

**CITY OF CLARENCE-ROCKLAND**

**EXPANSION LANDS SECONDARY PLAN  
TRANSPORTATION IMPACT ASSESSMENT**

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# 1. Introduction

The Town of Clarence-Rockland is part of the counties of Prescott and Russell. As part of the Official Plan of the United Counties of Prescott and Russell, the urban area of Clarence-Rockland was identified to be expanded to accommodate the long-term growth 2035 vision. This expanded urban area will accommodate additional new urban development to meet Clarence-Rockland's projected growth over the projected planning period. The expansion lands are located south of Clarence-Rockland on the west and east side of Caron Street. Fotenn, CIMA+ and Shore Tanner were retained by the Town of Clarence-Rockland to complete a Secondary Plan for the Expansion Lands. Once complete this Secondary Plan will be appended to the Official Plan for the Urban Area for the city of Clarence-Rockland as an amendment.

This report will assess the existing and proposed transportation network capacities for vehicles, cyclists and pedestrians and to highlight the existing transportation and traffic related conditions in the surrounding area of Clarence-Rockland. It is understood that the City is also concurrently undertaking a Transportation Master Plan (TMP), as well as a Multi-Modal Transportation Master Plan (MMTMP) in order to meet the anticipated growth and demand of the transportation network by all road users, including vehicles, cyclists and pedestrians in the near future. Both plans will serve as an update to the Strategic Transportation Plan for the Urban Area of the City of Clarence-Rockland, which was completed in 2005.

## 1.1 Planning Context

The following studies, planning policy and plans were consulted to understand the context of this transportation study from the perspective of each of the province, the county and the city of Clarence-Rockland's objectives for planning in this area.

- #CycleOn Strategy, 2013
- Prescott-Russell Recreational Trail Strategic Plan, 2014
- Prescott-Russell Recreational Trail Assessment and Improvement Plan, 2015
- Prescott-Russell Official Plan, 2018
- Strategic Transportation Plan for the Urban Area of the City of Clarence-Rockland, 2005
- Official Plan of the Urban Area of the City of Clarence-Rockland, 2014
- Development Charges Background Study, 2014
- Clarence-Rockland Transit Feasibility Study, 2014
- Clarence-Rockland Community Improvement Plan Background Study, 2016
- Clarence-Rockland Parks & Recreation Master Plan, 2016
- City of Clarence-Rockland Strategic Plan, 2018
- City of Clarence-Rockland Multi-Modal Transportation Master Plan Draft Memo, 2018

### 1.1.1 Provincial Planning

The province of Ontario is looking to have cycling recognized as a respected and valued mode of transportation in Ontario by the year 2033. The guiding principles of this strategy are:

- Safety
- Partnership
- Accessibility
- Connectivity

The strategic plans that apply to the City of Clarence-Rockland for the purpose of this report to meet this goal includes:

- Design healthy, active and prosperous communities;
- Improve cycling structure; and
- Make streets safer.

### 1.1.2 County Planning

The land that Clarence-Rockland is looking to make part of their urban area is currently under rural policy area with the County of Prescott-Russell. Their Official Plan provides guidance on the distribution of residential types and density. It is seeking to ensure that 70% of all new housing will be low density (up to 16 units per net ha), 20% medium density (up to 30 units per net ha) and 10% high density (more than 30 units per net ha). Caron Street and Baseline Road are identified as having a right-of-way of 26 meters. Baseline Road is identified as a local collector road and Caron Road is identified as a major collector.

The County of Prescott-Russell has a focus on improving recreational active transportation modes across the county. This includes the paving of road shoulders within the cycling network and integrating it into Public Works, improving active transportation uptake in municipal official plans, and including sidewalk and cycling facility requirements in municipal by-laws for new developments.

### 1.1.3 Municipal Planning Context

A future residential neighbourhood is projected to be developed in the lands located west of the study area, as the lands are designated for low density residential develop as per the Clarence-Rockland Official Plan (OP).

#### Key Issues

- Planned pathway system – integration of existing and proposed on/off-street pathway facilities (MMLOS considerations)
- Medium to Long term effects on Caron Street – Primary north-south roadway link to County Road 17 (HWY17), looking at a potentially expansion.

- New East-West Arterial Corridor – Proposed development lands may trigger this need as County Road 17 and Caron Street begin to reach capacity, as previously discussed in the 2005 strategic plan.

## 1.2 Study Area

The City of Clarence-Rockland is located within the United Counties of Prescott and Russell and is situated along County Road 17 (HWY 17), approximately 40 km east of the City of Ottawa's downtown. The Ottawa River is located immediately north while the United Counties of Stormont, Dundas, and Glengarry are located further south. An interprovincial connection between Ontario and Quebec is provided via a seasonal ferry (does not operate during winter months), which provides a link between Thurso, Quebec and Clarence-Rockland. Alternative interprovincial connections are provided via a bridge connection in the east (linking Hawkesbury, Ontario and Grenville, Quebec) or a four-season ferry in the west (linking Cumberland, Ontario and Masson-Angers, Quebec), which operates 24 hours a day, 7 days a week.

The location of the Secondary Plan Expansion Lands, in relation to the greater City of Clarence-Rockland is illustrated in **Figure 1**.



**Figure 1: Expansion Lands**

As depicted in **Figure 1**, the subject expansion lands include area south of David Street and west of Clarence Creek. It is situated mostly to the east of Caron Street, with the exception of an area of approximately 23 hectares on the west side of Caron Street in the southwest of the study area. The Rockland Golf Club and the residential neighbourhood of Rockland East are located to the north of the study area.

## 2. Existing Conditions

### 2.1 Study Area Road Network

The roads within the greater study area are under a combination of jurisdictions, including the Counties of Prescott and Russell, and the City of Clarence-Rockland. The following is a summary of the roads within the greater study area of the proposed Secondary Plan boundaries, and the role these roadways play in the greater road network.

**HWY 17:** is a 2-lane east-west arterial road with a posted speed limit of 70 km/h designated under the Counties of Prescott and Russell's jurisdiction that is continuous between the County limits. HWY17 provides a major transportation link between the Ottawa region and the Greater Montreal area community, as well as providing direct access within the Counties of Prescott and Russell.

**Caron Street:** is a 2-lane north-south major collector road. A posted speed limit of 50 km/h is present from the north extension of the road at its intersection with HWY 17 to 500 metres south of David Street. South of David Street, Caron Street extends to Baseline Road with a posted speed limit of 80 km/h. A centre two-way-left-turn lane is currently provided along Caron Street between HWY 17 and David Street, which provides refuge for left-turn movements to/from a number of local roads and adjacent land uses.

**Docteur Corbeil Boulevard:** is a 2-lane east-west major collector road with a posted speed limit of 50 km/h. In the west, Docteur Corbeil Boulevard extends from St. Jean Street (as a 'T' intersection) and terminates at Caron Street in the east (as a 'T' intersection). **Laurier Street:** is a 2-lane east-west major collector road with a posted speed limit of 50 km/h. In the west, Laurier Street extends from Popuart Road to HWY 17 in the east (as an unsignalized 'T' intersection). On-street parking is provided on both the north and south sides of Laurier Street where residential housing is provided.

**David Street:** is a 2-lane east-west local street with a posted speed limit of 50 km. In the west, David Street extends from Caron Street (as a 'T' intersection) to Tucker Road/Montée Outaouais in the east (as a 'T' intersection). David Street primarily serves a small residential and agricultural land uses.

**Baseline Road:** is a 2-lane local collector with a posted speed limit of 80 km/h and a rural cross section. In the west, Baseline Road extends from Canaan Road to Division Road in the east.

## 2.2 Study Area Intersections

**Caron Street at HWY 17** is a four-legged signalized intersection. Auxiliary left-turn lanes are provided in all directions, and auxiliary right-turn lanes are provided in the eastbound and westbound directions. A single lane is provided for through movements in all directions, with northbound and southbound through movements shared with right-turns.

Crosswalks with pedestrian actuated signals are provided for all crossing directions.



**Caron Street at Laurier Street** is a slightly skewed, four-legged signalized intersection. Auxiliary left-turn lanes are provided in all directions. A single shared through/right-turn lane is provided in all directions.

Crosswalks with pedestrian actuated signals are provided for all crossing directions.



**Caron Street at Hélène Street** is a three-legged side street stop-controlled intersection. An auxiliary northbound left turn lane is provided as an extension of the continuous left-turn lane along Caron Street.

No pedestrian crosswalks are provided at the intersection. This intersection is similar to most local residential roads intersecting with Caron Street within the study area.



**Caron Street at Docteur Corbeil Boulevard** is a three-legged side street stop-controlled intersection. A continuous centre left-turn lane is provided through the intersection along Caron Street.

A pedestrian crossing is provided on the west side of the intersection. Bicycle lanes are provided along Docteur Corbeil Boulevard.



**Caron Street at David Street** is a three legged all-way stop controlled intersection. An auxiliary southbound left-turn lane is provided as an extension of the continuous left-turn lane along Caron Street.

No Pedestrian crosswalks are provided at the intersection.



**Caron Street at Baseline Road** is a three-legged side street stop-controlled intersection, with southbound vehicles along Caron Street required to stop. No auxiliary lanes are provided at the intersection.

No pedestrian crosswalks are provided at the intersection.



## 2.3 Existing Active Transportation

Active transportation facilities were reviewed to gain an understanding of existing pedestrian and cycling facilities within the greater City area. The City acknowledges that protecting and expanding the existing pedestrian and bicycle network in the City is essential to creating quality of place. Existing policies within the City's Official Plan are anticipated to be expanded with the future TMP and ATP currently being updated.

### 2.3.1 Pedestrian Facilities

A sidewalk, approximately 2.2 m in width is provided along the west side of Caron Street, while a paved asphalt path approximately 3.0 m in width is provided along the east side of this roadway, both extending from HWY 17 in the north and terminating at David Street in the south. The asphalt path is recognized as an 'off-street multi-use path' according to the Clarence-Rockland Official Plan; however, there is no signage present along the asphalt path (based on Google Street view imagery) to indicate its use as a 'multi-use' path.

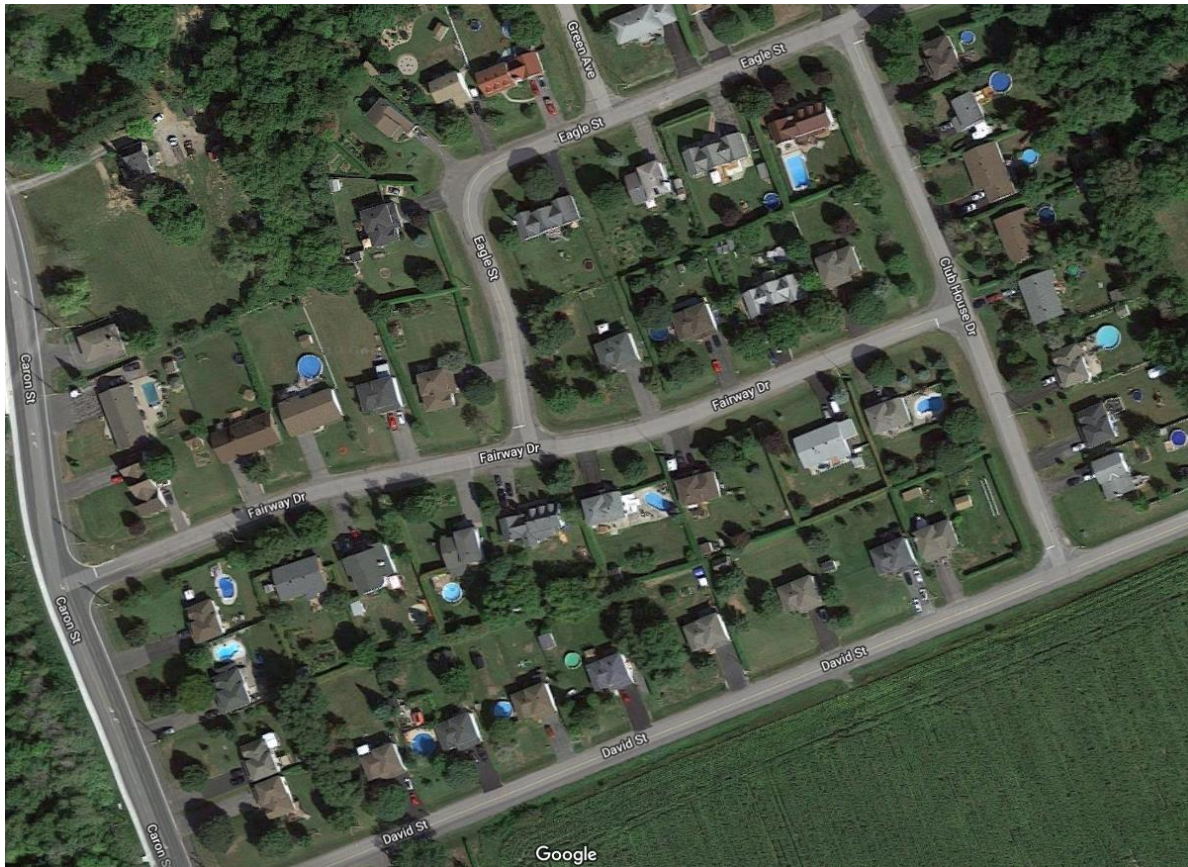
Two (2) midblock crossing treatments are present along Caron Street connecting to local trails, as illustrated in **Figure 2**. Midblock crossing treatments have 'zebra' type pavement markings, side-mounted pedestrian crossover signs (Ra-5LR) on both sides of the road facing both directions, and pedestrian refuge islands. These midblock crossing treatments offer the only opportunity for pedestrians to cross Caron Street, with the exception of the east-west crosswalk provided at the signalized HWY 17/Caron and Laurier/Caron intersections.



**Figure 2: Midblock Pedestrian Crossing (Caron Street north of Hélène Street)**

Sidewalks are primarily located along collector roadways within the City, such as Laurier Street, St. Joseph Street, St. Jean Street, Heritage Drive, etc. Most local residential streets within the City do not have pedestrian facilities. An example of absent sidewalks along local roadways is depicted in **Figure 3**.

Some local roads within the City are identified as potential candidates for road widening as per the Official Plan (e.g. David Road is a candidate for widening). As defined in the City's Official Plan<sup>1</sup>, the addition of dedicated pedestrian facilities should be considered at the time when road reconstruction projects are being undertaken within the City's urban area.



*Figure 3: Absence of sidewalks north of David Rd*

### 2.3.2 Cycling Facilities

As mentioned previously, a paved asphalt path is provided along the east side of Caron Street, extending from HWY 17 in the north and terminating at David Street in the south. The City has designated this path as a 'multi-use' facility; however, the elements attributed to it are more recognizable with a dedicated cycling facility, such as a two-way cycle-track. The width of the asphalt path is approximately 3.0 metres, with a solid yellow centre-line running down the centre. Bicycle lane pavement markings are provided in both directions, as illustrated in **Figure 4**.

<sup>1</sup> Official Plan of the Urban Area of the City of Calrence-Rockland, Section 7.11 Pedestrian Policies



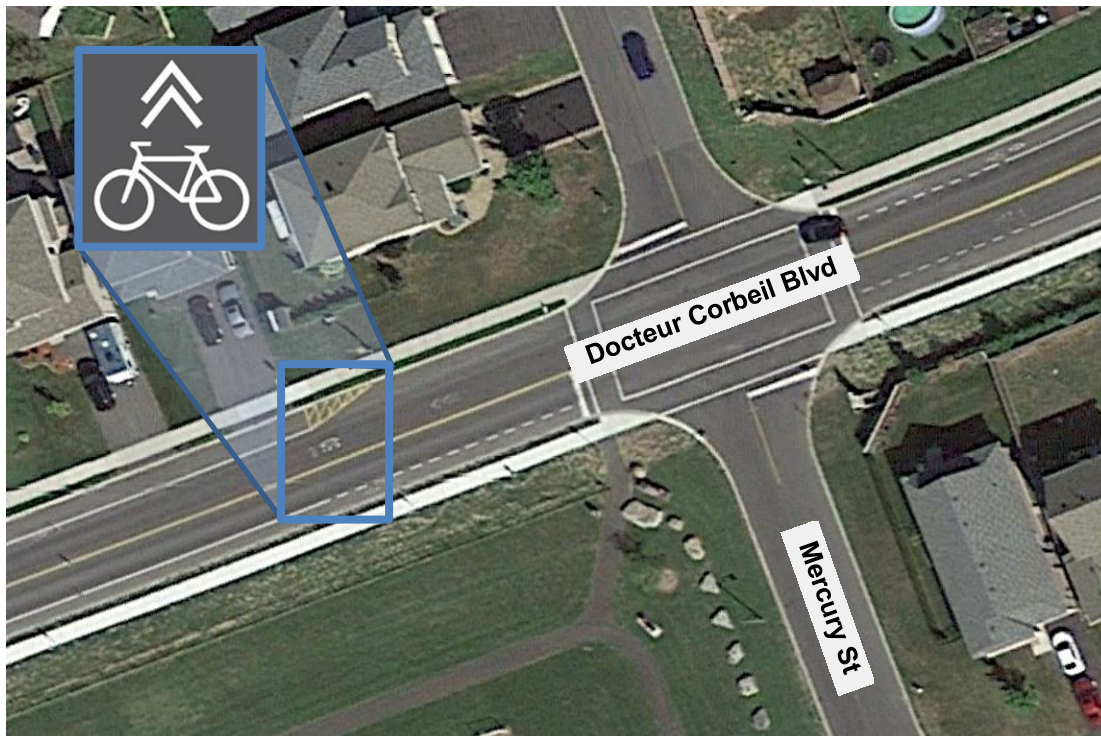
**Figure 4: Paved Asphalt Pavement Markings – Caron Street South of HWY 17**

Cyclist crossing facilities are also provided in multiple locations along Caron Street. Crossing facilities have custom double-sided bicycle crossing signage present on both sides of the road to alert oncoming vehicles. Dashed pavement markings as well as directional arrows are present, which provide positive guidance for crossing cyclists, as illustrated in **Figure 5**.



**Figure 5: Cyclist Crossing Facilities – Caron Street**

Bicycle lanes are provided in the east and westbound directions along Docteur Corbeil Boulevard. As depicted in **Figure 6** bicycle lanes are shown to terminate when on-street parking is provided for the adjacent residential units, and 'Sharrow' pavement markings are provided within the centre of the travel lane to guide cyclists as to where they should ride within a travel lane, shared by both motorists and cyclists.



**Figure 6: Bicycle Lane & 'Sharrow' Cyclist Pavement Markings (Docteur Corbeil Blvd 350m west of Caron St)**

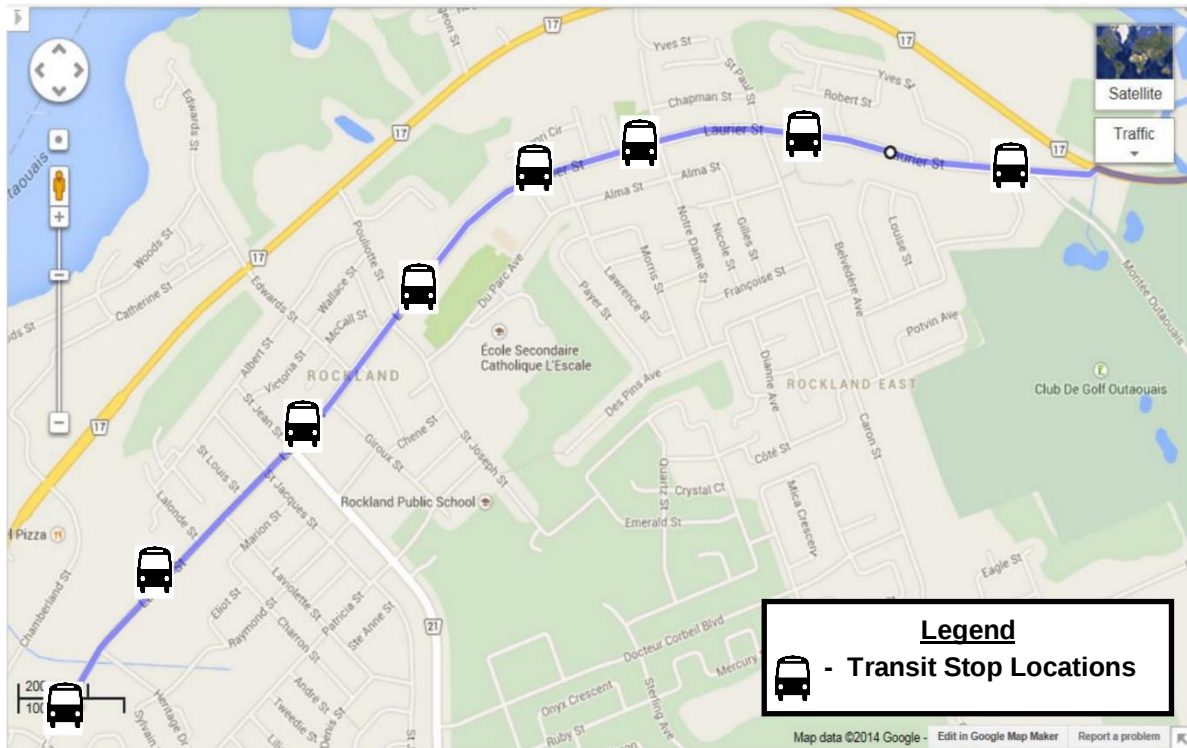
## 2.4 Existing Transit

Clarence-Rockland Transport (CRT) operates three bus routes (No. 530, 530A and 535), which connect the City of Clarence-Rockland and downtown Ottawa, with some services continuing to Gatineau (Hull). Route 530 directly serves the study area, while route 535 provides service to/from Bourget along Russell Road and Highway 417.

Within the City of Clarence-Rockland, route 530 and 530A are understood to be a commuter-oriented express service operating inbound to Ottawa in the morning and outbound to Clarence-Rockland in the afternoon. In 2012, 11 daily trips were provided on Route 530, with an average daily ridership of 355 people using the service (per direction). Within Clarence-Rockland, this route is understood to travel on Laurier Street and Docteur Corbeil Boulevard (to/from Clarence Creek). Both routes and their respective bus stop locations are illustrated in **Figure 7** and **Figure 8**.

Based on information provided, it should be noted that the contract between Clarence-Rockland and the Leduc Bus Lines will expire on August 31<sup>st</sup>, 2019. However, Leduc Bus lines has indicated that buses will continue to operate on September 1<sup>st</sup>, although there could be an increase in fares without municipal funding.<sup>2</sup> This may have an impact on future transit ridership.

<sup>2</sup> CBC. (2019). *Clarence-Rockland hands public transit system to private sector* | CBC News. [online].



**Figure 7: CRT Route 530**



**Figure 8: CRT Route 530A**

## 2.5 Existing Network Operations

### 2.5.1 Methodology

Intersection capacity analysis was undertaken using procedures described in the Highway Capacity Manual (HCM). The analysis primarily focuses on performance measures such as level-of-service (LOS), volume to capacity (v/c) ratio, and 95<sup>th</sup> percentile queues. Additionally, delays reported with HCM methodology were compared to delays reported in SimTraffic simulation in certain cases where simulated results vary from reported results. LOS is a qualitative measure of operational performance and is based on control delay. The LOS criteria for signalized and unsignalized intersections are shown in **Table 1**.

**Table 1: LOS Criteria for Signalized and Unsignalized Intersections**

| LOS      | Control Delay (seconds/vehicle) |                            | Traffic Flow Characteristics                   |
|----------|---------------------------------|----------------------------|------------------------------------------------|
|          | Signalized Intersections        | Unsignalized Intersections |                                                |
| <b>A</b> | 0 – 10                          | 0 – 10                     | Very Good                                      |
| <b>B</b> | > 10 – 20                       | > 10 – 15                  | Good                                           |
| <b>C</b> | > 20 – 35                       | > 15 – 25                  | Typically preferred planning objective         |
| <b>D</b> | > 35 – 55                       | > 25 – 35                  | Typically acceptable                           |
| <b>E</b> | > 55 – 80                       | > 35 – 50                  | Undesirable; potentially unstable traffic flow |
| <b>F</b> | > 80                            | > 50                       | Failing movements may impede traffic flow      |

A v/c Ratio is the ratio between traffic volume and the theoretical capacity of an intersection or movement. A v/c Ratio greater than 1.0 indicates that an intersection or movement is operating over capacity. A 95<sup>th</sup> percentile queue is a queue length that has a 5% probability of being exceeded during the analysis period (i.e. during peak hours). It is common industry practice to use 95<sup>th</sup> percentile queues for design purposes.

Additionally, the review of intersection operations follows industry best practices which indicate that the analysis should identify intersections where:

- v/c ratios for overall intersection operations, through movements or shared through/turning movements are 0.90 or above;
- v/c ratios for exclusive movements are above 1.00; and
- 95<sup>th</sup> percentile queue lengths for individual movements exceed available lane storage.

The operational performance of signalized and stop-controlled intersections within the study area were reviewed using Synchro/SimTraffic (v9) software.

### 2.5.2 Traffic Analysis

Turning movement counts (TMCs) were collected during the week of April 5<sup>th</sup> to April 12<sup>th</sup>, 2018 during both AM and PM peak periods. Some TMCs at unsignalized intersections were estimated based on counts at similar locations throughout the study area. Link volume between intersections was balanced appropriately in the north-south direction along Caron Street, to minimize volume discrepancies between counts conducted on different days. Turning movement counts are illustrated in **Figure 9** and full turning movement counts are provided in **Appendix A**.

Intersection operational analysis was undertaken for the two (2) signalized and seven (7) unsignalized intersections within the study area using Synchro/SimTraffic 9 software to assess existing conditions. A signal timing plan was provided by the City of Clarence-Rockland for the intersection of Caron Street & HWY 17 and used in the existing conditions Synchro model. The signal timing at the intersection of Caron Street & Laurier Street was not provided and was measured in the field on April 10, 2018. The measured signal timing was compared with OTM Book 12 Signal Timing guidelines based on the roadway conditions and modified accordingly.

The existing conditions analysis is summarized in **Table 2** and the detailed Synchro/SimTraffic output results are provided in **Appendix B**.

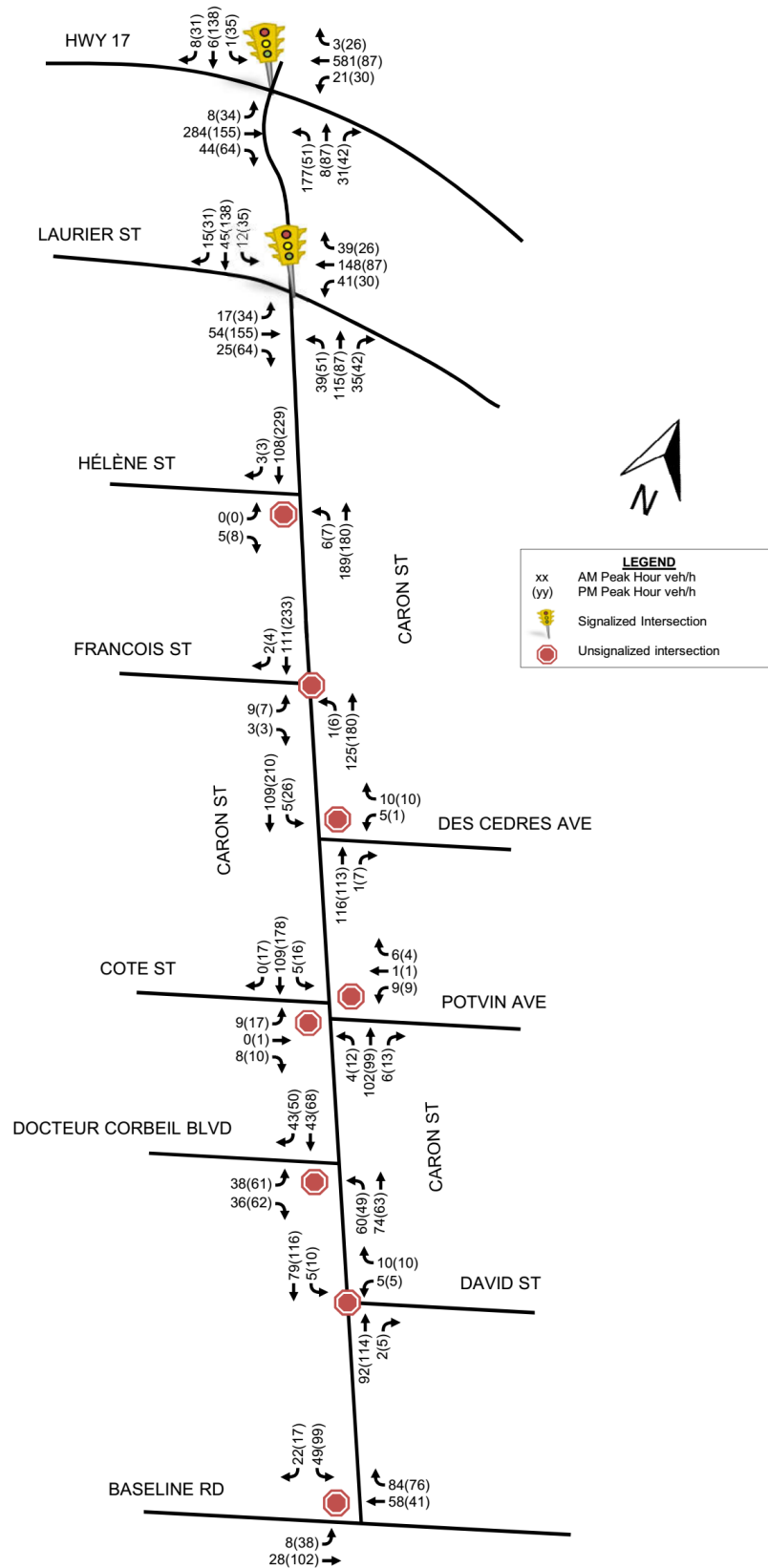


Figure 9: 2018 Existing Turning Movement Volumes

Table 2: 2018 Existing Intersection Operations

| Direction                                                | Mov   | Storage Length (m) | AM Peak Hour |           |     |           | PM Peak Hour |           |     |           |
|----------------------------------------------------------|-------|--------------------|--------------|-----------|-----|-----------|--------------|-----------|-----|-----------|
|                                                          |       |                    | v/c          | Delay (s) | LOS | Queue (m) | v/c          | Delay (s) | LOS | Queue (m) |
| Caron Street at HWY 17 (Signalized)                      |       |                    |              |           |     |           |              |           |     |           |
| EB                                                       | L     | 90                 | 0.03         | 10        | A   | 7         | 0.06         | 12        | B   | 12        |
|                                                          | T     | -                  | 0.33         | 12        | B   | 34        | 0.20         | 16        | B   | 26        |
|                                                          | R     | 85                 | 0.03         | 9         | A   | 9         | 0.05         | 14        | B   | 14        |
| WB                                                       | L     | 60                 | 0.04         | 8         | A   | 8         | 0.05         | 12        | B   | 12        |
|                                                          | T     | -                  | 0.65         | 17        | B   | 51        | 0.11         | 15        | B   | 19        |
|                                                          | R     | 56                 | 0.00         | 9         | A   | 2         | 0.02         | 14        | B   | 9         |
| NB                                                       | L     | 60                 | 0.72         | 41        | D   | 44        | 0.23         | 32        | C   | 23        |
|                                                          | T/R   | -                  | 0.07         | 35        | C   | 12        | 0.42         | 39        | D   | 35        |
| SB                                                       | L     | 40                 | 0.02         | 43        | D   | 2         | 0.15         | 34        | C   | 21        |
|                                                          | T/R   | -                  | 0.26         | 48        | D   | 8         | 0.64         | 46        | D   | 49        |
| Overall                                                  |       |                    | 0.70         | 20        | B   | -         | 0.29         | 27        | C   | -         |
| Caron Street at Laurier Street (Signalized)              |       |                    |              |           |     |           |              |           |     |           |
| EB                                                       | L     | 35                 | 0.04         | 13        | B   | 6         | 0.07         | 11        | B   | 12        |
|                                                          | T/R   | -                  | 0.10         | 14        | B   | 12        | 0.32         | 16        | B   | 30        |
| WB                                                       | L     | 60                 | 0.08         | 11        | B   | 10        | 0.07         | 12        | B   | 9         |
|                                                          | T/R   | -                  | 0.26         | 14        | B   | 23        | 0.17         | 15        | B   | 16        |
| NB                                                       | L     | 55                 | 0.15         | 23        | C   | 13        | 0.23         | 25        | C   | 15        |
|                                                          | T/R   | -                  | 0.44         | 28        | C   | 34        | 0.42         | 29        | C   | 31        |
| SB                                                       | L     | 50                 | 0.06         | 26        | C   | 6         | 0.14         | 24        | C   | 14        |
|                                                          | T/R   | -                  | 0.18         | 28        | C   | 19        | 0.59         | 32        | C   | 42        |
| Overall                                                  |       |                    | 0.32         | 20        | B   | -         | 0.38         | 22        | C   | -         |
| Caron Street at Hélène Street (Unsignalized)             |       |                    |              |           |     |           |              |           |     |           |
| EB                                                       | L/R   | -                  | 0.01         | 9         | A   | 6         | 0.01         | 10        | A   | 8         |
| NB                                                       | L     | 15                 | 0.00         | 1         | A   | 2         | 0.01         | 8         | A   | 4         |
|                                                          | T     | -                  | 0.12         | -         | -   | -         | 0.12         | -         | -   | -         |
| SB                                                       | T/R   | -                  | 0.07         | -         | -   | -         | 0.15         | -         | -   | -         |
| Overall                                                  |       |                    | 0.21         | 1         | A   | -         | 0.23         | 1         | A   | -         |
| Caron Street at Francoise Street (Unsignalized)          |       |                    |              |           |     |           |              |           |     |           |
| EB                                                       | L/R   | -                  | 0.02         | 8         | A   | 10        | 0.02         | 8         | A   | 10        |
| NB                                                       | L     | 15                 | 0.00         | 7         | A   | 2         | 0.01         | 8         | A   | 6         |
|                                                          | T     | -                  | 0.18         | 8         | -   | 17        | 0.26         | -         | -   | 19        |
| SB                                                       | T/R   | -                  | 0.15         | 8         | A   | 17        | 0.31         | 8         | A   | 24        |
| Overall                                                  |       |                    | 0.17         | 8         | A   | -         | 0.23         | 9         | A   | -         |
| Caron Street at Des Cèdres Avenue (Unsignalized)         |       |                    |              |           |     |           |              |           |     |           |
| WB                                                       | L/R   | -                  | 0.02         | 9         | A   | 10        | 0.01         | 9         | A   | 9         |
| NB                                                       | T/R   | -                  | 0.08         | -         | -   | -         | 0.08         | -         | -   | -         |
| SB                                                       | L     | 15                 | 0.00         | 1         | A   | 2         | 0.02         | 8         | A   | 6         |
|                                                          | T     | -                  | 0.07         | -         | -   | -         | 0.14         | -         | -   | -         |
| Overall                                                  |       |                    | 0.17         | 1         | A   | -         | 0.22         | 1         | A   | -         |
| Caron Street at Cote Street/Potvin Avenue (Unsignalized) |       |                    |              |           |     |           |              |           |     |           |
| EB                                                       | L/T/R | -                  | 0.02         | 8         | A   | 11        | 0.04         | 8         | A   | 14        |
| WB                                                       | L/T/R | -                  | 0.02         | 8         | A   | 10        | 0.02         | 8         | A   | 10        |
| NB                                                       | L     | 15                 | 0.01         | 7         | A   | 5         | 0.02         | 7         | A   | 9         |
|                                                          | T/R   | -                  | 0.16         | -         | -   | 18        | 0.16         | -         | -   | 16        |
| SB                                                       | L     | 15                 | 0.01         | 7         | A   | 4         | 0.03         | 7         | A   | 7         |
|                                                          | T/R   | -                  | 0.16         | -         | -   | 15        | 0.17         | -         | -   | 14        |
| Overall                                                  |       |                    | 0.16         | 7         | A   | -         | 0.18         | 7         | A   | -         |
| Caron Street at Docteur Corbeil Boulevard (Unsignalized) |       |                    |              |           |     |           |              |           |     |           |

| Direction                                           | Mov | Storage Length (m) | AM Peak Hour |           |          |           | PM Peak Hour |           |          |           |
|-----------------------------------------------------|-----|--------------------|--------------|-----------|----------|-----------|--------------|-----------|----------|-----------|
|                                                     |     |                    | v/c          | Delay (s) | LOS      | Queue (m) | v/c          | Delay (s) | LOS      | Queue (m) |
| EB                                                  | L/R | -                  | 0.10         | 10        | A        | 14        | 0.16         | 10        | B        | 15        |
| NB                                                  | L   | 15                 | 0.04         | 8         | A        | 8         | 0.04         | 8         | A        | 8         |
|                                                     | T   | -                  | 0.05         | -         | -        | -         | 0.04         | -         | -        | -         |
| SB                                                  | T/R | -                  | 0.06         | -         | -        | -         | 0.08         | -         | -        | -         |
| <b>Overall</b>                                      |     |                    | <b>0.21</b>  | <b>4</b>  | <b>A</b> | <b>-</b>  | <b>0.24</b>  | <b>5</b>  | <b>A</b> | <b>-</b>  |
| <b>Caron Street at David Street (Unsignalized)</b>  |     |                    |              |           |          |           |              |           |          |           |
| WB                                                  | L/R | -                  | 0.02         | 7         | A        | 10        | 0.02         | 7         | A        | 10        |
| NB                                                  | T/R | -                  | 0.12         | 8         | A        | 17        | 0.15         | 8         | A        | 17        |
| SB                                                  | L   | 40                 | 0.01         | 7         | A        | 6         | 0.02         | 7         | A        | 10        |
|                                                     | T   | -                  | 0.11         | 7         | -        | 16        | 0.17         | 7         | -        | 15        |
| <b>Overall</b>                                      |     |                    | <b>0.15</b>  | <b>7</b>  | <b>A</b> | <b>-</b>  | <b>0.17</b>  | <b>8</b>  | <b>A</b> | <b>-</b>  |
| <b>Caron Street at Baseline Road (Unsignalized)</b> |     |                    |              |           |          |           |              |           |          |           |
| EB                                                  | L/T | -                  | 0.01         | 2         | A        | 3         | 0.03         | 2         | A        | 6         |
| WB                                                  | T/R | -                  | 0.09         | -         | -        | 12        | 0.08         | -         | -        | 16        |
| SB                                                  | L/R | -                  | 0.09         | 10        | A        | -         | 0.18         | 11        | B        | -         |
| <b>Overall</b>                                      |     |                    | <b>0.20</b>  | <b>3</b>  | <b>A</b> | <b>-</b>  | <b>0.28</b>  | <b>4</b>  | <b>A</b> | <b>-</b>  |

As shown in **Table 2**, all movements at signalized intersections are operating with a v/c ratio below 0.72 (i.e. with a LOS D or better). Regarding 95<sup>th</sup> percentile queues, the existing storage at signalized intersections is also noted as being sufficient (i.e. left-turn vehicle queues are not spilling back into and blocking adjacent through lanes). All movements at unsignalized intersections are operating with a v/c ratio below 0.31, (i.e. with a LOS B or better) and 95<sup>th</sup> percentile queues ranging between 1-3 vehicles in length.

Overall, there are no existing issues from a transportation perspective along Caron Street.

### 3. Transportation Master Plan

As part of the subject Secondary Plan and for the purpose of the following Transportation Master Planning exercise, future land use statistics were developed for the planned urban expansion area. Three residential scenarios were considered (e.g. a low, medium and high density scenario), and following public consultation and consultation with technical City Staff, a “medium” density scenario was selected as the preferred option. The following **Table 3** summarizes the estimated land use statistics for the subject expansion area.

**Table 3: Medium Scenario Land Use Projected Densities**

| Land Use Designation       | Area (ha)     | Residential |              | Employment                   |            |
|----------------------------|---------------|-------------|--------------|------------------------------|------------|
|                            |               | Units       | Population   | Floor Area (m <sup>2</sup> ) | Employment |
| Low Density Residential    | 76.46         | 688         | 1,789        | -                            | -          |
| Medium Density Residential | 22.55         | 203         | 528          | -                            | -          |
| High Density Residential   | 11.14         | 100         | 261          | -                            | -          |
| Commercial                 | 2.91          | -           | -            | 7,283                        | 182        |
| Institutional/Community    | 24.17         | -           | -            | -                            | -          |
| <b>Total</b>               | <b>137.23</b> | <b>911</b>  | <b>2,577</b> | <b>7,283</b>                 | <b>182</b> |

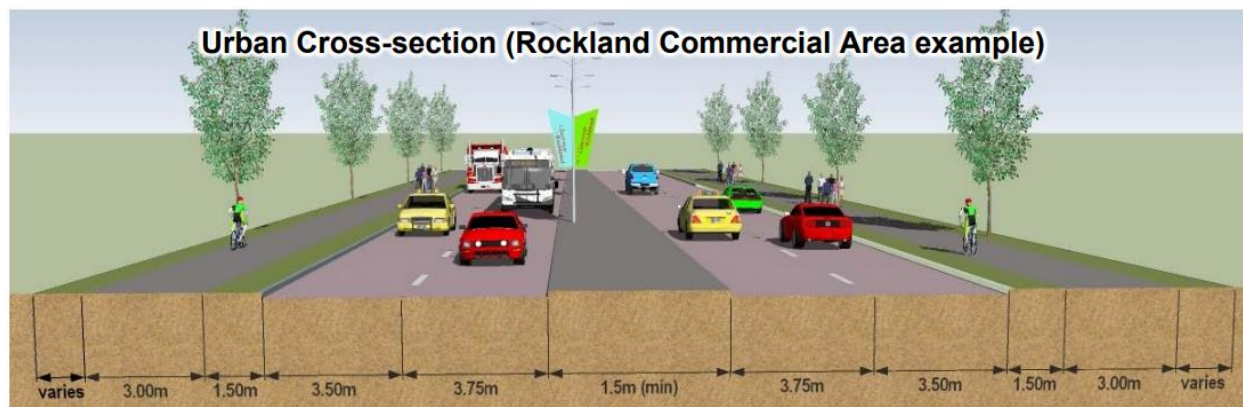
As a result of this projected increase in population and employment, new roads and multi-modal links should be considered, which the following sections outline potential future transportation needs.

It should be noted that as development applications come online, additional and more detailed analysis from a transportation perspective will be required to better develop future network needs (e.g. traffic signal control, auxiliary turns lanes, etc.). The estimated timing of full build-out is 25-years.

### 3.1 Planned Area Network Changes

An Environmental Study Report was prepared by AECOM in June of 2016 for the proposed widening of HWY 17<sup>3</sup>. Within the City of Clarence-Rockland, the proposed improvements included widening the existing HWY 17 as well as potentially widening/improving Baseline Road outside of the City Urban Boundary. The recommended plan is to widen both roadways from one lane in each direction to two lanes in both directions from east of the Trim Road interchange in the City of Ottawa, for a distance of approximately 21.5 km to Landry Road in the City of Clarence-Rockland.

A conceptual design of the future cross-section within the urban area of the Clarence-Rockland is illustrated in **Figure 10**.



**Figure 10: Conceptual Urban Cross-Section within the City of Clarence-Rockland**

It should also be noted that it was identified in the Environmental Study Report that pedestrians and cyclists should be accommodated by multi-use pathways, paved shoulders and service roads along the HWY 17, with select pedestrian crossing treatments proposed within commercial zones where there will be desire lines.

<sup>3</sup> Environmental Study Report Ottawa Road 174 / County Road 17 Environmental Assessment Study, AECOM, June 2016

Based on the article provided by *CBC News*, MTO confirmed in 2016 that it would provide funding to widen HWY 17 in Clarence-Rockland. The planned construction is expected to commence in 2019<sup>4</sup>.

With respect to the 2005 Strategic Planning report, prepared by *McCormick Rankin Corporation*, it was proposed that David Street will eventually extend to Poupart Road, which would be extended to HWY 17 to bolster the east-west network for the southern part of the city. Given the recent residential development west of Caron Street, this new east-west link is more likely to occur further south; however, the construction of the new east-west link is still uncertain and therefore, its timing is assumed to be beyond the scope of this assessment.

Without a new east-west link, more traffic will have to travel north or south in order to head east or west of the City. As a result, neighbourhoods may experience cut-through traffic once north-south become more congested.

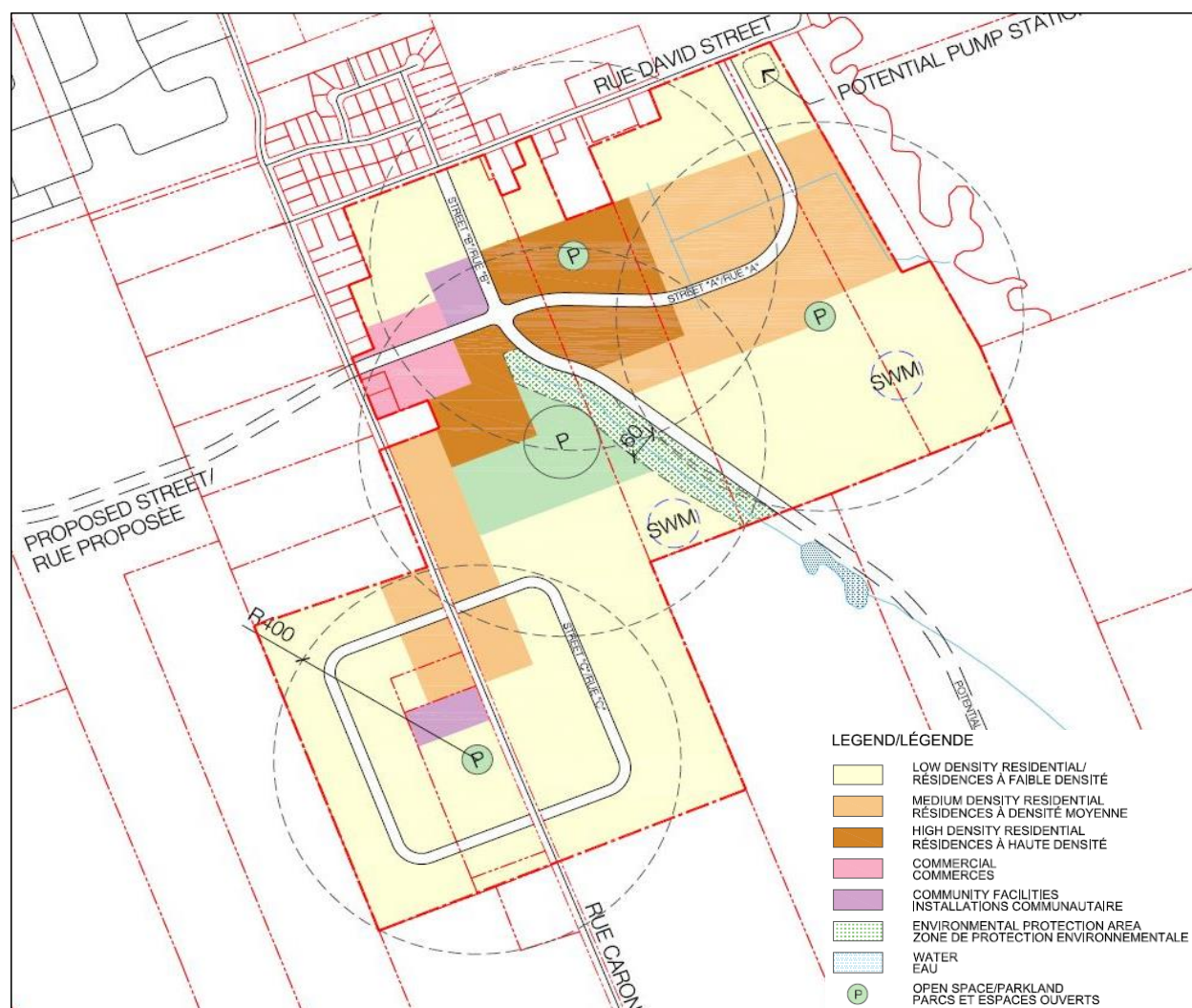
### 3.2 Preferred Secondary Plan Concept

Following public consultation and consultation with technical City Staff, a preferred concept plan, outlining where certain land use types should be considered and where future collector roadways should be provided by the 2044 planning horizon year. This preferred concept plan is shown below in **Figure 11** and it should be noted that local roadways are not depicted, as future development will dictate where local roadways will be constructed. It should also be noted that there is currently no timeline for the extension of Street 'A' and Street 'B' beyond the study area, (i.e. a connection to the adjacent community to the west and Baseline Road to the south will ultimately be provided; however, this will likely occur beyond the 25-year planning horizon).

For the purpose of this assessment, the preferred concept plan was broken down into three phases. Phase 1 is assumed to be built-out within a 10-year time horizon (i.e. by the year 2029), Phase 2 is assumed to be built-out within a 20-year horizon (i.e. by the year 2039), and full build-out of the preferred concept plan is assumed to be built-out within a 25-year horizon (i.e. by the year 2044).

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<sup>4</sup> CBC. (2016). *Ontario gives \$40M to widen Rockland's County Road 17* | *CBC News*. [online] Available at: <https://www.cbc.ca/news/canada/ottawa/country-road-17-widen-1.3638456> [Accessed 2 May 2019].



**Figure 11: Preferred Concept Plan (prepared by FOTENN Consulting)**

For analysis purposes, the following **Table 4** summarizes an assumed build-out and timing of the land uses depicted in **Figure 11**.

**Table 4: Projected Build-Out Phasing**

| Land Use                                    | Units or Gross Floor Area (GFA) |                        |                               |
|---------------------------------------------|---------------------------------|------------------------|-------------------------------|
|                                             | Phase 1<br>(year 2029)          | Phase 2<br>(year 2039) | Full Build-out<br>(year 2044) |
| Low Density Residential                     | 273                             | 480                    | 688                           |
| Medium Density Residential                  | 48                              | 126                    | 203                           |
| High Density Residential                    | 31                              | 65                     | 100                           |
| <b>Total Residential Units</b>              | <b>352</b>                      | <b>671</b>             | <b>991</b>                    |
| <b>Total Commercial GFA (m<sup>2</sup>)</b> | <b>7,283</b>                    | <b>7,283</b>           | <b>7,283</b>                  |

As shown in **Table 4**, it is anticipated that the planned commercial component of the expansion lands will be fully built-out by the 2029 horizon year and by the 2044 horizon year, an approximate total of 990 residential units will be constructed.

### 3.3 Future Transit

As mentioned previously in Section 2.4 of this report, the immediate future of transit service and ridership is somewhat unknown for Clarence-Rockland. However, as the subject expansion lands is built-out and as Clarence-Rockland continues to grow, it is assumed there will be an increase in transit demand. Therefore and for the purpose of this assessment, a transit modal share has been assumed when analyzing the total projected person trips generated by the subject expansion lands.

### 3.4 Future Cycling, Pedestrian & On-Street Parking

As previously mentioned, an approximate 2.2 m wide sidewalk is provided along the west side of Caron Street and a paved asphalt pathway, approximately 3.0 m in width, is provided along the east side of this roadway. Currently, these active transportation facilities are provided between HWY 17 in the north to David Street in the south. With the expansion of the urban boundary, these active transportation facilities should be extended south to the proposed new urban boundary (i.e. the existing sidewalk and pathway along Caron Street should be extended south, beyond the proposed Street 'C').

The cross-section of David Street currently consists of a relatively narrow travel lane in each direction for general purpose traffic, unpaved shoulders and rural ditches for drainage. Given David Street will be included in the expansion of the urban boundary, its cross-section should be upgraded to include sidewalks and dedicated cycling facilities (e.g. paved shoulders as a minimum or more preferably, a segregated bike facility should be provided along its length, such as cycle-tracks), which is considered to be a typical cross-section for urban collector roadways.

With respect to the City of Ottawa's *Road Corridor Planning & Design Guidelines*, the recommended right-of-way (ROW) width for David Street is 26 m, which is considered typical for new roads with segments that include on-road cycling routes. Typical cross-sections can be found in Appendix A of the City of Ottawa's *Road Corridor Planning & Design Guidelines*.

With regard to the new collector roadways (i.e. Street 'A', Street 'B' and Street 'C'), their cross-sections should also include sidewalks and dedicated cycling facilities, and along commercial, community and parkland frontages, on-street parking should also be considered.

By providing safe and efficient links for all modes of transportation, and ensuring sufficient on-street parking is provided for commercial/community spaces, the subject expansion lands will have the means to be a rich and sustainable community.

### 3.5 Background Growth

With respect to background traffic growth, as a result of new development outside the study area, a general 2% per annum growth rate was assumed as a way to capture the projected impacts of

new traffic travelling through the study area. Based on recent Census data<sup>5</sup>, this is considered to be a conservative approach, as Clarence-Rockland has experienced a historical growth rate of 1.7% per annum.

Based on the surrounding network and area development potential, an annual background traffic growth rate was applied to the HWY 17 eastbound and westbound through movements only. It should be noted that background traffic volumes for all other movements at study area intersections will remain constant (i.e. with the exception of the eastbound and westbound through movements at the Caron/HWY 17 intersection, observed volumes depicted in **Figure 9** are not anticipated increase because of new development outside the study area).

The following **Table 5** summarizes the projected background traffic volumes on HWY 17 for each build-out horizon year.

**Table 5: Projected Background Traffic Growth**

| Direction                           | Mov. | Background Traffic Volumes (veh/h) |     |                        |     |                               |     |
|-------------------------------------|------|------------------------------------|-----|------------------------|-----|-------------------------------|-----|
|                                     |      | Phase 1<br>(year 2029)             |     | Phase 2<br>(year 2039) |     | Full Build-out<br>(year 2044) |     |
|                                     |      | AM                                 | PM  | AM                     | PM  | AM                            | PM  |
| Caron Street at HWY 17 (Signalized) |      |                                    |     |                        |     |                               |     |
| EB                                  | T    | 346                                | 189 | 422                    | 230 | 466                           | 254 |
| WB                                  | T    | 708                                | 106 | 863                    | 129 | 953                           | 143 |

### 3.6 Projected Site Trip Generation

For the purpose of this assessment, projected site-generated traffic was estimated using the appropriate average vehicle trip generation rates (or fitted curve equation, if available) from the 10<sup>th</sup> Edition of the Institute of Transportation Engineers (ITE) Trip Generation Manual. The following **Table 6** summarizes a number of appropriate ITE trip generation rates for estimating projected site-generated traffic.

**Table 6: ITE Vehicle Trip Generation Rates**

| Land Use                       | Data Source | AM Peak                                      | PM Peak                                      |
|--------------------------------|-------------|----------------------------------------------|----------------------------------------------|
| Single-Family Detached Housing | ITE 210     | $T = 0.74(X)$ ;<br>$T = 0.71(X) + 4.80$      | $T = 0.99(X)$ ;<br>$\ln(T) = 0.96(X) + 0.20$ |
| Multifamily Housing            | ITE 220     | $T = 0.46(X)$ ;<br>$\ln(T) = 0.95(X) - 0.51$ | $T = 0.56(X)$ ;<br>$\ln(T) = 0.89(X) - 0.02$ |

<sup>5</sup> Statistics Canada. 2017. *Clarence-Rockland, C [Census subdivision], Ontario and Ontario [Province] (table). Census Profile. 2016 Census. Statistics Canada Catalogue no. 98-316-X2016001. Ottawa. Released November 29, 2017.*  
<https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/index.cfm?Lang=E> (accessed May 1, 2019).

| Land Use                                       | Data Source | AM Peak                                      | PM Peak                                      |
|------------------------------------------------|-------------|----------------------------------------------|----------------------------------------------|
| Single Tenant Office Building                  | ITE 715     | $T = 1.78(X)$ ;<br>$T = 1.68(X) + 17.26$     | $T = 1.71(X)$ ;<br>$T = 1.54(X) + 27.59$     |
| Convenience Market                             | ITE 851     | $T = 62.54(X)$ ;<br>n/a                      | $T = 49.11(X)$ ;<br>n/a                      |
| Fast Food Restaurant Without Drive Thru Window | ITE 933     | $T = 25.10(X)$ ;<br>$T = 89.03(X) - 157.40$  | $T = 28.34(X)$ ;<br>n/a                      |
| Mid-Rise Residential with 1st Floor Commercial | ITE 231     | $T = 0.45(X)$ ;<br>n/a                       | $T = 0.37(X)$ ;<br>n/a                       |
| Drive in Bank                                  | ITE 912     | $T = 9.50(X)$ ;<br>n/a                       | $T = 20.45(X)$ ;<br>n/a                      |
| Coffee/Donut Shop with Drive-thru              | ITE 937     | $T = 88.99(X)$ ;<br>n/a                      | $T = 43.38(X)$ ;<br>n/a                      |
| Pharmacy Without Drive-thru                    | ITE 880     | $T = 2.94(X)$ ;<br>n/a                       | $T = 8.51(X)$ ;<br>n/a                       |
| Medical Dental Clinic                          | ITE 720     | $T = 2.78(X)$ ;<br>$\ln(T) = 0.89(X) + 1.31$ | $T = 3.46(X)$ ;<br>$T = 3.43(X) + 2.57$      |
| Fast Casual Restaurant                         | ITE 930     | $T = 2.07(X)$ ;<br>n/a                       | $T = 14.13(X)$ ;<br>n/a                      |
| Day Care Centre                                | ITE 565     | $T = 11.0(X)$ ;<br>n/a                       | $T = 11.12(X)$ ;<br>n/a                      |
| Clinic                                         | ITE 630     | $T = 3.69(X)$ ;<br>n/a                       | $T = 3.28(X)$ ;<br>$\ln(T) = 0.72(X) + 1.97$ |

Notes:  $T$  = Average Vehicle Trip Ends; and  $X$  = Number of residential units or 1,000 ft<sup>2</sup> GFA

With respect to ITE trip generation rates, the data used to develop these rates only include vehicle trips (i.e. walking, cycling or transit trips are not captured), and the data collection surveys are typically conducted in highly-suburban locations with limited access to transit and dedicated non-motorized facilities (e.g. sidewalks, bike lanes, etc. are limited). To properly consider the multi-modal trips generated by new development, projected site-generated traffic (estimated using ITE trip generation rates) is converted to projected site-generated *persons* trips.

To convert projected ITE vehicle trips to *person* trips, an auto occupancy factor and non-auto trip factor is applied to the ITE trip generation rates. With respect to available American Census data, the typical modal share of non-auto person trips is approximately 10% and the typical auto occupancy is 1.15. Therefore, when combined, a factor of 1.28 is used to convert vehicle trips to person trips.

Based on the foregoing, the projected weekday morning and afternoon peak hour person trip generation for the subject expansion lands is summarized in **Table 7**, **Table 8** and **Table 9**, for the planned 2029, 2039 and 2044 build-out years, respectively.

It should be noted, for the commercial component of the expansion lands, multiple trip generation rates were combined to estimate an overall commercial projected trip generation (i.e. trip generation rates for convenience market, drive-in bank, coffee shop, etc. were combined).

**Table 7: Phase 1 Modified Person Trip Generation (Year 2029)**

| Land Use                                       | Area       | AM Peak (Person Trips/hr) |            |              | PM Peak (Person Trips/hr) |            |              |
|------------------------------------------------|------------|---------------------------|------------|--------------|---------------------------|------------|--------------|
|                                                |            | In                        | Out        | Total        | In                        | Out        | Total        |
| Single-Family Detached Housing                 | 273 Units  | 63                        | 191        | 254          | 214                       | 127        | 341          |
| Multifamily Housing                            | 48 Units   | 6                         | 24         | 30           | 24                        | 15         | 39           |
| Mid-Rise Residential with 1st Floor Commercial | 31 Units   | 4                         | 14         | 18           | 10                        | 5          | 15           |
| Commercial                                     | 78,394 ft² | 681                       | 525        | 1,026        | 527                       | 612        | 1,139        |
| <b>Total Person Trips/hr</b>                   |            | <b>754</b>                | <b>754</b> | <b>1,508</b> | <b>775</b>                | <b>759</b> | <b>1,534</b> |

As summarized in **Table 7**, the build-out of Phase 1 is projected to generate approximately 1,508 and 1,534 person trips per hour during weekday morning and afternoon peak hours, respectively.

**Table 8: Phase 2 Modified Person Trip Generation (Year 2039)**

| Land Use                                       | Area       | AM Peak (Person Trips/hr) |            |              | PM Peak (Person Trips/hr) |            |              |
|------------------------------------------------|------------|---------------------------|------------|--------------|---------------------------|------------|--------------|
|                                                |            | In                        | Out        | Total        | In                        | Out        | Total        |
| Single-Family Detached Housing                 | 480 Units  | 110                       | 332        | 442          | 369                       | 217        | 586          |
| Multifamily Housing                            | 126 Units  | 17                        | 59         | 76           | 58                        | 35         | 93           |
| Mid-Rise Residential with 1st Floor Commercial | 65 Units   | 8                         | 29         | 37           | 22                        | 9          | 31           |
| Commercial                                     | 78,394 ft² | 681                       | 525        | 1,206        | 527                       | 612        | 1,139        |
| <b>Total Person Trips/hr</b>                   |            | <b>816</b>                | <b>945</b> | <b>1,761</b> | <b>976</b>                | <b>873</b> | <b>1,849</b> |

As summarized in **Table 8**, the build-out of Phase 2 is projected to generate approximately 1,761 and 1,849 person trips per hour during weekday morning and afternoon peak hours, respectively.

**Table 9: Full Build-Out Modified Person Trip Generation (Year 2044)**

| Land Use                                       | Area       | AM Peak (Person Trips/hr) |              |              | PM Peak (Person Trips/hr) |            |              |
|------------------------------------------------|------------|---------------------------|--------------|--------------|---------------------------|------------|--------------|
|                                                |            | In                        | Out          | Total        | In                        | Out        | Total        |
| Single-Family Detached Housing                 | 688 Units  | 157                       | 474          | 631          | 521                       | 307        | 828          |
| Multifamily Housing                            | 203 Units  | 27                        | 93           | 120          | 89                        | 53         | 142          |
| Mid-Rise Residential with 1st Floor Commercial | 100 Units  | 13                        | 45           | 58           | 33                        | 14         | 47           |
| Commercial                                     | 78,394 ft² | 681                       | 525          | 1,206        | 527                       | 612        | 1,139        |
| <b>Total Person Trips/hr</b>                   |            | <b>878</b>                | <b>1,137</b> | <b>2,015</b> | <b>1,170</b>              | <b>986</b> | <b>2,156</b> |

As summarized in **Table 9**, the full build-out of the expansion lands is projected to generate approximately 2,015 and 2,156 person trips per hour during weekday morning and afternoon peak hours, respectively.

### 3.6.1 Travel Mode Shares

Estimating the number of person trips arriving/departing by different travel modes, total projected person trips are subdivided by mode share values that take into consideration proximity and quality of transit, pedestrian and cycling facilities, and the main purpose of trips.

With respect to the Transportation Impact Study (TIS), prepared by *Castleglenn Consultants Inc.*, for the Morris Village development, which is located directly adjacent to and west of the subject expansion lands, modal share values for Morris Village were assumed to be 85% auto drivers, 5% auto passenger, and 10% transit.

For the purpose of this assessment, similar modal share values were assumed, to be consistent with the previous analysis conducted for the Morris Village development. It should be noted that a non-motorized travel mode was not included in the Morris Village TIS and for the purpose this assessment, it was assumed that there will be a 5% mode share for non-motorized trips, resulting in the following modal splits for the proposed expansion lands:

- 80% Auto Driver
- 5% Auto Passenger
- 10% Transit
- 5% Non-motorized
- 100% Total Person Trips**

It should also be noted, given the majority of the planned commercial will serve the community within the subject expansion lands, it is reasonable to conclude that a number of trips will be shared (e.g. a single person can visit a drive-in bank on their way home). As such, a 30% reduction in total projected site-generated traffic was assumed.

The following **Table 10**, **Table 11**, and **Table 12** summarize the weekday morning and afternoon peak hour trip generation, by mode, for the planned 2029, 2039 and 2044 build-out years, respectively.

**Table 10: Phase 1 Site Trip Generation (Year 2029)**

| Travel Mode                     | Mode Share | AM Peak (Person Trips/hr) |             |              | PM Peak (Person Trips/hr) |             |              |
|---------------------------------|------------|---------------------------|-------------|--------------|---------------------------|-------------|--------------|
|                                 |            | In                        | Out         | Total        | In                        | Out         | Total        |
| Auto Driver                     | 80%        | 604                       | 604         | 1,208        | 620                       | 608         | 1,228        |
| Auto Passenger                  | 5%         | 38                        | 38          | 76           | 39                        | 38          | 77           |
| Transit                         | 10%        | 75                        | 75          | 150          | 78                        | 76          | 154          |
| Non-motorized                   | 5%         | 37                        | 37          | 74           | 38                        | 37          | 75           |
| Total Person Trips              | 100%       | 754                       | 754         | 1,508        | 775                       | 759         | 1,534        |
| <b>Total Auto Trips</b>         |            | <b>604</b>                | <b>604</b>  | <b>1,208</b> | <b>620</b>                | <b>608</b>  | <b>1,228</b> |
| <b>Less Multi-Purpose Trips</b> |            | <b>-181</b>               | <b>-181</b> | <b>-362</b>  | <b>-186</b>               | <b>-182</b> | <b>-368</b>  |
| <b>Total 'New' Auto Trips</b>   |            | <b>423</b>                | <b>423</b>  | <b>846</b>   | <b>434</b>                | <b>426</b>  | <b>860</b>   |

As summarized in **Table 10**, the build-out of Phase 1 is projected to generate approximately 846 and 860 veh/h during weekday morning and afternoon peak hours, respectively.

**Table 11: Phase 2 Site Trip Generation (Year 2039)**

| Travel Mode                     | Mode Share | AM Peak (Person Trips/hr) |             |              | PM Peak (Person Trips/hr) |             |              |
|---------------------------------|------------|---------------------------|-------------|--------------|---------------------------|-------------|--------------|
|                                 |            | In                        | Out         | Total        | In                        | Out         | Total        |
| Auto Driver                     | 80%        | 653                       | 756         | 1,409        | 781                       | 699         | 1,480        |
| Auto Passenger                  | 5%         | 41                        | 48          | 89           | 49                        | 44          | 93           |
| Transit                         | 10%        | 82                        | 94          | 176          | 98                        | 87          | 185          |
| Non-motorized                   | 5%         | 40                        | 47          | 87           | 48                        | 43          | 91           |
| Total Person Trips              | 100%       | 816                       | 945         | 1,761        | 976                       | 873         | 1,849        |
| <b>Total Auto Trips</b>         |            | <b>653</b>                | <b>756</b>  | <b>1,409</b> | <b>781</b>                | <b>699</b>  | <b>1,480</b> |
| <b>Less Multi-Purpose Trips</b> |            | <b>-196</b>               | <b>-227</b> | <b>-423</b>  | <b>-234</b>               | <b>-210</b> | <b>-444</b>  |
| <b>Total 'New' Auto Trips</b>   |            | <b>457</b>                | <b>529</b>  | <b>986</b>   | <b>547</b>                | <b>489</b>  | <b>1,036</b> |

As summarized in **Table 11**, the build-out Phase 2 is projected to generate approximately 986 and 1,036 veh/h during weekday morning and afternoon peak hours, respectively.

**Table 12: Full Build-out Site Trip Generation (Year 2044)**

| Travel Mode                     | Mode Share | AM Peak (Person Trips/hr) |             |              | PM Peak (Person Trips/hr) |             |              |
|---------------------------------|------------|---------------------------|-------------|--------------|---------------------------|-------------|--------------|
|                                 |            | In                        | Out         | Total        | In                        | Out         | Total        |
| Auto Driver                     | 80%        | 703                       | 910         | 1,613        | 936                       | 789         | 1,725        |
| Auto Passenger                  | 5%         | 44                        | 57          | 101          | 59                        | 50          | 109          |
| Transit                         | 10%        | 88                        | 114         | 202          | 117                       | 98          | 215          |
| Non-motorized                   | 5%         | 43                        | 56          | 99           | 58                        | 49          | 107          |
| Total Person Trips              | 100%       | 878                       | 1,137       | 2,015        | 1,170                     | 986         | 2,156        |
| <b>Total Auto Trips</b>         |            | <b>703</b>                | <b>910</b>  | <b>1,613</b> | <b>936</b>                | <b>789</b>  | <b>1,725</b> |
| <b>Less Multi-Purpose Trips</b> |            | <b>-211</b>               | <b>-273</b> | <b>-484</b>  | <b>-281</b>               | <b>-237</b> | <b>-518</b>  |
| <b>Total 'New' Auto Trips</b>   |            | <b>492</b>                | <b>637</b>  | <b>1,129</b> | <b>655</b>                | <b>552</b>  | <b>1,207</b> |

As summarized in **Table 12**, the full build-out of the expansion lands is projected to generate approximately 1,129 and 1,207 veh/h during weekday morning and afternoon peak hours, respectively.

### 3.7 Vehicle Traffic Distribution and Assignment

The projected distribution of site-generated traffic was based on volume splits at existing study area intersections and the assumptions found in the Morris Village TIS, prepared by *Castleglenn Consultants Inc.* As such, the assumed distribution is outlined as follows:

- 65% to/from the west (Ottawa) via HWY 17;
  - 10% to/from the east (Hawkesbury) via HWY 17;
  - 15% to/from the south via Baseline Road; and
  - 10% to/from the City of Clarence Rockland.
- 100%**

### 3.8 Projected Conditions

#### 3.8.1 Phase 1 Conditions

Based on the assumed distribution outlined in section 3.7, 'new' auto trips were assigned to the study area network (depicted as **Figure 12**) for the 2029 build-out year, and were layered onto projected background traffic volumes (i.e. background traffic volumes are essentially existing volumes, taking into consideration volume increases on HWY 17, as summarized in **Table 5**). As a result, the total projected traffic volumes for the 2029 build-out year is depicted as **Figure 13**.

Using the Synchro (v9) intersection capacity analysis software, **Appendix C** contains a projected performance summary for study area intersections and the detail output data from Synchro. It should be noted, a TWLTL (i.e. Two-way Left Turn Lane) median on Caron Street was extended from David Street to Street 'A'. It should also be noted that no additional modifications to network geometry or signal timing were assumed for the analysis contained in **Appendix C**.

As a result of increased traffic volumes for the 2029 build-out year, the northbound left-turn movement at the Caron/HWY 17 intersection is projected to operate with a LoS 'F' during both weekday morning and afternoon peak hours. All other study area intersections are projected to perform with an acceptable Level of Service.

The following **Table 13** summarizes the failing northbound left-turn movement at the Caron/HWY 17 intersection.

**Table 13: Critical Movements Phase 1 (Year 2029)**

| Direction                           | Mov. | Storage Length (m) | AM Peak Hour |           |     |           | PM Peak Hour |           |     |           |
|-------------------------------------|------|--------------------|--------------|-----------|-----|-----------|--------------|-----------|-----|-----------|
|                                     |      |                    | v/c          | Delay (s) | LOS | Queue (m) | v/c          | Delay (s) | LOS | Queue (m) |
| Caron Street at HWY 17 (Signalized) |      |                    |              |           |     |           |              |           |     |           |
| NB                                  | L    | 60                 | 1.95         | 463       | F   | 155       | 1.17         | 136       | F   | 110       |

Improving the projected performance of the Caron/HWY 17 intersection, the following measures are recommended to support the additional traffic generated by the subject expansion lands.

**Caron/HWY 17**

- Implement dual northbound left-turns lanes;
- Provide dual westbound receiving lanes (i.e. two lanes are needed to receive northbound left-turning traffic);
- Implement a fully protected northbound left-turn signal phase; and
- Optimize Signal Phasing<sup>6</sup>.

With the implementation of the above recommendations, the northbound left-turn movement at the Caron/HWY 17 intersection is projected to operate with a LoS of 'D', during both morning and afternoon peak hours.

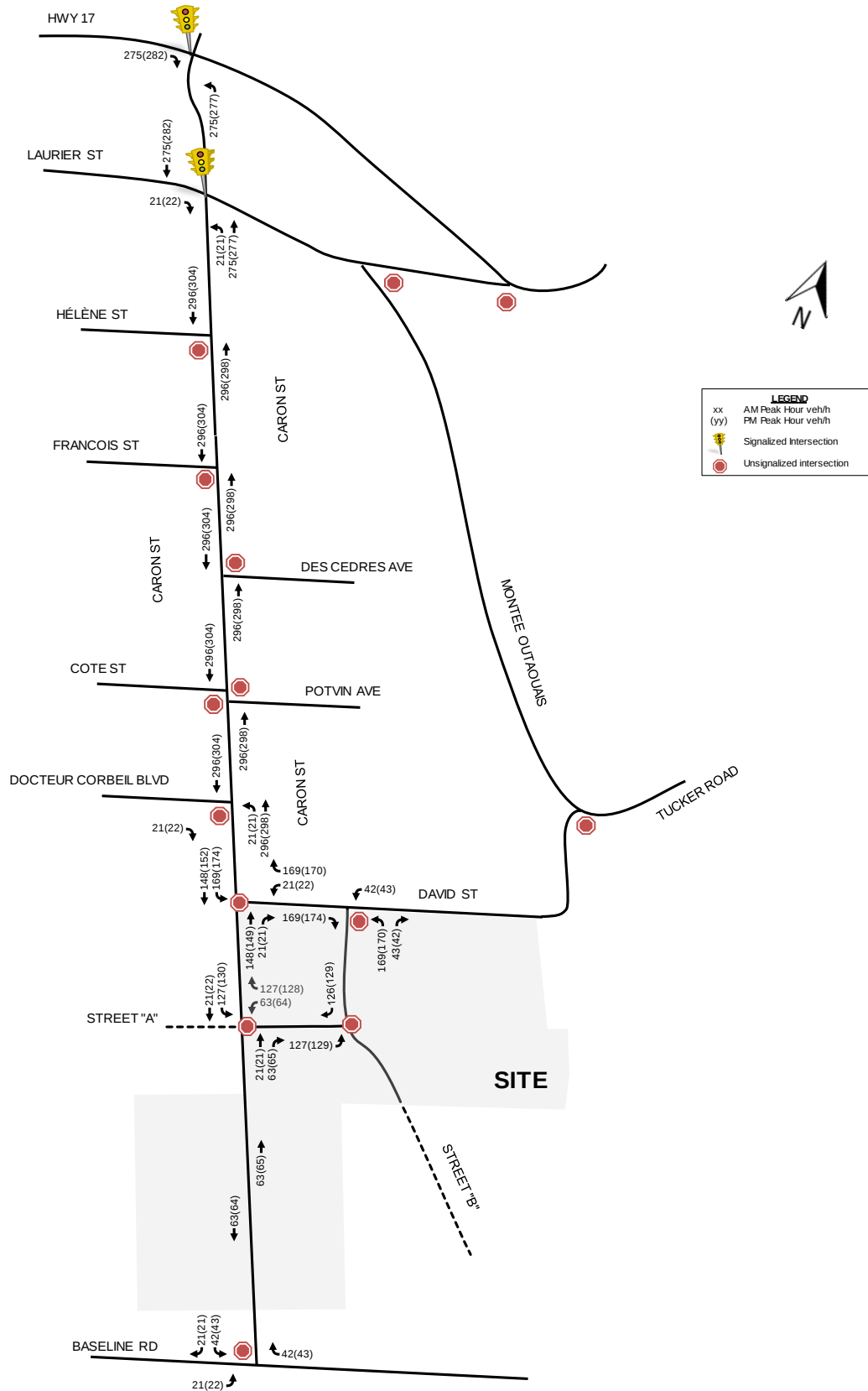
A projected performance summary for study area intersections with improvements and the detail output data from Synchro is contained in **Appendix D**.

With regarding to the new study area intersections, All-Way STOP control is recommended at the Caron/Street 'A' intersection and at the Street 'A'/Street 'B' intersection. At the new David/Street 'B' intersection, STOP control on the minor approach will be sufficient.

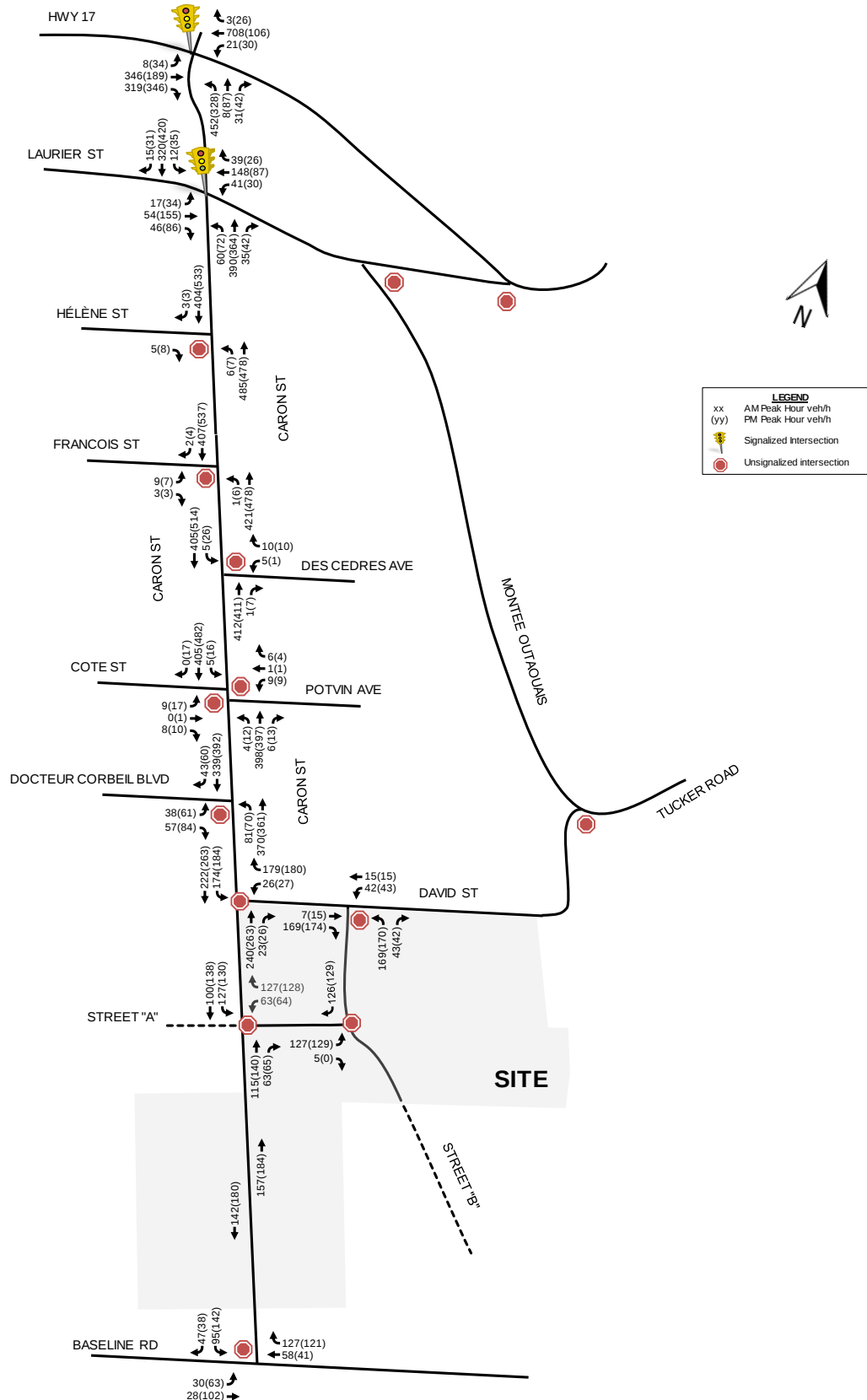
Despite the extension of Street 'A' westward will not occur within the foreseeable future (i.e. extending Street 'A' west of Caron Street), the City may wish to protect sufficient right-of-way for a single lane roundabout at the intersection of Street 'A'/Street 'B'. A roundabout at this location will be consistent with the intersection treatments within the Morris Village development. However, for analysis purposes, All-Way STOP control will be assumed in the subsequent analysis and it should be noted that a single lane roundabout has more vehicle throughput capacity than an All-Way STOP controlled intersection.

---

<sup>6</sup> Optimization of the signalized intersection operations was based on modifications of operation parameters as part of the Synchro analysis. The minimum initial and total split parameters in Synchro were modified to optimize the operation of the actuated traffic signal system.



**Figure 12: Phase 1 Total New Site-Generated Trips (Year 2029)**



**Figure 13: Phase 1 Total Projected Volume (Year 2029)**

### 3.8.2 Phase 2 Conditions

Based on the assumed distribution outlined in section 3.7, 'new' auto trips were assigned to the study area network (depicted as **Figure 14**) for the 2033 build-out year, and were layered onto projected background traffic volumes (i.e. background traffic volumes are essentially existing volumes, taking into consideration volume increases on HWY 17, as summarized in **Table 5**). As a result, the total projected traffic volumes for the 2039 build-out year is depicted as **Figure 15**.

Using the Synchro (v9) intersection capacity analysis software, **Appendix E** contains a projected performance summary for study area intersections and the detail output data from Synchro. It should be noted, a TWLTL (i.e. Two-way Left Turn Lane) median on Caron Street was extended from David Street to Street 'A'. It should also be noted that the previously recommended modifications to the network geometry and signal timing adjustments to the Caron/HWY 17 intersection for Phase 1, are also assumed to be in place by the 2039 build-out year, which is reflected in the analysis contained in **Appendix E**.

As a result of increased traffic volumes for the 2039 build-out year, the northbound left-turn movement at the Caron/HWY 17 intersection, is projected to operate with a LoS 'F' during weekday morning peak hour. In addition, the southbound through/right-turn movement at the Caron/Laurier intersection, is projected to operate with a poorly performing LoS 'E' during the weekday afternoon peak hour. All other study area intersections are projected to perform with an acceptable Level of Service.

The following **Table 14** summarizes the failing northbound left-turn movement at the Caron/HWY 17 intersection, and the southbound through/right-turn movement at the Caron/Laurier intersection.

**Table 14: Critical Movements Phase 2 (Year 2039)**

| Direction                                   | Mov. | Storage Length (m) | AM Peak Hour |           |     |           | PM Peak Hour |           |     |           |
|---------------------------------------------|------|--------------------|--------------|-----------|-----|-----------|--------------|-----------|-----|-----------|
|                                             |      |                    | v/c          | Delay (s) | LOS | Queue (m) | v/c          | Delay (s) | LOS | Queue (m) |
| Caron Street at HWY 17 (Signalized)         |      |                    |              |           |     |           |              |           |     |           |
| NB                                          | L    | 80                 | 1.05         | 90        | F   | 100       | 0.69         | 44        | D   | 53        |
| Caron Street at Laurier Street (Signalized) |      |                    |              |           |     |           |              |           |     |           |
| SB                                          | T/R  | -                  | 0.73         | 36        | D   | 94        | 1.01         | 71        | E   | 165       |

Improving the projected performance of the Caron/HWY 17 and Caron/Laurier intersections, the following measures are recommended to support the additional traffic generated by the subject expansion lands.

#### **Caron/HWY 17**

- Optimize Signal Phasing

#### **Caron/Laurier**

- Optimize Signal Phasing

With the implementation of the above recommendations, the northbound left-turn movement at the Caron/HWY 17 intersection is projected to operate with a LoS 'E', during the weekday morning peak hour. With regard to the southbound through/right movement at Caron/Laurier intersection, it is projected to operate with a LoS 'D' during the afternoon peak hour.

A projected performance summary for study area intersections with improvements and the detail output data from Synchro is contained in **Appendix F**.

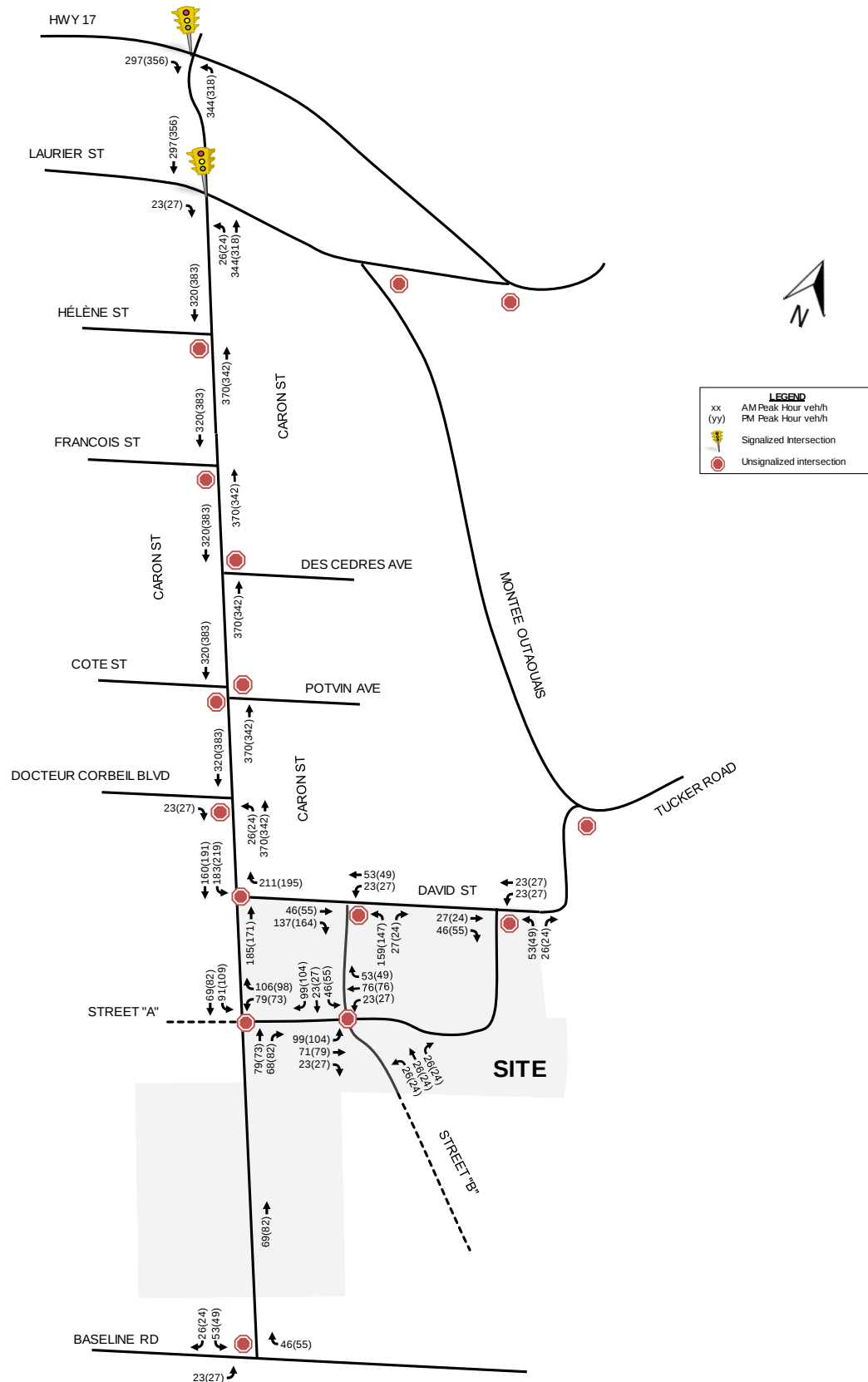
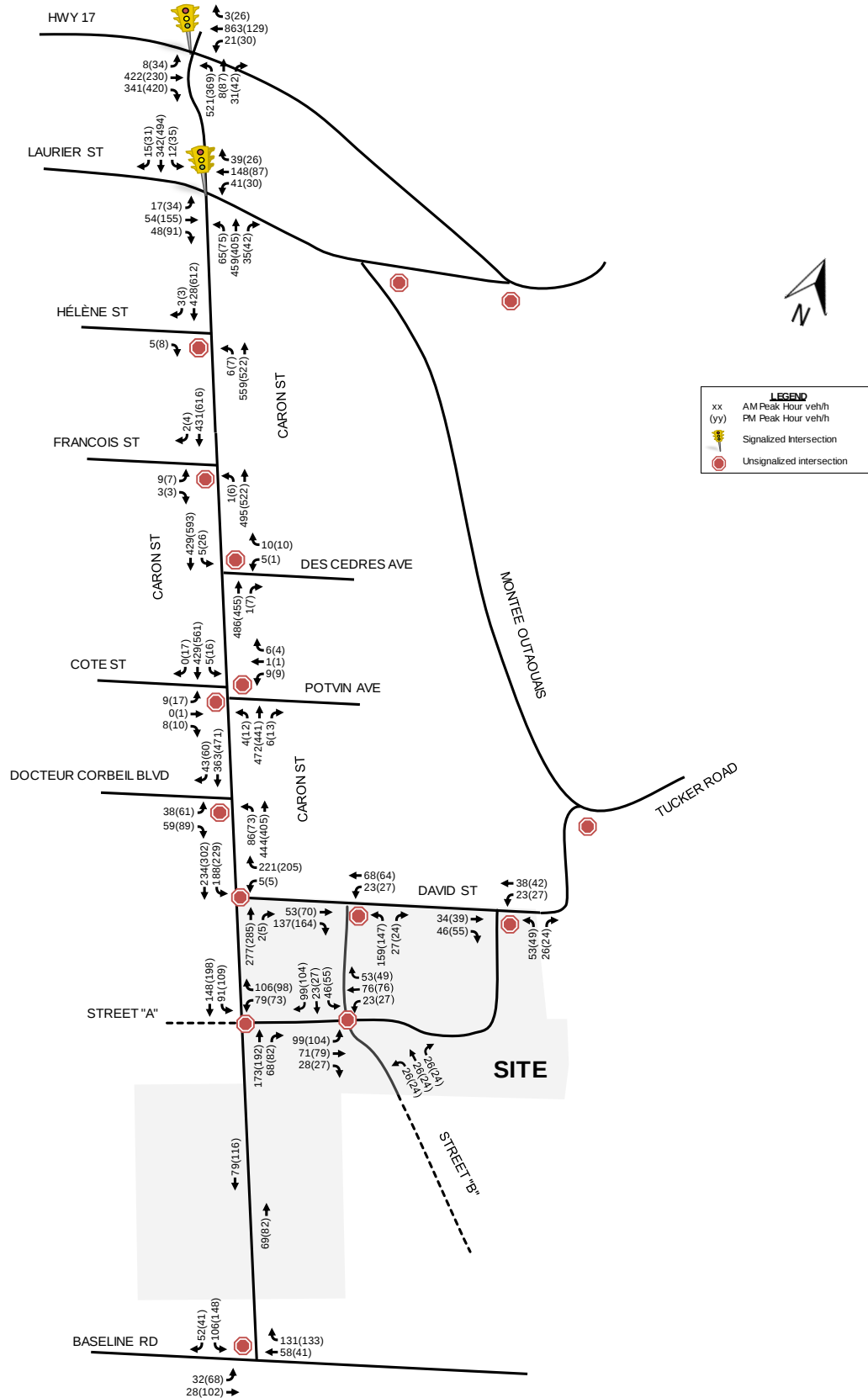


Figure 14: Phase 2 Total New Site-Generated Trips (Year 2039)



**Figure 15: Phase 2 Total Projected Volume (Year 2039)**

### 3.8.3 Full Build Out Conditions

Based on the assumed distribution outlined in section 3.7, 'new' auto trips were assigned to the study area network (depicted as **Figure 16**) for the full build-out 2044 horizon year, and were layered onto projected background traffic volumes (i.e. background traffic volumes are essentially existing volumes, taking into consideration volume increases on HWY 17, as summarized in **Table 5**). As a result, the total projected traffic volumes for the 2044 build-out year is depicted as **Figure 17**.

Using the Synchro (v9) intersection capacity analysis software, **Appendix G** contains a projected performance summary for study area intersections and the detail output data from Synchro. It should be noted, a TWLTL (i.e. Two-way Left Turn Lane) median on Caron Street was extended from Street 'A' to Street 'C'. It should also be noted that the previously recommended modifications to the network geometry and signal timing adjustments for Phase 2, are also assumed to be in place by the 2044 build-out year, which is reflected in the analysis contained in **Appendix G**.

As a result of increased traffic volumes for the 2044 build-out year, the northbound left-turn movement at the Caron/HWY 17, is projected to operate with a LoS 'F' during weekday morning peak hours. Similarly, the southbound through/right-turn movements at both the Caron/ Françoise and Caron/Cote/Potvin intersections are projected to operate with a LoS 'F' during the weekday afternoon peak hour. In addition, the southbound through/right-turn movement at the Caron/Laurier intersection, is projected to operate with a LoS 'E' during weekday afternoon peak hour. All other study area intersections are projected to perform with an acceptable Level of Service.

The following **Table 15** summarizes the poorly performing movements at study area intersections.

**Table 15: Critical Movements Full Build-out (Year 2044)**

| Direction                                                | Mov. | Storage Length (m) | AM Peak Hour |           |     |           | PM Peak Hour |           |     |           |
|----------------------------------------------------------|------|--------------------|--------------|-----------|-----|-----------|--------------|-----------|-----|-----------|
|                                                          |      |                    | v/c          | Delay (s) | LOS | Queue (m) | v/c          | Delay (s) | LOS | Queue (m) |
| Caron Street at HWY 17 (Signalized)                      |      |                    |              |           |     |           |              |           |     |           |
| NB                                                       | L    | 80                 | 1.04         | 85        | F   | 110       | 0.74         | 46        | D   | 61        |
| Caron Street at Laurier Street (Signalized)              |      |                    |              |           |     |           |              |           |     |           |
| SB                                                       | T/R  | -                  | 0.72         | 34        | C   | 90        | 1.05         | 79        | E   | 125       |
| Caron Street at Françoise Street (Unsignalized)          |      |                    |              |           |     |           |              |           |     |           |
| SB                                                       | T/R  | -                  | 0.67         | 17        | C   | -         | 1.03         | 62        | F   | -         |
| Caron Street at Cote Street/Potvin Avenue (Unsignalized) |      |                    |              |           |     |           |              |           |     |           |
| SB                                                       | T/R  | -                  | 0.72         | 19        | C   | -         | 1.04         | 66        | F   | -         |

Improving the projected performance of the critical movements listed above in **Table 15**, the following measures are recommended to support the additional traffic generated by the subject expansion lands.

***Caron/HWY 17***

- Widen the westbound through movement to two lanes; and
- Optimize Signal Phasing

***Caron/Laurier***

- Increase Signal Cycle Length to 120 seconds; and
- Optimize Signal Phasing.

***Caron/Françoise***

- Implement Traffic Signal Control.

***Caron/Cote/Potvin***

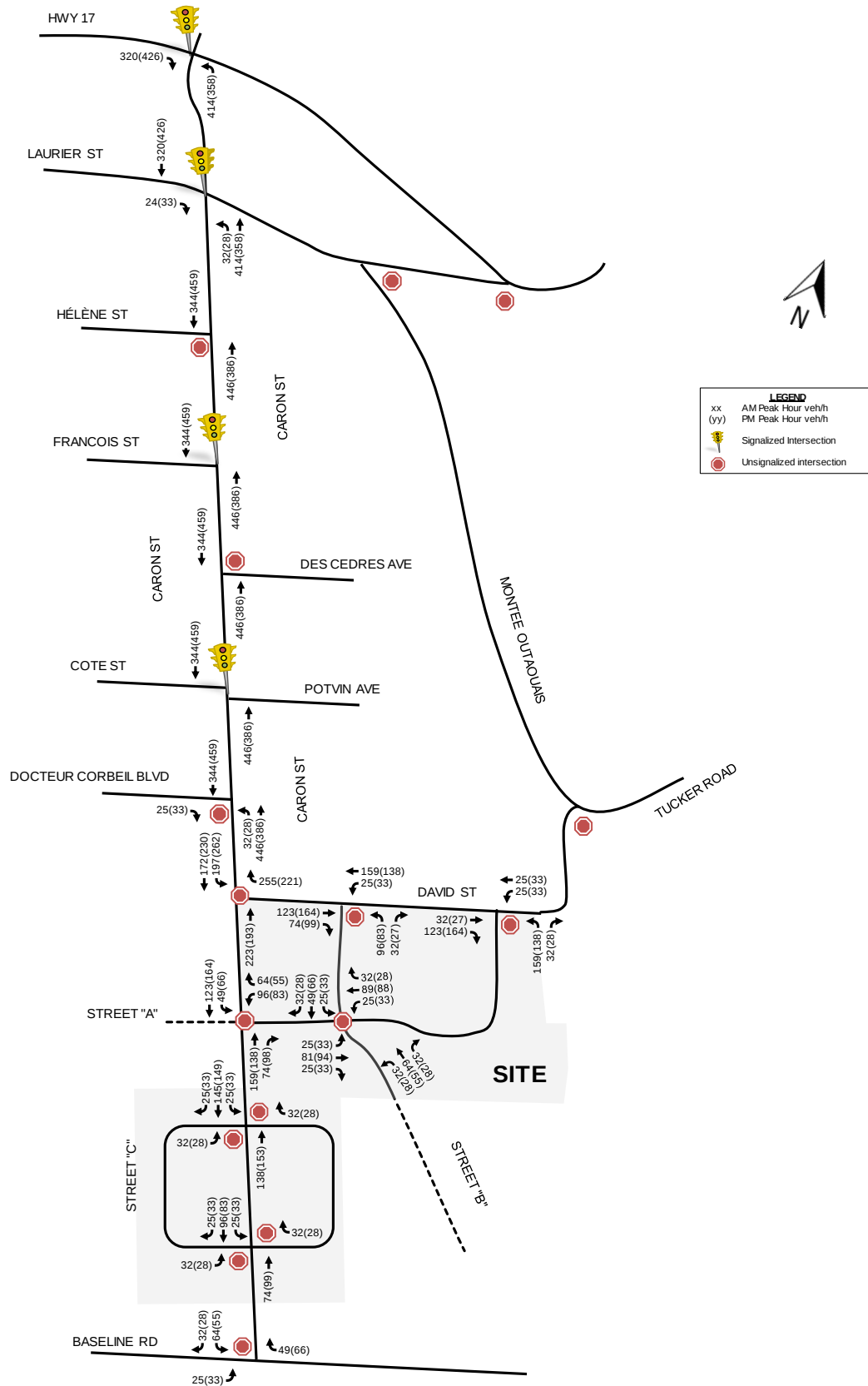
- Implement Traffic Signal Control.

With the implementation of the above recommendations, the northbound left-turn movement at the Caron/HWY 17 intersection is projected to operate with a LoS of 'C', during the weekday morning peak hour. The southbound through/right-turn movement at the Caron/Laurier intersection is projected to operate with a LoS of 'D', during afternoon peak hours.

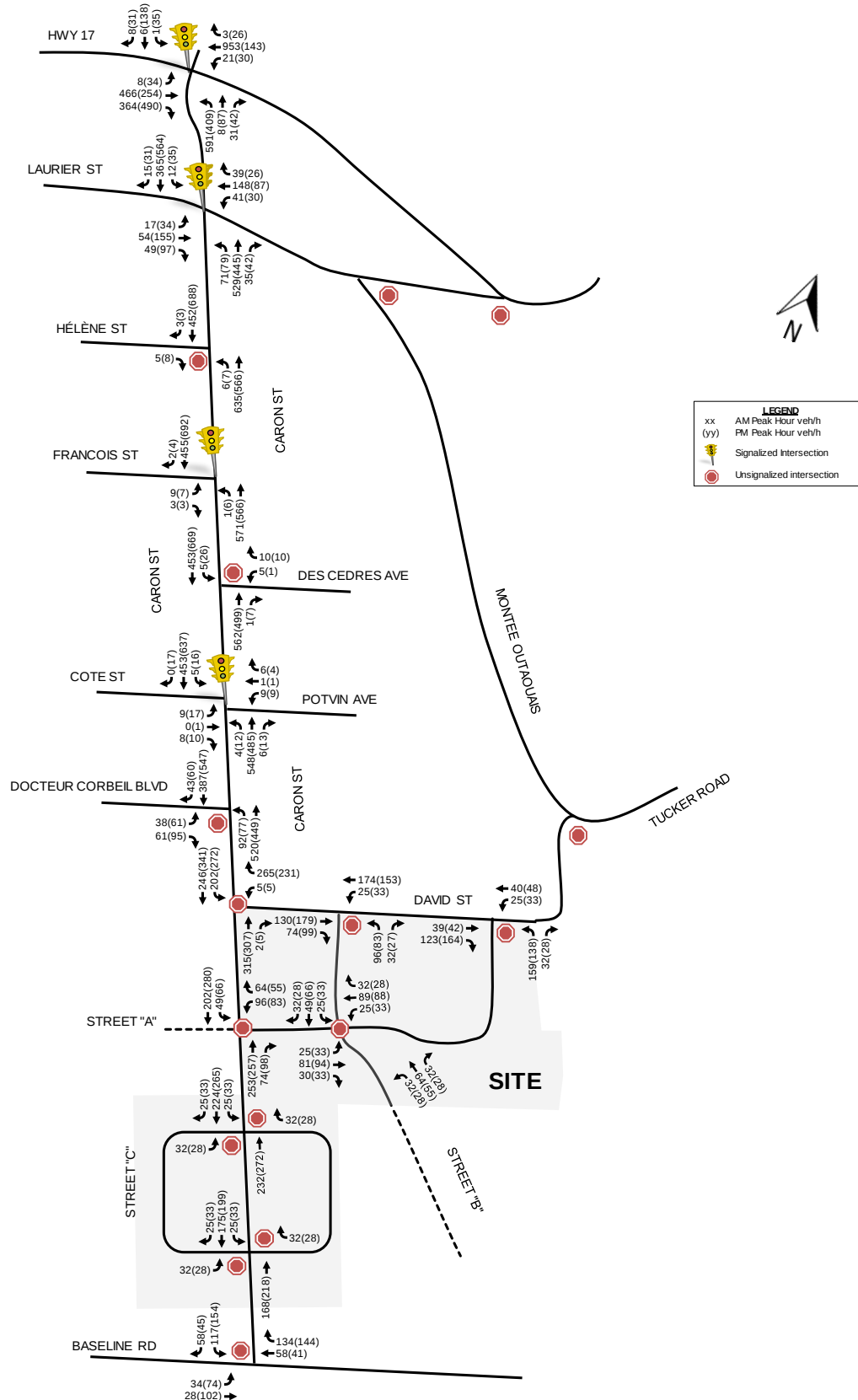
The southbound through/right-turn movements at both Caron/Françoise and Caron/Cote/Potvin intersections are projected to operate with a LoS 'A' during the weekday afternoon peak hour.

A projected performance summary for study area intersections with improvements and the detail output data from Synchro is contained in **Appendix H**.

With regarding to the new study area intersections, STOP control on the minor approaches of the Caron/Street 'C' intersections will be sufficient to support future development contained within the subject expansion lands.



**Figure 16: Full Build-out Total New Site-Generated Trips (Year 2044)**



## 4. Network Improvement Plan

Based on the foregoing, the following network improvement plan is recommended to support future development contained within the subject expansion lands. It should be noted that the following plan is for collector and arterial roadway only. As new development is built-out, local roadways will be constructed to provide access/egress between new land uses and the higher-order transportation network (i.e. collector and arterial roadways).

As such, it is recommended that access management policies and roadway design standards be developed to direct future development during the City's development approval process.

### 4.1.1 Phase 1

Along Caron Street, the existing TWLTL should be extended from David Street to Street 'A'. In addition, the following study area intersection improvements are also recommended for Phase 1:

#### ***Caron/HWY 17***

- Implement dual northbound left-turns lanes;
- Provide dual westbound receiving lanes (i.e. two lanes are needed to receive northbound left-turning traffic);
- Implement a fully protected northbound left-turn signal phase; and
- Optimize Signal Phasing.

All-Way STOP control is recommended at the new Caron/Street 'A' intersection and at the Street 'A'/Street 'B' intersection. At the new David/Street 'B' intersection, STOP control on the minor approach will be sufficient.

Despite the extension of Street 'A' westward, beyond Caron Street, will not occur within the foreseeable future, the City may wish to protect for a right-of-way that can accommodate a single lane roundabout for the intersection of Street 'A'/Street 'B'. A roundabout at this location will be consistent with the intersection treatments within the Morris Village development.

It should be noted that a typical range in diameter for a single-lane roundabout is 36-40 m if the design vehicle is a WB-17 or WB-20, and approximately 32 m if the design vehicle is smaller (i.e. fire truck, transit bus, etc.). If possible, the City should plan to protect a 40 m ROW for single-lane roundabouts where collector roadways intersect.

### 4.1.2 Phase 2

The previously recommended modifications to the network geometry and signal timing adjustments for Phase 1, are also assumed to be in place by the 2039 build-out year. In addition, the following study area intersection improvements are also recommended for Phase 2:

#### ***Caron/HWY 17***

- Optimize Signal Phasing

**Caron/Laurier**

- Optimize Signal Phasing

**4.1.3 Full Build-out**

Along Caron Street, the TWLTL should be extended from Street 'A' to Street 'C'.

The previously recommended modifications to the network geometry and signal timing adjustments for Phase 2, are also assumed to be in place by the 2044 build-out year. In addition, the following study area intersection improvements are also recommended for the full build-out of the expansion lands:

**Caron/HWY 17**

- Widen the westbound through movement to two lanes; and
- Optimize Signal Phasing.

**Caron/Laurier**

- Increase Signal Cycle Length to 120 seconds; and
- Optimize Signal Phasing.

**Caron/Françoise**

- Implement Traffic Signal Control.

**Caron/Cote/Potvin**

- Implement Traffic Signal Control.

Additionally, STOP control on the minor approaches of the new Caron/Street 'C' intersections are recommended to support future development contained within the subject expansion lands.

## **5. Findings, Conclusions, and Recommendations**

Based on the foregoing analysis, the following transportation findings, conclusions and recommendations are offered:

- Study area intersections are currently operating with an acceptable Levels of Service during both weekday morning and afternoon peak hours. This was confirmed with field observations;
- The pedestrian and cycling network contained within the urban sections of the study area are fairly well developed;
- Based on the preferred Concept Plan, full build-out is projected to generate new two-way traffic in the order of 1,100 to 1,200 veh/h, which is anticipated to occur over a 25-year time period;
- Mitigating the reliance on the private automobile, municipal funding for transit could be reconsidered to support future development (e.g. with municipal funding transit fares can

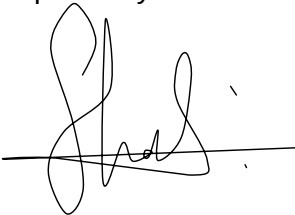
potentially be lowered to encourage ridership). Additionally, a new local transit route may be provided throughout the expansion lands, which can transport passengers to/from the route currently served by CRT Route 530;

- Sidewalks and dedicated cycling facilities should be provided along all urban collector roadways;
- Along commercial, community and parkland frontages, on-street parking should be considered; and
- With select road improvements (e.g. implementing traffic signal control, additional auxiliary turn lanes, widening HWY 17, etc.), the study area network is projected to operate acceptably.

As future development applications come online, additional and more detailed analysis from a transportation perspective will be required to better develop future network needs. However, by providing safe and efficient links for all modes of transportation, and ensuring sufficient on-street parking is provided for commercial/community spaces, the subject expansion lands will have the means to be a rich and sustainable community.

Based on the foregoing, the proposed expansion lands are recommended from a transportation perspective.

Prepared By:



Ehab Elmadhoun, E.I.T  
Engineering Intern, Transportation

Reviewed By:



Gordon Scobie, P.Eng.  
Project Manager, Transportation



# Appendix A

## Traffic Data



**Cima+**  
**240 Catherine st.**  
**Ottawa, ,**

## Turn Count Summary

**Location:** Caron at Hwy 17, Rockland, On

**GPS Coordinates: Lat=45.432940, Lon=-75.598433**

**Date:** 2018-04-05

**Day of week:** Thursday

**Weather:**

**Analyst:** Ben Tardioli

## Total vehicle traffic

| Interval starts | SouthBound |      |       | Westbound |      |       | Northbound |      |       | Eastbound |      |       | Total |
|-----------------|------------|------|-------|-----------|------|-------|------------|------|-------|-----------|------|-------|-------|
|                 | Left       | Thru | Right | Left      | Thru | Right | Left       | Thru | Right | Left      | Thru | Right |       |
| 07:30           | 0          | 2    | 2     | 7         | 140  | 0     | 41         | 1    | 7     | 1         | 53   | 13    | 267   |
| 07:45           | 1          | 1    | 2     | 4         | 158  | 3     | 52         | 4    | 10    | 2         | 75   | 14    | 326   |
| 08:00           | 0          | 2    | 1     | 1         | 136  | 0     | 46         | 3    | 6     | 3         | 73   | 5     | 276   |
| 08:15           | 0          | 1    | 3     | 9         | 147  | 0     | 38         | 0    | 8     | 2         | 83   | 12    | 303   |

## Car traffic

| Interval starts | SouthBound |      |       | Westbound |      |       | Northbound |      |       | Eastbound |      |       | Total |
|-----------------|------------|------|-------|-----------|------|-------|------------|------|-------|-----------|------|-------|-------|
|                 | Left       | Thru | Right | Left      | Thru | Right | Left       | Thru | Right | Left      | Thru | Right |       |
| 07:30           | 0          | 2    | 2     | 7         | 140  | 0     | 41         | 1    | 7     | 1         | 53   | 13    | 267   |
| 07:45           | 1          | 1    | 2     | 4         | 158  | 3     | 52         | 4    | 10    | 2         | 75   | 14    | 326   |
| 08:00           | 0          | 2    | 1     | 1         | 136  | 0     | 46         | 3    | 6     | 3         | 73   | 5     | 276   |
| 08:15           | 0          | 1    | 3     | 9         | 147  | 0     | 38         | 0    | 8     | 2         | 83   | 12    | 303   |

## Pedestrian volumes

[illegible]

## Intersection Peak Hour

07:30 - 08:30

|                 | SouthBound |      |       | Westbound |      |       | Northbound |      |       | Eastbound |      |       | Total |
|-----------------|------------|------|-------|-----------|------|-------|------------|------|-------|-----------|------|-------|-------|
|                 | Left       | Thru | Right | Left      | Thru | Right | Left       | Thru | Right | Left      | Thru | Right |       |
| Vehicle Total   | 1          | 6    | 8     | 21        | 581  | 3     | 177        | 8    | 31    | 8         | 284  | 44    | 1172  |
| Factor          | 0.25       | 0.75 | 0.67  | 0.58      | 0.92 | 0.25  | 0.85       | 0.50 | 0.78  | 0.67      | 0.86 | 0.79  | 0.90  |
| Approach Factor | 0.94       |      |       | 0.92      |      |       | 0.82       |      |       | 0.87      |      |       |       |

## Peak Hour Vehicle Summary

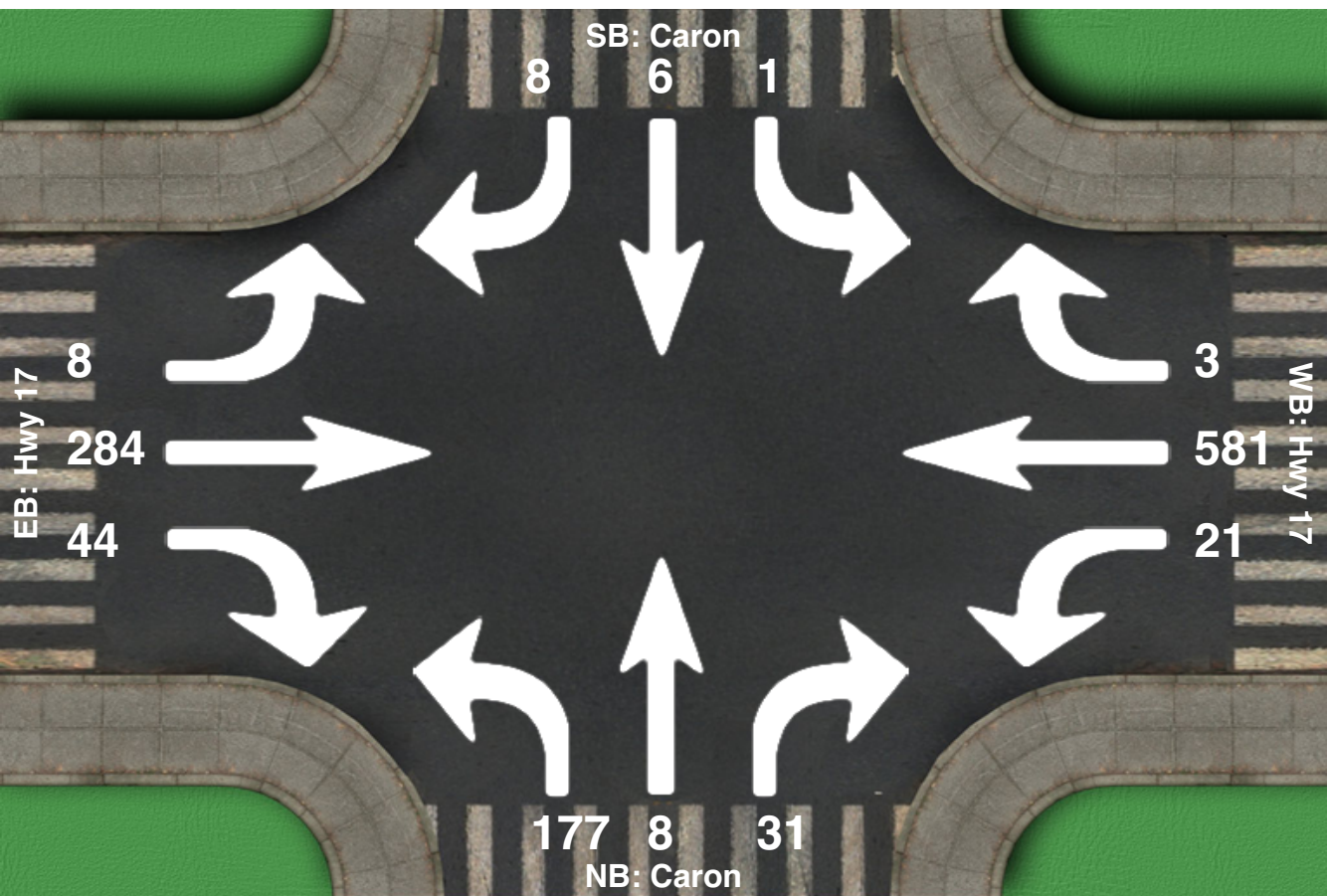
| Vehicle | SouthBound |      |       | Westbound |      |       | Northbound |      |       | Eastbound |      |       | Total |
|---------|------------|------|-------|-----------|------|-------|------------|------|-------|-----------|------|-------|-------|
|         | Left       | Thru | Right | Left      | Thru | Right | Left       | Thru | Right | Left      | Thru | Right |       |
| Car     | 1          | 6    | 8     | 21        | 581  | 3     | 177        | 8    | 31    | 8         | 284  | 44    | 1172  |

## Peak Hour Pedestrians

[illegible]

# Intersection Peak Hour

Location: Caron at Hwy 17, Rockland, On  
GPS Coordinates: Lat=45.432940, Lon=-75.598433  
Date: 2018-04-05  
Day of week: Thursday  
Weather:  
Analyst: Ben Tardioli



## Intersection Peak Hour

07:30 - 08:30

|                 | SouthBound |      |       | Westbound |      |       | Northbound |      |       | Eastbound |      |       | Total |
|-----------------|------------|------|-------|-----------|------|-------|------------|------|-------|-----------|------|-------|-------|
|                 | Left       | Thru | Right | Left      | Thru | Right | Left       | Thru | Right | Left      | Thru | Right |       |
| Vehicle Total   | 1          | 6    | 8     | 21        | 581  | 3     | 177        | 8    | 31    | 8         | 284  | 44    | 1172  |
| Factor          | 0.25       | 0.75 | 0.67  | 0.58      | 0.92 | 0.25  | 0.85       | 0.50 | 0.78  | 0.67      | 0.86 | 0.79  | 0.90  |
| Approach Factor | 0.94       |      |       | 0.92      |      |       | 0.82       |      |       | 0.87      |      |       |       |

**Cima+**  
**240 Catherine st.**  
**Ottawa, ,**

## Turn Count Summary

**Location:** Caron at Hwy 17, Rockland, On

**GPS Coordinates: Lat=45.557294, Lon=-75.279173**

**Date:** 2018-04-05

**Day of week:** Thursday

**Weather:**

**Analyst:** Ben Tardioli

## Total vehicle traffic

| Interval starts | SouthBound |      |       | Westbound |      |       | Northbound |      |       | Eastbound |      |       | Total |
|-----------------|------------|------|-------|-----------|------|-------|------------|------|-------|-----------|------|-------|-------|
|                 | Left       | Thru | Right | Left      | Thru | Right | Left       | Thru | Right | Left      | Thru | Right |       |
| 16:00           | 1          | 4    | 7     | 3         | 73   | 1     | 19         | 2    | 5     | 3         | 186  | 45    | 349   |
| 16:15           | 0          | 3    | 3     | 1         | 84   | 1     | 33         | 1    | 15    | 3         | 184  | 43    | 371   |
| 16:30           | 1          | 3    | 7     | 2         | 82   | 0     | 26         | 1    | 12    | 6         | 192  | 44    | 376   |
| 16:45           | 2          | 2    | 3     | 6         | 99   | 1     | 29         | 0    | 10    | 3         | 199  | 42    | 396   |
| 17:00           | 0          | 0    | 0     | 0         | 1    | 0     | 0          | 0    | 0     | 0         | 3    | 1     | 5     |

## Car traffic

| Interval starts | SouthBound |      |       | Westbound |      |       | Northbound |      |       | Eastbound |      |       | Total |
|-----------------|------------|------|-------|-----------|------|-------|------------|------|-------|-----------|------|-------|-------|
|                 | Left       | Thru | Right | Left      | Thru | Right | Left       | Thru | Right | Left      | Thru | Right |       |
| 16:00           | 1          | 4    | 7     | 3         | 73   | 1     | 19         | 2    | 5     | 3         | 186  | 45    | 349   |
| 16:15           | 0          | 3    | 3     | 1         | 84   | 1     | 33         | 1    | 15    | 3         | 184  | 43    | 371   |
| 16:30           | 1          | 3    | 7     | 2         | 82   | 0     | 26         | 1    | 12    | 6         | 192  | 44    | 376   |
| 16:45           | 2          | 2    | 3     | 6         | 99   | 1     | 29         | 0    | 10    | 3         | 199  | 42    | 396   |
| 17:00           | 0          | 0    | 0     | 0         | 1    | 0     | 0          | 0    | 0     | 0         | 3    | 1     | 5     |

## Pedestrian volumes

[illegible]

## Intersection Peak Hour

16:00 - 17:00

|                 | SouthBound |      |       | Westbound |      |       | Northbound |      |       | Eastbound |      |       | Total |
|-----------------|------------|------|-------|-----------|------|-------|------------|------|-------|-----------|------|-------|-------|
|                 | Left       | Thru | Right | Left      | Thru | Right | Left       | Thru | Right | Left      | Thru | Right |       |
| Vehicle Total   | 4          | 12   | 20    | 12        | 338  | 3     | 107        | 4    | 42    | 15        | 761  | 174   | 1492  |
| Factor          | 0.50       | 0.75 | 0.71  | 0.50      | 0.85 | 0.75  | 0.81       | 0.50 | 0.70  | 0.62      | 0.96 | 0.97  | 0.94  |
| Approach Factor | 0.75       |      |       | 0.83      |      |       | 0.78       |      |       | 0.97      |      |       |       |

## Peak Hour Vehicle Summary

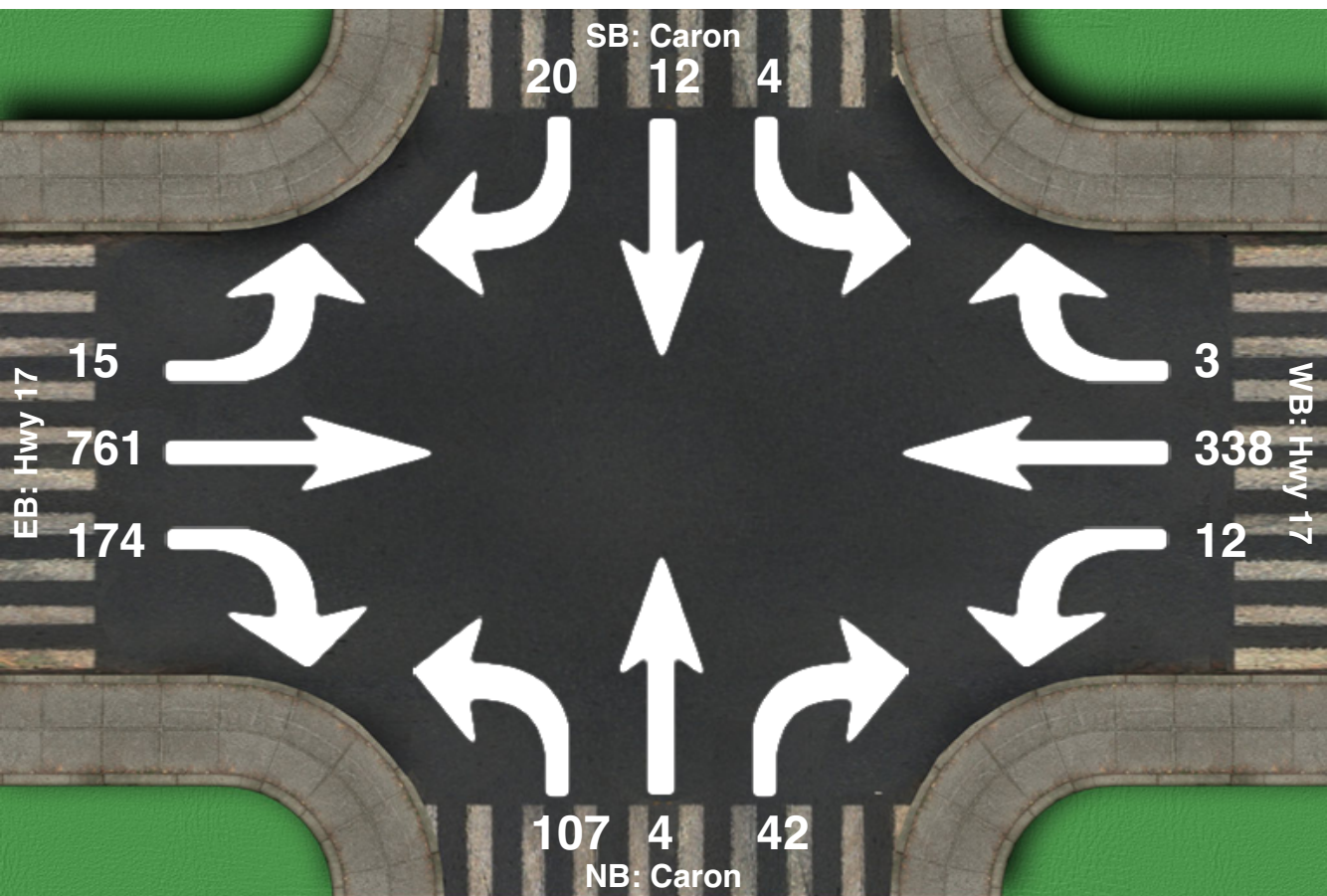
| Vehicle | SouthBound |      |       | Westbound |      |       | Northbound |      |       | Eastbound |      |       | Total |
|---------|------------|------|-------|-----------|------|-------|------------|------|-------|-----------|------|-------|-------|
|         | Left       | Thru | Right | Left      | Thru | Right | Left       | Thru | Right | Left      | Thru | Right |       |
| Car     | 4          | 12   | 20    | 12        | 338  | 3     | 107        | 4    | 42    | 15        | 761  | 174   | 1492  |

## Peak Hour Pedestrians

[illegible]

# Intersection Peak Hour

Location: Caron at Hwy 17, Rockland, On  
GPS Coordinates: Lat=45.557294, Lon=-75.279173  
Date: 2018-04-05  
Day of week: Thursday  
Weather:  
Analyst: Ben Tardioli



## Intersection Peak Hour

16:00 - 17:00

|                 | SouthBound |      |       | Westbound |      |       | Northbound |      |       | Eastbound |      |       | Total |
|-----------------|------------|------|-------|-----------|------|-------|------------|------|-------|-----------|------|-------|-------|
|                 | Left       | Thru | Right | Left      | Thru | Right | Left       | Thru | Right | Left      | Thru | Right |       |
| Vehicle Total   | 4          | 12   | 20    | 12        | 338  | 3     | 107        | 4    | 42    | 15        | 761  | 174   | 1492  |
| Factor          | 0.50       | 0.75 | 0.71  | 0.50      | 0.85 | 0.75  | 0.81       | 0.50 | 0.70  | 0.62      | 0.96 | 0.97  | 0.94  |
| Approach Factor | 0.75       |      |       | 0.83      |      |       | 0.78       |      |       | 0.97      |      |       |       |

**Cima+**  
**240 Catherine st.**  
**Ottawa, ,**

## Turn Count Summary

**Location:** Caron at Laurier, Rockland, On

**GPS Coordinates: Lat=45.555171, Lon=-75.276541**

**Date:** 2018-04-09

**Day of week: Monday**

**Weather:**

**Analyst:** Ben Tardioli

## Total vehicle traffic

| Interval starts | SouthBound |      |       | Westbound |      |       | Northbound |      |       | Eastbound |      |       | Total |
|-----------------|------------|------|-------|-----------|------|-------|------------|------|-------|-----------|------|-------|-------|
|                 | Left       | Thru | Right | Left      | Thru | Right | Left       | Thru | Right | Left      | Thru | Right |       |
| 07:30           | 1          | 7    | 1     | 11        | 32   | 14    | 9          | 29   | 10    | 1         | 11   | 5     | 131   |
| 07:45           | 4          | 12   | 8     | 11        | 43   | 8     | 12         | 36   | 7     | 6         | 10   | 6     | 163   |
| 08:00           | 2          | 11   | 2     | 14        | 39   | 7     | 7          | 18   | 10    | 6         | 19   | 9     | 144   |
| 08:15           | 5          | 15   | 4     | 5         | 34   | 10    | 11         | 32   | 8     | 4         | 14   | 5     | 147   |

## Car traffic

| Interval starts | SouthBound |      |       | Westbound |      |       | Northbound |      |       | Eastbound |      |       | Total |
|-----------------|------------|------|-------|-----------|------|-------|------------|------|-------|-----------|------|-------|-------|
|                 | Left       | Thru | Right | Left      | Thru | Right | Left       | Thru | Right | Left      | Thru | Right |       |
| 07:30           | 1          | 7    | 1     | 11        | 32   | 14    | 9          | 29   | 10    | 1         | 11   | 5     | 131   |
| 07:45           | 4          | 12   | 8     | 11        | 43   | 8     | 12         | 36   | 7     | 6         | 10   | 6     | 163   |
| 08:00           | 2          | 11   | 2     | 14        | 39   | 7     | 7          | 18   | 10    | 6         | 19   | 9     | 144   |
| 08:15           | 5          | 15   | 4     | 5         | 34   | 10    | 11         | 32   | 8     | 4         | 14   | 5     | 147   |

## Pedestrian volumes

[illegible]

## Intersection Peak Hour

07:30 - 08:30

|                 | SouthBound |      |       | Westbound |      |       | Northbound |      |       | Eastbound |      |       | Total |
|-----------------|------------|------|-------|-----------|------|-------|------------|------|-------|-----------|------|-------|-------|
|                 | Left       | Thru | Right | Left      | Thru | Right | Left       | Thru | Right | Left      | Thru | Right |       |
| Vehicle Total   | 12         | 45   | 15    | 41        | 148  | 39    | 39         | 115  | 35    | 17        | 54   | 25    | 585   |
| Factor          | 0.60       | 0.75 | 0.47  | 0.73      | 0.86 | 0.70  | 0.81       | 0.80 | 0.88  | 0.71      | 0.71 | 0.69  | 0.90  |
| Approach Factor | 0.75       |      |       | 0.92      |      |       | 0.86       |      |       | 0.71      |      |       |       |

## Peak Hour Vehicle Summary

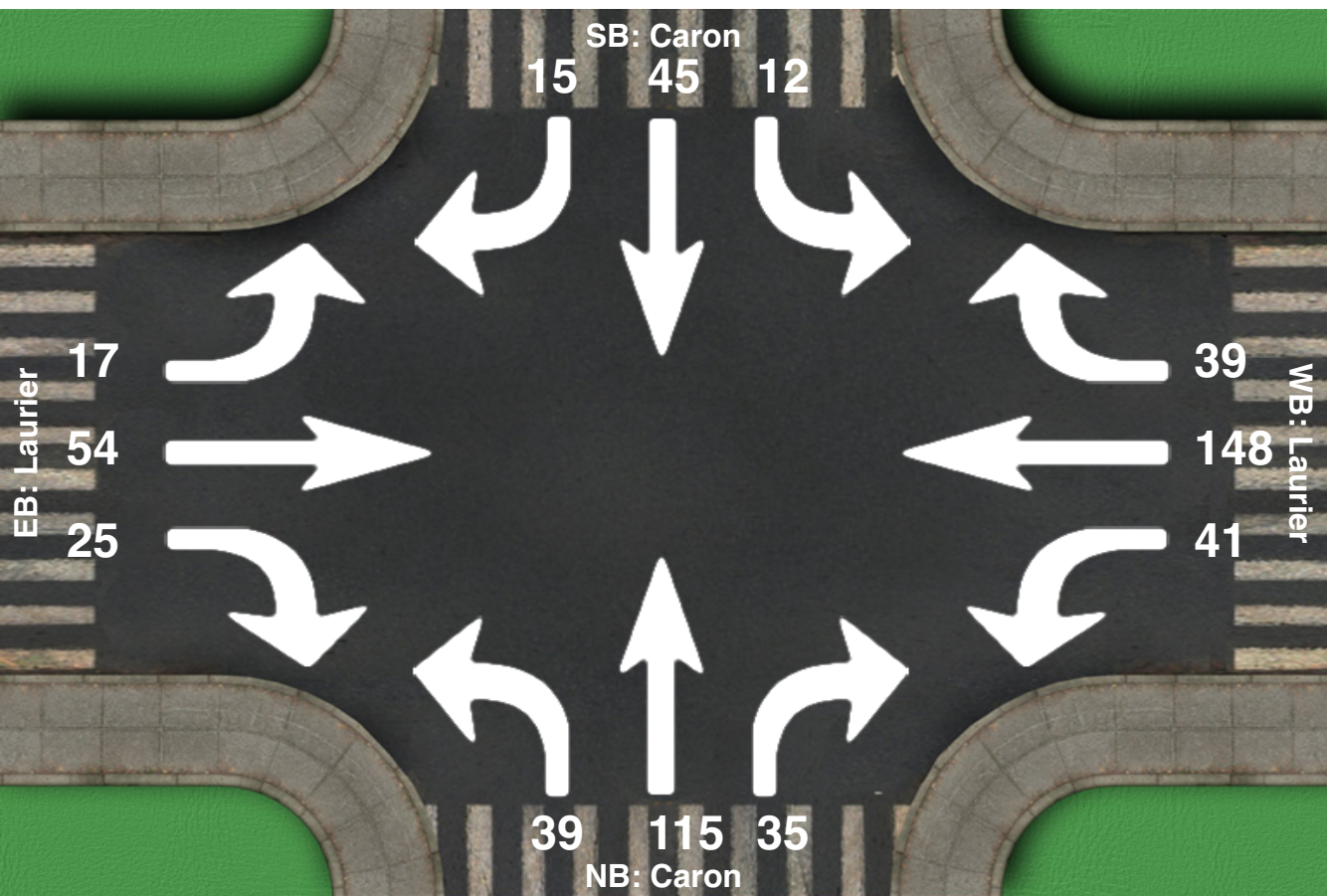
| Vehicle | SouthBound |      |       | Westbound |      |       | Northbound |      |       | Eastbound |      |       | Total |
|---------|------------|------|-------|-----------|------|-------|------------|------|-------|-----------|------|-------|-------|
|         | Left       | Thru | Right | Left      | Thru | Right | Left       | Thru | Right | Left      | Thru | Right |       |
| Car     | 12         | 45   | 15    | 41        | 148  | 39    | 39         | 115  | 35    | 17        | 54   | 25    | 585   |

## Peak Hour Pedestrians

[illegible]

# Intersection Peak Hour

Location: Caron at Laurier, Rockland, On  
GPS Coordinates: Lat=45.555171, Lon=-75.276541  
Date: 2018-04-09  
Day of week: Monday  
Weather:  
Analyst: Ben Tardioli



## Intersection Peak Hour

07:30 - 08:30

|                 | SouthBound |      |       | Westbound |      |       | Northbound |      |       | Eastbound |      |       | Total |
|-----------------|------------|------|-------|-----------|------|-------|------------|------|-------|-----------|------|-------|-------|
|                 | Left       | Thru | Right | Left      | Thru | Right | Left       | Thru | Right | Left      | Thru | Right |       |
| Vehicle Total   | 12         | 45   | 15    | 41        | 148  | 39    | 39         | 115  | 35    | 17        | 54   | 25    | 585   |
| Factor          | 0.60       | 0.75 | 0.47  | 0.73      | 0.86 | 0.70  | 0.81       | 0.80 | 0.88  | 0.71      | 0.71 | 0.69  | 0.90  |
| Approach Factor | 0.75       |      |       | 0.92      |      |       | 0.86       |      |       | 0.71      |      |       |       |

## Turn Count Summary

**Location:** Caron at Laurier, Rockland, On  
**GPS Coordinates:** Lat=45.554743, Lon=-75.276561  
**Date:** 2018-04-09  
**Day of week:** Monday  
**Weather:**  
**Analyst:** Ben Tardioli

### Total vehicle traffic

| Interval starts | SouthBound |      |       | Westbound |      |       | Northbound |      |       | Eastbound |      |       | Total |
|-----------------|------------|------|-------|-----------|------|-------|------------|------|-------|-----------|------|-------|-------|
|                 | Left       | Thru | Right | Left      | Thru | Right | Left       | Thru | Right | Left      | Thru | Right |       |
| 16:00           | 16         | 34   | 6     | 7         | 20   | 8     | 10         | 18   | 8     | 9         | 40   | 14    | 190   |
| 16:15           | 4          | 41   | 8     | 7         | 23   | 7     | 13         | 18   | 14    | 8         | 42   | 15    | 200   |
| 16:30           | 7          | 32   | 11    | 8         | 24   | 6     | 14         | 24   | 8     | 8         | 34   | 23    | 199   |
| 16:45           | 8          | 31   | 6     | 8         | 20   | 5     | 14         | 27   | 12    | 9         | 39   | 12    | 191   |

### Car traffic

| Interval starts | SouthBound |      |       | Westbound |      |       | Northbound |      |       | Eastbound |      |       | Total |
|-----------------|------------|------|-------|-----------|------|-------|------------|------|-------|-----------|------|-------|-------|
|                 | Left       | Thru | Right | Left      | Thru | Right | Left       | Thru | Right | Left      | Thru | Right |       |
| 16:00           | 16         | 34   | 6     | 7         | 20   | 8     | 10         | 18   | 8     | 9         | 40   | 14    | 190   |
| 16:15           | 4          | 41   | 8     | 7         | 23   | 7     | 13         | 18   | 14    | 8         | 42   | 15    | 200   |
| 16:30           | 7          | 32   | 11    | 8         | 24   | 6     | 14         | 24   | 8     | 8         | 34   | 23    | 199   |
| 16:45           | 8          | 31   | 6     | 8         | 20   | 5     | 14         | 27   | 12    | 9         | 39   | 12    | 191   |

### Bicycle traffic

| Interval starts | SouthBound |      |       | Westbound |      |       | Northbound |      |       | Eastbound |      |       | Total |
|-----------------|------------|------|-------|-----------|------|-------|------------|------|-------|-----------|------|-------|-------|
|                 | Left       | Thru | Right | Left      | Thru | Right | Left       | Thru | Right | Left      | Thru | Right |       |
| 16:00           | 0          | 0    | 0     | 0         | 0    | 0     | 0          | 0    | 0     | 0         | 0    | 0     | 0     |
| 16:15           | 0          | 0    | 0     | 0         | 0    | 0     | 0          | 0    | 0     | 0         | 0    | 0     | 0     |
| 16:30           | 0          | 0    | 0     | 0         | 0    | 0     | 0          | 0    | 0     | 0         | 0    | 0     | 0     |
| 16:45           | 0          | 0    | 0     | 0         | 0    | 0     | 0          | 0    | 0     | 0         | 0    | 0     | 0     |

### Pedestrian volumes

| Interval starts | NE   |       |       | NW   |       |       | SW   |       |       | SE   |       |       | Total |
|-----------------|------|-------|-------|------|-------|-------|------|-------|-------|------|-------|-------|-------|
|                 | Left | Right | Total | Left | Right | Total | Left | Right | Total | Left | Right | Total |       |
| 16:00           | 2    | 0     | 2     | 0    | 0     | 0     | 0    | 1     | 1     | 0    | 0     | 0     | 3     |
| 16:15           | 0    | 2     | 2     | 0    | 0     | 0     | 0    | 0     | 0     | 0    | 0     | 0     | 2     |
| 16:30           | 0    | 0     | 0     | 2    | 0     | 2     | 0    | 0     | 0     | 2    | 0     | 2     | 4     |
| 16:45           | 1    | 0     | 1     | 0    | 1     | 1     | 0    | 1     | 1     | 1    | 0     | 1     | 4     |

# Intersection Peak Hour

16:00 - 17:00

|                 | SouthBound |      |       | Westbound |      |       | Northbound |      |       | Eastbound |      |       | Total |
|-----------------|------------|------|-------|-----------|------|-------|------------|------|-------|-----------|------|-------|-------|
|                 | Left       | Thru | Right | Left      | Thru | Right | Left       | Thru | Right | Left      | Thru | Right |       |
| Vehicle Total   | 35         | 138  | 31    | 30        | 87   | 26    | 51         | 87   | 42    | 34        | 155  | 64    | 780   |
| Factor          | 0.55       | 0.84 | 0.70  | 0.94      | 0.91 | 0.81  | 0.91       | 0.81 | 0.75  | 0.94      | 0.92 | 0.70  | 0.97  |
| Approach Factor | 0.91       |      |       | 0.94      |      |       | 0.85       |      |       | 0.97      |      |       |       |

## Peak Hour Vehicle Summary

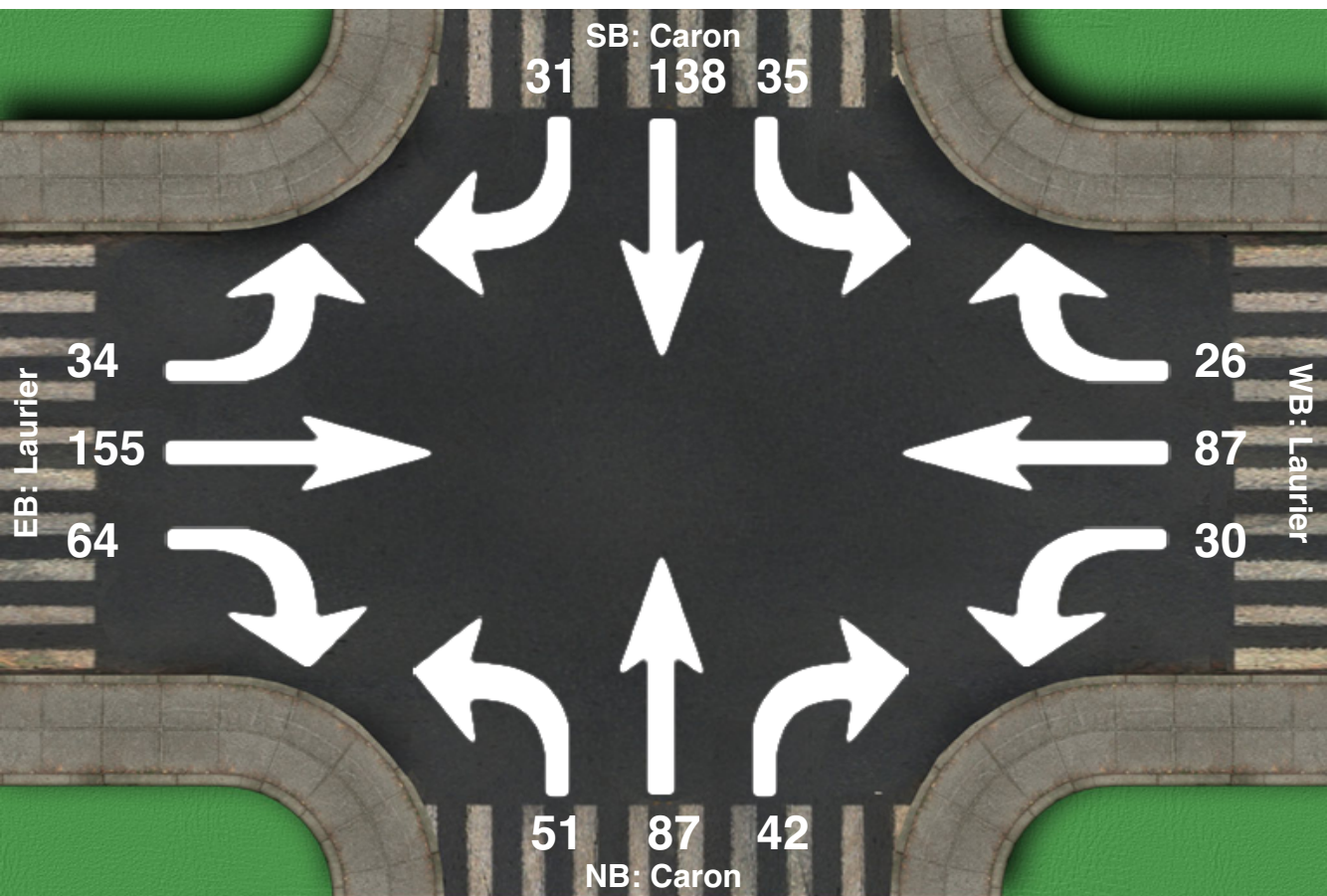
| Vehicle | SouthBound |      |       | Westbound |      |       | Northbound |      |       | Eastbound |      |       | Total |
|---------|------------|------|-------|-----------|------|-------|------------|------|-------|-----------|------|-------|-------|
|         | Left       | Thru | Right | Left      | Thru | Right | Left       | Thru | Right | Left      | Thru | Right |       |
| Car     | 35         | 138  | 31    | 30        | 87   | 26    | 51         | 87   | 42    | 34        | 155  | 64    | 780   |
| Bicycle | 0          | 0    | 0     | 0         | 0    | 0     | 0          | 0    | 0     | 0         | 0    | 0     | 0     |

## Peak Hour Pedestrians

|             | NE   |       |       | NW   |       |       | SW   |       |       | SE   |       |       | Total |
|-------------|------|-------|-------|------|-------|-------|------|-------|-------|------|-------|-------|-------|
|             | Left | Right | Total | Left | Right | Total | Left | Right | Total | Left | Right | Total |       |
| Pedestrians | 3    | 2     | 5     | 2    | 1     | 3     | 0    | 2     | 2     | 3    | 0     | 3     | 13    |

# Intersection Peak Hour

Location: Caron at Laurier, Rockland, On  
GPS Coordinates: Lat=45.554743, Lon=-75.276561  
Date: 2018-04-09  
Day of week: Monday  
Weather:  
Analyst: Ben Tardioli



# Intersection Peak Hour

16:00 - 17:00

|                 | SouthBound |      |       | Westbound |      |       | Northbound |      |       | Eastbound |      |       | Total |
|-----------------|------------|------|-------|-----------|------|-------|------------|------|-------|-----------|------|-------|-------|
|                 | Left       | Thru | Right | Left      | Thru | Right | Left       | Thru | Right | Left      | Thru | Right |       |
| Vehicle Total   | 35         | 138  | 31    | 30        | 87   | 26    | 51         | 87   | 42    | 34        | 155  | 64    | 780   |
| Factor          | 0.55       | 0.84 | 0.70  | 0.94      | 0.91 | 0.81  | 0.91       | 0.81 | 0.75  | 0.94      | 0.92 | 0.70  | 0.97  |
| Approach Factor | 0.91       |      |       | 0.94      |      |       | 0.85       |      |       | 0.97      |      |       |       |

**Cima+**  
**240 Catherine st.**  
**Ottawa, ,**

## Turn Count Summary

**Location:** Caron at Baseline , Rockland, On

**GPS Coordinates: Lat=45.525226, Lon=-75.259189**

**Date:** 2018-04-10

**Day of week: Tuesday**

**Weather:**

**Analyst:** Ben Tardioli

## Total vehicle traffic

| Interval starts | SouthBound |      |       | Westbound |      |       | Northbound |      |       | Eastbound |      |       | Total |
|-----------------|------------|------|-------|-----------|------|-------|------------|------|-------|-----------|------|-------|-------|
|                 | Left       | Thru | Right | Left      | Thru | Right | Left       | Thru | Right | Left      | Thru | Right |       |
| 07:30           | 10         | 0    | 6     | 0         | 15   | 26    | 0          | 0    | 0     | 4         | 15   | 0     | 76    |
| 07:45           | 16         | 0    | 5     | 0         | 12   | 20    | 0          | 0    | 0     | 0         | 6    | 0     | 59    |
| 08:00           | 12         | 0    | 8     | 0         | 16   | 13    | 0          | 0    | 0     | 1         | 4    | 0     | 54    |
| 08:15           | 11         | 0    | 3     | 0         | 15   | 25    | 0          | 0    | 0     | 3         | 3    | 0     | 60    |

## Car traffic

| Interval starts | SouthBound |      |       | Westbound |      |       | Northbound |      |       | Eastbound |      |       | Total |
|-----------------|------------|------|-------|-----------|------|-------|------------|------|-------|-----------|------|-------|-------|
|                 | Left       | Thru | Right | Left      | Thru | Right | Left       | Thru | Right | Left      | Thru | Right |       |
| 07:30           | 10         | 0    | 6     | 0         | 15   | 26    | 0          | 0    | 0     | 4         | 15   | 0     | 76    |
| 07:45           | 16         | 0    | 5     | 0         | 12   | 20    | 0          | 0    | 0     | 0         | 6    | 0     | 59    |
| 08:00           | 12         | 0    | 8     | 0         | 16   | 13    | 0          | 0    | 0     | 1         | 4    | 0     | 54    |
| 08:15           | 11         | 0    | 3     | 0         | 15   | 25    | 0          | 0    | 0     | 3         | 3    | 0     | 60    |

## Bicycle traffic

[illegible]

## Pedestrian volumes

[illegible]

## Intersection Peak Hour

07:30 - 08:30

|                 | SouthBound |      |       | Westbound |      |       | Northbound |      |       | Eastbound |      |       | Total |
|-----------------|------------|------|-------|-----------|------|-------|------------|------|-------|-----------|------|-------|-------|
|                 | Left       | Thru | Right | Left      | Thru | Right | Left       | Thru | Right | Left      | Thru | Right |       |
| Vehicle Total   | 49         | 0    | 22    | 0         | 58   | 84    | 0          | 0    | 0     | 8         | 28   | 0     | 249   |
| Factor          | 0.77       | 0.00 | 0.69  | 0.00      | 0.91 | 0.81  | 0.00       | 0.00 | 0.00  | 0.50      | 0.47 | 0.00  | 0.82  |
| Approach Factor | 0.85       |      |       | 0.87      |      |       | 0.00       |      |       | 0.47      |      |       |       |

## Peak Hour Vehicle Summary

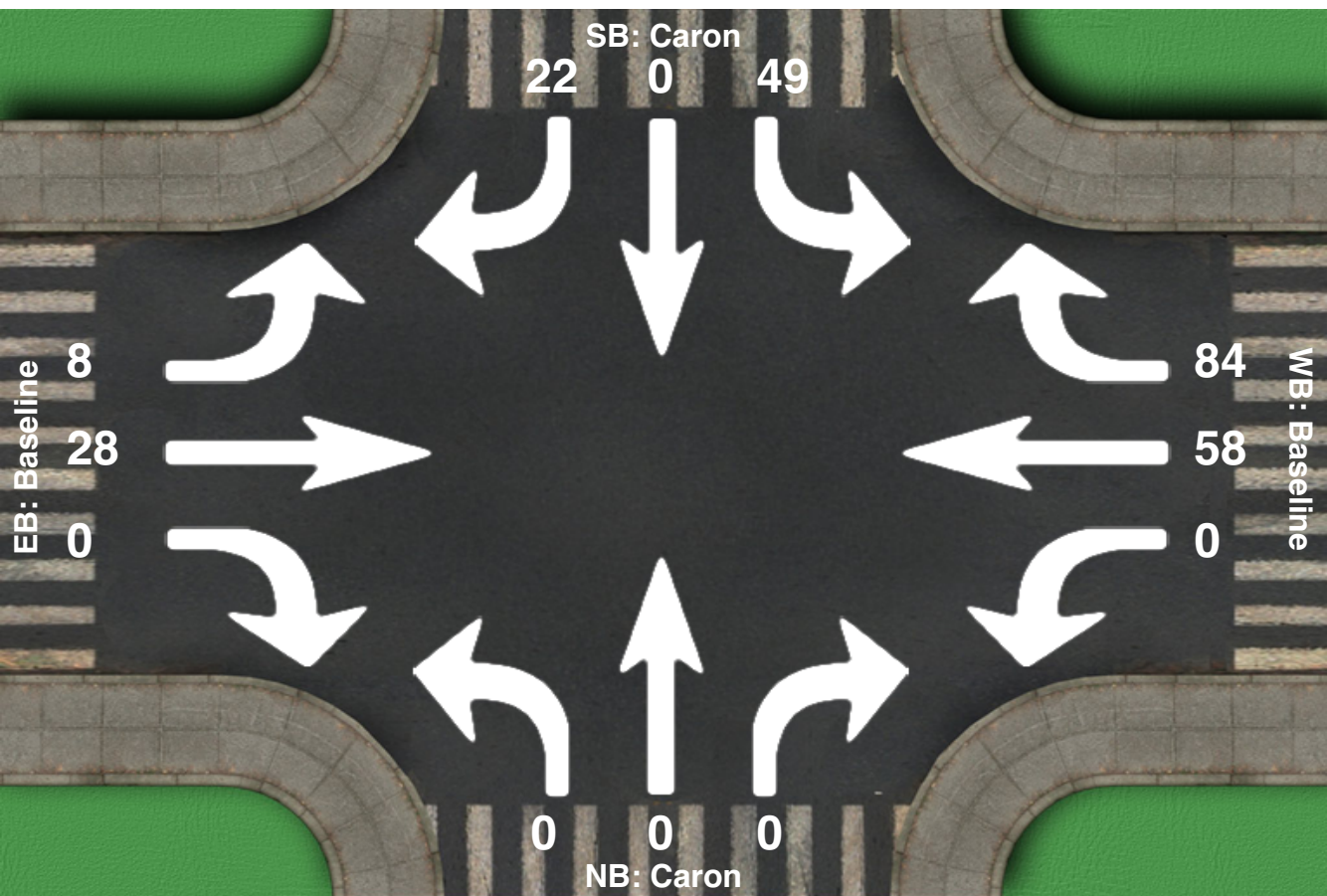
[illegible]

## Peak Hour Pedestrians

[illegible]

# Intersection Peak Hour

Location: Caron at Baseline , Rockland, On  
GPS Coordinates: Lat=45.525226, Lon=-75.259189  
Date: 2018-04-10  
Day of week: Tuesday  
Weather:  
Analyst: Ben Tardioli



## Intersection Peak Hour

07:30 - 08:30

|                 | SouthBound |      |       | Westbound |      |       | Northbound |      |       | Eastbound |      |       | Total |
|-----------------|------------|------|-------|-----------|------|-------|------------|------|-------|-----------|------|-------|-------|
|                 | Left       | Thru | Right | Left      | Thru | Right | Left       | Thru | Right | Left      | Thru | Right |       |
| Vehicle Total   | 49         | 0    | 22    | 0         | 58   | 84    | 0          | 0    | 0     | 8         | 28   | 0     | 249   |
| Factor          | 0.77       | 0.00 | 0.69  | 0.00      | 0.91 | 0.81  | 0.00       | 0.00 | 0.00  | 0.50      | 0.47 | 0.00  | 0.82  |
| Approach Factor | 0.85       |      |       | 0.87      |      |       | 0.00       |      |       | 0.47      |      |       |       |

**Cima+**  
**240 Catherine st.**  
**Ottawa, ,**

## Turn Count Summary

**Location:** Caron at Baseline , Rockland, On

**GPS Coordinates: Lat=45.525226, Lon=-75.259189**

**Date:** 2018-04-10

**Day of week: Tuesday**

**Weather:**

**Analyst:** Ben Tardioli

## Total vehicle traffic

| Interval starts | SouthBound |      |       | Westbound |      |       | Northbound |      |       | Eastbound |      |       | Total |
|-----------------|------------|------|-------|-----------|------|-------|------------|------|-------|-----------|------|-------|-------|
|                 | Left       | Thru | Right | Left      | Thru | Right | Left       | Thru | Right | Left      | Thru | Right |       |
| 16:00           | 27         | 0    | 2     | 0         | 9    | 25    | 0          | 0    | 0     | 6         | 28   | 0     | 97    |
| 16:15           | 25         | 0    | 4     | 0         | 12   | 23    | 0          | 0    | 0     | 7         | 20   | 0     | 91    |
| 16:30           | 22         | 0    | 3     | 0         | 13   | 17    | 0          | 0    | 0     | 12        | 31   | 0     | 98    |
| 16:45           | 25         | 0    | 8     | 0         | 7    | 11    | 0          | 0    | 0     | 13        | 23   | 0     | 87    |

## Car traffic

| Interval starts | SouthBound |      |       | Westbound |      |       | Northbound |      |       | Eastbound |      |       | Total |
|-----------------|------------|------|-------|-----------|------|-------|------------|------|-------|-----------|------|-------|-------|
|                 | Left       | Thru | Right | Left      | Thru | Right | Left       | Thru | Right | Left      | Thru | Right |       |
| 16:00           | 27         | 0    | 2     | 0         | 9    | 25    | 0          | 0    | 0     | 6         | 28   | 0     | 97    |
| 16:15           | 25         | 0    | 4     | 0         | 12   | 23    | 0          | 0    | 0     | 7         | 20   | 0     | 91    |
| 16:30           | 22         | 0    | 3     | 0         | 13   | 17    | 0          | 0    | 0     | 12        | 31   | 0     | 98    |
| 16:45           | 25         | 0    | 8     | 0         | 7    | 11    | 0          | 0    | 0     | 13        | 23   | 0     | 87    |

## Bicycle traffic

[illegible]

## Pedestrian volumes

[illegible]

## Intersection Peak Hour

16:00 - 17:00

|                 | SouthBound |      |       | Westbound |      |       | Northbound |      |       | Eastbound |      |       | Total |
|-----------------|------------|------|-------|-----------|------|-------|------------|------|-------|-----------|------|-------|-------|
|                 | Left       | Thru | Right | Left      | Thru | Right | Left       | Thru | Right | Left      | Thru | Right |       |
| Vehicle Total   | 99         | 0    | 17    | 0         | 41   | 76    | 0          | 0    | 0     | 38        | 102  | 0     | 373   |
| Factor          | 0.92       | 0.00 | 0.53  | 0.00      | 0.79 | 0.76  | 0.00       | 0.00 | 0.00  | 0.73      | 0.82 | 0.00  | 0.95  |
| Approach Factor | 0.88       |      |       | 0.84      |      |       | 0.00       |      |       | 0.81      |      |       |       |

## Peak Hour Vehicle Summary

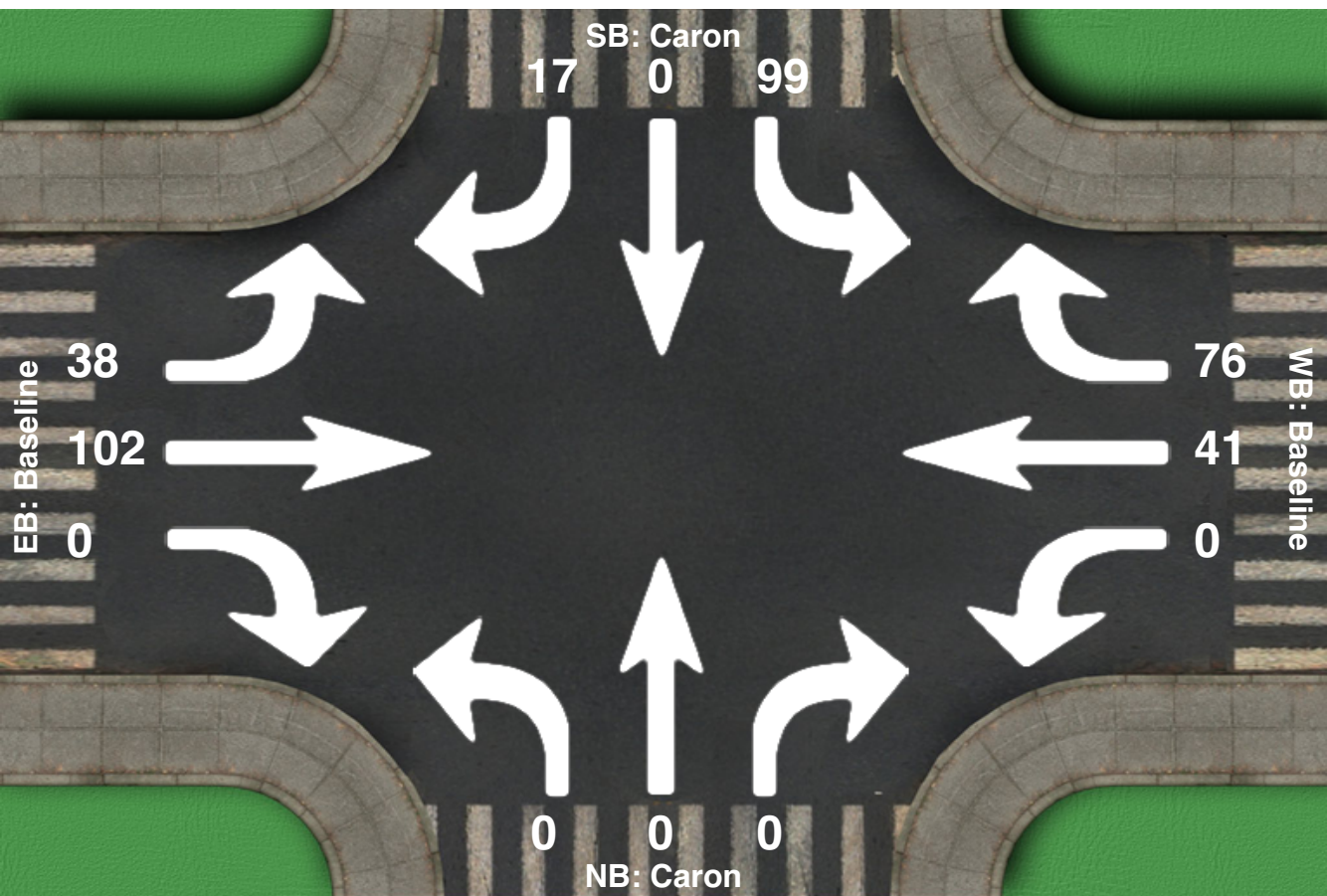
[illegible]

## Peak Hour Pedestrians

[illegible]

# Intersection Peak Hour

Location: Caron at Baseline , Rockland, On  
GPS Coordinates: Lat=45.525226, Lon=-75.259189  
Date: 2018-04-10  
Day of week: Tuesday  
Weather:  
Analyst: Ben Tardioli



## Intersection Peak Hour

16:00 - 17:00

|                 | SouthBound |      |       | Westbound |      |       | Northbound |      |       | Eastbound |      |       | Total |
|-----------------|------------|------|-------|-----------|------|-------|------------|------|-------|-----------|------|-------|-------|
|                 | Left       | Thru | Right | Left      | Thru | Right | Left       | Thru | Right | Left      | Thru | Right |       |
| Vehicle Total   | 99         | 0    | 17    | 0         | 41   | 76    | 0          | 0    | 0     | 38        | 102  | 0     | 373   |
| Factor          | 0.92       | 0.00 | 0.53  | 0.00      | 0.79 | 0.76  | 0.00       | 0.00 | 0.00  | 0.73      | 0.82 | 0.00  | 0.95  |
| Approach Factor | 0.88       |      |       | 0.84      |      |       | 0.00       |      |       | 0.81      |      |       |       |

**Cima+**  
**240 Catherine st.**  
**Ottawa, ,**

## Turn Count Summary

**Location:** Caron at Docteur Corbeil, Rockland, On

**GPS Coordinates: Lat=45.544293, Lon=-75.271567**

**Date:** 2018-04-11

**Day of week:      Wednesday**

## Weather:

**Analyst:** Ben Tardioli

## Total vehicle traffic

| Interval starts | SouthBound |      |       | Westbound |      |       | Northbound |      |       | Eastbound |      |       | Total |
|-----------------|------------|------|-------|-----------|------|-------|------------|------|-------|-----------|------|-------|-------|
|                 | Left       | Thru | Right | Left      | Thru | Right | Left       | Thru | Right | Left      | Thru | Right |       |
| 07:30           | 0          | 12   | 9     | 0         | 0    | 0     | 23         | 21   | 0     | 9         | 0    | 9     | 83    |
| 07:45           | 0          | 9    | 18    | 0         | 0    | 0     | 24         | 22   | 0     | 11        | 0    | 14    | 98    |
| 08:00           | 0          | 12   | 9     | 0         | 0    | 0     | 7          | 13   | 0     | 12        | 0    | 8     | 61    |
| 08:15           | 0          | 10   | 7     | 0         | 0    | 0     | 6          | 18   | 0     | 6         | 0    | 5     | 52    |
| 08:30           | 0          | 0    | 0     | 0         | 0    | 0     | 1          | 0    | 0     | 0         | 0    | 0     | 1     |

## Car traffic

| Interval starts | SouthBound |      |       | Westbound |      |       | Northbound |      |       | Eastbound |      |       | Total |
|-----------------|------------|------|-------|-----------|------|-------|------------|------|-------|-----------|------|-------|-------|
|                 | Left       | Thru | Right | Left      | Thru | Right | Left       | Thru | Right | Left      | Thru | Right |       |
| 07:30           | 0          | 12   | 9     | 0         | 0    | 0     | 22         | 21   | 0     | 9         | 0    | 9     | 82    |
| 07:45           | 0          | 9    | 18    | 0         | 0    | 0     | 24         | 22   | 0     | 11        | 0    | 14    | 98    |
| 08:00           | 0          | 12   | 9     | 0         | 0    | 0     | 7          | 13   | 0     | 12        | 0    | 8     | 61    |
| 08:15           | 0          | 10   | 7     | 0         | 0    | 0     | 6          | 18   | 0     | 6         | 0    | 5     | 52    |
| 08:30           | 0          | 0    | 0     | 0         | 0    | 0     | 1          | 0    | 0     | 0         | 0    | 0     | 1     |

## Bicycle traffic

[illegible]

## Pedestrian volumes

[illegible]

# Intersection Peak Hour

07:30 - 08:30

|                 | SouthBound |      |       | Westbound |      |       | Northbound |      |       | Eastbound |      |       | Total |
|-----------------|------------|------|-------|-----------|------|-------|------------|------|-------|-----------|------|-------|-------|
|                 | Left       | Thru | Right | Left      | Thru | Right | Left       | Thru | Right | Left      | Thru | Right |       |
| Vehicle Total   | 0          | 43   | 43    | 0         | 0    | 0     | 60         | 74   | 0     | 38        | 0    | 36    | 294   |
| Factor          | 0.00       | 0.90 | 0.60  | 0.00      | 0.00 | 0.00  | 0.62       | 0.84 | 0.00  | 0.79      | 0.00 | 0.64  | 0.75  |
| Approach Factor | 0.80       |      |       | 0.00      |      |       | 0.73       |      |       | 0.74      |      |       |       |

## Peak Hour Vehicle Summary

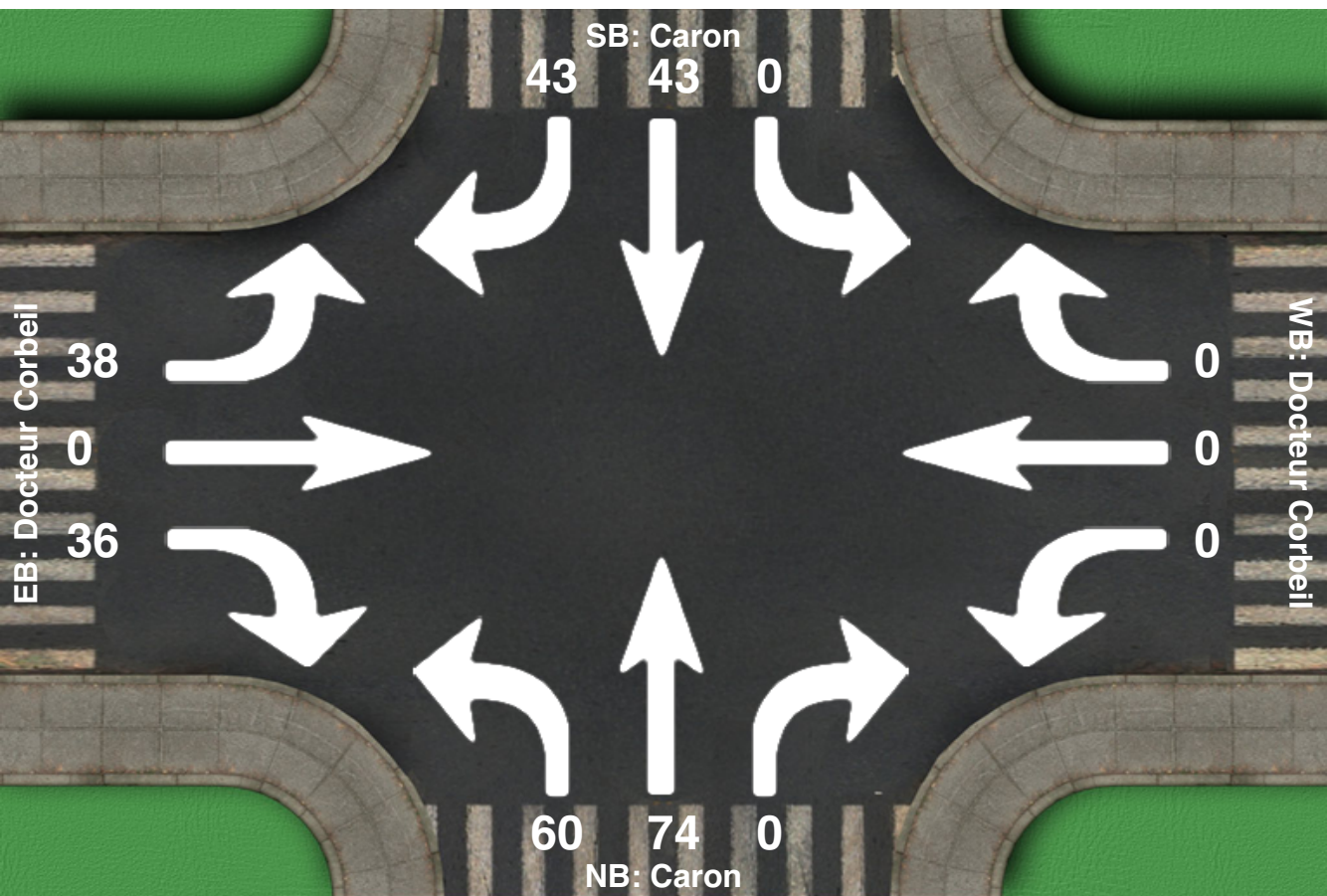
| Vehicle | SouthBound |      |       | Westbound |      |       | Northbound |      |       | Eastbound |      |       | Total |
|---------|------------|------|-------|-----------|------|-------|------------|------|-------|-----------|------|-------|-------|
|         | Left       | Thru | Right | Left      | Thru | Right | Left       | Thru | Right | Left      | Thru | Right |       |
| Car     | 0          | 43   | 43    | 0         | 0    | 0     | 59         | 74   | 0     | 38        | 0    | 36    | 293   |
| Bicycle | 0          | 0    | 0     | 0         | 0    | 0     | 1          | 0    | 0     | 0         | 0    | 0     | 1     |

## Peak Hour Pedestrians

|             | NE   |       |       | NW   |       |       | SW   |       |       | SE   |       |       | Total |
|-------------|------|-------|-------|------|-------|-------|------|-------|-------|------|-------|-------|-------|
|             | Left | Right | Total | Left | Right | Total | Left | Right | Total | Left | Right | Total |       |
| Pedestrians | 0    | 3     | 3     | 0    | 1     | 1     | 1    | 1     | 2     | 0    | 0     | 0     | 6     |

# Intersection Peak Hour

Location: Caron at Docteur Corbeil, Rockland, On  
GPS Coordinates: Lat=45.544293, Lon=-75.271567  
Date: 2018-04-11  
Day of week: Wednesday  
Weather:  
Analyst: Ben Tardioli



## Intersection Peak Hour

07:30 - 08:30

|                 | SouthBound |      |       | Westbound |      |       | Northbound |      |       | Eastbound |      |       | Total |
|-----------------|------------|------|-------|-----------|------|-------|------------|------|-------|-----------|------|-------|-------|
|                 | Left       | Thru | Right | Left      | Thru | Right | Left       | Thru | Right | Left      | Thru | Right |       |
| Vehicle Total   | 0          | 43   | 43    | 0         | 0    | 0     | 60         | 74   | 0     | 38        | 0    | 36    | 294   |
| Factor          | 0.00       | 0.90 | 0.60  | 0.00      | 0.00 | 0.00  | 0.62       | 0.84 | 0.00  | 0.79      | 0.00 | 0.64  | 0.75  |
| Approach Factor | 0.80       |      |       | 0.00      |      |       | 0.73       |      |       | 0.74      |      |       |       |

**Cima+**  
**240 Catherine st.**  
**Ottawa, ,**

## Turn Count Summary

**Location:** Caron at Docteur Corbeil, Rockland, On

**GPS Coordinates: Lat=45.544176, Lon=-75.271704**

Date: 2018-04-11

**Day of week: Wednesday**

**Weather:**

**Analyst:** Ben Tardioli

## Total vehicle traffic

| Interval starts | SouthBound |      |       | Westbound |      |       | Northbound |      |       | Eastbound |      |       | Total |
|-----------------|------------|------|-------|-----------|------|-------|------------|------|-------|-----------|------|-------|-------|
|                 | Left       | Thru | Right | Left      | Thru | Right | Left       | Thru | Right | Left      | Thru | Right |       |
| 16:00           | 0          | 17   | 10    | 0         | 0    | 1     | 12         | 13   | 0     | 9         | 0    | 21    | 83    |
| 16:15           | 0          | 17   | 16    | 0         | 0    | 0     | 11         | 17   | 0     | 16        | 0    | 11    | 88    |
| 16:30           | 0          | 18   | 14    | 0         | 0    | 0     | 9          | 11   | 0     | 16        | 0    | 13    | 81    |
| 16:45           | 0          | 16   | 10    | 0         | 0    | 0     | 17         | 22   | 0     | 20        | 0    | 17    | 102   |

## Car traffic

| Interval starts | SouthBound |      |       | Westbound |      |       | Northbound |      |       | Eastbound |      |       | Total |
|-----------------|------------|------|-------|-----------|------|-------|------------|------|-------|-----------|------|-------|-------|
|                 | Left       | Thru | Right | Left      | Thru | Right | Left       | Thru | Right | Left      | Thru | Right |       |
| 16:00           | 0          | 17   | 9     | 0         | 0    | 1     | 12         | 13   | 0     | 9         | 0    | 21    | 82    |
| 16:15           | 0          | 17   | 16    | 0         | 0    | 0     | 11         | 17   | 0     | 16        | 0    | 11    | 88    |
| 16:30           | 0          | 18   | 14    | 0         | 0    | 0     | 9          | 11   | 0     | 15        | 0    | 13    | 80    |
| 16:45           | 0          | 16   | 10    | 0         | 0    | 0     | 17         | 22   | 0     | 20        | 0    | 17    | 102   |

## Bicycle traffic

[illegible]

## Pedestrian volumes

[illegible]

# Intersection Peak Hour

16:00 - 17:00

|                 | SouthBound |      |       | Westbound |      |       | Northbound |      |       | Eastbound |      |       | Total |
|-----------------|------------|------|-------|-----------|------|-------|------------|------|-------|-----------|------|-------|-------|
|                 | Left       | Thru | Right | Left      | Thru | Right | Left       | Thru | Right | Left      | Thru | Right |       |
| Vehicle Total   | 0          | 68   | 50    | 0         | 0    | 1     | 49         | 63   | 0     | 61        | 0    | 62    | 354   |
| Factor          | 0.00       | 0.94 | 0.78  | 0.00      | 0.00 | 0.25  | 0.72       | 0.72 | 0.00  | 0.76      | 0.00 | 0.74  | 0.87  |
| Approach Factor | 0.89       |      |       | 0.25      |      |       | 0.72       |      |       | 0.83      |      |       |       |

## Peak Hour Vehicle Summary

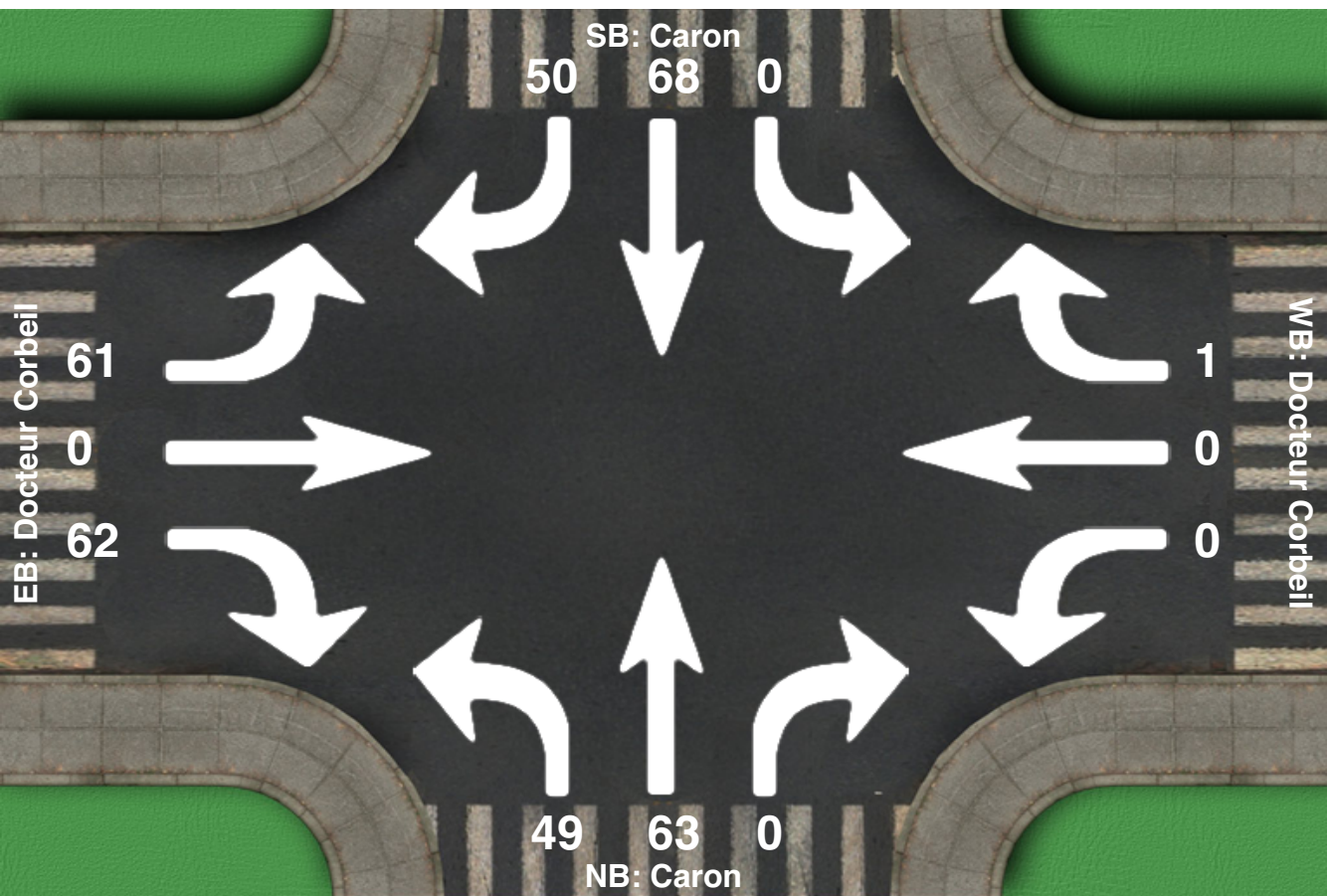
| Vehicle | SouthBound |      |       | Westbound |      |       | Northbound |      |       | Eastbound |      |       | Total |
|---------|------------|------|-------|-----------|------|-------|------------|------|-------|-----------|------|-------|-------|
|         | Left       | Thru | Right | Left      | Thru | Right | Left       | Thru | Right | Left      | Thru | Right |       |
| Car     | 0          | 68   | 49    | 0         | 0    | 1     | 49         | 63   | 0     | 60        | 0    | 62    | 352   |
| Bicycle | 0          | 0    | 1     | 0         | 0    | 0     | 0          | 0    | 0     | 1         | 0    | 0     | 2     |

## Peak Hour Pedestrians

|             | NE   |       |       | NW   |       |       | SW   |       |       | SE   |       |       | Total |
|-------------|------|-------|-------|------|-------|-------|------|-------|-------|------|-------|-------|-------|
|             | Left | Right | Total | Left | Right | Total | Left | Right | Total | Left | Right | Total |       |
| Pedestrians | 0    | 0     | 0     | 3    | 0     | 3     | 1    | 0     | 1     | 0    | 0     | 0     | 4     |

# Intersection Peak Hour

Location: Caron at Docteur Corbeil, Rockland, On  
GPS Coordinates: Lat=45.544176, Lon=-75.271704  
Date: 2018-04-11  
Day of week: Wednesday  
Weather:  
Analyst: Ben Tardioli



## Intersection Peak Hour

16:00 - 17:00

|                 | SouthBound |      |       | Westbound |      |       | Northbound |      |       | Eastbound |      |       | Total |
|-----------------|------------|------|-------|-----------|------|-------|------------|------|-------|-----------|------|-------|-------|
|                 | Left       | Thru | Right | Left      | Thru | Right | Left       | Thru | Right | Left      | Thru | Right |       |
| Vehicle Total   | 0          | 68   | 50    | 0         | 0    | 1     | 49         | 63   | 0     | 61        | 0    | 62    | 354   |
| Factor          | 0.00       | 0.94 | 0.78  | 0.00      | 0.00 | 0.25  | 0.72       | 0.72 | 0.00  | 0.76      | 0.00 | 0.74  | 0.87  |
| Approach Factor | 0.89       |      |       | 0.25      |      |       | 0.72       |      |       | 0.83      |      |       |       |

# B

## Appendix B

### Existing Conditions Traffic Operations

# HCM Signalized Intersection Capacity Analysis

## 1: Rue Caron/Rue Industrielle & HWY 17

# Existing Conditions

Timing Plan: AM Peak

|                                   |  |  |  |  |  |  |   |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |  |  |  |  |  |  |  |  |                                                                                     |  |  |                                                                                     |
| Traffic Volume (vph)              | 8                                                                                 | 284                                                                               | 44                                                                                | 21                                                                                | 581                                                                               | 3                                                                                 | 177                                                                                 | 8                                                                                   | 31                                                                                  | 1                                                                                   | 6                                                                                   | 8                                                                                   |
| Future Volume (vph)               | 8                                                                                 | 284                                                                               | 44                                                                                | 21                                                                                | 581                                                                               | 3                                                                                 | 177                                                                                 | 8                                                                                   | 31                                                                                  | 1                                                                                   | 6                                                                                   | 8                                                                                   |
| Ideal Flow (vphpl)                | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                |
| Total Lost time (s)               | 6.9                                                                               | 6.9                                                                               | 6.9                                                                               | 6.9                                                                               | 6.9                                                                               | 6.9                                                                               | 5.9                                                                                 | 6.3                                                                                 |                                                                                     | 5.9                                                                                 | 6.3                                                                                 |                                                                                     |
| Lane Util. Factor                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     |
| Frt                               | 1.00                                                                              | 1.00                                                                              | 0.85                                                                              | 1.00                                                                              | 1.00                                                                              | 0.85                                                                              | 1.00                                                                                | 0.88                                                                                |                                                                                     | 1.00                                                                                | 0.92                                                                                |                                                                                     |
| Flt Protected                     | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                                | 1.00                                                                                |                                                                                     | 0.95                                                                                | 1.00                                                                                |                                                                                     |
| Satd. Flow (prot)                 | 1676                                                                              | 1765                                                                              | 1500                                                                              | 1676                                                                              | 1765                                                                              | 1500                                                                              | 1676                                                                                | 1555                                                                                |                                                                                     | 1676                                                                                | 1616                                                                                |                                                                                     |
| Flt Permitted                     | 0.30                                                                              | 1.00                                                                              | 1.00                                                                              | 0.54                                                                              | 1.00                                                                              | 1.00                                                                              | 0.53                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     |
| Satd. Flow (perm)                 | 536                                                                               | 1765                                                                              | 1500                                                                              | 944                                                                               | 1765                                                                              | 1500                                                                              | 941                                                                                 | 1555                                                                                |                                                                                     | 1765                                                                                | 1616                                                                                |                                                                                     |
| Peak-hour factor, PHF             | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                |
| Adj. Flow (vph)                   | 9                                                                                 | 316                                                                               | 49                                                                                | 23                                                                                | 646                                                                               | 3                                                                                 | 197                                                                                 | 9                                                                                   | 34                                                                                  | 1                                                                                   | 7                                                                                   | 9                                                                                   |
| RTOR Reduction (vph)              | 0                                                                                 | 0                                                                                 | 22                                                                                | 0                                                                                 | 0                                                                                 | 1                                                                                 | 0                                                                                   | 30                                                                                  | 0                                                                                   | 0                                                                                   | 9                                                                                   | 0                                                                                   |
| Lane Group Flow (vph)             | 9                                                                                 | 316                                                                               | 27                                                                                | 23                                                                                | 646                                                                               | 2                                                                                 | 197                                                                                 | 13                                                                                  | 0                                                                                   | 1                                                                                   | 7                                                                                   | 0                                                                                   |
| Turn Type                         | pm+pt                                                                             | NA                                                                                | Perm                                                                              | pm+pt                                                                             | NA                                                                                | Perm                                                                              | pm+pt                                                                               | NA                                                                                  |                                                                                     | pm+pt                                                                               | NA                                                                                  |                                                                                     |
| Protected Phases                  | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   | 6                                                                                   |                                                                                     |
| Permitted Phases                  | 4                                                                                 |                                                                                   | 4                                                                                 | 8                                                                                 |                                                                                   | 8                                                                                 | 2                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     |
| Actuated Green, G (s)             | 50.5                                                                              | 49.5                                                                              | 49.5                                                                              | 53.1                                                                              | 50.8                                                                              | 50.8                                                                              | 18.0                                                                                | 11.2                                                                                |                                                                                     | 2.5                                                                                 | 1.6                                                                                 |                                                                                     |
| Effective Green, g (s)            | 50.5                                                                              | 49.5                                                                              | 49.5                                                                              | 53.1                                                                              | 50.8                                                                              | 50.8                                                                              | 18.0                                                                                | 11.2                                                                                |                                                                                     | 2.5                                                                                 | 1.6                                                                                 |                                                                                     |
| Actuated g/C Ratio                | 0.56                                                                              | 0.55                                                                              | 0.55                                                                              | 0.59                                                                              | 0.57                                                                              | 0.57                                                                              | 0.20                                                                                | 0.12                                                                                |                                                                                     | 0.03                                                                                | 0.02                                                                                |                                                                                     |
| Clearance Time (s)                | 6.9                                                                               | 6.9                                                                               | 6.9                                                                               | 6.9                                                                               | 6.9                                                                               | 6.9                                                                               | 5.9                                                                                 | 6.3                                                                                 |                                                                                     | 5.9                                                                                 | 6.3                                                                                 |                                                                                     |
| Vehicle Extension (s)             | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 |                                                                                     | 3.0                                                                                 | 3.0                                                                                 |                                                                                     |
| Lane Grp Cap (vph)                | 313                                                                               | 971                                                                               | 825                                                                               | 576                                                                               | 997                                                                               | 847                                                                               | 274                                                                                 | 193                                                                                 |                                                                                     | 48                                                                                  | 28                                                                                  |                                                                                     |
| v/s Ratio Prot                    | 0.00                                                                              | 0.18                                                                              |                                                                                   | c0.00                                                                             | c0.37                                                                             |                                                                                   | c0.08                                                                               | 0.01                                                                                |                                                                                     | 0.00                                                                                | 0.00                                                                                |                                                                                     |
| v/s Ratio Perm                    | 0.02                                                                              |                                                                                   | 0.02                                                                              | 0.02                                                                              |                                                                                   | 0.00                                                                              | c0.06                                                                               |                                                                                     |                                                                                     | 0.00                                                                                |                                                                                     |                                                                                     |
| v/c Ratio                         | 0.03                                                                              | 0.33                                                                              | 0.03                                                                              | 0.04                                                                              | 0.65                                                                              | 0.00                                                                              | 0.72                                                                                | 0.07                                                                                |                                                                                     | 0.02                                                                                | 0.26                                                                                |                                                                                     |
| Uniform Delay, d1                 | 9.7                                                                               | 11.1                                                                              | 9.2                                                                               | 7.7                                                                               | 13.4                                                                              | 8.5                                                                               | 32.7                                                                                | 34.7                                                                                |                                                                                     | 42.5                                                                                | 43.6                                                                                |                                                                                     |
| Progression Factor                | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     |
| Incremental Delay, d2             | 0.0                                                                               | 0.9                                                                               | 0.1                                                                               | 0.0                                                                               | 3.3                                                                               | 0.0                                                                               | 8.7                                                                                 | 0.2                                                                                 |                                                                                     | 0.2                                                                                 | 4.8                                                                                 |                                                                                     |
| Delay (s)                         | 9.8                                                                               | 12.0                                                                              | 9.3                                                                               | 7.7                                                                               | 16.7                                                                              | 8.5                                                                               | 41.4                                                                                | 34.9                                                                                |                                                                                     | 42.7                                                                                | 48.4                                                                                |                                                                                     |
| Level of Service                  | A                                                                                 | B                                                                                 | A                                                                                 | A                                                                                 | B                                                                                 | A                                                                                 | D                                                                                   | C                                                                                   |                                                                                     | D                                                                                   | D                                                                                   |                                                                                     |
| Approach Delay (s)                |                                                                                   | 11.6                                                                              |                                                                                   |                                                                                   | 16.3                                                                              |                                                                                   |                                                                                     | 40.2                                                                                |                                                                                     |                                                                                     | 48.0                                                                                |                                                                                     |
| Approach LOS                      |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                     | D                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| <b>Intersection Summary</b>       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2000 Control Delay            |                                                                                   |                                                                                   | 19.8                                                                              |                                                                                   |                                                                                   |                                                                                   | HCM 2000 Level of Service                                                           |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |
| HCM 2000 Volume to Capacity ratio |                                                                                   |                                                                                   | 0.70                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Cycle Length (s)         |                                                                                   |                                                                                   | 89.9                                                                              |                                                                                   |                                                                                   |                                                                                   | Sum of lost time (s)                                                                |                                                                                     |                                                                                     | 26.0                                                                                |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 60.3%                                                                             |                                                                                   |                                                                                   |                                                                                   | ICU Level of Service                                                                |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| c Critical Lane Group             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM Signalized Intersection Capacity Analysis

## 2: Caron St/Rue Caron & Laurier St

Existing Conditions

Timing Plan: AM Peak

|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |  |  |                                                                                     |
| Traffic Volume (vph)              | 17                                                                                | 54                                                                                | 25                                                                                | 41                                                                                | 148                                                                               | 39                                                                                | 39                                                                                  | 115                                                                                 | 35                                                                                  | 12                                                                                  | 45                                                                                  | 15                                                                                  |
| Future Volume (vph)               | 17                                                                                | 54                                                                                | 25                                                                                | 41                                                                                | 148                                                                               | 39                                                                                | 39                                                                                  | 115                                                                                 | 35                                                                                  | 12                                                                                  | 45                                                                                  | 15                                                                                  |
| Ideal Flow (vphpl)                | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                |
| Total Lost time (s)               | 6.5                                                                               | 6.5                                                                               |                                                                                   | 6.5                                                                               | 6.5                                                                               |                                                                                   | 6.1                                                                                 | 6.1                                                                                 |                                                                                     | 6.1                                                                                 | 6.1                                                                                 |                                                                                     |
| Lane Util. Factor                 | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     |
| Frt                               | 1.00                                                                              | 0.95                                                                              |                                                                                   | 1.00                                                                              | 0.97                                                                              |                                                                                   | 1.00                                                                                | 0.96                                                                                |                                                                                     | 1.00                                                                                | 0.96                                                                                |                                                                                     |
| Flt Protected                     | 0.95                                                                              | 1.00                                                                              |                                                                                   | 0.95                                                                              | 1.00                                                                              |                                                                                   | 0.95                                                                                | 1.00                                                                                |                                                                                     | 0.95                                                                                | 1.00                                                                                |                                                                                     |
| Satd. Flow (prot)                 | 1676                                                                              | 1680                                                                              |                                                                                   | 1676                                                                              | 1710                                                                              |                                                                                   | 1676                                                                                | 1703                                                                                |                                                                                     | 1676                                                                                | 1698                                                                                |                                                                                     |
| Flt Permitted                     | 0.63                                                                              | 1.00                                                                              |                                                                                   | 0.66                                                                              | 1.00                                                                              |                                                                                   | 0.62                                                                                | 1.00                                                                                |                                                                                     | 0.65                                                                                | 1.00                                                                                |                                                                                     |
| Satd. Flow (perm)                 | 1109                                                                              | 1680                                                                              |                                                                                   | 1161                                                                              | 1710                                                                              |                                                                                   | 1086                                                                                | 1703                                                                                |                                                                                     | 1150                                                                                | 1698                                                                                |                                                                                     |
| Peak-hour factor, PHF             | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                |
| Adj. Flow (vph)                   | 19                                                                                | 60                                                                                | 28                                                                                | 46                                                                                | 164                                                                               | 43                                                                                | 43                                                                                  | 128                                                                                 | 39                                                                                  | 13                                                                                  | 50                                                                                  | 17                                                                                  |
| RTOR Reduction (vph)              | 0                                                                                 | 15                                                                                | 0                                                                                 | 0                                                                                 | 8                                                                                 | 0                                                                                 | 0                                                                                   | 14                                                                                  | 0                                                                                   | 0                                                                                   | 14                                                                                  | 0                                                                                   |
| Lane Group Flow (vph)             | 19                                                                                | 73                                                                                | 0                                                                                 | 46                                                                                | 199                                                                               | 0                                                                                 | 43                                                                                  | 153                                                                                 | 0                                                                                   | 13                                                                                  | 53                                                                                  | 0                                                                                   |
| Turn Type                         | pm+pt                                                                             | NA                                                                                |                                                                                   | pm+pt                                                                             | NA                                                                                |                                                                                   | pm+pt                                                                               | NA                                                                                  |                                                                                     | pm+pt                                                                               | NA                                                                                  |                                                                                     |
| Protected Phases                  | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   | 6                                                                                   |                                                                                     |
| Permitted Phases                  | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   |                                                                                   | 2                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     |
| Actuated Green, G (s)             | 33.7                                                                              | 32.8                                                                              |                                                                                   | 37.9                                                                              | 34.9                                                                              |                                                                                   | 19.2                                                                                | 16.0                                                                                |                                                                                     | 14.8                                                                                | 13.8                                                                                |                                                                                     |
| Effective Green, g (s)            | 33.7                                                                              | 32.8                                                                              |                                                                                   | 37.9                                                                              | 34.9                                                                              |                                                                                   | 19.2                                                                                | 16.0                                                                                |                                                                                     | 14.8                                                                                | 13.8                                                                                |                                                                                     |
| Actuated g/C Ratio                | 0.43                                                                              | 0.42                                                                              |                                                                                   | 0.49                                                                              | 0.45                                                                              |                                                                                   | 0.25                                                                                | 0.21                                                                                |                                                                                     | 0.19                                                                                | 0.18                                                                                |                                                                                     |
| Clearance Time (s)                | 6.5                                                                               | 6.5                                                                               |                                                                                   | 6.5                                                                               | 6.5                                                                               |                                                                                   | 6.1                                                                                 | 6.1                                                                                 |                                                                                     | 6.1                                                                                 | 6.1                                                                                 |                                                                                     |
| Vehicle Extension (s)             | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                                 | 3.0                                                                                 |                                                                                     | 3.0                                                                                 | 3.0                                                                                 |                                                                                     |
| Lane Grp Cap (vph)                | 485                                                                               | 706                                                                               |                                                                                   | 583                                                                               | 765                                                                               |                                                                                   | 291                                                                                 | 349                                                                                 |                                                                                     | 224                                                                                 | 300                                                                                 |                                                                                     |
| v/s Ratio Prot                    | 0.00                                                                              | 0.04                                                                              |                                                                                   | c0.00                                                                             | c0.12                                                                             |                                                                                   | c0.01                                                                               | c0.09                                                                               |                                                                                     | 0.00                                                                                | 0.03                                                                                |                                                                                     |
| v/s Ratio Perm                    | 0.02                                                                              |                                                                                   |                                                                                   | 0.04                                                                              |                                                                                   |                                                                                   | 0.03                                                                                |                                                                                     |                                                                                     | 0.01                                                                                |                                                                                     |                                                                                     |
| v/c Ratio                         | 0.04                                                                              | 0.10                                                                              |                                                                                   | 0.08                                                                              | 0.26                                                                              |                                                                                   | 0.15                                                                                | 0.44                                                                                |                                                                                     | 0.06                                                                                | 0.18                                                                                |                                                                                     |
| Uniform Delay, d1                 | 12.7                                                                              | 13.7                                                                              |                                                                                   | 10.6                                                                              | 13.5                                                                              |                                                                                   | 22.8                                                                                | 27.1                                                                                |                                                                                     | 25.8                                                                                | 27.3                                                                                |                                                                                     |
| Progression Factor                | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     |
| Incremental Delay, d2             | 0.0                                                                               | 0.3                                                                               |                                                                                   | 0.1                                                                               | 0.8                                                                               |                                                                                   | 0.2                                                                                 | 0.9                                                                                 |                                                                                     | 0.1                                                                                 | 0.3                                                                                 |                                                                                     |
| Delay (s)                         | 12.8                                                                              | 14.0                                                                              |                                                                                   | 10.7                                                                              | 14.3                                                                              |                                                                                   | 23.0                                                                                | 28.0                                                                                |                                                                                     | 25.9                                                                                | 27.6                                                                                |                                                                                     |
| Level of Service                  | B                                                                                 | B                                                                                 |                                                                                   | B                                                                                 | B                                                                                 |                                                                                   | C                                                                                   | C                                                                                   |                                                                                     | C                                                                                   | C                                                                                   |                                                                                     |
| Approach Delay (s)                |                                                                                   | 13.8                                                                              |                                                                                   |                                                                                   | 13.6                                                                              |                                                                                   |                                                                                     | 27.0                                                                                |                                                                                     |                                                                                     | 27.3                                                                                |                                                                                     |
| Approach LOS                      |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| <b>Intersection Summary</b>       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2000 Control Delay            |                                                                                   |                                                                                   | 19.6                                                                              |                                                                                   |                                                                                   | HCM 2000 Level of Service                                                         |                                                                                     |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |
| HCM 2000 Volume to Capacity ratio |                                                                                   |                                                                                   | 0.32                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Cycle Length (s)         |                                                                                   |                                                                                   | 78.0                                                                              |                                                                                   |                                                                                   | Sum of lost time (s)                                                              |                                                                                     |                                                                                     | 25.2                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 35.9%                                                                             |                                                                                   |                                                                                   | ICU Level of Service                                                              |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| c Critical Lane Group             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM Unsignalized Intersection Capacity Analysis

## 3: Caron St & Hélène St

Existing Conditions

Timing Plan: AM Peak

|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                   |  |  |  |  |  |  |
| Movement                          | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations               |  |                                                                                   |  |  |  |                                                                                   |
| Traffic Volume (veh/h)            | 0                                                                                 | 5                                                                                 | 6                                                                                 | 189                                                                               | 108                                                                               | 3                                                                                 |
| Future Volume (Veh/h)             | 0                                                                                 | 5                                                                                 | 6                                                                                 | 189                                                                               | 108                                                                               | 3                                                                                 |
| Sign Control                      | Stop                                                                              |                                                                                   |                                                                                   | Free                                                                              | Free                                                                              |                                                                                   |
| Grade                             | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                | 0%                                                                                |                                                                                   |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |
| Hourly flow rate (vph)            | 0                                                                                 | 6                                                                                 | 7                                                                                 | 210                                                                               | 120                                                                               | 3                                                                                 |
| Pedestrians                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Width (m)                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Walking Speed (m/s)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Percent Blockage                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Median type                       |                                                                                   |                                                                                   |                                                                                   | TWLT                                                                              | TWLT                                                                              |                                                                                   |
| Median storage veh                |                                                                                   |                                                                                   |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 169                                                                               |                                                                                   |
| pX, platoon unblocked             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC, conflicting volume            | 346                                                                               | 122                                                                               | 123                                                                               |                                                                                   |                                                                                   |                                                                                   |
| vC1, stage 1 conf vol             | 122                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC2, stage 2 conf vol             | 224                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vCu, unblocked vol                | 346                                                                               | 122                                                                               | 123                                                                               |                                                                                   |                                                                                   |                                                                                   |
| tC, single (s)                    | 6.4                                                                               | 6.2                                                                               | 4.1                                                                               |                                                                                   |                                                                                   |                                                                                   |
| tC, 2 stage (s)                   | 5.4                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| tF (s)                            | 3.5                                                                               | 3.3                                                                               | 2.2                                                                               |                                                                                   |                                                                                   |                                                                                   |
| p0 queue free %                   | 100                                                                               | 99                                                                                | 100                                                                               |                                                                                   |                                                                                   |                                                                                   |
| cM capacity (veh/h)               | 759                                                                               | 930                                                                               | 1464                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Direction, Lane #                 | EB 1                                                                              | NB 1                                                                              | NB 2                                                                              | SB 1                                                                              |                                                                                   |                                                                                   |
| Volume Total                      | 6                                                                                 | 7                                                                                 | 210                                                                               | 123                                                                               |                                                                                   |                                                                                   |
| Volume Left                       | 0                                                                                 | 7                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |
| Volume Right                      | 6                                                                                 | 0                                                                                 | 0                                                                                 | 3                                                                                 |                                                                                   |                                                                                   |
| cSH                               | 930                                                                               | 1464                                                                              | 1700                                                                              | 1700                                                                              |                                                                                   |                                                                                   |
| Volume to Capacity                | 0.01                                                                              | 0.00                                                                              | 0.12                                                                              | 0.07                                                                              |                                                                                   |                                                                                   |
| Queue Length 95th (m)             | 0.1                                                                               | 0.1                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |
| Control Delay (s)                 | 8.9                                                                               | 7.5                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |
| Lane LOS                          | A                                                                                 | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Approach Delay (s)                | 8.9                                                                               | 0.2                                                                               |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   |
| Approach LOS                      | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Average Delay                     |                                                                                   |                                                                                   | 0.3                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 20.5%                                                                             | ICU Level of Service                                                              |                                                                                   | A                                                                                 |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |

# HCM Unsignalized Intersection Capacity Analysis

## 4: Caron St & Francois St

Existing Conditions

Timing Plan: AM Peak

|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                   |  |  |  |  |  |  |
| Movement                          | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations               |  |                                                                                   |  |  |  |                                                                                   |
| Sign Control                      | Stop                                                                              |                                                                                   |                                                                                   | Stop                                                                              | Stop                                                                              |                                                                                   |
| Traffic Volume (vph)              | 9                                                                                 | 3                                                                                 | 1                                                                                 | 125                                                                               | 111                                                                               | 2                                                                                 |
| Future Volume (vph)               | 9                                                                                 | 3                                                                                 | 1                                                                                 | 125                                                                               | 111                                                                               | 2                                                                                 |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |
| Hourly flow rate (vph)            | 10                                                                                | 3                                                                                 | 1                                                                                 | 139                                                                               | 123                                                                               | 2                                                                                 |
| Direction, Lane #                 | EB 1                                                                              | NB 1                                                                              | NB 2                                                                              | SB 1                                                                              |                                                                                   |                                                                                   |
| Volume Total (vph)                | 13                                                                                | 1                                                                                 | 139                                                                               | 125                                                                               |                                                                                   |                                                                                   |
| Volume Left (vph)                 | 10                                                                                | 1                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |
| Volume Right (vph)                | 3                                                                                 | 0                                                                                 | 0                                                                                 | 2                                                                                 |                                                                                   |                                                                                   |
| Hadj (s)                          | 0.05                                                                              | 0.53                                                                              | 0.03                                                                              | 0.02                                                                              |                                                                                   |                                                                                   |
| Departure Headway (s)             | 4.5                                                                               | 5.1                                                                               | 4.6                                                                               | 4.2                                                                               |                                                                                   |                                                                                   |
| Degree Utilization, x             | 0.02                                                                              | 0.00                                                                              | 0.18                                                                              | 0.15                                                                              |                                                                                   |                                                                                   |
| Capacity (veh/h)                  | 735                                                                               | 686                                                                               | 762                                                                               | 848                                                                               |                                                                                   |                                                                                   |
| Control Delay (s)                 | 7.6                                                                               | 7.0                                                                               | 7.5                                                                               | 7.9                                                                               |                                                                                   |                                                                                   |
| Approach Delay (s)                | 7.6                                                                               | 7.5                                                                               |                                                                                   | 7.9                                                                               |                                                                                   |                                                                                   |
| Approach LOS                      | A                                                                                 | A                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Delay                             | 7.7                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Level of Service                  | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization | 16.9%                                                                             |                                                                                   |                                                                                   | ICU Level of Service                                                              | A                                                                                 |                                                                                   |
| Analysis Period (min)             | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |

# HCM Unsignalized Intersection Capacity Analysis

## 5: Caron St & Des Cedres Ave

Existing Conditions  
Timing Plan: AM Peak

|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                   |  |  |  |  |  |  |
| Movement                          | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |
| Lane Configurations               |  |                                                                                   |  |                                                                                   |  |  |
| Traffic Volume (veh/h)            | 5                                                                                 | 10                                                                                | 116                                                                               | 1                                                                                 | 5                                                                                 | 109                                                                               |
| Future Volume (Veh/h)             | 5                                                                                 | 10                                                                                | 116                                                                               | 1                                                                                 | 5                                                                                 | 109                                                                               |
| Sign Control                      | Stop                                                                              |                                                                                   | Free                                                                              |                                                                                   | Free                                                                              | Free                                                                              |
| Grade                             | 0%                                                                                |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |
| Hourly flow rate (vph)            | 6                                                                                 | 11                                                                                | 129                                                                               | 1                                                                                 | 6                                                                                 | 121                                                                               |
| Pedestrians                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Width (m)                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Walking Speed (m/s)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Percent Blockage                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Median type                       |                                                                                   |                                                                                   | TWLTL                                                                             |                                                                                   | TWLTL                                                                             |                                                                                   |
| Median storage veh                |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   | 2                                                                                 |                                                                                   |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| pX, platoon unblocked             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC, conflicting volume            | 262                                                                               | 130                                                                               |                                                                                   |                                                                                   | 130                                                                               |                                                                                   |
| vC1, stage 1 conf vol             | 130                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC2, stage 2 conf vol             | 133                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vCu, unblocked vol                | 262                                                                               | 130                                                                               |                                                                                   |                                                                                   | 130                                                                               |                                                                                   |
| tC, single (s)                    | 6.4                                                                               | 6.2                                                                               |                                                                                   |                                                                                   | 4.1                                                                               |                                                                                   |
| tC, 2 stage (s)                   | 5.4                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| tF (s)                            | 3.5                                                                               | 3.3                                                                               |                                                                                   |                                                                                   | 2.2                                                                               |                                                                                   |
| p0 queue free %                   | 99                                                                                | 99                                                                                |                                                                                   |                                                                                   | 100                                                                               |                                                                                   |
| cM capacity (veh/h)               | 817                                                                               | 920                                                                               |                                                                                   |                                                                                   | 1455                                                                              |                                                                                   |
| Direction, Lane #                 | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                   |                                                                                   |
| Volume Total                      | 17                                                                                | 130                                                                               | 6                                                                                 | 121                                                                               |                                                                                   |                                                                                   |
| Volume Left                       | 6                                                                                 | 0                                                                                 | 6                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |
| Volume Right                      | 11                                                                                | 1                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |
| cSH                               | 881                                                                               | 1700                                                                              | 1455                                                                              | 1700                                                                              |                                                                                   |                                                                                   |
| Volume to Capacity                | 0.02                                                                              | 0.08                                                                              | 0.00                                                                              | 0.07                                                                              |                                                                                   |                                                                                   |
| Queue Length 95th (m)             | 0.4                                                                               | 0.0                                                                               | 0.1                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |
| Control Delay (s)                 | 9.2                                                                               | 0.0                                                                               | 7.5                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |
| Lane LOS                          | A                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Approach Delay (s)                | 9.2                                                                               | 0.0                                                                               | 0.4                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Approach LOS                      | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Average Delay                     |                                                                                   |                                                                                   | 0.7                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 16.5%                                                                             |                                                                                   | ICU Level of Service                                                              | A                                                                                 |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |

# HCM Unsignalized Intersection Capacity Analysis

## 6: Caron St & Cote St/Potvin Ave

Existing Conditions

Timing Plan: AM Peak

|                                   |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|--|--|--|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |  |  |  |  |  |  |
| Lane Configurations               |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |  |  |                                                                                     |  |  |                                                                                     |  |  |  |  |  |  |
| Sign Control                      |                                                                                   | Stop                                                                              |                                                                                   |                                                                                   | Stop                                                                              |                                                                                   |                                                                                     | Stop                                                                                |                                                                                     |                                                                                     | Stop                                                                                |                                                                                     |  |  |  |  |  |  |
| Traffic Volume (vph)              | 9                                                                                 | 0                                                                                 | 8                                                                                 | 9                                                                                 | 1                                                                                 | 6                                                                                 | 4                                                                                   | 102                                                                                 | 6                                                                                   | 5                                                                                   | 109                                                                                 | 0                                                                                   |  |  |  |  |  |  |
| Future Volume (vph)               | 9                                                                                 | 0                                                                                 | 8                                                                                 | 9                                                                                 | 1                                                                                 | 6                                                                                 | 4                                                                                   | 102                                                                                 | 6                                                                                   | 5                                                                                   | 109                                                                                 | 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                                                                                |  |  |  |  |  |  |
| Hourly flow rate (vph)            | 10                                                                                | 0                                                                                 | 9                                                                                 | 10                                                                                | 1                                                                                 | 7                                                                                 | 4                                                                                   | 113                                                                                 | 7                                                                                   | 6                                                                                   | 121                                                                                 | 0                                                                                   |  |  |  |  |  |  |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              | NB 2                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Volume Total (vph)                | 19                                                                                | 18                                                                                | 4                                                                                 | 120                                                                               | 6                                                                                 | 121                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Volume Left (vph)                 | 10                                                                                | 10                                                                                | 4                                                                                 | 0                                                                                 | 6                                                                                 | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Volume Right (vph)                | 9                                                                                 | 7                                                                                 | 0                                                                                 | 7                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Hadj (s)                          | -0.14                                                                             | -0.09                                                                             | 0.53                                                                              | -0.01                                                                             | 0.53                                                                              | 0.03                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Departure Headway (s)             | 4.4                                                                               | 4.4                                                                               | 5.2                                                                               | 4.7                                                                               | 5.2                                                                               | 4.7                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Degree Utilization, x             | 0.02                                                                              | 0.02                                                                              | 0.01                                                                              | 0.16                                                                              | 0.01                                                                              | 0.16                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Capacity (veh/h)                  | 778                                                                               | 759                                                                               | 675                                                                               | 755                                                                               | 673                                                                               | 749                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Control Delay (s)                 | 7.5                                                                               | 7.5                                                                               | 7.0                                                                               | 7.3                                                                               | 7.1                                                                               | 7.4                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Approach Delay (s)                | 7.5                                                                               | 7.5                                                                               | 7.3                                                                               |                                                                                   | 7.4                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Approach LOS                      | A                                                                                 | A                                                                                 | A                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Delay                             |                                                                                   |                                                                                   | 7.4                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Level of Service                  |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 16.1%                                                                             | ICU Level of Service                                                              |                                                                                   |                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |

# HCM Unsignalized Intersection Capacity Analysis

## 7: Caron St & Docteur Corbeil Blvd

Existing Conditions  
Timing Plan: AM Peak



| Movement                          | EBL                                                                               | EBR  | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR  |
|-----------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations               |  |      |  |  |  |      |
| Traffic Volume (veh/h)            | 38                                                                                | 36   | 60                                                                                | 74                                                                                | 43                                                                                | 43   |
| Future Volume (Veh/h)             | 38                                                                                | 36   | 60                                                                                | 74                                                                                | 43                                                                                | 43   |
| Sign Control                      | Stop                                                                              |      |                                                                                   | Free                                                                              | Free                                                                              |      |
| Grade                             | 0%                                                                                |      |                                                                                   | 0%                                                                                | 0%                                                                                |      |
| Peak Hour Factor                  | 0.90                                                                              | 0.90 | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90 |
| Hourly flow rate (vph)            | 42                                                                                | 40   | 67                                                                                | 82                                                                                | 48                                                                                | 48   |
| Pedestrians                       | 2                                                                                 |      |                                                                                   |                                                                                   |                                                                                   |      |
| Lane Width (m)                    | 3.6                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |
| Walking Speed (m/s)               | 1.2                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |
| Percent Blockage                  | 0                                                                                 |      |                                                                                   |                                                                                   |                                                                                   |      |
| Right turn flare (veh)            |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Median type                       |                                                                                   |      |                                                                                   | TWLT                                                                              | TWLT                                                                              |      |
| Median storage veh)               |                                                                                   |      |                                                                                   | 2                                                                                 | 2                                                                                 |      |
| Upstream signal (m)               |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| pX, platoon unblocked             |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| vC, conflicting volume            | 290                                                                               | 74   | 98                                                                                |                                                                                   |                                                                                   |      |
| vC1, stage 1 conf vol             | 74                                                                                |      |                                                                                   |                                                                                   |                                                                                   |      |
| vC2, stage 2 conf vol             | 216                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |
| vCu, unblocked vol                | 290                                                                               | 74   | 98                                                                                |                                                                                   |                                                                                   |      |
| tC, single (s)                    | 6.4                                                                               | 6.2  | 4.1                                                                               |                                                                                   |                                                                                   |      |
| tC, 2 stage (s)                   | 5.4                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |
| tF (s)                            | 3.5                                                                               | 3.3  | 2.2                                                                               |                                                                                   |                                                                                   |      |
| p0 queue free %                   | 94                                                                                | 96   | 96                                                                                |                                                                                   |                                                                                   |      |
| cM capacity (veh/h)               | 752                                                                               | 986  | 1493                                                                              |                                                                                   |                                                                                   |      |
| Direction, Lane #                 | EB 1                                                                              | NB 1 | NB 2                                                                              | SB 1                                                                              |                                                                                   |      |
| Volume Total                      | 82                                                                                | 67   | 82                                                                                | 96                                                                                |                                                                                   |      |
| Volume Left                       | 42                                                                                | 67   | 0                                                                                 | 0                                                                                 |                                                                                   |      |
| Volume Right                      | 40                                                                                | 0    | 0                                                                                 | 48                                                                                |                                                                                   |      |
| cSH                               | 851                                                                               | 1493 | 1700                                                                              | 1700                                                                              |                                                                                   |      |
| Volume to Capacity                | 0.10                                                                              | 0.04 | 0.05                                                                              | 0.06                                                                              |                                                                                   |      |
| Queue Length 95th (m)             | 2.2                                                                               | 1.0  | 0.0                                                                               | 0.0                                                                               |                                                                                   |      |
| Control Delay (s)                 | 9.7                                                                               | 7.5  | 0.0                                                                               | 0.0                                                                               |                                                                                   |      |
| Lane LOS                          | A                                                                                 | A    |                                                                                   |                                                                                   |                                                                                   |      |
| Approach Delay (s)                | 9.7                                                                               | 3.4  |                                                                                   | 0.0                                                                               |                                                                                   |      |
| Approach LOS                      | A                                                                                 |      |                                                                                   |                                                                                   |                                                                                   |      |
| Intersection Summary              |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Average Delay                     |                                                                                   |      | 4.0                                                                               |                                                                                   |                                                                                   |      |
| Intersection Capacity Utilization |                                                                                   |      | 21.4%                                                                             |                                                                                   | ICU Level of Service                                                              | A    |
| Analysis Period (min)             |                                                                                   |      | 15                                                                                |                                                                                   |                                                                                   |      |

# HCM Unsignalized Intersection Capacity Analysis 8: David St & Caron St

Existing Conditions  
Timing Plan: AM Peak

|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--|--|
|                                   |  |  |  |  |  |  |  |  |
| Movement                          | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |  |  |
| Lane Configurations               |  |                                                                                   |  |                                                                                   |  |  |  |  |
| Sign Control                      | Stop                                                                              |                                                                                   | Stop                                                                              |                                                                                   | Stop                                                                              | Stop                                                                              |  |  |
| Traffic Volume (vph)              | 5                                                                                 | 10                                                                                | 92                                                                                | 2                                                                                 | 5                                                                                 | 79                                                                                |  |  |
| Future Volume (vph)               | 5                                                                                 | 10                                                                                | 92                                                                                | 2                                                                                 | 5                                                                                 | 79                                                                                |  |  |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |  |  |
| Hourly flow rate (vph)            | 6                                                                                 | 11                                                                                | 102                                                                               | 2                                                                                 | 6                                                                                 | 88                                                                                |  |  |
| Direction, Lane #                 | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                   |                                                                                   |  |  |
| Volume Total (vph)                | 17                                                                                | 104                                                                               | 6                                                                                 | 88                                                                                |                                                                                   |                                                                                   |  |  |
| Volume Left (vph)                 | 6                                                                                 | 0                                                                                 | 6                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |  |  |
| Volume Right (vph)                | 11                                                                                | 2                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |  |  |
| Hadj (s)                          | -0.28                                                                             | 0.02                                                                              | 0.53                                                                              | 0.03                                                                              |                                                                                   |                                                                                   |  |  |
| Departure Headway (s)             | 4.1                                                                               | 4.2                                                                               | 5.1                                                                               | 4.6                                                                               |                                                                                   |                                                                                   |  |  |
| Degree Utilization, x             | 0.02                                                                              | 0.12                                                                              | 0.01                                                                              | 0.11                                                                              |                                                                                   |                                                                                   |  |  |
| Capacity (veh/h)                  | 842                                                                               | 850                                                                               | 684                                                                               | 762                                                                               |                                                                                   |                                                                                   |  |  |
| Control Delay (s)                 | 7.1                                                                               | 7.7                                                                               | 7.0                                                                               | 7.0                                                                               |                                                                                   |                                                                                   |  |  |
| Approach Delay (s)                | 7.1                                                                               | 7.7                                                                               | 7.0                                                                               |                                                                                   |                                                                                   |                                                                                   |  |  |
| Approach LOS                      | A                                                                                 | A                                                                                 | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |  |  |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
| Delay                             |                                                                                   |                                                                                   | 7.4                                                                               |                                                                                   |                                                                                   |                                                                                   |  |  |
| Level of Service                  |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |  |  |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 15.2%                                                                             | ICU Level of Service                                                              | A                                                                                 |                                                                                   |  |  |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |  |  |

# HCM Unsignalized Intersection Capacity Analysis

## 9: Baseline Rd & Caron St

Existing Conditions

Timing Plan: AM Peak



| Movement                          | EBL  | EBT                                                                               | WBT                                                                               | WBR                  | SBL                                                                               | SBR  |
|-----------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations               |      |  |  |                      |  |      |
| Traffic Volume (veh/h)            | 8    | 28                                                                                | 58                                                                                | 84                   | 49                                                                                | 22   |
| Future Volume (Veh/h)             | 8    | 28                                                                                | 58                                                                                | 84                   | 49                                                                                | 22   |
| Sign Control                      |      | Free                                                                              | Free                                                                              |                      | Stop                                                                              |      |
| Grade                             |      | 0%                                                                                | 0%                                                                                |                      | 0%                                                                                |      |
| Peak Hour Factor                  | 0.90 | 0.90                                                                              | 0.90                                                                              | 0.90                 | 0.90                                                                              | 0.90 |
| Hourly flow rate (vph)            | 9    | 31                                                                                | 64                                                                                | 93                   | 54                                                                                | 24   |
| Pedestrians                       |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Lane Width (m)                    |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Walking Speed (m/s)               |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Percent Blockage                  |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Right turn flare (veh)            |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Median type                       |      | None                                                                              | None                                                                              |                      |                                                                                   |      |
| Median storage veh                |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Upstream signal (m)               |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| pX, platoon unblocked             |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| vC, conflicting volume            | 157  |                                                                                   |                                                                                   |                      | 160                                                                               | 110  |
| vC1, stage 1 conf vol             |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| vC2, stage 2 conf vol             |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| vCu, unblocked vol                | 157  |                                                                                   |                                                                                   |                      | 160                                                                               | 110  |
| tC, single (s)                    | 4.1  |                                                                                   |                                                                                   |                      | 6.4                                                                               | 6.2  |
| tC, 2 stage (s)                   |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| tF (s)                            | 2.2  |                                                                                   |                                                                                   |                      | 3.5                                                                               | 3.3  |
| p0 queue free %                   | 99   |                                                                                   |                                                                                   |                      | 93                                                                                | 97   |
| cM capacity (veh/h)               | 1423 |                                                                                   |                                                                                   |                      | 826                                                                               | 943  |
| Direction, Lane #                 | EB 1 | WB 1                                                                              | SB 1                                                                              |                      |                                                                                   |      |
| Volume Total                      | 40   | 157                                                                               | 78                                                                                |                      |                                                                                   |      |
| Volume Left                       | 9    | 0                                                                                 | 54                                                                                |                      |                                                                                   |      |
| Volume Right                      | 0    | 93                                                                                | 24                                                                                |                      |                                                                                   |      |
| cSH                               | 1423 | 1700                                                                              | 859                                                                               |                      |                                                                                   |      |
| Volume to Capacity                | 0.01 | 0.09                                                                              | 0.09                                                                              |                      |                                                                                   |      |
| Queue Length 95th (m)             | 0.1  | 0.0                                                                               | 2.1                                                                               |                      |                                                                                   |      |
| Control Delay (s)                 | 1.7  | 0.0                                                                               | 9.6                                                                               |                      |                                                                                   |      |
| Lane LOS                          | A    |                                                                                   | A                                                                                 |                      |                                                                                   |      |
| Approach Delay (s)                | 1.7  | 0.0                                                                               | 9.6                                                                               |                      |                                                                                   |      |
| Approach LOS                      |      |                                                                                   | A                                                                                 |                      |                                                                                   |      |
| Intersection Summary              |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Average Delay                     |      |                                                                                   | 3.0                                                                               |                      |                                                                                   |      |
| Intersection Capacity Utilization |      | 19.8%                                                                             |                                                                                   | ICU Level of Service |                                                                                   | A    |
| Analysis Period (min)             |      | 15                                                                                |                                                                                   |                      |                                                                                   |      |

## Intersection: 1: Rue Caron/Rue Industrielle &amp; HWY 17

| Movement              | EB    | EB   | EB   | WB    | WB   | WB   | NB    | NB   | SB   | SB    |
|-----------------------|-------|------|------|-------|------|------|-------|------|------|-------|
| Directions Served     | L     | T    | R    | L     | T    | R    | L     | TR   | L    | TR    |
| Maximum Queue (m)     | 8.5   | 43.7 | 12.6 | 8.3   | 65.3 | 4.6  | 53.8  | 14.3 | 4.1  | 11.0  |
| Average Queue (m)     | 1.9   | 16.5 | 2.7  | 2.4   | 27.7 | 0.2  | 25.0  | 4.9  | 0.1  | 2.5   |
| 95th Queue (m)        | 7.3   | 33.6 | 9.2  | 8.3   | 51.4 | 1.9  | 43.7  | 11.7 | 1.7  | 8.1   |
| Link Distance (m)     | 833.3 |      |      | 805.3 |      |      | 415.2 |      |      | 113.3 |
| Upstream Blk Time (%) |       |      |      |       |      |      |       |      |      |       |
| Queuing Penalty (veh) |       |      |      |       |      |      |       |      |      |       |
| Storage Bay Dist (m)  | 90.0  |      | 85.0 | 60.0  |      | 56.0 | 60.0  |      | 40.0 |       |
| Storage Blk Time (%)  | 0     |      |      |       |      | 0    |       |      |      |       |
| Queuing Penalty (veh) | 0     |      |      |       |      | 0    |       |      |      |       |

## Intersection: 2: Caron St/Rue Caron &amp; Laurier St

| Movement              | EB    | EB   | WB    | WB   | NB    | NB   | SB    | SB   |
|-----------------------|-------|------|-------|------|-------|------|-------|------|
| Directions Served     | L     | TR   | L     | TR   | L     | TR   | L     | TR   |
| Maximum Queue (m)     | 8.3   | 16.8 | 15.0  | 34.4 | 15.8  | 44.0 | 8.2   | 27.3 |
| Average Queue (m)     | 1.7   | 4.4  | 3.4   | 9.8  | 4.9   | 17.9 | 1.4   | 9.6  |
| 95th Queue (m)        | 6.3   | 12.1 | 10.4  | 23.2 | 12.7  | 34.0 | 5.8   | 19.1 |
| Link Distance (m)     | 928.0 |      | 698.5 |      | 142.0 |      | 415.2 |      |
| Upstream Blk Time (%) |       |      |       |      |       |      |       |      |
| Queuing Penalty (veh) |       |      |       |      |       |      |       |      |
| Storage Bay Dist (m)  | 35.0  |      | 60.0  |      | 55.0  |      | 50.0  |      |
| Storage Blk Time (%)  |       |      |       |      |       |      | 0     |      |
| Queuing Penalty (veh) |       |      |       |      |       |      | 0     |      |

## Intersection: 3: Caron St &amp; Hélène St

| Movement              | EB    | NB  |
|-----------------------|-------|-----|
| Directions Served     | LR    | L   |
| Maximum Queue (m)     | 8.2   | 5.1 |
| Average Queue (m)     | 1.2   | 0.2 |
| 95th Queue (m)        | 5.8   | 2.1 |
| Link Distance (m)     | 266.6 |     |
| Upstream Blk Time (%) |       |     |
| Queuing Penalty (veh) |       |     |
| Storage Bay Dist (m)  | 15.0  |     |
| Storage Blk Time (%)  |       |     |
| Queuing Penalty (veh) |       |     |

## Intersection: 4: Caron St &amp; Francois St

| Movement              | EB    | NB   | NB    | SB    |
|-----------------------|-------|------|-------|-------|
| Directions Served     | LR    | L    | T     | TR    |
| Maximum Queue (m)     | 10.7  | 5.2  | 20.2  | 18.9  |
| Average Queue (m)     | 3.1   | 0.2  | 11.1  | 11.2  |
| 95th Queue (m)        | 10.4  | 2.2  | 17.2  | 17.1  |
| Link Distance (m)     | 343.3 |      | 122.7 | 232.6 |
| Upstream Blk Time (%) |       |      |       |       |
| Queuing Penalty (veh) |       |      |       |       |
| Storage Bay Dist (m)  |       | 15.0 |       |       |
| Storage Blk Time (%)  |       |      | 1     |       |
| Queuing Penalty (veh) |       |      | 0     |       |

## Intersection: 5: Caron St &amp; Des Cedres Ave

| Movement              | WB    | SB   |
|-----------------------|-------|------|
| Directions Served     | LR    | L    |
| Maximum Queue (m)     | 8.7   | 3.4  |
| Average Queue (m)     | 3.0   | 0.1  |
| 95th Queue (m)        | 9.7   | 1.8  |
| Link Distance (m)     | 109.3 |      |
| Upstream Blk Time (%) |       |      |
| Queuing Penalty (veh) |       |      |
| Storage Bay Dist (m)  |       | 15.0 |
| Storage Blk Time (%)  |       |      |
| Queuing Penalty (veh) |       |      |

## Intersection: 6: Caron St &amp; Cote St/Potvin Ave

| Movement              | EB   | WB    | NB   | NB    | SB   | SB    |
|-----------------------|------|-------|------|-------|------|-------|
| Directions Served     | LTR  | LTR   | L    | TR    | L    | TR    |
| Maximum Queue (m)     | 9.1  | 8.9   | 8.7  | 22.5  | 5.5  | 17.6  |
| Average Queue (m)     | 3.7  | 3.2   | 0.9  | 11.2  | 0.7  | 9.2   |
| 95th Queue (m)        | 10.9 | 10.1  | 5.3  | 18.2  | 3.7  | 14.6  |
| Link Distance (m)     | 73.6 | 115.9 |      | 507.4 |      | 263.8 |
| Upstream Blk Time (%) |      |       |      |       |      |       |
| Queuing Penalty (veh) |      |       |      |       |      |       |
| Storage Bay Dist (m)  |      |       | 30.0 |       | 40.0 |       |
| Storage Blk Time (%)  |      |       |      | 0     |      |       |
| Queuing Penalty (veh) |      |       |      | 0     |      |       |

## Intersection: 7: Caron St &amp; Docteur Corbeil Blvd

| Movement              | EB    | NB   |
|-----------------------|-------|------|
| Directions Served     | LR    | L    |
| Maximum Queue (m)     | 15.7  | 10.1 |
| Average Queue (m)     | 8.1   | 1.7  |
| 95th Queue (m)        | 14.4  | 7.6  |
| Link Distance (m)     | 486.3 |      |
| Upstream Blk Time (%) |       |      |
| Queuing Penalty (veh) |       |      |
| Storage Bay Dist (m)  |       | 15.0 |
| Storage Blk Time (%)  |       | 0    |
| Queuing Penalty (veh) |       | 0    |

## Intersection: 8: David St &amp; Caron St

| Movement              | WB    | NB   | SB   | SB    |
|-----------------------|-------|------|------|-------|
| Directions Served     | LR    | TR   | L    | T     |
| Maximum Queue (m)     | 9.1   | 21.9 | 9.2  | 19.4  |
| Average Queue (m)     | 3.2   | 10.2 | 1.1  | 9.5   |
| 95th Queue (m)        | 10.1  | 17.0 | 6.1  | 16.1  |
| Link Distance (m)     | 509.7 | 82.9 |      | 518.2 |
| Upstream Blk Time (%) |       |      |      |       |
| Queuing Penalty (veh) |       |      |      |       |
| Storage Bay Dist (m)  |       |      | 40.0 |       |
| Storage Blk Time (%)  |       |      |      |       |
| Queuing Penalty (veh) |       |      |      |       |

## Intersection: 9: Baseline Rd &amp; Caron St

| Movement              | EB    | SB     |
|-----------------------|-------|--------|
| Directions Served     | LT    | LR     |
| Maximum Queue (m)     | 7.5   | 14.2   |
| Average Queue (m)     | 0.4   | 7.3    |
| 95th Queue (m)        | 3.2   | 12.2   |
| Link Distance (m)     | 763.0 | 1938.3 |
| Upstream Blk Time (%) |       |        |
| Queuing Penalty (veh) |       |        |
| Storage Bay Dist (m)  |       |        |
| Storage Blk Time (%)  |       |        |
| Queuing Penalty (veh) |       |        |

## Network Summary

Network wide Queuing Penalty: 0

# HCM Signalized Intersection Capacity Analysis

1: Rue Caron/Rue Industrielle & HWY 17

Existing Conditions

Timing Plan: PM Peak

|                                   |  |  |  |  |  |  |   |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |  |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph)              | 34                                                                                | 155                                                                               | 64                                                                                | 30                                                                                | 87                                                                                | 26                                                                                | 51                                                                                  | 87                                                                                  | 42                                                                                  | 35                                                                                  | 138                                                                                 | 31                                                                                  |
| Future Volume (vph)               | 34                                                                                | 155                                                                               | 64                                                                                | 30                                                                                | 87                                                                                | 26                                                                                | 51                                                                                  | 87                                                                                  | 42                                                                                  | 35                                                                                  | 138                                                                                 | 31                                                                                  |
| Ideal Flow (vphpl)                | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                |
| Total Lost time (s)               | 6.9                                                                               | 6.9                                                                               | 6.9                                                                               | 6.9                                                                               | 6.9                                                                               | 6.9                                                                               | 5.9                                                                                 | 6.3                                                                                 |                                                                                     | 5.9                                                                                 | 6.3                                                                                 |                                                                                     |
| Lane Util. Factor                 | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     |
| Frt                               | 1.00                                                                              | 1.00                                                                              | 0.85                                                                              | 1.00                                                                              | 1.00                                                                              | 0.85                                                                              | 1.00                                                                                | 0.95                                                                                |                                                                                     | 1.00                                                                                | 0.97                                                                                |                                                                                     |
| Flt Protected                     | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                              | 1.00                                                                              | 1.00                                                                              | 0.95                                                                                | 1.00                                                                                |                                                                                     | 0.95                                                                                | 1.00                                                                                |                                                                                     |
| Satd. Flow (prot)                 | 1676                                                                              | 1765                                                                              | 1500                                                                              | 1676                                                                              | 1765                                                                              | 1500                                                                              | 1676                                                                                | 1678                                                                                |                                                                                     | 1676                                                                                | 1717                                                                                |                                                                                     |
| Flt Permitted                     | 0.69                                                                              | 1.00                                                                              | 1.00                                                                              | 0.65                                                                              | 1.00                                                                              | 1.00                                                                              | 0.44                                                                                | 1.00                                                                                |                                                                                     | 0.67                                                                                | 1.00                                                                                |                                                                                     |
| Satd. Flow (perm)                 | 1223                                                                              | 1765                                                                              | 1500                                                                              | 1144                                                                              | 1765                                                                              | 1500                                                                              | 774                                                                                 | 1678                                                                                |                                                                                     | 1174                                                                                | 1717                                                                                |                                                                                     |
| Peak-hour factor, PHF             | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                |
| Adj. Flow (vph)                   | 38                                                                                | 172                                                                               | 71                                                                                | 33                                                                                | 97                                                                                | 29                                                                                | 57                                                                                  | 97                                                                                  | 47                                                                                  | 39                                                                                  | 153                                                                                 | 34                                                                                  |
| RTOR Reduction (vph)              | 0                                                                                 | 0                                                                                 | 36                                                                                | 0                                                                                 | 0                                                                                 | 15                                                                                | 0                                                                                   | 15                                                                                  | 0                                                                                   | 0                                                                                   | 7                                                                                   | 0                                                                                   |
| Lane Group Flow (vph)             | 38                                                                                | 172                                                                               | 35                                                                                | 33                                                                                | 97                                                                                | 14                                                                                | 57                                                                                  | 129                                                                                 | 0                                                                                   | 39                                                                                  | 180                                                                                 | 0                                                                                   |
| Turn Type                         | pm+pt                                                                             | NA                                                                                | Perm                                                                              | pm+pt                                                                             | NA                                                                                | Perm                                                                              | pm+pt                                                                               | NA                                                                                  |                                                                                     | pm+pt                                                                               | NA                                                                                  |                                                                                     |
| Protected Phases                  | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   | 6                                                                                   |                                                                                     |
| Permitted Phases                  | 4                                                                                 |                                                                                   | 4                                                                                 | 8                                                                                 |                                                                                   | 8                                                                                 | 2                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     |
| Actuated Green, G (s)             | 55.8                                                                              | 51.9                                                                              | 51.9                                                                              | 55.6                                                                              | 51.8                                                                              | 51.8                                                                              | 26.1                                                                                | 19.5                                                                                |                                                                                     | 21.7                                                                                | 17.3                                                                                |                                                                                     |
| Effective Green, g (s)            | 55.8                                                                              | 51.9                                                                              | 51.9                                                                              | 55.6                                                                              | 51.8                                                                              | 51.8                                                                              | 26.1                                                                                | 19.5                                                                                |                                                                                     | 21.7                                                                                | 17.3                                                                                |                                                                                     |
| Actuated g/C Ratio                | 0.53                                                                              | 0.49                                                                              | 0.49                                                                              | 0.53                                                                              | 0.49                                                                              | 0.49                                                                              | 0.25                                                                                | 0.18                                                                                |                                                                                     | 0.21                                                                                | 0.16                                                                                |                                                                                     |
| Clearance Time (s)                | 6.9                                                                               | 6.9                                                                               | 6.9                                                                               | 6.9                                                                               | 6.9                                                                               | 6.9                                                                               | 5.9                                                                                 | 6.3                                                                                 |                                                                                     | 5.9                                                                                 | 6.3                                                                                 |                                                                                     |
| Vehicle Extension (s)             | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                               | 3.0                                                                                 | 3.0                                                                                 |                                                                                     | 3.0                                                                                 | 3.0                                                                                 |                                                                                     |
| Lane Grp Cap (vph)                | 662                                                                               | 867                                                                               | 737                                                                               | 621                                                                               | 865                                                                               | 735                                                                               | 247                                                                                 | 309                                                                                 |                                                                                     | 262                                                                                 | 281                                                                                 |                                                                                     |
| v/s Ratio Prot                    | c0.00                                                                             | c0.10                                                                             |                                                                                   | 0.00                                                                              | 0.05                                                                              |                                                                                   | c0.01                                                                               | 0.08                                                                                |                                                                                     | 0.01                                                                                | c0.11                                                                               |                                                                                     |
| v/s Ratio Perm                    | 0.03                                                                              |                                                                                   | 0.02                                                                              | 0.03                                                                              |                                                                                   | 0.01                                                                              | 0.04                                                                                |                                                                                     |                                                                                     | 0.02                                                                                |                                                                                     |                                                                                     |
| v/c Ratio                         | 0.06                                                                              | 0.20                                                                              | 0.05                                                                              | 0.05                                                                              | 0.11                                                                              | 0.02                                                                              | 0.23                                                                                | 0.42                                                                                |                                                                                     | 0.15                                                                                | 0.64                                                                                |                                                                                     |
| Uniform Delay, d1                 | 12.0                                                                              | 15.1                                                                              | 14.0                                                                              | 12.1                                                                              | 14.5                                                                              | 13.8                                                                              | 31.2                                                                                | 38.0                                                                                |                                                                                     | 34.1                                                                                | 41.3                                                                                |                                                                                     |
| Progression Factor                | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                              | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     |
| Incremental Delay, d2             | 0.0                                                                               | 0.5                                                                               | 0.1                                                                               | 0.0                                                                               | 0.3                                                                               | 0.0                                                                               | 0.5                                                                                 | 0.9                                                                                 |                                                                                     | 0.3                                                                                 | 4.9                                                                                 |                                                                                     |
| Delay (s)                         | 12.1                                                                              | 15.6                                                                              | 14.1                                                                              | 12.1                                                                              | 14.8                                                                              | 13.9                                                                              | 31.6                                                                                | 39.0                                                                                |                                                                                     | 34.4                                                                                | 46.2                                                                                |                                                                                     |
| Level of Service                  | B                                                                                 | B                                                                                 | B                                                                                 | B                                                                                 | B                                                                                 | B                                                                                 | C                                                                                   | D                                                                                   |                                                                                     | C                                                                                   | D                                                                                   |                                                                                     |
| Approach Delay (s)                |                                                                                   | 14.8                                                                              |                                                                                   |                                                                                   | 14.1                                                                              |                                                                                   |                                                                                     | 36.9                                                                                |                                                                                     |                                                                                     | 44.2                                                                                |                                                                                     |
| Approach LOS                      |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                     | D                                                                                   |                                                                                     |                                                                                     | D                                                                                   |                                                                                     |
| <b>Intersection Summary</b>       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2000 Control Delay            |                                                                                   |                                                                                   | 27.4                                                                              |                                                                                   |                                                                                   |                                                                                   | HCM 2000 Level of Service                                                           |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |
| HCM 2000 Volume to Capacity ratio |                                                                                   |                                                                                   | 0.29                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Cycle Length (s)         |                                                                                   |                                                                                   | 105.6                                                                             |                                                                                   |                                                                                   |                                                                                   | Sum of lost time (s)                                                                |                                                                                     |                                                                                     | 26.0                                                                                |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 48.3%                                                                             |                                                                                   |                                                                                   |                                                                                   | ICU Level of Service                                                                |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| c Critical Lane Group             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM Signalized Intersection Capacity Analysis

## 2: Caron St/Rue Caron & Laurier St

# Existing Conditions

Timing Plan: PM Peak

|                                   |  |  |  |  |  |  |   |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |  |  |                                                                                   |  |  |                                                                                   |  |  |                                                                                     |  |  |                                                                                     |
| Traffic Volume (vph)              | 34                                                                                | 155                                                                               | 64                                                                                | 30                                                                                | 87                                                                                | 26                                                                                | 51                                                                                  | 87                                                                                  | 42                                                                                  | 35                                                                                  | 138                                                                                 | 31                                                                                  |
| Future Volume (vph)               | 34                                                                                | 155                                                                               | 64                                                                                | 30                                                                                | 87                                                                                | 26                                                                                | 51                                                                                  | 87                                                                                  | 42                                                                                  | 35                                                                                  | 138                                                                                 | 31                                                                                  |
| Ideal Flow (vphpl)                | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                              | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                | 1800                                                                                |
| Total Lost time (s)               | 6.5                                                                               | 6.5                                                                               |                                                                                   | 6.5                                                                               | 6.5                                                                               |                                                                                   | 6.1                                                                                 | 6.1                                                                                 |                                                                                     | 6.1                                                                                 | 6.1                                                                                 |                                                                                     |
| Lane Util. Factor                 | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     |
| Frpb, ped/bikes                   | 1.00                                                                              | 0.99                                                                              |                                                                                   | 1.00                                                                              | 0.99                                                                              |                                                                                   | 1.00                                                                                | 0.99                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     |
| Flpb, ped/bikes                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     |
| Frt                               | 1.00                                                                              | 0.96                                                                              |                                                                                   | 1.00                                                                              | 0.97                                                                              |                                                                                   | 1.00                                                                                | 0.95                                                                                |                                                                                     | 1.00                                                                                | 0.97                                                                                |                                                                                     |
| Flt Protected                     | 0.95                                                                              | 1.00                                                                              |                                                                                   | 0.95                                                                              | 1.00                                                                              |                                                                                   | 0.95                                                                                | 1.00                                                                                |                                                                                     | 0.95                                                                                | 1.00                                                                                |                                                                                     |
| Satd. Flow (prot)                 | 1671                                                                              | 1675                                                                              |                                                                                   | 1672                                                                              | 1694                                                                              |                                                                                   | 1674                                                                                | 1665                                                                                |                                                                                     | 1673                                                                                | 1709                                                                                |                                                                                     |
| Flt Permitted                     | 0.66                                                                              | 1.00                                                                              |                                                                                   | 0.61                                                                              | 1.00                                                                              |                                                                                   | 0.58                                                                                | 1.00                                                                                |                                                                                     | 0.67                                                                                | 1.00                                                                                |                                                                                     |
| Satd. Flow (perm)                 | 1153                                                                              | 1675                                                                              |                                                                                   | 1070                                                                              | 1694                                                                              |                                                                                   | 1030                                                                                | 1665                                                                                |                                                                                     | 1172                                                                                | 1709                                                                                |                                                                                     |
| Peak-hour factor, PHF             | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                | 0.90                                                                                |
| Adj. Flow (vph)                   | 38                                                                                | 172                                                                               | 71                                                                                | 33                                                                                | 97                                                                                | 29                                                                                | 57                                                                                  | 97                                                                                  | 47                                                                                  | 39                                                                                  | 153                                                                                 | 34                                                                                  |
| RTOR Reduction (vph)              | 0                                                                                 | 14                                                                                | 0                                                                                 | 0                                                                                 | 10                                                                                | 0                                                                                 | 0                                                                                   | 22                                                                                  | 0                                                                                   | 0                                                                                   | 10                                                                                  | 0                                                                                   |
| Lane Group Flow (vph)             | 38                                                                                | 229                                                                               | 0                                                                                 | 33                                                                                | 116                                                                               | 0                                                                                 | 57                                                                                  | 122                                                                                 | 0                                                                                   | 39                                                                                  | 177                                                                                 | 0                                                                                   |
| Confl. Peds. (#/hr)               | 4                                                                                 |                                                                                   | 4                                                                                 | 4                                                                                 |                                                                                   | 4                                                                                 | 2                                                                                   |                                                                                     | 2                                                                                   | 2                                                                                   |                                                                                     | 2                                                                                   |
| Turn Type                         | pm+pt                                                                             | NA                                                                                |                                                                                   | pm+pt                                                                             | NA                                                                                |                                                                                   | pm+pt                                                                               | NA                                                                                  |                                                                                     | pm+pt                                                                               | NA                                                                                  |                                                                                     |
| Protected Phases                  | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   | 6                                                                                   |                                                                                     |
| Permitted Phases                  | 4                                                                                 |                                                                                   |                                                                                   | 8                                                                                 |                                                                                   |                                                                                   | 2                                                                                   |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     |
| Actuated Green, G (s)             | 35.3                                                                              | 32.4                                                                              |                                                                                   | 33.3                                                                              | 31.4                                                                              |                                                                                   | 16.5                                                                                | 13.4                                                                                |                                                                                     | 16.5                                                                                | 13.4                                                                                |                                                                                     |
| Effective Green, g (s)            | 35.3                                                                              | 32.4                                                                              |                                                                                   | 33.3                                                                              | 31.4                                                                              |                                                                                   | 16.5                                                                                | 13.4                                                                                |                                                                                     | 16.5                                                                                | 13.4                                                                                |                                                                                     |
| Actuated g/C Ratio                | 0.46                                                                              | 0.43                                                                              |                                                                                   | 0.44                                                                              | 0.41                                                                              |                                                                                   | 0.22                                                                                | 0.18                                                                                |                                                                                     | 0.22                                                                                | 0.18                                                                                |                                                                                     |
| Clearance Time (s)                | 6.5                                                                               | 6.5                                                                               |                                                                                   | 6.5                                                                               | 6.5                                                                               |                                                                                   | 6.1                                                                                 | 6.1                                                                                 |                                                                                     | 6.1                                                                                 | 6.1                                                                                 |                                                                                     |
| Vehicle Extension (s)             | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                               | 3.0                                                                               |                                                                                   | 3.0                                                                                 | 3.0                                                                                 |                                                                                     | 3.0                                                                                 | 3.0                                                                                 |                                                                                     |
| Lane Grp Cap (vph)                | 555                                                                               | 714                                                                               |                                                                                   | 483                                                                               | 699                                                                               |                                                                                   | 249                                                                                 | 293                                                                                 |                                                                                     | 274                                                                                 | 301                                                                                 |                                                                                     |
| v/s Ratio Prot                    | c0.00                                                                             | c0.14                                                                             |                                                                                   | 0.00                                                                              | 0.07                                                                              |                                                                                   | c0.01                                                                               | 0.07                                                                                |                                                                                     | 0.01                                                                                | c0.10                                                                               |                                                                                     |
| v/s Ratio Perm                    | 0.03                                                                              |                                                                                   |                                                                                   | 0.03                                                                              |                                                                                   |                                                                                   | 0.04                                                                                |                                                                                     |                                                                                     | 0.03                                                                                |                                                                                     |                                                                                     |
| v/c Ratio                         | 0.07                                                                              | 0.32                                                                              |                                                                                   | 0.07                                                                              | 0.17                                                                              |                                                                                   | 0.23                                                                                | 0.42                                                                                |                                                                                     | 0.14                                                                                | 0.59                                                                                |                                                                                     |
| Uniform Delay, d1                 | 11.2                                                                              | 14.5                                                                              |                                                                                   | 12.2                                                                              | 14.1                                                                              |                                                                                   | 24.1                                                                                | 27.8                                                                                |                                                                                     | 23.8                                                                                | 28.8                                                                                |                                                                                     |
| Progression Factor                | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                              | 1.00                                                                              |                                                                                   | 1.00                                                                                | 1.00                                                                                |                                                                                     | 1.00                                                                                | 1.00                                                                                |                                                                                     |
| Incremental Delay, d2             | 0.1                                                                               | 1.2                                                                               |                                                                                   | 0.1                                                                               | 0.5                                                                               |                                                                                   | 0.5                                                                                 | 1.0                                                                                 |                                                                                     | 0.2                                                                                 | 2.9                                                                                 |                                                                                     |
| Delay (s)                         | 11.2                                                                              | 15.7                                                                              |                                                                                   | 12.3                                                                              | 14.6                                                                              |                                                                                   | 24.6                                                                                | 28.8                                                                                |                                                                                     | 24.1                                                                                | 31.7                                                                                |                                                                                     |
| Level of Service                  | B                                                                                 | B                                                                                 |                                                                                   | B                                                                                 | B                                                                                 |                                                                                   | C                                                                                   | C                                                                                   |                                                                                     | C                                                                                   | C                                                                                   |                                                                                     |
| Approach Delay (s)                |                                                                                   | 15.1                                                                              |                                                                                   |                                                                                   | 14.1                                                                              |                                                                                   |                                                                                     | 27.6                                                                                |                                                                                     |                                                                                     | 30.4                                                                                |                                                                                     |
| Approach LOS                      |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                     | C                                                                                   |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |
| <b>Intersection Summary</b>       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| HCM 2000 Control Delay            |                                                                                   |                                                                                   | 21.8                                                                              |                                                                                   |                                                                                   | HCM 2000 Level of Service                                                         |                                                                                     |                                                                                     | C                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| HCM 2000 Volume to Capacity ratio |                                                                                   |                                                                                   | 0.38                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Actuated Cycle Length (s)         |                                                                                   |                                                                                   | 76.0                                                                              |                                                                                   |                                                                                   | Sum of lost time (s)                                                              |                                                                                     |                                                                                     | 25.2                                                                                |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 56.3%                                                                             |                                                                                   |                                                                                   | ICU Level of Service                                                              |                                                                                     |                                                                                     | B                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| c Critical Lane Group             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM Unsignalized Intersection Capacity Analysis

## 3: Caron St & Hélène St

Existing Conditions

Timing Plan: PM Peak

|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                   |  |  |  |  |  |  |
| Movement                          | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations               |  |                                                                                   |  |  |  |                                                                                   |
| Traffic Volume (veh/h)            | 0                                                                                 | 8                                                                                 | 7                                                                                 | 180                                                                               | 229                                                                               | 3                                                                                 |
| Future Volume (Veh/h)             | 0                                                                                 | 8                                                                                 | 7                                                                                 | 180                                                                               | 229                                                                               | 3                                                                                 |
| Sign Control                      | Stop                                                                              |                                                                                   |                                                                                   | Free                                                                              | Free                                                                              |                                                                                   |
| Grade                             | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                | 0%                                                                                |                                                                                   |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |
| Hourly flow rate (vph)            | 0                                                                                 | 9                                                                                 | 8                                                                                 | 200                                                                               | 254                                                                               | 3                                                                                 |
| Pedestrians                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Width (m)                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Walking Speed (m/s)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Percent Blockage                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Median type                       |                                                                                   |                                                                                   |                                                                                   | TWLT                                                                              | TWLT                                                                              |                                                                                   |
| Median storage veh                |                                                                                   |                                                                                   |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 169                                                                               |                                                                                   |
| pX, platoon unblocked             | 0.95                                                                              | 0.95                                                                              | 0.95                                                                              |                                                                                   |                                                                                   |                                                                                   |
| vC, conflicting volume            | 472                                                                               | 256                                                                               | 257                                                                               |                                                                                   |                                                                                   |                                                                                   |
| vC1, stage 1 conf vol             | 256                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC2, stage 2 conf vol             | 216                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vCu, unblocked vol                | 421                                                                               | 195                                                                               | 196                                                                               |                                                                                   |                                                                                   |                                                                                   |
| tC, single (s)                    | 6.4                                                                               | 6.2                                                                               | 4.1                                                                               |                                                                                   |                                                                                   |                                                                                   |
| tC, 2 stage (s)                   | 5.4                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| tF (s)                            | 3.5                                                                               | 3.3                                                                               | 2.2                                                                               |                                                                                   |                                                                                   |                                                                                   |
| p0 queue free %                   | 100                                                                               | 99                                                                                | 99                                                                                |                                                                                   |                                                                                   |                                                                                   |
| cM capacity (veh/h)               | 707                                                                               | 807                                                                               | 1312                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Direction, Lane #                 | EB 1                                                                              | NB 1                                                                              | NB 2                                                                              | SB 1                                                                              |                                                                                   |                                                                                   |
| Volume Total                      | 9                                                                                 | 8                                                                                 | 200                                                                               | 257                                                                               |                                                                                   |                                                                                   |
| Volume Left                       | 0                                                                                 | 8                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |
| Volume Right                      | 9                                                                                 | 0                                                                                 | 0                                                                                 | 3                                                                                 |                                                                                   |                                                                                   |
| cSH                               | 807                                                                               | 1312                                                                              | 1700                                                                              | 1700                                                                              |                                                                                   |                                                                                   |
| Volume to Capacity                | 0.01                                                                              | 0.01                                                                              | 0.12                                                                              | 0.15                                                                              |                                                                                   |                                                                                   |
| Queue Length 95th (m)             | 0.2                                                                               | 0.1                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |
| Control Delay (s)                 | 9.5                                                                               | 7.8                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |
| Lane LOS                          | A                                                                                 | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Approach Delay (s)                | 9.5                                                                               | 0.3                                                                               |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   |
| Approach LOS                      | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Average Delay                     |                                                                                   |                                                                                   | 0.3                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 22.9%                                                                             | ICU Level of Service                                                              |                                                                                   | A                                                                                 |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |

# HCM Unsignalized Intersection Capacity Analysis

## 4: Caron St & Francois St

Existing Conditions

Timing Plan: PM Peak

|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                   |  |  |  |  |  |  |
| Movement                          | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations               |  |                                                                                   |  |  |  |                                                                                   |
| Sign Control                      | Stop                                                                              |                                                                                   |                                                                                   | Stop                                                                              | Stop                                                                              |                                                                                   |
| Traffic Volume (vph)              | 7                                                                                 | 3                                                                                 | 6                                                                                 | 180                                                                               | 233                                                                               | 4                                                                                 |
| Future Volume (vph)               | 7                                                                                 | 3                                                                                 | 6                                                                                 | 180                                                                               | 233                                                                               | 4                                                                                 |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |
| Hourly flow rate (vph)            | 8                                                                                 | 3                                                                                 | 7                                                                                 | 200                                                                               | 259                                                                               | 4                                                                                 |
| Direction, Lane #                 | EB 1                                                                              | NB 1                                                                              | NB 2                                                                              | SB 1                                                                              |                                                                                   |                                                                                   |
| Volume Total (vph)                | 11                                                                                | 7                                                                                 | 200                                                                               | 263                                                                               |                                                                                   |                                                                                   |
| Volume Left (vph)                 | 8                                                                                 | 7                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |
| Volume Right (vph)                | 3                                                                                 | 0                                                                                 | 0                                                                                 | 4                                                                                 |                                                                                   |                                                                                   |
| Hadj (s)                          | 0.02                                                                              | 0.53                                                                              | 0.03                                                                              | 0.02                                                                              |                                                                                   |                                                                                   |
| Departure Headway (s)             | 5.0                                                                               | 5.2                                                                               | 4.7                                                                               | 4.3                                                                               |                                                                                   |                                                                                   |
| Degree Utilization, x             | 0.02                                                                              | 0.01                                                                              | 0.26                                                                              | 0.31                                                                              |                                                                                   |                                                                                   |
| Capacity (veh/h)                  | 656                                                                               | 674                                                                               | 748                                                                               | 825                                                                               |                                                                                   |                                                                                   |
| Control Delay (s)                 | 8.0                                                                               | 7.1                                                                               | 8.2                                                                               | 9.2                                                                               |                                                                                   |                                                                                   |
| Approach Delay (s)                | 8.0                                                                               | 8.2                                                                               |                                                                                   | 9.2                                                                               |                                                                                   |                                                                                   |
| Approach LOS                      | A                                                                                 | A                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Delay                             |                                                                                   |                                                                                   | 8.7                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Level of Service                  |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 23.2%                                                                             | ICU Level of Service                                                              | A                                                                                 |                                                                                   |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |

# HCM Unsignalized Intersection Capacity Analysis

## 5: Caron St & Des Cedres Ave

Existing Conditions  
Timing Plan: PM Peak

|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                   |  |  |  |  |  |  |
| Movement                          | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |
| Lane Configurations               |  |                                                                                   |  |                                                                                   |  |  |
| Traffic Volume (veh/h)            | 1                                                                                 | 10                                                                                | 113                                                                               | 7                                                                                 | 26                                                                                | 210                                                                               |
| Future Volume (Veh/h)             | 1                                                                                 | 10                                                                                | 113                                                                               | 7                                                                                 | 26                                                                                | 210                                                                               |
| Sign Control                      | Stop                                                                              |                                                                                   | Free                                                                              |                                                                                   | Free                                                                              | Free                                                                              |
| Grade                             | 0%                                                                                |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |
| Hourly flow rate (vph)            | 1                                                                                 | 11                                                                                | 126                                                                               | 8                                                                                 | 29                                                                                | 233                                                                               |
| Pedestrians                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Width (m)                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Walking Speed (m/s)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Percent Blockage                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Median type                       |                                                                                   |                                                                                   | TWLT                                                                              |                                                                                   | TWLT                                                                              |                                                                                   |
| Median storage veh                |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   | 2                                                                                 |                                                                                   |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| pX, platoon unblocked             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC, conflicting volume            | 421                                                                               | 130                                                                               |                                                                                   |                                                                                   | 134                                                                               |                                                                                   |
| vC1, stage 1 conf vol             | 130                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC2, stage 2 conf vol             | 291                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vCu, unblocked vol                | 421                                                                               | 130                                                                               |                                                                                   |                                                                                   | 134                                                                               |                                                                                   |
| tC, single (s)                    | 6.4                                                                               | 6.2                                                                               |                                                                                   |                                                                                   | 4.1                                                                               |                                                                                   |
| tC, 2 stage (s)                   | 5.4                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| tF (s)                            | 3.5                                                                               | 3.3                                                                               |                                                                                   |                                                                                   | 2.2                                                                               |                                                                                   |
| p0 queue free %                   | 100                                                                               | 99                                                                                |                                                                                   |                                                                                   | 98                                                                                |                                                                                   |
| cM capacity (veh/h)               | 701                                                                               | 920                                                                               |                                                                                   |                                                                                   | 1451                                                                              |                                                                                   |
| Direction, Lane #                 | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                   |                                                                                   |
| Volume Total                      | 12                                                                                | 134                                                                               | 29                                                                                | 233                                                                               |                                                                                   |                                                                                   |
| Volume Left                       | 1                                                                                 | 0                                                                                 | 29                                                                                | 0                                                                                 |                                                                                   |                                                                                   |
| Volume Right                      | 11                                                                                | 8                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |
| cSH                               | 896                                                                               | 1700                                                                              | 1451                                                                              | 1700                                                                              |                                                                                   |                                                                                   |
| Volume to Capacity                | 0.01                                                                              | 0.08                                                                              | 0.02                                                                              | 0.14                                                                              |                                                                                   |                                                                                   |
| Queue Length 95th (m)             | 0.3                                                                               | 0.0                                                                               | 0.4                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |
| Control Delay (s)                 | 9.1                                                                               | 0.0                                                                               | 7.5                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |
| Lane LOS                          | A                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Approach Delay (s)                | 9.1                                                                               | 0.0                                                                               | 0.8                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Approach LOS                      | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Average Delay                     |                                                                                   |                                                                                   | 0.8                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 21.7%                                                                             | ICU Level of Service                                                              |                                                                                   | A                                                                                 |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |

# HCM Unsignalized Intersection Capacity Analysis

## 6: Caron St & Cote St/Potvin Ave

Existing Conditions

Timing Plan: PM Peak

|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|--|--|--|
|                                   |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |  |  |  |  |  |  |
| Lane Configurations               |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |  |  |                                                                                     |  |  |                                                                                     |  |  |  |  |  |  |
| Sign Control                      |                                                                                   | Stop                                                                              |                                                                                   |                                                                                   | Stop                                                                              |                                                                                   |                                                                                     | Stop                                                                                |                                                                                     |                                                                                     | Stop                                                                                |                                                                                     |  |  |  |  |  |  |
| Traffic Volume (vph)              | 17                                                                                | 1                                                                                 | 10                                                                                | 9                                                                                 | 1                                                                                 | 4                                                                                 | 12                                                                                  | 99                                                                                  | 13                                                                                  | 16                                                                                  | 99                                                                                  | 17                                                                                  |  |  |  |  |  |  |
| Future Volume (vph)               | 17                                                                                | 1                                                                                 | 10                                                                                | 9                                                                                 | 1                                                                                 | 4                                                                                 | 12                                                                                  | 99                                                                                  | 13                                                                                  | 16                                                                                  | 99                                                                                  | 17                                                                                  |  |  |  |  |  |  |
| 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                                                                                |  |  |  |  |  |  |
| Hourly flow rate (vph)            | 19                                                                                | 1                                                                                 | 11                                                                                | 10                                                                                | 1                                                                                 | 4                                                                                 | 13                                                                                  | 110                                                                                 | 14                                                                                  | 18                                                                                  | 110                                                                                 | 19                                                                                  |  |  |  |  |  |  |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              | NB 2                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Volume Total (vph)                | 31                                                                                | 15                                                                                | 13                                                                                | 124                                                                               | 18                                                                                | 129                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Volume Left (vph)                 | 19                                                                                | 10                                                                                | 13                                                                                | 0                                                                                 | 18                                                                                | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Volume Right (vph)                | 11                                                                                | 4                                                                                 | 0                                                                                 | 14                                                                                | 0                                                                                 | 19                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Hadj (s)                          | -0.06                                                                             | 0.01                                                                              | 0.53                                                                              | -0.05                                                                             | 0.53                                                                              | -0.07                                                                             |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Departure Headway (s)             | 4.5                                                                               | 4.6                                                                               | 5.3                                                                               | 4.7                                                                               | 5.2                                                                               | 4.6                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Degree Utilization, x             | 0.04                                                                              | 0.02                                                                              | 0.02                                                                              | 0.16                                                                              | 0.03                                                                              | 0.17                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Capacity (veh/h)                  | 741                                                                               | 727                                                                               | 669                                                                               | 753                                                                               | 667                                                                               | 758                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Control Delay (s)                 | 7.7                                                                               | 7.7                                                                               | 7.2                                                                               | 7.4                                                                               | 7.2                                                                               | 7.4                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Approach Delay (s)                | 7.7                                                                               | 7.7                                                                               | 7.3                                                                               |                                                                                   | 7.3                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Approach LOS                      | A                                                                                 | A                                                                                 | A                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Delay                             |                                                                                   |                                                                                   | 7.4                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Level of Service                  |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 17.6%                                                                             | ICU Level of Service                                                              |                                                                                   |                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |

# HCM Unsignalized Intersection Capacity Analysis

## 7: Caron St & Docteur Corbeil Blvd

Existing Conditions  
Timing Plan: PM Peak



| Movement                          | EBL                                                                               | EBR  | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR  |
|-----------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations               |  |      |  |  |  |      |
| Traffic Volume (veh/h)            | 61                                                                                | 62   | 49                                                                                | 63                                                                                | 68                                                                                | 50   |
| Future Volume (Veh/h)             | 61                                                                                | 62   | 49                                                                                | 63                                                                                | 68                                                                                | 50   |
| Sign Control                      | Stop                                                                              |      |                                                                                   | Free                                                                              | Free                                                                              |      |
| Grade                             | 0%                                                                                |      |                                                                                   | 0%                                                                                | 0%                                                                                |      |
| Peak Hour Factor                  | 0.90                                                                              | 0.90 | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90 |
| Hourly flow rate (vph)            | 68                                                                                | 69   | 54                                                                                | 70                                                                                | 76                                                                                | 56   |
| Pedestrians                       | 4                                                                                 |      |                                                                                   |                                                                                   |                                                                                   |      |
| Lane Width (m)                    | 3.6                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |
| Walking Speed (m/s)               | 1.2                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |
| Percent Blockage                  | 0                                                                                 |      |                                                                                   |                                                                                   |                                                                                   |      |
| Right turn flare (veh)            |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Median type                       |                                                                                   |      |                                                                                   | TWLT                                                                              | TWLT                                                                              |      |
| Median storage veh)               |                                                                                   |      |                                                                                   | 2                                                                                 | 2                                                                                 |      |
| Upstream signal (m)               |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| pX, platoon unblocked             |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| vC, conflicting volume            | 286                                                                               | 108  | 136                                                                               |                                                                                   |                                                                                   |      |
| vC1, stage 1 conf vol             | 108                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |
| vC2, stage 2 conf vol             | 178                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |
| vCu, unblocked vol                | 286                                                                               | 108  | 136                                                                               |                                                                                   |                                                                                   |      |
| tC, single (s)                    | 6.4                                                                               | 6.2  | 4.1                                                                               |                                                                                   |                                                                                   |      |
| tC, 2 stage (s)                   | 5.4                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |
| tF (s)                            | 3.5                                                                               | 3.3  | 2.2                                                                               |                                                                                   |                                                                                   |      |
| p0 queue free %                   | 91                                                                                | 93   | 96                                                                                |                                                                                   |                                                                                   |      |
| cM capacity (veh/h)               | 775                                                                               | 943  | 1443                                                                              |                                                                                   |                                                                                   |      |
| Direction, Lane #                 | EB 1                                                                              | NB 1 | NB 2                                                                              | SB 1                                                                              |                                                                                   |      |
| Volume Total                      | 137                                                                               | 54   | 70                                                                                | 132                                                                               |                                                                                   |      |
| Volume Left                       | 68                                                                                | 54   | 0                                                                                 | 0                                                                                 |                                                                                   |      |
| Volume Right                      | 69                                                                                | 0    | 0                                                                                 | 56                                                                                |                                                                                   |      |
| cSH                               | 851                                                                               | 1443 | 1700                                                                              | 1700                                                                              |                                                                                   |      |
| Volume to Capacity                | 0.16                                                                              | 0.04 | 0.04                                                                              | 0.08                                                                              |                                                                                   |      |
| Queue Length 95th (m)             | 4.0                                                                               | 0.8  | 0.0                                                                               | 0.0                                                                               |                                                                                   |      |
| Control Delay (s)                 | 10.0                                                                              | 7.6  | 0.0                                                                               | 0.0                                                                               |                                                                                   |      |
| Lane LOS                          | B                                                                                 | A    |                                                                                   |                                                                                   |                                                                                   |      |
| Approach Delay (s)                | 10.0                                                                              | 3.3  | 0.0                                                                               |                                                                                   |                                                                                   |      |
| Approach LOS                      | B                                                                                 |      |                                                                                   |                                                                                   |                                                                                   |      |
| Intersection Summary              |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Average Delay                     |                                                                                   |      | 4.5                                                                               |                                                                                   |                                                                                   |      |
| Intersection Capacity Utilization |                                                                                   |      | 23.8%                                                                             | ICU Level of Service                                                              | A                                                                                 |      |
| Analysis Period (min)             |                                                                                   |      | 15                                                                                |                                                                                   |                                                                                   |      |

# HCM Unsignalized Intersection Capacity Analysis

## 8: David St & Caron St

Existing Conditions

Timing Plan: PM Peak

|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                   |  |  |  |  |  |  |
| Movement                          | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |
| Lane Configurations               |  |                                                                                   |  |                                                                                   |  |  |
| Sign Control                      | Stop                                                                              |                                                                                   | Stop                                                                              |                                                                                   | Stop                                                                              | Stop                                                                              |
| Traffic Volume (vph)              | 5                                                                                 | 10                                                                                | 114                                                                               | 5                                                                                 | 10                                                                                | 116                                                                               |
| Future Volume (vph)               | 5                                                                                 | 10                                                                                | 114                                                                               | 5                                                                                 | 10                                                                                | 116                                                                               |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |
| Hourly flow rate (vph)            | 6                                                                                 | 11                                                                                | 127                                                                               | 6                                                                                 | 11                                                                                | 129                                                                               |
| Direction, Lane #                 | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                   |                                                                                   |
| Volume Total (vph)                | 17                                                                                | 133                                                                               | 11                                                                                | 129                                                                               |                                                                                   |                                                                                   |
| Volume Left (vph)                 | 6                                                                                 | 0                                                                                 | 11                                                                                | 0                                                                                 |                                                                                   |                                                                                   |
| Volume Right (vph)                | 11                                                                                | 6                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |
| Hadj (s)                          | -0.28                                                                             | 0.01                                                                              | 0.53                                                                              | 0.03                                                                              |                                                                                   |                                                                                   |
| Departure Headway (s)             | 4.2                                                                               | 4.2                                                                               | 5.2                                                                               | 4.7                                                                               |                                                                                   |                                                                                   |
| Degree Utilization, x             | 0.02                                                                              | 0.15                                                                              | 0.02                                                                              | 0.17                                                                              |                                                                                   |                                                                                   |
| Capacity (veh/h)                  | 798                                                                               | 843                                                                               | 681                                                                               | 759                                                                               |                                                                                   |                                                                                   |
| Control Delay (s)                 | 7.3                                                                               | 8.0                                                                               | 7.0                                                                               | 7.4                                                                               |                                                                                   |                                                                                   |
| Approach Delay (s)                | 7.3                                                                               | 8.0                                                                               | 7.4                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Approach LOS                      | A                                                                                 | A                                                                                 | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Delay                             |                                                                                   |                                                                                   | 7.6                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Level of Service                  |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 17.3%                                                                             | ICU Level of Service                                                              | A                                                                                 |                                                                                   |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |

# HCM Unsignalized Intersection Capacity Analysis

## 9: Baseline Rd & Caron St

Existing Conditions

Timing Plan: PM Peak



| Movement                          | EBL  | EBT  | WBT   | WBR                  | SBL  | SBR  |
|-----------------------------------|------|------|-------|----------------------|------|------|
| Lane Configurations               |      |      |       |                      |      |      |
| Traffic Volume (veh/h)            | 38   | 102  | 41    | 76                   | 99   | 17   |
| Future Volume (Veh/h)             | 38   | 102  | 41    | 76                   | 99   | 17   |
| Sign Control                      |      | Free | Free  |                      | Stop |      |
| Grade                             |      | 0%   | 0%    |                      | 0%   |      |
| Peak Hour Factor                  | 0.90 | 0.90 | 0.90  | 0.90                 | 0.90 | 0.90 |
| Hourly flow rate (vph)            | 42   | 113  | 46    | 84                   | 110  | 19   |
| Pedestrians                       |      |      |       |                      |      |      |
| Lane Width (m)                    |      |      |       |                      |      |      |
| Walking Speed (m/s)               |      |      |       |                      |      |      |
| Percent Blockage                  |      |      |       |                      |      |      |
| Right turn flare (veh)            |      |      |       |                      |      |      |
| Median type                       |      | None | None  |                      |      |      |
| Median storage veh                |      |      |       |                      |      |      |
| Upstream signal (m)               |      |      |       |                      |      |      |
| pX, platoon unblocked             |      |      |       |                      |      |      |
| vC, conflicting volume            | 130  |      |       |                      | 285  | 88   |
| vC1, stage 1 conf vol             |      |      |       |                      |      |      |
| vC2, stage 2 conf vol             |      |      |       |                      |      |      |
| vCu, unblocked vol                | 130  |      |       |                      | 285  | 88   |
| tC, single (s)                    | 4.1  |      |       |                      | 6.4  | 6.2  |
| tC, 2 stage (s)                   |      |      |       |                      |      |      |
| tF (s)                            | 2.2  |      |       |                      | 3.5  | 3.3  |
| p0 queue free %                   | 97   |      |       |                      | 84   | 98   |
| cM capacity (veh/h)               | 1455 |      |       |                      | 685  | 970  |
| Direction, Lane #                 | EB 1 | WB 1 | SB 1  |                      |      |      |
| Volume Total                      | 155  | 130  | 129   |                      |      |      |
| Volume Left                       | 42   | 0    | 110   |                      |      |      |
| Volume Right                      | 0    | 84   | 19    |                      |      |      |
| cSH                               | 1455 | 1700 | 716   |                      |      |      |
| Volume to Capacity                | 0.03 | 0.08 | 0.18  |                      |      |      |
| Queue Length 95th (m)             | 0.6  | 0.0  | 4.6   |                      |      |      |
| Control Delay (s)                 | 2.2  | 0.0  | 11.1  |                      |      |      |
| Lane LOS                          | A    |      | B     |                      |      |      |
| Approach Delay (s)                | 2.2  | 0.0  | 11.1  |                      |      |      |
| Approach LOS                      |      |      | B     |                      |      |      |
| Intersection Summary              |      |      |       |                      |      |      |
| Average Delay                     |      |      | 4.3   |                      |      |      |
| Intersection Capacity Utilization |      |      | 28.1% | ICU Level of Service |      | A    |
| Analysis Period (min)             |      |      | 15    |                      |      |      |

## Intersection: 1: Rue Caron/Rue Industrielle &amp; HWY 17

| Movement              | EB    | EB   | EB   | WB    | WB   | WB   | NB    | NB   | SB   | SB    |
|-----------------------|-------|------|------|-------|------|------|-------|------|------|-------|
| Directions Served     | L     | T    | R    | L     | T    | R    | L     | TR   | L    | TR    |
| Maximum Queue (m)     | 16.5  | 31.9 | 17.1 | 16.6  | 27.7 | 11.2 | 36.4  | 46.0 | 37.0 | 59.7  |
| Average Queue (m)     | 3.8   | 13.3 | 5.0  | 3.8   | 6.5  | 2.5  | 9.7   | 17.9 | 7.7  | 26.5  |
| 95th Queue (m)        | 12.3  | 26.3 | 13.7 | 11.8  | 18.7 | 8.7  | 23.2  | 34.9 | 21.2 | 48.5  |
| Link Distance (m)     | 833.3 |      |      | 805.3 |      |      | 415.2 |      |      | 113.3 |
| Upstream Blk Time (%) |       |      |      |       |      |      |       |      |      |       |
| Queuing Penalty (veh) |       |      |      |       |      |      |       |      |      |       |
| Storage Bay Dist (m)  | 90.0  |      | 85.0 | 60.0  |      | 56.0 | 60.0  |      | 40.0 |       |
| Storage Blk Time (%)  |       |      |      |       |      |      |       | 0    | 0    | 4     |
| Queuing Penalty (veh) |       |      |      |       |      |      |       | 0    | 0    | 1     |

## Intersection: 2: Caron St/Rue Caron &amp; Laurier St

| Movement              | EB    | EB   | WB    | WB   | NB    | NB   | SB    | SB   |
|-----------------------|-------|------|-------|------|-------|------|-------|------|
| Directions Served     | L     | TR   | L     | TR   | L     | TR   | L     | TR   |
| Maximum Queue (m)     | 19.5  | 38.5 | 13.3  | 21.0 | 18.3  | 37.4 | 20.2  | 50.0 |
| Average Queue (m)     | 3.9   | 14.3 | 2.9   | 6.4  | 6.7   | 17.6 | 5.3   | 22.9 |
| 95th Queue (m)        | 12.2  | 30.4 | 9.2   | 16.4 | 14.9  | 30.9 | 13.7  | 41.8 |
| Link Distance (m)     | 928.0 |      | 698.5 |      | 142.0 |      | 415.2 |      |
| Upstream Blk Time (%) |       |      |       |      |       |      |       |      |
| Queuing Penalty (veh) |       |      |       |      |       |      |       |      |
| Storage Bay Dist (m)  | 35.0  |      | 60.0  |      | 55.0  |      | 50.0  |      |
| Storage Blk Time (%)  | 1     |      |       |      | 0     |      |       |      |
| Queuing Penalty (veh) | 0     |      |       |      | 0     |      |       |      |

## Intersection: 3: Caron St &amp; Hélène St

| Movement              | EB    | NB  |
|-----------------------|-------|-----|
| Directions Served     | LR    | L   |
| Maximum Queue (m)     | 8.3   | 7.1 |
| Average Queue (m)     | 2.4   | 0.5 |
| 95th Queue (m)        | 8.3   | 3.7 |
| Link Distance (m)     | 266.6 |     |
| Upstream Blk Time (%) |       |     |
| Queuing Penalty (veh) |       |     |
| Storage Bay Dist (m)  | 15.0  |     |
| Storage Blk Time (%)  |       |     |
| Queuing Penalty (veh) |       |     |

## Intersection: 4: Caron St &amp; Francois St

| Movement              | EB    | NB   | NB    | SB    |
|-----------------------|-------|------|-------|-------|
| Directions Served     | LR    | L    | T     | TR    |
| Maximum Queue (m)     | 9.3   | 9.1  | 21.5  | 27.8  |
| Average Queue (m)     | 2.7   | 1.3  | 12.4  | 16.0  |
| 95th Queue (m)        | 9.5   | 6.4  | 19.2  | 24.4  |
| Link Distance (m)     | 343.3 |      | 122.7 | 232.6 |
| Upstream Blk Time (%) |       |      |       |       |
| Queuing Penalty (veh) |       |      |       |       |
| Storage Bay Dist (m)  |       | 15.0 |       |       |
| Storage Blk Time (%)  |       | 0    | 1     |       |
| Queuing Penalty (veh) |       | 0    | 0     |       |

## Intersection: 5: Caron St &amp; Des Cedres Ave

| Movement              | WB    | SB   |
|-----------------------|-------|------|
| Directions Served     | LR    | L    |
| Maximum Queue (m)     | 8.7   | 9.1  |
| Average Queue (m)     | 2.4   | 1.1  |
| 95th Queue (m)        | 8.8   | 5.8  |
| Link Distance (m)     | 109.3 |      |
| Upstream Blk Time (%) |       |      |
| Queuing Penalty (veh) |       |      |
| Storage Bay Dist (m)  |       | 15.0 |
| Storage Blk Time (%)  |       | 0    |
| Queuing Penalty (veh) |       | 0    |

## Intersection: 6: Caron St &amp; Cote St/Potvin Ave

| Movement              | EB   | WB    | NB   | NB    | SB   | SB    |
|-----------------------|------|-------|------|-------|------|-------|
| Directions Served     | LTR  | LTR   | L    | TR    | L    | TR    |
| Maximum Queue (m)     | 16.0 | 8.9   | 8.8  | 18.1  | 5.6  | 16.8  |
| Average Queue (m)     | 5.8  | 3.1   | 2.5  | 10.4  | 2.2  | 8.8   |
| 95th Queue (m)        | 13.6 | 10.0  | 8.9  | 16.1  | 6.6  | 13.5  |
| Link Distance (m)     | 73.6 | 115.9 |      | 507.4 |      | 263.8 |
| Upstream Blk Time (%) |      |       |      |       |      |       |
| Queuing Penalty (veh) |      |       |      |       |      |       |
| Storage Bay Dist (m)  |      |       | 30.0 |       | 40.0 |       |
| Storage Blk Time (%)  |      |       |      |       |      |       |
| Queuing Penalty (veh) |      |       |      |       |      |       |

## Intersection: 7: Caron St &amp; Docteur Corbeil Blvd

| Movement              | EB    | NB   |
|-----------------------|-------|------|
| Directions Served     | LR    | L    |
| Maximum Queue (m)     | 17.9  | 13.1 |
| Average Queue (m)     | 10.0  | 1.7  |
| 95th Queue (m)        | 15.1  | 8.2  |
| Link Distance (m)     | 486.3 |      |
| Upstream Blk Time (%) |       |      |
| Queuing Penalty (veh) |       |      |
| Storage Bay Dist (m)  |       | 15.0 |
| Storage Blk Time (%)  |       | 0    |
| Queuing Penalty (veh) |       | 0    |

## Intersection: 8: David St &amp; Caron St

| Movement              | WB    | NB   | SB   | SB    |
|-----------------------|-------|------|------|-------|
| Directions Served     | LR    | TR   | L    | T     |
| Maximum Queue (m)     | 9.1   | 18.7 | 9.3  | 16.7  |
| Average Queue (m)     | 3.3   | 10.7 | 2.7  | 10.1  |
| 95th Queue (m)        | 10.2  | 16.6 | 9.5  | 14.5  |
| Link Distance (m)     | 509.7 | 82.9 |      | 518.2 |
| Upstream Blk Time (%) |       |      |      |       |
| Queuing Penalty (veh) |       |      |      |       |
| Storage Bay Dist (m)  |       |      | 40.0 |       |
| Storage Blk Time (%)  |       |      |      |       |
| Queuing Penalty (veh) |       |      |      |       |

## Intersection: 9: Baseline Rd &amp; Caron St

| Movement              | EB    | SB     |
|-----------------------|-------|--------|
| Directions Served     | LT    | LR     |
| Maximum Queue (m)     | 12.2  | 18.3   |
| Average Queue (m)     | 1.1   | 9.7    |
| 95th Queue (m)        | 6.1   | 15.6   |
| Link Distance (m)     | 763.0 | 1938.3 |
| Upstream Blk Time (%) |       |        |
| Queuing Penalty (veh) |       |        |
| Storage Bay Dist (m)  |       |        |
| Storage Blk Time (%)  |       |        |
| Queuing Penalty (veh) |       |        |

## Network Summary

Network wide Queuing Penalty: 2

# C

## Appendix C

### Projected Phase 1 Traffic Operations

| Direction                                       | Mov. | Storage Length (m) | AM Peak Hour |           |     |           | PM Peak Hour |           |     |           |
|-------------------------------------------------|------|--------------------|--------------|-----------|-----|-----------|--------------|-----------|-----|-----------|
|                                                 |      |                    | v/c          | Delay (s) | LOS | Queue (m) | v/c          | Delay (s) | LOS | Queue (m) |
| Caron Street at HWY 17 (Signalized)             |      |                    |              |           |     |           |              |           |     |           |
| EB                                              | L    | 90                 | 0.03         | 6         | A   | 2         | 0.06         | 12        | B   | 8         |
|                                                 | T    | -                  | 0.36         | 12        | B   | 67        | 0.26         | 20        | B   | 45        |
|                                                 | R    | 85                 | 0.34         | 3         | A   | 13        | 0.43         | 4         | A   | 16        |
| WB                                              | L    | 60                 | 0.04         | 6         | A   | 4         | 0.06         | 12        | B   | 7         |
|                                                 | T    | -                  | 0.71         | 17        | B   | 200       | 0.14         | 19        | B   | 26        |
|                                                 | R    | 56                 | 0.00         | 0         | A   | 0         | 0.04         | 0         | A   | 0         |
| NB                                              | L    | 60                 | 1.95         | 463       | F   | 155       | 1.17         | 136       | F   | 110       |
|                                                 | T/R  | -                  | 0.17         | 17        | B   | 10        | 0.34         | 33        | C   | 39        |
| SB                                              | L    | 40                 | 0.01         | 29        | C   | 1         | 0.12         | 26        | C   | 12        |
|                                                 | T/R  | -                  | 0.07         | 26        | C   | 7         | 0.67         | 50        | D   | 53        |
| Overall                                         |      |                    | 1.95         | 119       | F   | -         | 1.17         | 47        | D   | -         |
| Caron Street at Laurier Street (Signalized)     |      |                    |              |           |     |           |              |           |     |           |
| EB                                              | L    | 35                 | 0.04         | 15        | B   | 5         | 0.08         | 16        | B   | 9         |
|                                                 | T/R  | -                  | 0.18         | 15        | B   | 19        | 0.46         | 25        | C   | 53        |
| WB                                              | L    | 60                 | 0.09         | 16        | B   | 10        | 0.09         | 16        | B   | 8         |
|                                                 | T/R  | -                  | 0.31         | 21        | C   | 42        | 0.22         | 22        | C   | 26        |
| NB                                              | L    | 55                 | 0.23         | 17        | B   | 13        | 0.37         | 20        | B   | 15        |
|                                                 | T/R  | -                  | 0.72         | 30        | C   | 123       | 0.74         | 35        | C   | 115       |
| SB                                              | L    | 50                 | 0.05         | 16        | B   | 4         | 0.15         | 16        | B   | 9         |
|                                                 | T/R  | -                  | 0.75         | 37        | D   | 81        | 0.90         | 50        | D   | 134       |
| Overall                                         |      |                    | 0.75         | 28        | C   | -         | 0.90         | 35        | C   | -         |
| Caron Street at Hélène Street (Unsignalized)    |      |                    |              |           |     |           |              |           |     |           |
| EB                                              | L/R  | -                  | 0.01         | 10        | B   | 1         | 0.02         | 11        | B   | 1         |
| NB                                              | L    | 15                 | 0.01         | 8         | A   | 1         | 0.01         | 9         | A   | 1         |
|                                                 | T    | -                  | 0.32         | 0         | A   | 0         | 0.31         | 0         | A   | 0         |
| SB                                              | T/R  | -                  | 0.27         | 0         | A   | 0         | 0.35         | 0         | A   | 0         |
| Overall                                         |      |                    | 0.27         | 1         | A   | -         | 0.35         | 1         | A   | -         |
| Caron Street at Françoise Street (Unsignalized) |      |                    |              |           |     |           |              |           |     |           |
| EB                                              | L/R  | -                  | 0.02         | 9         | A   | -         | 0.02         | 10        | A   | -         |
| NB                                              | L    | 15                 | 0.00         | 7         | A   | -         | 0.01         | 7         | A   | -         |
|                                                 | T    | -                  | 0.64         | 15        | B   | -         | 0.74         | 19        | A   | -         |
| SB                                              | T/R  | -                  | 0.58         | 14        | B   | -         | 0.78         | 22        | C   | -         |
| Overall                                         |      |                    | 0.64         | 14        | B   | -         | 0.78         | 21        | C   | -         |

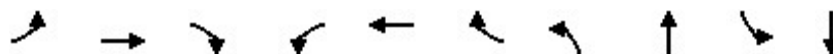
| Direction                                                | Mov.  | Storage Length (m) | AM Peak Hour |           |     |           | PM Peak Hour |           |     |           |
|----------------------------------------------------------|-------|--------------------|--------------|-----------|-----|-----------|--------------|-----------|-----|-----------|
|                                                          |       |                    | v/c          | Delay (s) | LOS | Queue (m) | v/c          | Delay (s) | LOS | Queue (m) |
| Caron Street at Des Cèdres Avenue (Unsignalized)         |       |                    |              |           |     |           |              |           |     |           |
| WB                                                       | L/R   | -                  | 0.03         | 12        | B   | 1         | 0.02         | 11        | B   | 1         |
| NB                                                       | T/R   | -                  | 0.27         | 0         | A   | 0         | 0.27         | 0         | A   | 0         |
| SB                                                       | L     | 15                 | 0.01         | 8         | A   | 1         | 0.03         | 8         | A   | 1         |
|                                                          | T     | -                  | 0.26         | 0         | A   | 0         | 0.34         | 0         | A   | 0         |
| Overall                                                  |       |                    | 0.27         | 1         | A   | -         | 0.34         | 1         | A   | -         |
| Caron Street at Cote Street/Potvin Avenue (Unsignalized) |       |                    |              |           |     |           |              |           |     |           |
| EB                                                       | L/T/R | -                  | 0.03         | 9         | A   | -         | 0.05         | 10        | A   | -         |
| WB                                                       | L/T/R | -                  | 0.03         | 9         | A   | -         | 0.03         | 10        | A   | -         |
| NB                                                       | L     | 15                 | 0.01         | 7         | A   | -         | 0.02         | 8         | A   | -         |
|                                                          | T/R   | -                  | 0.62         | 15        | B   | -         | 0.65         | 16        | C   | -         |
| SB                                                       | L     | 15                 | 0.01         | 7         | A   | -         | 0.03         | 8         | A   | -         |
|                                                          | T/R   | -                  | 0.62         | 15        | B   | -         | 0.78         | 22        | C   | -         |
| Overall                                                  |       |                    | 0.62         | 14        | B   | -         | 0.78         | 19        | C   | -         |
| Caron Street at Docteur Corbeil Boulevard (Unsignalized) |       |                    |              |           |     |           |              |           |     |           |
| EB                                                       | L/R   | -                  | 0.19         | 13        | B   | 5         | 0.31         | 15        | B   | 9         |
| NB                                                       | L     | 15                 | 0.08         | 9         | A   | 2         | 0.07         | 9         | A   | 2         |
|                                                          | T     | -                  | 0.24         | 0         | A   | 0         | 0.24         | 0         | A   | 0         |
| SB                                                       | T/R   | -                  | 0.25         | 0         | A   | 0         | 0.30         | 0         | A   | 0         |
| Overall                                                  |       |                    | 0.25         | 2         | A   | -         | 0.30         | 3         | A   | -         |
| Caron Street at David Street (Unsignalized)              |       |                    |              |           |     |           |              |           |     |           |
| WB                                                       | L/R   | -                  | 0.33         | 11        | B   | -         | 0.34         | 11        | B   | -         |
| NB                                                       | T/R   | -                  | 0.42         | 12        | B   | -         | 0.47         | 13        | B   | -         |
| SB                                                       | L     | 40                 | 0.32         | 11        | B   | -         | 0.34         | 11        | B   | -         |
|                                                          | T     | -                  | 0.38         | 11        | B   | -         | 0.45         | 12        | B   | -         |
| Overall                                                  |       |                    | 0.42         | 11        | B   | -         | 0.47         | 12        | B   | -         |
| Caron Street at Baseline Road (Unsignalized)             |       |                    |              |           |     |           |              |           |     |           |
| EB                                                       | L/T   | -                  | 0.02         | 4         | A   | 1         | 0.05         | 3         | A   | 1         |
| WB                                                       | T/R   | -                  | 0.12         | 0         | A   | 0         | 0.11         | 0         | A   | 0         |
| SB                                                       | L/R   | -                  | 0.20         | 11        | B   | 5         | 0.31         | 13        | B   | 9         |
| Overall                                                  |       |                    | 0.20         | 5         | A   | -         | 0.31         | 6         | A   | -         |
| Caron Street at Street A (Unsignalized)                  |       |                    |              |           |     |           |              |           |     |           |
| WB                                                       | L     | -                  | 0.27         | 9         | A   | -         | 0.29         | 10        | A   | -         |
|                                                          | R     | -                  | 0.27         | 9         | A   | -         | 0.29         | 10        | A   | -         |
| NB                                                       | T/R   | -                  | 0.26         | 9         | A   | -         | 0.30         | 10        | A   | -         |
| SB                                                       | L/T   | 25                 | 0.24         | 9         | A   | -         | 0.30         | 10        | A   | -         |

| Direction                               | Mov.  | Storage Length (m) | AM Peak Hour |           |     |           | PM Peak Hour |           |     |           |
|-----------------------------------------|-------|--------------------|--------------|-----------|-----|-----------|--------------|-----------|-----|-----------|
|                                         |       |                    | v/c          | Delay (s) | LOS | Queue (m) | v/c          | Delay (s) | LOS | Queue (m) |
| Overall                                 |       |                    | 0.27         | 9         | A   | -         | 0.30         | 10        | A   | -         |
| Street B at David Street (Unsignalized) |       |                    |              |           |     |           |              |           |     |           |
| EB                                      | T/R   | -                  | 0.12         | 0         | A   | 0         | 0.12         | 0         | A   | 0         |
| WB                                      | L/T   | -                  | 0.03         | 6         | A   | 1         | 0.04         | 6         | A   | 1         |
| NB                                      | L/R   | -                  | 0.30         | 12        | B   | 9         | 0.31         | 12        | B   | 9         |
| Overall                                 |       |                    | 0.30         | 6         | A   | -         | 0.31         | 6         | A   | 6         |
| Street B at Street A (Unsignalized)     |       |                    |              |           |     |           |              |           |     |           |
| EB                                      | L/T/R | -                  | 0.18         | 8         | A   | -         | 0.18         | 8         | A   | -         |
| WB                                      | L/T/R | -                  | -            | -         | -   | -         | -            | -         | -   | -         |
| NB                                      | L/T/R | -                  | -            | -         | -   | -         | -            | -         | -   | -         |
| SB                                      | L/T/R | -                  | 0.14         | 7         | A   | -         | 0.15         | 7         | A   | -         |
| Overall                                 |       |                    | 0.18         | 8         | A   | -         | 0.18         | 8         | A   | -         |

# Lanes, Volumes, Timings

## 1: Rue Caron/Rue Industrielle & HWY 17

Phase 1  
AM.syn



| Lane Group             | EBL   | EBT   | EBR   | WBL   | WBT    | WBR   | NBL    | NBT   | SBL   | SBT   |
|------------------------|-------|-------|-------|-------|--------|-------|--------|-------|-------|-------|
| Lane Configurations    |       |       |       |       |        |       |        |       |       |       |
| Traffic Volume (vph)   | 8     | 346   | 319   | 21    | 708    | 3     | 452    | 8     | 1     | 6     |
| Future Volume (vph)    | 8     | 346   | 319   | 21    | 708    | 3     | 452    | 8     | 1     | 6     |
| Lane Group Flow (vph)  | 9     | 384   | 354   | 23    | 787    | 3     | 502    | 43    | 1     | 16    |
| Turn Type              | pm+pt | NA    | Perm  | pm+pt | NA     | Perm  | pm+pt  | NA    | pm+pt | NA    |
| Protected Phases       | 7     | 4     |       | 3     | 8      |       | 5      | 2     | 1     | 6     |
| Permitted Phases       | 4     |       | 4     | 8     |        | 8     | 2      |       | 6     |       |
| Detector Phase         | 7     | 4     | 4     | 3     | 8      | 8     | 5      | 2     | 1     | 6     |
| Switch Phase           |       |       |       |       |        |       |        |       |       |       |
| Minimum Initial (s)    | 5.0   | 5.0   | 5.0   | 5.0   | 5.0    | 5.0   | 5.0    | 10.0  | 5.0   | 10.0  |
| Minimum Split (s)      | 11.9  | 51.9  | 51.9  | 11.9  | 51.9   | 51.9  | 10.9   | 33.3  | 10.9  | 33.3  |
| Total Split (s)        | 18.9  | 51.9  | 51.9  | 18.9  | 51.9   | 51.9  | 15.9   | 33.3  | 15.9  | 33.3  |
| Total Split (%)        | 15.8% | 43.3% | 43.3% | 15.8% | 43.3%  | 43.3% | 13.3%  | 27.8% | 13.3% | 27.8% |
| Yellow Time (s)        | 4.2   | 4.2   | 4.2   | 4.2   | 4.2    | 4.2   | 3.3    | 3.3   | 3.3   | 3.3   |
| All-Red Time (s)       | 2.7   | 2.7   | 2.7   | 2.7   | 2.7    | 2.7   | 2.6    | 3.0   | 2.6   | 3.0   |
| Lost Time Adjust (s)   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0   | 0.0    | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)    | 6.9   | 6.9   | 6.9   | 6.9   | 6.9    | 6.9   | 5.9    | 6.3   | 5.9   | 6.3   |
| Lead/Lag               | Lead  | Lag   | Lag   | Lead  | Lag    | Lag   | Lead   | Lag   | Lead  | Lag   |
| Lead-Lag Optimize?     | Yes   | Yes   | Yes   | Yes   | Yes    | Yes   | Yes    | Yes   | Yes   | Yes   |
| Recall Mode            | None  | Max   | Max   | None  | Max    | Max   | None   | None  | None  | None  |
| Act Effct Green (s)    | 48.0  | 45.9  | 45.9  | 49.5  | 48.5   | 48.5  | 12.8   | 10.9  | 7.3   | 10.2  |
| Actuated g/C Ratio     | 0.63  | 0.60  | 0.60  | 0.65  | 0.63   | 0.63  | 0.17   | 0.14  | 0.10  | 0.13  |
| v/c Ratio              | 0.03  | 0.36  | 0.34  | 0.04  | 0.71   | 0.00  | 1.95   | 0.17  | 0.01  | 0.07  |
| Control Delay          | 6.4   | 11.7  | 2.6   | 6.0   | 17.0   | 0.0   | 462.6  | 17.2  | 29.0  | 25.9  |
| Queue Delay            | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0   | 0.0    | 0.0   | 0.0   | 0.0   |
| Total Delay            | 6.4   | 11.7  | 2.6   | 6.0   | 17.0   | 0.0   | 462.6  | 17.2  | 29.0  | 25.9  |
| LOS                    | A     | B     | A     | A     | B      | A     | F      | B     | C     | C     |
| Approach Delay         |       | 7.3   |       |       | 16.6   |       |        | 427.4 |       | 26.0  |
| Approach LOS           |       | A     |       |       | B      |       |        | F     |       | C     |
| Queue Length 50th (m)  | 0.3   | 16.5  | 0.0   | 0.8   | 47.7   | 0.0   | ~93.5  | 0.9   | 0.1   | 0.7   |
| Queue Length 95th (m)  | 2.3   | 67.4  | 13.4  | 4.3   | #200.2 | 0.0   | #154.5 | 9.9   | 1.3   | 6.7   |
| Internal Link Dist (m) |       | 820.6 |       |       | 792.2  |       |        | 422.2 |       | 103.9 |
| Turn Bay Length (m)    | 90.0  |       | 85.0  | 60.0  |        | 56.0  | 60.0   |       | 40.0  |       |
| Base Capacity (vph)    | 436   | 1057  | 1040  | 685   | 1115   | 1001  | 258    | 580   | 260   | 586   |
| Starvation Cap Reductn | 0     | 0     | 0     | 0     | 0      | 0     | 0      | 0     | 0     | 0     |
| Spillback Cap Reductn  | 0     | 0     | 0     | 0     | 0      | 0     | 0      | 0     | 0     | 0     |
| Storage Cap Reductn    | 0     | 0     | 0     | 0     | 0      | 0     | 0      | 0     | 0     | 0     |
| Reduced v/c Ratio      | 0.02  | 0.36  | 0.34  | 0.03  | 0.71   | 0.00  | 1.95   | 0.07  | 0.00  | 0.03  |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 76.7

Natural Cycle: 150

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.95

Intersection Signal Delay: 118.9

Intersection LOS: F

Intersection Capacity Utilization 83.4%

ICU Level of Service E

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

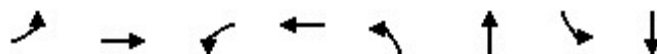
Splits and Phases: 1: Rue Caron/Rue Industrielle & HWY 17

|        |        |        |        |
|--------|--------|--------|--------|
|        |        |        |        |
| 15.9 s | 33.3 s | 18.9 s | 51.9 s |
|        |        |        |        |
| 15.9 s | 33.3 s | 18.9 s | 51.9 s |

# Lanes, Volumes, Timings

## 2: Caron St/Rue Caron & Laurier St

Phase 1  
AM.syn



| Lane Group             | EBL   | EBT   | WBL   | WBT   | NBL   | NBT    | SBL   | SBT   |
|------------------------|-------|-------|-------|-------|-------|--------|-------|-------|
| Lane Configurations    |       |       |       |       |       |        |       |       |
| Traffic Volume (vph)   | 17    | 54    | 41    | 148   | 60    | 390    | 12    | 320   |
| Future Volume (vph)    | 17    | 54    | 41    | 148   | 60    | 390    | 12    | 320   |
| Lane Group Flow (vph)  | 19    | 111   | 46    | 207   | 67    | 472    | 13    | 373   |
| Turn Type              | pm+pt | NA    | pm+pt | NA    | pm+pt | NA     | pm+pt | NA    |
| Protected Phases       | 7     | 4     | 3     | 8     | 5     | 2      | 1     | 6     |
| Permitted Phases       | 4     |       | 8     |       | 2     |        | 6     |       |
| Detector Phase         | 7     | 4     | 3     | 8     | 5     | 2      | 1     | 6     |
| Switch Phase           |       |       |       |       |       |        |       |       |
| Minimum Initial (s)    | 5.0   | 10.0  | 5.0   | 10.0  | 5.0   | 10.0   | 5.0   | 10.0  |
| Minimum Split (s)      | 11.5  | 31.5  | 11.5  | 31.5  | 11.1  | 27.1   | 11.1  | 27.1  |
| Total Split (s)        | 12.0  | 33.0  | 12.0  | 33.0  | 12.0  | 33.0   | 12.0  | 33.0  |
| Total Split (%)        | 13.3% | 36.7% | 13.3% | 36.7% | 13.3% | 36.7%  | 13.3% | 36.7% |
| Yellow Time (s)        | 3.3   | 3.3   | 3.3   | 3.3   | 3.3   | 3.3    | 3.3   | 3.3   |
| All-Red Time (s)       | 3.2   | 3.2   | 3.2   | 3.2   | 2.8   | 2.8    | 2.8   | 2.8   |
| Lost Time Adjust (s)   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0   | 0.0   |
| Total Lost Time (s)    | 6.5   | 6.5   | 6.5   | 6.5   | 6.1   | 6.1    | 6.1   | 6.1   |
| Lead/Lag               | Lead  | Lag   | Lead  | Lag   | Lead  | Lag    | Lead  | Lag   |
| Lead-Lag Optimize?     | Yes   | Yes   | Yes   | Yes   | Yes   | Yes    | Yes   | Yes   |
| Recall Mode            | None  | Max   | None  | Max   | None  | None   | None  | None  |
| Act Effct Green (s)    | 30.4  | 27.5  | 31.5  | 29.6  | 30.1  | 29.1   | 26.4  | 22.1  |
| Actuated g/C Ratio     | 0.39  | 0.35  | 0.40  | 0.38  | 0.39  | 0.37   | 0.34  | 0.28  |
| v/c Ratio              | 0.04  | 0.18  | 0.09  | 0.31  | 0.23  | 0.72   | 0.05  | 0.75  |
| Control Delay          | 15.2  | 15.2  | 15.5  | 21.1  | 17.2  | 30.4   | 15.5  | 37.4  |
| Queue Delay            | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0   | 0.0   |
| Total Delay            | 15.2  | 15.2  | 15.5  | 21.1  | 17.2  | 30.4   | 15.5  | 37.4  |
| LOS                    | B     | B     | B     | C     | B     | C      | B     | D     |
| Approach Delay         |       | 15.2  |       | 20.1  |       | 28.7   |       | 36.7  |
| Approach LOS           |       | B     |       | C     |       | C      |       | D     |
| Queue Length 50th (m)  | 1.6   | 6.9   | 3.8   | 17.5  | 6.1   | 56.1   | 1.2   | 52.2  |
| Queue Length 95th (m)  | 5.3   | 18.6  | 9.9   | 41.9  | 13.1  | #122.5 | 4.1   | 80.9  |
| Internal Link Dist (m) |       | 919.9 |       | 690.6 |       | 145.4  |       | 422.2 |
| Turn Bay Length (m)    | 35.0  |       | 60.0  |       | 55.0  |        | 50.0  |       |
| Base Capacity (vph)    | 472   | 609   | 509   | 659   | 289   | 716    | 262   | 627   |
| Starvation Cap Reductn | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0     |
| Spillback Cap Reductn  | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0     |
| Storage Cap Reductn    | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0     |
| Reduced v/c Ratio      | 0.04  | 0.18  | 0.09  | 0.31  | 0.23  | 0.66   | 0.05  | 0.59  |

### Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 78

Natural Cycle: 85

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 28.1

Intersection LOS: C

Intersection Capacity Utilization 58.6%

ICU Level of Service B

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 2: Caron St/Rue Caron & Laurier St

|      |    |      |    |      |    |      |    |
|------|----|------|----|------|----|------|----|
|      | Ø1 |      | Ø2 |      | Ø3 |      | Ø4 |
| 12 s |    | 33 s |    | 12 s |    | 33 s |    |
|      | Ø5 |      | Ø6 |      | Ø7 |      | Ø8 |
| 12 s |    | 33 s |    | 12 s |    | 33 s |    |

City of Ottawa Inc.

06/06/2010

# HCM Unsignalized Intersection Capacity Analysis

## 3: Caron St & Hélène St

Phase 1  
AM.syn



| Movement                          | EBL                                                                               | EBR  | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR  |
|-----------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations               |  |      |  |  |  |      |
| Traffic Volume (veh/h)            | 0                                                                                 | 5    | 6                                                                                 | 485                                                                               | 404                                                                               | 3    |
| Future Volume (Veh/h)             | 0                                                                                 | 5    | 6                                                                                 | 485                                                                               | 404                                                                               | 3    |
| Sign Control                      | Stop                                                                              |      |                                                                                   | Free                                                                              | Free                                                                              |      |
| Grade                             | 0%                                                                                |      |                                                                                   | 0%                                                                                | 0%                                                                                |      |
| Peak Hour Factor                  | 0.90                                                                              | 0.90 | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90 |
| Hourly flow rate (vph)            | 0                                                                                 | 6    | 7                                                                                 | 539                                                                               | 449                                                                               | 3    |
| Pedestrians                       |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Lane Width (m)                    |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Walking Speed (m/s)               |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Percent Blockage                  |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Right turn flare (veh)            |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Median type                       |                                                                                   |      |                                                                                   | TWLTL                                                                             | TWLTL                                                                             |      |
| Median storage veh)               |                                                                                   |      |                                                                                   | 2                                                                                 | 2                                                                                 |      |
| Upstream signal (m)               |                                                                                   |      |                                                                                   |                                                                                   | 169                                                                               |      |
| pX, platoon unblocked             | 0.82                                                                              | 0.82 | 0.82                                                                              |                                                                                   |                                                                                   |      |
| vC, conflicting volume            | 1004                                                                              | 450  | 452                                                                               |                                                                                   |                                                                                   |      |
| vC1, stage 1 conf vol             | 450                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |
| vC2, stage 2 conf vol             | 553                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |
| vCu, unblocked vol                | 894                                                                               | 219  | 221                                                                               |                                                                                   |                                                                                   |      |
| tC, single (s)                    | 6.4                                                                               | 6.2  | 4.1                                                                               |                                                                                   |                                                                                   |      |
| tC, 2 stage (s)                   | 5.4                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |
| tF (s)                            | 3.5                                                                               | 3.3  | 2.2                                                                               |                                                                                   |                                                                                   |      |
| p0 queue free %                   | 100                                                                               | 99   | 99                                                                                |                                                                                   |                                                                                   |      |
| cM capacity (veh/h)               | 481                                                                               | 672  | 1105                                                                              |                                                                                   |                                                                                   |      |
| Direction, Lane #                 | EB 1                                                                              | NB 1 | NB 2                                                                              | SB 1                                                                              |                                                                                   |      |
| Volume Total                      | 6                                                                                 | 7    | 539                                                                               | 452                                                                               |                                                                                   |      |
| Volume Left                       | 0                                                                                 | 7    | 0                                                                                 | 0                                                                                 |                                                                                   |      |
| Volume Right                      | 6                                                                                 | 0    | 0                                                                                 | 3                                                                                 |                                                                                   |      |
| cSH                               | 672                                                                               | 1105 | 1700                                                                              | 1700                                                                              |                                                                                   |      |
| Volume to Capacity                | 0.01                                                                              | 0.01 | 0.32                                                                              | 0.27                                                                              |                                                                                   |      |
| Queue Length 95th (m)             | 0.2                                                                               | 0.1  | 0.0                                                                               | 0.0                                                                               |                                                                                   |      |
| Control Delay (s)                 | 10.4                                                                              | 8.3  | 0.0                                                                               | 0.0                                                                               |                                                                                   |      |
| Lane LOS                          | B                                                                                 | A    |                                                                                   |                                                                                   |                                                                                   |      |
| Approach Delay (s)                | 10.4                                                                              | 0.1  |                                                                                   | 0.0                                                                               |                                                                                   |      |
| Approach LOS                      | B                                                                                 |      |                                                                                   |                                                                                   |                                                                                   |      |
| Intersection Summary              |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Average Delay                     |                                                                                   |      | 0.1                                                                               |                                                                                   |                                                                                   |      |
| Intersection Capacity Utilization |                                                                                   |      | 36.9%                                                                             | ICU Level of Service                                                              |                                                                                   | A    |
| Analvsis Period (min)             |                                                                                   |      | 15                                                                                |                                                                                   |                                                                                   |      |

# HCM Unsignalized Intersection Capacity Analysis

## 4: Caron St & Francois St

Phase 1  
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| Movement                          | EBL                                                                               | EBR  | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR  |
|-----------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations               |  |      |  |  |  |      |
| Sign Control                      | Stop                                                                              |      |                                                                                   | Stop                                                                              | Stop                                                                              |      |
| Traffic Volume (vph)              | 9                                                                                 | 3    | 1                                                                                 | 421                                                                               | 407                                                                               | 2    |
| Future Volume (vph)               | 9                                                                                 | 3    | 1                                                                                 | 421                                                                               | 407                                                                               | 2    |
| Peak Hour Factor                  | 0.90                                                                              | 0.90 | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90 |
| Hourly flow rate (vph)            | 10                                                                                | 3    | 1                                                                                 | 468                                                                               | 452                                                                               | 2    |
| Direction, Lane #                 | EB 1                                                                              | NB 1 | NB 2                                                                              | SB 1                                                                              |                                                                                   |      |
| Volume Total (vph)                | 13                                                                                | 1    | 468                                                                               | 454                                                                               |                                                                                   |      |
| Volume Left (vph)                 | 10                                                                                | 1    | 0                                                                                 | 0                                                                                 |                                                                                   |      |
| Volume Right (vph)                | 3                                                                                 | 0    | 0                                                                                 | 2                                                                                 |                                                                                   |      |
| Hadj (s)                          | 0.05                                                                              | 0.53 | 0.03                                                                              | 0.03                                                                              |                                                                                   |      |
| Departure Headway (s)             | 6.0                                                                               | 5.4  | 4.9                                                                               | 4.6                                                                               |                                                                                   |      |
| Degree Utilization, x             | 0.02                                                                              | 0.00 | 0.64                                                                              | 0.58                                                                              |                                                                                   |      |
| Capacity (veh/h)                  | 512                                                                               | 654  | 729                                                                               | 774                                                                               |                                                                                   |      |
| Control Delay (s)                 | 9.1                                                                               | 7.2  | 14.8                                                                              | 13.7                                                                              |                                                                                   |      |
| Approach Delay (s)                | 9.1                                                                               | 14.8 |                                                                                   | 13.7                                                                              |                                                                                   |      |
| Approach LOS                      | A                                                                                 | B    |                                                                                   | B                                                                                 |                                                                                   |      |
| Intersection Summary              |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Delay                             |                                                                                   |      | 14.2                                                                              |                                                                                   |                                                                                   |      |
| Level of Service                  |                                                                                   |      | B                                                                                 |                                                                                   |                                                                                   |      |
| Intersection Capacity Utilization |                                                                                   |      | 33.4%                                                                             | ICU Level of Service                                                              | A                                                                                 |      |
| Analysis Period (min)             |                                                                                   |      | 15                                                                                |                                                                                   |                                                                                   |      |

# HCM Unsignalized Intersection Capacity Analysis

## 5: Caron St & Des Cedres Ave

Phase 1  
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|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                   |  |  |  |  |  |  |
| Movement                          | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |
| Lane Configurations               |  |                                                                                   |  |                                                                                   |  |  |
| Traffic Volume (veh/h)            | 5                                                                                 | 10                                                                                | 412                                                                               | 1                                                                                 | 5                                                                                 | 405                                                                               |
| Future Volume (Veh/h)             | 5                                                                                 | 10                                                                                | 412                                                                               | 1                                                                                 | 5                                                                                 | 405                                                                               |
| Sign Control                      | Stop                                                                              |                                                                                   | Free                                                                              |                                                                                   | Free                                                                              | Free                                                                              |
| Grade                             | 0%                                                                                |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |
| Hourly flow rate (vph)            | 6                                                                                 | 11                                                                                | 458                                                                               | 1                                                                                 | 6                                                                                 | 450                                                                               |
| Pedestrians                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Width (m)                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Walking Speed (m/s)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Percent Blockage                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Median type                       |                                                                                   |                                                                                   | TWLTL                                                                             |                                                                                   | TWLTL                                                                             |                                                                                   |
| Median storage veh)               |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   | 2                                                                                 |                                                                                   |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| pX, platoon unblocked             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC, conflicting volume            | 920                                                                               | 458                                                                               |                                                                                   |                                                                                   | 459                                                                               |                                                                                   |
| vC1, stage 1 conf vol             | 458                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC2, stage 2 conf vol             | 462                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vCu, unblocked vol                | 920                                                                               | 458                                                                               |                                                                                   |                                                                                   | 459                                                                               |                                                                                   |
| tC, single (s)                    | 6.4                                                                               | 6.2                                                                               |                                                                                   |                                                                                   | 4.1                                                                               |                                                                                   |
| tC, 2 stage (s)                   | 5.4                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| tF (s)                            | 3.5                                                                               | 3.3                                                                               |                                                                                   |                                                                                   | 2.2                                                                               |                                                                                   |
| p0 queue free %                   | 99                                                                                | 98                                                                                |                                                                                   |                                                                                   | 99                                                                                |                                                                                   |
| cM capacity (veh/h)               | 510                                                                               | 602                                                                               |                                                                                   |                                                                                   | 1102                                                                              |                                                                                   |
| Direction, Lane #                 | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                   |                                                                                   |
| Volume Total                      | 17                                                                                | 459                                                                               | 6                                                                                 | 450                                                                               |                                                                                   |                                                                                   |
| Volume Left                       | 6                                                                                 | 0                                                                                 | 6                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |
| Volume Right                      | 11                                                                                | 1                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |
| cSH                               | 566                                                                               | 1700                                                                              | 1102                                                                              | 1700                                                                              |                                                                                   |                                                                                   |
| Volume to Capacity                | 0.03                                                                              | 0.27                                                                              | 0.01                                                                              | 0.26                                                                              |                                                                                   |                                                                                   |
| Queue Length 95th (m)             | 0.6                                                                               | 0.0                                                                               | 0.1                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |
| Control Delay (s)                 | 11.6                                                                              | 0.0                                                                               | 8.3                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |
| Lane LOS                          | B                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Approach Delay (s)                | 11.6                                                                              | 0.0                                                                               | 0.1                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Approach LOS                      | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Average Delay                     |                                                                                   |                                                                                   | 0.3                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 33.0%                                                                             | ICU Level of Service                                                              |                                                                                   | A                                                                                 |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |

# HCM Unsignalized Intersection Capacity Analysis

## 6: Caron St & Cote St/Potvin Ave

Phase 1  
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|                                   |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|--|--|--|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |  |  |  |  |  |  |
| Lane Configurations               |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |  |  |                                                                                     |  |  |                                                                                     |  |  |  |  |  |  |
| Sign Control                      |                                                                                   | Stop                                                                              |                                                                                   |                                                                                   | Stop                                                                              |                                                                                   |                                                                                     | Stop                                                                                |                                                                                     |                                                                                     | Stop                                                                                |                                                                                     |  |  |  |  |  |  |
| Traffic Volume (vph)              | 9                                                                                 | 0                                                                                 | 8                                                                                 | 9                                                                                 | 1                                                                                 | 6                                                                                 | 4                                                                                   | 398                                                                                 | 6                                                                                   | 5                                                                                   | 405                                                                                 | 0                                                                                   |  |  |  |  |  |  |
| Future Volume (vph)               | 9                                                                                 | 0                                                                                 | 8                                                                                 | 9                                                                                 | 1                                                                                 | 6                                                                                 | 4                                                                                   | 398                                                                                 | 6                                                                                   | 5                                                                                   | 405                                                                                 | 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                                                                                |  |  |  |  |  |  |
| Hourly flow rate (vph)            | 10                                                                                | 0                                                                                 | 9                                                                                 | 10                                                                                | 1                                                                                 | 7                                                                                 | 4                                                                                   | 442                                                                                 | 7                                                                                   | 6                                                                                   | 450                                                                                 | 0                                                                                   |  |  |  |  |  |  |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              | NB 2                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Volume Total (vph)                | 19                                                                                | 18                                                                                | 4                                                                                 | 449                                                                               | 6                                                                                 | 450                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Volume Left (vph)                 | 10                                                                                | 10                                                                                | 4                                                                                 | 0                                                                                 | 6                                                                                 | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Volume Right (vph)                | 9                                                                                 | 7                                                                                 | 0                                                                                 | 7                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Hadj (s)                          | -0.14                                                                             | -0.09                                                                             | 0.53                                                                              | 0.02                                                                              | 0.53                                                                              | 0.03                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Departure Headway (s)             | 5.9                                                                               | 5.9                                                                               | 5.5                                                                               | 5.0                                                                               | 5.5                                                                               | 5.0                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Degree Utilization, x             | 0.03                                                                              | 0.03                                                                              | 0.01                                                                              | 0.62                                                                              | 0.01                                                                              | 0.62                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Capacity (veh/h)                  | 513                                                                               | 516                                                                               | 636                                                                               | 714                                                                               | 636                                                                               | 713                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Control Delay (s)                 | 9.0                                                                               | 9.1                                                                               | 7.3                                                                               | 14.6                                                                              | 7.3                                                                               | 14.7                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Approach Delay (s)                | 9.0                                                                               | 9.1                                                                               | 14.5                                                                              |                                                                                   | 14.6                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Approach LOS                      | A                                                                                 | A                                                                                 | B                                                                                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Delay                             |                                                                                   |                                                                                   | 14.4                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Level of Service                  |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 32.5%                                                                             | ICU Level of Service                                                              |                                                                                   | A                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |

# HCM Unsignalized Intersection Capacity Analysis

## 7: Caron St & Docteur Corbeil Blvd

Phase 1  
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| Movement                          | EBL  | EBR  | NBL   | NBT                  | SBT   | SBR  |
|-----------------------------------|------|------|-------|----------------------|-------|------|
| Lane Configurations               |      |      |       |                      |       |      |
| Traffic Volume (veh/h)            | 38   | 57   | 81    | 370                  | 339   | 43   |
| Future Volume (Veh/h)             | 38   | 57   | 81    | 370                  | 339   | 43   |
| Sign Control                      | Stop |      |       | Free                 | Free  |      |
| Grade                             | 0%   |      |       | 0%                   | 0%    |      |
| Peak Hour Factor                  | 0.90 | 0.90 | 0.90  | 0.90                 | 0.90  | 0.90 |
| Hourly flow rate (vph)            | 42   | 63   | 90    | 411                  | 377   | 48   |
| Pedestrians                       | 2    |      |       |                      |       |      |
| Lane Width (m)                    | 3.6  |      |       |                      |       |      |
| Walking Speed (m/s)               | 1.2  |      |       |                      |       |      |
| Percent Blockage                  | 0    |      |       |                      |       |      |
| Right turn flare (veh)            |      |      |       |                      |       |      |
| Median type                       |      |      |       | TWLTL                | TWLTL |      |
| Median storage (veh)              |      |      |       | 2                    | 2     |      |
| Upstream signal (m)               |      |      |       |                      |       |      |
| pX, platoon unblocked             |      |      |       |                      |       |      |
| vC, conflicting volume            | 994  | 403  | 427   |                      |       |      |
| vC1, stage 1 conf vol             | 403  |      |       |                      |       |      |
| vC2, stage 2 conf vol             | 591  |      |       |                      |       |      |
| vCu, unblocked vol                | 994  | 403  | 427   |                      |       |      |
| tC, single (s)                    | 6.4  | 6.2  | 4.1   |                      |       |      |
| tC, 2 stage (s)                   | 5.4  |      |       |                      |       |      |
| tF (s)                            | 3.5  | 3.3  | 2.2   |                      |       |      |
| p0 queue free %                   | 91   | 90   | 92    |                      |       |      |
| cM capacity (veh/h)               | 449  | 646  | 1130  |                      |       |      |
| Direction, Lane #                 | EB 1 | NB 1 | NB 2  | SB 1                 |       |      |
| Volume Total                      | 105  | 90   | 411   | 425                  |       |      |
| Volume Left                       | 42   | 90   | 0     | 0                    |       |      |
| Volume Right                      | 63   | 0    | 0     | 48                   |       |      |
| cSH                               | 550  | 1130 | 1700  | 1700                 |       |      |
| Volume to Capacity                | 0.19 | 0.08 | 0.24  | 0.25                 |       |      |
| Queue Length 95th (m)             | 4.9  | 1.8  | 0.0   | 0.0                  |       |      |
| Control Delay (s)                 | 13.1 | 8.5  | 0.0   | 0.0                  |       |      |
| Lane LOS                          | B    | A    |       |                      |       |      |
| Approach Delay (s)                | 13.1 | 1.5  |       | 0.0                  |       |      |
| Approach LOS                      | B    |      |       |                      |       |      |
| Intersection Summary              |      |      |       |                      |       |      |
| Average Delay                     |      |      | 2.1   |                      |       |      |
| Intersection Capacity Utilization |      |      | 42.3% | ICU Level of Service |       | A    |
| Analysis Period (min)             |      |      | 15    |                      |       |      |

# HCM Unsignalized Intersection Capacity Analysis

## 8: David St & Caron St

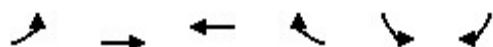
Phase 1  
AM.syn

|                                   |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--|--|
| Movement                          | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |  |  |
| Lane Configurations               |  |                                                                                   |  |                                                                                   |  |  |  |  |
| Sign Control                      | Stop                                                                              |                                                                                   | Stop                                                                              |                                                                                   | Stop                                                                              | Stop                                                                              |  |  |
| Traffic Volume (vph)              | 26                                                                                | 179                                                                               | 240                                                                               | 23                                                                                | 174                                                                               | 222                                                                               |  |  |
| Future Volume (vph)               | 26                                                                                | 179                                                                               | 240                                                                               | 23                                                                                | 174                                                                               | 222                                                                               |  |  |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |  |  |
| Hourly flow rate (vph)            | 29                                                                                | 199                                                                               | 267                                                                               | 26                                                                                | 193                                                                               | 247                                                                               |  |  |
| Direction, Lane #                 | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                   |                                                                                   |  |  |
| Volume Total (vph)                | 228                                                                               | 293                                                                               | 193                                                                               | 247                                                                               |                                                                                   |                                                                                   |  |  |
| Volume Left (vph)                 | 29                                                                                | 0                                                                                 | 193                                                                               | 0                                                                                 |                                                                                   |                                                                                   |  |  |
| Volume Right (vph)                | 199                                                                               | 26                                                                                | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |  |  |
| Hadj (s)                          | -0.46                                                                             | -0.02                                                                             | 0.53                                                                              | 0.03                                                                              |                                                                                   |                                                                                   |  |  |
| Departure Headway (s)             | 5.1                                                                               | 5.2                                                                               | 6.0                                                                               | 5.5                                                                               |                                                                                   |                                                                                   |  |  |
| Degree Utilization, x             | 0.33                                                                              | 0.42                                                                              | 0.32                                                                              | 0.38                                                                              |                                                                                   |                                                                                   |  |  |
| Capacity (veh/h)                  | 643                                                                               | 669                                                                               | 579                                                                               | 634                                                                               |                                                                                   |                                                                                   |  |  |
| Control Delay (s)                 | 10.6                                                                              | 11.8                                                                              | 10.6                                                                              | 10.6                                                                              |                                                                                   |                                                                                   |  |  |
| Approach Delay (s)                | 10.6                                                                              | 11.8                                                                              | 10.6                                                                              |                                                                                   |                                                                                   |                                                                                   |  |  |
| Approach LOS                      | B                                                                                 | B                                                                                 | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |  |  |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
| Delay                             |                                                                                   |                                                                                   | 11.0                                                                              |                                                                                   |                                                                                   |                                                                                   |  |  |
| Level of Service                  |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |  |  |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 48.2%                                                                             | ICU Level of Service                                                              | A                                                                                 |                                                                                   |  |  |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |  |  |

# HCM Unsignalized Intersection Capacity Analysis

## 9: Baseline Rd & Caron St

Phase 1  
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| Movement                          | EBL  | EBT                                                                               | WBT                                                                               | WBR                  | SBL                                                                               | SBR  |
|-----------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations               |      |  |  |                      |  |      |
| Traffic Volume (veh/h)            | 30   | 28                                                                                | 58                                                                                | 127                  | 95                                                                                | 47   |
| Future Volume (Veh/h)             | 30   | 28                                                                                | 58                                                                                | 127                  | 95                                                                                | 47   |
| Sign Control                      |      | Free                                                                              | Free                                                                              |                      | Stop                                                                              |      |
| Grade                             |      | 0%                                                                                | 0%                                                                                |                      | 0%                                                                                |      |
| Peak Hour Factor                  | 0.90 | 0.90                                                                              | 0.90                                                                              | 0.90                 | 0.90                                                                              | 0.90 |
| Hourly flow rate (vph)            | 33   | 31                                                                                | 64                                                                                | 141                  | 106                                                                               | 52   |
| Pedestrians                       |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Lane Width (m)                    |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Walking Speed (m/s)               |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Percent Blockage                  |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Right turn flare (veh)            |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Median type                       |      | None                                                                              | None                                                                              |                      |                                                                                   |      |
| Median storage veh)               |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Upstream signal (m)               |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| pX, platoon unblocked             |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| vC, conflicting volume            | 205  |                                                                                   |                                                                                   |                      | 232                                                                               | 134  |
| vC1, stage 1 conf vol             |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| vC2, stage 2 conf vol             |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| vCu, unblocked vol                | 205  |                                                                                   |                                                                                   |                      | 232                                                                               | 134  |
| tC, single (s)                    | 4.1  |                                                                                   |                                                                                   |                      | 6.4                                                                               | 6.2  |
| tC, 2 stage (s)                   |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| tF (s)                            | 2.2  |                                                                                   |                                                                                   |                      | 3.5                                                                               | 3.3  |
| p0 queue free %                   | 98   |                                                                                   |                                                                                   |                      | 86                                                                                | 94   |
| cM capacity (veh/h)               | 1366 |                                                                                   |                                                                                   |                      | 738                                                                               | 914  |
| Direction, Lane #                 | EB 1 | WB 1                                                                              | SB 1                                                                              |                      |                                                                                   |      |
| Volume Total                      | 64   | 205                                                                               | 158                                                                               |                      |                                                                                   |      |
| Volume Left                       | 33   | 0                                                                                 | 106                                                                               |                      |                                                                                   |      |
| Volume Right                      | 0    | 141                                                                               | 52                                                                                |                      |                                                                                   |      |
| cSH                               | 1366 | 1700                                                                              | 788                                                                               |                      |                                                                                   |      |
| Volume to Capacity                | 0.02 | 0.12                                                                              | 0.20                                                                              |                      |                                                                                   |      |
| Queue Length 95th (m)             | 0.5  | 0.0                                                                               | 5.2                                                                               |                      |                                                                                   |      |
| Control Delay (s)                 | 4.1  | 0.0                                                                               | 10.7                                                                              |                      |                                                                                   |      |
| Lane LOS                          | A    |                                                                                   | B                                                                                 |                      |                                                                                   |      |
| Approach Delay (s)                | 4.1  | 0.0                                                                               | 10.7                                                                              |                      |                                                                                   |      |
| Approach LOS                      |      |                                                                                   | B                                                                                 |                      |                                                                                   |      |
| Intersection Summary              |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Average Delay                     |      |                                                                                   | 4.6                                                                               |                      |                                                                                   |      |
| Intersection Capacity Utilization |      |                                                                                   | 33.4%                                                                             | ICU Level of Service |                                                                                   | A    |
| Analvsis Period (min)             |      |                                                                                   | 15                                                                                |                      |                                                                                   |      |

# HCM Unsignalized Intersection Capacity Analysis

## 10: Street B & David St

Phase 1  
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|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                   |  |  |  |  |  |  |
| Movement                          | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBR                                                                               |
| Lane Configurations               |  |                                                                                   |                                                                                   |  |  |  |
| Traffic Volume (veh/h)            | 7                                                                                 | 169                                                                               | 42                                                                                | 15                                                                                | 169                                                                               | 43                                                                                |
| Future Volume (Veh/h)             | 7                                                                                 | 169                                                                               | 42                                                                                | 15                                                                                | 169                                                                               | 43                                                                                |
| Sign Control                      | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              | Stop                                                                              |                                                                                   |
| Grade                             | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                | 0%                                                                                |                                                                                   |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |
| Hourly flow rate (vph)            | 8                                                                                 | 188                                                                               | 47                                                                                | 17                                                                                | 188                                                                               | 48                                                                                |
| Pedestrians                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Width (m)                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Walking Speed (m/s)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Percent Blockage                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Median type                       | None                                                                              |                                                                                   |                                                                                   | None                                                                              |                                                                                   |                                                                                   |
| Median storage (veh)              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| pX, platoon unblocked             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC, conflicting volume            |                                                                                   |                                                                                   | 196                                                                               |                                                                                   | 213                                                                               | 102                                                                               |
| vC1, stage 1 conf vol             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC2, stage 2 conf vol             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vCu, unblocked vol                |                                                                                   |                                                                                   | 196                                                                               |                                                                                   | 213                                                                               | 102                                                                               |
| tC, single (s)                    |                                                                                   |                                                                                   | 4.1                                                                               |                                                                                   | 6.4                                                                               | 6.2                                                                               |
| tC, 2 stage (s)                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| tF (s)                            |                                                                                   |                                                                                   | 2.2                                                                               |                                                                                   | 3.5                                                                               | 3.3                                                                               |
| p0 queue free %                   |                                                                                   |                                                                                   | 97                                                                                |                                                                                   | 75                                                                                | 95                                                                                |
| cM capacity (veh/h)               |                                                                                   |                                                                                   | 1377                                                                              |                                                                                   | 749                                                                               | 953                                                                               |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Volume Total                      | 196                                                                               | 64                                                                                | 236                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Volume Left                       | 0                                                                                 | 47                                                                                | 188                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Volume Right                      | 188                                                                               | 0                                                                                 | 48                                                                                |                                                                                   |                                                                                   |                                                                                   |
| cSH                               | 1700                                                                              | 1377                                                                              | 783                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Volume to Capacity                | 0.12                                                                              | 0.03                                                                              | 0.30                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Queue Length 95th (m)             | 0.0                                                                               | 0.7                                                                               | 8.9                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Control Delay (s)                 | 0.0                                                                               | 5.7                                                                               | 11.6                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Lane LOS                          |                                                                                   | A                                                                                 | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Approach Delay (s)                | 0.0                                                                               | 5.7                                                                               | 11.6                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Approach LOS                      |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Average Delay                     |                                                                                   |                                                                                   | 6.2                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 37.4%                                                                             | ICU Level of Service                                                              | A                                                                                 |                                                                                   |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |

# HCM Unsignalized Intersection Capacity Analysis12: Street B & Street A

Phase 1  
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|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Sign Control                      |                                                                                   | Stop                                                                              |                                                                                   |                                                                                   | Stop                                                                              |                                                                                   |                                                                                    | Stop                                                                                |                                                                                     |                                                                                     | Stop                                                                                |                                                                                     |
| Traffic Volume (vph)              | 127                                                                               | 0                                                                                 | 5                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 126                                                                                 |
| Future Volume (vph)               | 127                                                                               | 0                                                                                 | 5                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 126                                                                                 |
| 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                                                                                |
| Hourly flow rate (vph)            | 141                                                                               | 0                                                                                 | 6                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 140                                                                                 |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Total (vph)                | 147                                                                               | 0                                                                                 | 0                                                                                 | 140                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Left (vph)                 | 141                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Right (vph)                | 6                                                                                 | 0                                                                                 | 0                                                                                 | 140                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Hadj (s)                          | 0.20                                                                              | 0.00                                                                              | 0.00                                                                              | -0.57                                                                             |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Departure Headway (s)             | 4.4                                                                               | 4.3                                                                               | 4.4                                                                               | 3.7                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Degree Utilization, x             | 0.18                                                                              | 0.00                                                                              | 0.00                                                                              | 0.14                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Capacity (veh/h)                  | 797                                                                               | 803                                                                               | 795                                                                               | 941                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Control Delay (s)                 | 8.3                                                                               | 7.3                                                                               | 7.4                                                                               | 7.3                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay (s)                | 8.3                                                                               | 0.0                                                                               | 0.0                                                                               | 7.3                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                      | A                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Delay                             |                                                                                   |                                                                                   | 7.8                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Level of Service                  |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 22.6%                                                                             | ICU Level of Service                                                              | A                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM Unsignalized Intersection Capacity Analysis

## 15: Caron St & Street A

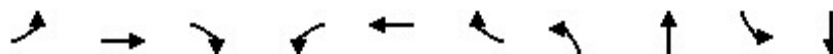
Phase 1  
AM.syn

|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--|--|
|                                   |  |  |  |  |  |  |  |  |
| Movement                          | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |  |  |
| Lane Configurations               |  |                                                                                   |  |                                                                                   |  |  |  |  |
| Sign Control                      | Stop                                                                              |                                                                                   | Stop                                                                              |                                                                                   | Stop                                                                              | Stop                                                                              |  |  |
| Traffic Volume (vph)              | 63                                                                                | 127                                                                               | 115                                                                               | 63                                                                                | 127                                                                               | 100                                                                               |  |  |
| Future Volume (vph)               | 63                                                                                | 127                                                                               | 115                                                                               | 63                                                                                | 127                                                                               | 100                                                                               |  |  |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |  |  |
| Hourly flow rate (vph)            | 70                                                                                | 141                                                                               | 128                                                                               | 70                                                                                | 141                                                                               | 111                                                                               |  |  |
| Direction, Lane #                 | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                   |                                                                                   |  |  |
| Volume Total (vph)                | 211                                                                               | 198                                                                               | 94                                                                                | 158                                                                               |                                                                                   |                                                                                   |  |  |
| Volume Left (vph)                 | 70                                                                                | 0                                                                                 | 94                                                                                | 47                                                                                |                                                                                   |                                                                                   |  |  |
| Volume Right (vph)                | 141                                                                               | 70                                                                                | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |  |  |
| Hadj (s)                          | -0.30                                                                             | -0.18                                                                             | 0.53                                                                              | 0.18                                                                              |                                                                                   |                                                                                   |  |  |
| Departure Headway (s)             | 4.7                                                                               | 4.7                                                                               | 5.8                                                                               | 5.4                                                                               |                                                                                   |                                                                                   |  |  |
| Degree Utilization, x             | 0.27                                                                              | 0.26                                                                              | 0.15                                                                              | 0.24                                                                              |                                                                                   |                                                                                   |  |  |
| Capacity (veh/h)                  | 715                                                                               | 731                                                                               | 597                                                                               | 638                                                                               |                                                                                   |                                                                                   |  |  |
| Control Delay (s)                 | 9.4                                                                               | 9.3                                                                               | 8.6                                                                               | 8.9                                                                               |                                                                                   |                                                                                   |  |  |
| Approach Delay (s)                | 9.4                                                                               | 9.3                                                                               | 8.8                                                                               |                                                                                   |                                                                                   |                                                                                   |  |  |
| Approach LOS                      | A                                                                                 | A                                                                                 | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |  |  |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
| Delay                             |                                                                                   |                                                                                   | 9.1                                                                               |                                                                                   |                                                                                   |                                                                                   |  |  |
| Level of Service                  |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |  |  |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 38.9%                                                                             | ICU Level of Service                                                              | A                                                                                 |                                                                                   |  |  |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |  |  |

# Lanes, Volumes, Timings

## 1: Rue Caron/Rue Industrielle & HWY 17

Phase 1  
PM.syn



| Lane Group             | EBL   | EBT   | EBR   | WBL   | WBT   | WBR   | NBL    | NBT   | SBL   | SBT   |
|------------------------|-------|-------|-------|-------|-------|-------|--------|-------|-------|-------|
| Lane Configurations    |       |       |       |       |       |       |        |       |       |       |
| Traffic Volume (vph)   | 34    | 189   | 346   | 30    | 106   | 26    | 328    | 87    | 35    | 138   |
| Future Volume (vph)    | 34    | 189   | 346   | 30    | 106   | 26    | 328    | 87    | 35    | 138   |
| Lane Group Flow (vph)  | 38    | 210   | 384   | 33    | 118   | 29    | 364    | 144   | 39    | 187   |
| Turn Type              | pm+pt | NA    | Perm  | pm+pt | NA    | Perm  | pm+pt  | NA    | pm+pt | NA    |
| Protected Phases       | 7     | 4     |       | 3     | 8     |       | 5      | 2     | 1     | 6     |
| Permitted Phases       | 4     |       | 4     | 8     |       | 8     | 2      |       | 6     |       |
| Detector Phase         | 7     | 4     | 4     | 3     | 8     | 8     | 5      | 2     | 1     | 6     |
| Switch Phase           |       |       |       |       |       |       |        |       |       |       |
| Minimum Initial (s)    | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0    | 10.0  | 5.0   | 10.0  |
| Minimum Split (s)      | 11.9  | 51.9  | 51.9  | 11.9  | 51.9  | 51.9  | 10.9   | 33.3  | 10.9  | 33.3  |
| Total Split (s)        | 18.9  | 51.9  | 51.9  | 18.9  | 51.9  | 51.9  | 15.9   | 33.3  | 15.9  | 33.3  |
| Total Split (%)        | 15.8% | 43.3% | 43.3% | 15.8% | 43.3% | 43.3% | 13.3%  | 27.8% | 13.3% | 27.8% |
| Yellow Time (s)        | 4.2   | 4.2   | 4.2   | 4.2   | 4.2   | 4.2   | 3.3    | 3.3   | 3.3   | 3.3   |
| All-Red Time (s)       | 2.7   | 2.7   | 2.7   | 2.7   | 2.7   | 2.7   | 2.6    | 3.0   | 2.6   | 3.0   |
| Lost Time Adjust (s)   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)    | 6.9   | 6.9   | 6.9   | 6.9   | 6.9   | 6.9   | 5.9    | 6.3   | 5.9   | 6.3   |
| Lead/Lag               | Lead  | Lag   | Lag   | Lead  | Lag   | Lag   | Lead   | Lag   | Lead  | Lag   |
| Lead-Lag Optimize?     | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   | Yes    | Yes   | Yes   | Yes   |
| Recall Mode            | None  | Max   | Max   | None  | Max   | Max   | None   | None  | None  | None  |
| Act Effct Green (s)    | 49.7  | 45.7  | 45.7  | 49.5  | 45.6  | 45.6  | 30.0   | 24.0  | 23.2  | 15.6  |
| Actuated g/C Ratio     | 0.50  | 0.46  | 0.46  | 0.50  | 0.46  | 0.46  | 0.30   | 0.24  | 0.24  | 0.16  |
| v/c Ratio              | 0.06  | 0.26  | 0.43  | 0.06  | 0.14  | 0.04  | 1.17   | 0.34  | 0.12  | 0.67  |
| Control Delay          | 11.9  | 19.6  | 3.8   | 11.8  | 18.8  | 0.1   | 136.2  | 32.9  | 25.6  | 50.2  |
| Queue Delay            | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0   | 0.0   | 0.0   |
| Total Delay            | 11.9  | 19.6  | 3.8   | 11.8  | 18.8  | 0.1   | 136.2  | 32.9  | 25.6  | 50.2  |
| LOS                    | B     | B     | A     | B     | B     | A     | F      | C     | C     | D     |
| Approach Delay         |       | 9.5   |       |       | 14.5  |       |        | 106.9 |       | 46.0  |
| Approach LOS           |       | A     |       |       | B     |       |        | F     |       | D     |
| Queue Length 50th (m)  | 3.0   | 24.2  | 0.0   | 2.6   | 12.9  | 0.0   | ~59.1  | 20.7  | 5.1   | 31.5  |
| Queue Length 95th (m)  | 8.1   | 44.6  | 16.3  | 7.3   | 26.4  | 0.0   | #109.5 | 38.9  | 11.9  | 52.9  |
| Internal Link Dist (m) |       | 820.6 |       |       | 792.2 |       |        | 422.2 |       | 103.9 |
| Turn Bay Length (m)    | 90.0  |       | 85.0  | 60.0  |       | 56.0  | 60.0   |       | 40.0  |       |
| Base Capacity (vph)    | 696   | 819   | 901   | 649   | 817   | 773   | 311    | 484   | 363   | 483   |
| Starvation Cap Reductn | 0     | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     |
| Spillback Cap Reductn  | 0     | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     |
| Storage Cap Reductn    | 0     | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     |
| Reduced v/c Ratio      | 0.05  | 0.26  | 0.43  | 0.05  | 0.14  | 0.04  | 1.17   | 0.30  | 0.11  | 0.39  |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 98.5

Natural Cycle: 110

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.17

Intersection Signal Delay: 47.4

Intersection LOS: D

Intersection Capacity Utilization 65.2%

ICU Level of Service C

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

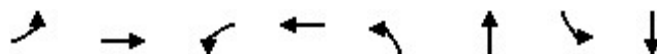
Splits and Phases: 1: Rue Caron/Rue Industrielle & HWY 17

|        |        |        |        |        |        |        |        |        |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|        |        |        |        |        |        |        |        |        |
| 15.9 s | 33.3 s | 18.9 s | 51.9 s | 15.9 s | 33.3 s | 18.9 s | 51.9 s | 15.9 s |
|        |        |        |        |        |        |        |        |        |
| 15.9 s | 33.3 s | 18.9 s | 51.9 s | 15.9 s | 33.3 s | 18.9 s | 51.9 s | 15.9 s |

# Lanes, Volumes, Timings

## 2: Caron St/Rue Caron & Laurier St

Phase 1  
PM.syn



| Lane Group             | EBL   | EBT   | WBL   | WBT   | NBL   | NBT    | SBL   | SBT    |
|------------------------|-------|-------|-------|-------|-------|--------|-------|--------|
| Lane Configurations    |       |       |       |       |       |        |       |        |
| Traffic Volume (vph)   | 34    | 155   | 30    | 87    | 72    | 364    | 35    | 420    |
| Future Volume (vph)    | 34    | 155   | 30    | 87    | 72    | 364    | 35    | 420    |
| Lane Group Flow (vph)  | 38    | 268   | 33    | 126   | 80    | 451    | 39    | 501    |
| Turn Type              | pm+pt | NA    | pm+pt | NA    | pm+pt | NA     | pm+pt | NA     |
| Protected Phases       | 7     | 4     | 3     | 8     | 5     | 2      | 1     | 6      |
| Permitted Phases       | 4     |       | 8     |       | 2     |        | 6     |        |
| Detector Phase         | 7     | 4     | 3     | 8     | 5     | 2      | 1     | 6      |
| Switch Phase           |       |       |       |       |       |        |       |        |
| Minimum Initial (s)    | 5.0   | 10.0  | 5.0   | 10.0  | 5.0   | 10.0   | 5.0   | 10.0   |
| Minimum Split (s)      | 11.5  | 31.5  | 11.5  | 31.5  | 11.1  | 27.1   | 11.1  | 27.1   |
| Total Split (s)        | 12.0  | 33.0  | 12.0  | 33.0  | 12.0  | 33.0   | 12.0  | 33.0   |
| Total Split (%)        | 13.3% | 36.7% | 13.3% | 36.7% | 13.3% | 36.7%  | 13.3% | 36.7%  |
| Yellow Time (s)        | 3.3   | 3.3   | 3.3   | 3.3   | 3.3   | 3.3    | 3.3   | 3.3    |
| All-Red Time (s)       | 3.2   | 3.2   | 3.2   | 3.2   | 2.8   | 2.8    | 2.8   | 2.8    |
| Lost Time Adjust (s)   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0   | 0.0    |
| Total Lost Time (s)    | 6.5   | 6.5   | 6.5   | 6.5   | 6.1   | 6.1    | 6.1   | 6.1    |
| Lead/Lag               | Lead  | Lag   | Lead  | Lag   | Lead  | Lag    | Lead  | Lag    |
| Lead-Lag Optimize?     | Yes   | Yes   | Yes   | Yes   | Yes   | Yes    | Yes   | Yes    |
| Recall Mode            | None  | Max   | None  | Max   | None  | None   | None  | None   |
| Act Effct Green (s)    | 30.2  | 27.2  | 30.2  | 27.2  | 31.6  | 28.4   | 30.3  | 25.8   |
| Actuated g/C Ratio     | 0.37  | 0.33  | 0.37  | 0.33  | 0.39  | 0.35   | 0.37  | 0.32   |
| v/c Ratio              | 0.08  | 0.46  | 0.09  | 0.22  | 0.37  | 0.74   | 0.15  | 0.90   |
| Control Delay          | 16.1  | 24.7  | 16.1  | 21.5  | 19.9  | 35.0   | 16.1  | 50.4   |
| Queue Delay            | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0   | 0.0    |
| Total Delay            | 16.1  | 24.7  | 16.1  | 21.5  | 19.9  | 35.0   | 16.1  | 50.4   |
| LOS                    | B     | C     | B     | C     | B     | C      | B     | D      |
| Approach Delay         |       | 23.6  |       | 20.4  |       | 32.7   |       | 47.9   |
| Approach LOS           |       | C     |       | C     |       | C      |       | D      |
| Queue Length 50th (m)  | 3.5   | 31.0  | 3.0   | 13.0  | 7.4   | 66.5   | 3.5   | 77.3   |
| Queue Length 95th (m)  | 8.6   | 52.6  | 7.8   | 25.7  | 15.1  | #114.6 | 8.8   | #133.9 |
| Internal Link Dist (m) |       | 919.9 |       | 690.6 |       | 145.4  |       | 422.2  |
| Turn Bay Length (m)    | 35.0  |       | 60.0  |       | 55.0  |        | 50.0  |        |
| Base Capacity (vph)    | 475   | 578   | 385   | 579   | 220   | 645    | 268   | 593    |
| Starvation Cap Reductn | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0      |
| Spillback Cap Reductn  | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0      |
| Storage Cap Reductn    | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0      |
| Reduced v/c Ratio      | 0.08  | 0.46  | 0.09  | 0.22  | 0.36  | 0.70   | 0.15  | 0.84   |

### Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 81.5

Natural Cycle: 85

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 35.0

Intersection LOS: C

Intersection Capacity Utilization 68.8%

ICU Level of Service C

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 2: Caron St/Rue Caron & Laurier St

|      |    |      |    |      |    |      |    |
|------|----|------|----|------|----|------|----|
|      | Ø1 |      | Ø2 |      | Ø3 |      | Ø4 |
| 12 s |    | 33 s |    | 12 s |    | 33 s |    |
|      | Ø5 |      | Ø6 |      | Ø7 |      | Ø8 |
| 12 s |    | 33 s |    | 12 s |    | 33 s |    |

City of Ottawa Inc.

06/06/2010

# HCM Unsignalized Intersection Capacity Analysis

## 3: Caron St & Hélène St

Phase 1  
PM.syn



| Movement                          | EBL                                                                               | EBR  | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR  |
|-----------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations               |  |      |  |  |  |      |
| Traffic Volume (veh/h)            | 0                                                                                 | 8    | 7                                                                                 | 478                                                                               | 533                                                                               | 3    |
| Future Volume (Veh/h)             | 0                                                                                 | 8    | 7                                                                                 | 478                                                                               | 533                                                                               | 3    |
| Sign Control                      | Stop                                                                              |      |                                                                                   | Free                                                                              | Free                                                                              |      |
| Grade                             | 0%                                                                                |      |                                                                                   | 0%                                                                                | 0%                                                                                |      |
| Peak Hour Factor                  | 0.90                                                                              | 0.90 | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90 |
| Hourly flow rate (vph)            | 0                                                                                 | 9    | 8                                                                                 | 531                                                                               | 592                                                                               | 3    |
| Pedestrians                       |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Lane Width (m)                    |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Walking Speed (m/s)               |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Percent Blockage                  |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Right turn flare (veh)            |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Median type                       |                                                                                   |      |                                                                                   | TWLTL                                                                             | TWLTL                                                                             |      |
| Median storage veh                |                                                                                   |      |                                                                                   | 2                                                                                 | 2                                                                                 |      |
| Upstream signal (m)               |                                                                                   |      |                                                                                   |                                                                                   | 169                                                                               |      |
| pX, platoon unblocked             | 0.73                                                                              | 0.73 | 0.73                                                                              |                                                                                   |                                                                                   |      |
| vC, conflicting volume            | 1140                                                                              | 594  | 595                                                                               |                                                                                   |                                                                                   |      |
| vC1, stage 1 conf vol             | 594                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |
| vC2, stage 2 conf vol             | 547                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |
| vCu, unblocked vol                | 1009                                                                              | 261  | 264                                                                               |                                                                                   |                                                                                   |      |
| tC, single (s)                    | 6.4                                                                               | 6.2  | 4.1                                                                               |                                                                                   |                                                                                   |      |
| tC, 2 stage (s)                   | 5.4                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |
| tF (s)                            | 3.5                                                                               | 3.3  | 2.2                                                                               |                                                                                   |                                                                                   |      |
| p0 queue free %                   | 100                                                                               | 98   | 99                                                                                |                                                                                   |                                                                                   |      |
| cM capacity (veh/h)               | 436                                                                               | 569  | 952                                                                               |                                                                                   |                                                                                   |      |
| Direction, Lane #                 | EB 1                                                                              | NB 1 | NB 2                                                                              | SB 1                                                                              |                                                                                   |      |
| Volume Total                      | 9                                                                                 | 8    | 531                                                                               | 595                                                                               |                                                                                   |      |
| Volume Left                       | 0                                                                                 | 8    | 0                                                                                 | 0                                                                                 |                                                                                   |      |
| Volume Right                      | 9                                                                                 | 0    | 0                                                                                 | 3                                                                                 |                                                                                   |      |
| cSH                               | 569                                                                               | 952  | 1700                                                                              | 1700                                                                              |                                                                                   |      |
| Volume to Capacity                | 0.02                                                                              | 0.01 | 0.31                                                                              | 0.35                                                                              |                                                                                   |      |
| Queue Length 95th (m)             | 0.3                                                                               | 0.2  | 0.0                                                                               | 0.0                                                                               |                                                                                   |      |
| Control Delay (s)                 | 11.4                                                                              | 8.8  | 0.0                                                                               | 0.0                                                                               |                                                                                   |      |
| Lane LOS                          | B                                                                                 | A    |                                                                                   |                                                                                   |                                                                                   |      |
| Approach Delay (s)                | 11.4                                                                              | 0.1  |                                                                                   | 0.0                                                                               |                                                                                   |      |
| Approach LOS                      | B                                                                                 |      |                                                                                   |                                                                                   |                                                                                   |      |
| Intersection Summary              |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Average Delay                     | 0.2                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |
| Intersection Capacity Utilization | 39.8%                                                                             |      |                                                                                   | ICU Level of Service                                                              | A                                                                                 |      |
| Analysis Period (min)             | 15                                                                                |      |                                                                                   |                                                                                   |                                                                                   |      |

# HCM Unsignalized Intersection Capacity Analysis

## 4: Caron St & Francois St

Phase 1

PM.syn



| Movement                          | EBL                                                                               | EBR  | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR  |
|-----------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations               |  |      |  |  |  |      |
| Sign Control                      | Stop                                                                              |      |                                                                                   | Stop                                                                              | Stop                                                                              |      |
| Traffic Volume (vph)              | 7                                                                                 | 3    | 6                                                                                 | 478                                                                               | 537                                                                               | 4    |
| Future Volume (vph)               | 7                                                                                 | 3    | 6                                                                                 | 478                                                                               | 537                                                                               | 4    |
| Peak Hour Factor                  | 0.90                                                                              | 0.90 | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90 |
| Hourly flow rate (vph)            | 8                                                                                 | 3    | 7                                                                                 | 531                                                                               | 597                                                                               | 4    |
| Direction, Lane #                 | EB 1                                                                              | NB 1 | NB 2                                                                              | SB 1                                                                              |                                                                                   |      |
| Volume Total (vph)                | 11                                                                                | 7    | 531                                                                               | 601                                                                               |                                                                                   |      |
| Volume Left (vph)                 | 8                                                                                 | 7    | 0                                                                                 | 0                                                                                 |                                                                                   |      |
| Volume Right (vph)                | 3                                                                                 | 0    | 0                                                                                 | 4                                                                                 |                                                                                   |      |
| Hadj (s)                          | 0.02                                                                              | 0.53 | 0.03                                                                              | 0.03                                                                              |                                                                                   |      |
| Departure Headway (s)             | 6.4                                                                               | 5.5  | 5.0                                                                               | 4.7                                                                               |                                                                                   |      |
| Degree Utilization, x             | 0.02                                                                              | 0.01 | 0.74                                                                              | 0.78                                                                              |                                                                                   |      |
| Capacity (veh/h)                  | 508                                                                               | 642  | 707                                                                               | 766                                                                               |                                                                                   |      |
| Control Delay (s)                 | 9.6                                                                               | 7.4  | 19.4                                                                              | 21.9                                                                              |                                                                                   |      |
| Approach Delay (s)                | 9.6                                                                               | 19.2 |                                                                                   | 21.9                                                                              |                                                                                   |      |
| Approach LOS                      | A                                                                                 | C    |                                                                                   | C                                                                                 |                                                                                   |      |
| Intersection Summary              |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Delay                             |                                                                                   |      | 20.6                                                                              |                                                                                   |                                                                                   |      |
| Level of Service                  |                                                                                   |      | C                                                                                 |                                                                                   |                                                                                   |      |
| Intersection Capacity Utilization |                                                                                   |      | 40.1%                                                                             | ICU Level of Service                                                              | A                                                                                 |      |
| Analysis Period (min)             |                                                                                   |      | 15                                                                                |                                                                                   |                                                                                   |      |

# HCM Unsignalized Intersection Capacity Analysis

## 5: Caron St & Des Cedres Ave

Phase 1  
PM.syn

|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                   |  |  |  |  |  |  |
| Movement                          | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |
| Lane Configurations               |  |                                                                                   |  |                                                                                   |  |  |
| Traffic Volume (veh/h)            | 1                                                                                 | 10                                                                                | 411                                                                               | 7                                                                                 | 26                                                                                | 514                                                                               |
| Future Volume (Veh/h)             | 1                                                                                 | 10                                                                                | 411                                                                               | 7                                                                                 | 26                                                                                | 514                                                                               |
| Sign Control                      | Stop                                                                              |                                                                                   | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              |
| Grade                             | 0%                                                                                |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |
| Hourly flow rate (vph)            | 1                                                                                 | 11                                                                                | 457                                                                               | 8                                                                                 | 29                                                                                | 571                                                                               |
| Pedestrians                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Width (m)                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Walking Speed (m/s)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Percent Blockage                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Median type                       |                                                                                   |                                                                                   | TWLT                                                                              |                                                                                   | TWLT                                                                              |                                                                                   |
| Median storage veh)               |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   | 2                                                                                 |                                                                                   |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| pX, platoon unblocked             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC, conflicting volume            | 1090                                                                              | 461                                                                               |                                                                                   |                                                                                   | 465                                                                               |                                                                                   |
| vC1, stage 1 conf vol             | 461                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC2, stage 2 conf vol             | 629                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vCu, unblocked vol                | 1090                                                                              | 461                                                                               |                                                                                   |                                                                                   | 465                                                                               |                                                                                   |
| tC, single (s)                    | 6.4                                                                               | 6.2                                                                               |                                                                                   |                                                                                   | 4.1                                                                               |                                                                                   |
| tC, 2 stage (s)                   | 5.4                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| tF (s)                            | 3.5                                                                               | 3.3                                                                               |                                                                                   |                                                                                   | 2.2                                                                               |                                                                                   |
| p0 queue free %                   | 100                                                                               | 98                                                                                |                                                                                   |                                                                                   | 97                                                                                |                                                                                   |
| cM capacity (veh/h)               | 442                                                                               | 600                                                                               |                                                                                   |                                                                                   | 1096                                                                              |                                                                                   |
| Direction, Lane #                 | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                   |                                                                                   |
| Volume Total                      | 12                                                                                | 465                                                                               | 29                                                                                | 571                                                                               |                                                                                   |                                                                                   |
| Volume Left                       | 1                                                                                 | 0                                                                                 | 29                                                                                | 0                                                                                 |                                                                                   |                                                                                   |
| Volume Right                      | 11                                                                                | 8                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |
| cSH                               | 583                                                                               | 1700                                                                              | 1096                                                                              | 1700                                                                              |                                                                                   |                                                                                   |
| Volume to Capacity                | 0.02                                                                              | 0.27                                                                              | 0.03                                                                              | 0.34                                                                              |                                                                                   |                                                                                   |
| Queue Length 95th (m)             | 0.4                                                                               | 0.0                                                                               | 0.6                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |
| Control Delay (s)                 | 11.3                                                                              | 0.0                                                                               | 8.4                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |
| Lane LOS                          | B                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Approach Delay (s)                | 11.3                                                                              | 0.0                                                                               | 0.4                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Approach LOS                      | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Average Delay                     |                                                                                   |                                                                                   | 0.4                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 38.6%                                                                             | ICU Level of Service                                                              |                                                                                   | A                                                                                 |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |

# HCM Unsignalized Intersection Capacity Analysis

## 6: Caron St & Cote St/Potvin Ave

Phase 1  
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|                                   |  |  |  |  |  |  |   |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |  |  |                                                                                     |  |  |                                                                                     |
| Sign Control                      |                                                                                   | Stop                                                                              |                                                                                   |                                                                                   | Stop                                                                              |                                                                                   |                                                                                     | Stop                                                                                |                                                                                     |                                                                                     | Stop                                                                                |                                                                                     |
| Traffic Volume (vph)              | 17                                                                                | 1                                                                                 | 10                                                                                | 9                                                                                 | 1                                                                                 | 4                                                                                 | 12                                                                                  | 397                                                                                 | 13                                                                                  | 16                                                                                  | 482                                                                                 | 17                                                                                  |
| Future Volume (vph)               | 17                                                                                | 1                                                                                 | 10                                                                                | 9                                                                                 | 1                                                                                 | 4                                                                                 | 12                                                                                  | 397                                                                                 | 13                                                                                  | 16                                                                                  | 482                                                                                 | 17                                                                                  |
| 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                                                                                |
| Hourly flow rate (vph)            | 19                                                                                | 1                                                                                 | 11                                                                                | 10                                                                                | 1                                                                                 | 4                                                                                 | 13                                                                                  | 441                                                                                 | 14                                                                                  | 18                                                                                  | 536                                                                                 | 19                                                                                  |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              | NB 2                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Total (vph)                | 31                                                                                | 15                                                                                | 13                                                                                | 455                                                                               | 18                                                                                | 555                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Left (vph)                 | 19                                                                                | 10                                                                                | 13                                                                                | 0                                                                                 | 18                                                                                | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Right (vph)                | 11                                                                                | 4                                                                                 | 0                                                                                 | 14                                                                                | 0                                                                                 | 19                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Hadj (s)                          | -0.06                                                                             | 0.01                                                                              | 0.53                                                                              | 0.01                                                                              | 0.53                                                                              | 0.01                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Departure Headway (s)             | 6.2                                                                               | 6.3                                                                               | 5.6                                                                               | 5.1                                                                               | 5.6                                                                               | 5.0                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Degree Utilization, x             | 0.05                                                                              | 0.03                                                                              | 0.02                                                                              | 0.65                                                                              | 0.03                                                                              | 0.78                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Capacity (veh/h)                  | 517                                                                               | 500                                                                               | 617                                                                               | 693                                                                               | 627                                                                               | 700                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Control Delay (s)                 | 9.6                                                                               | 9.5                                                                               | 7.6                                                                               | 15.8                                                                              | 7.5                                                                               | 22.1                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay (s)                | 9.6                                                                               | 9.5                                                                               | 15.6                                                                              | 21.6                                                                              |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                      | A                                                                                 | A                                                                                 | C                                                                                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Delay                             |                                                                                   |                                                                                   | 18.5                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Level of Service                  |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 37.9%                                                                             |                                                                                   | ICU Level of Service                                                              |                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM Unsignalized Intersection Capacity Analysis

## 7: Caron St & Docteur Corbeil Blvd

Phase 1  
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|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--|--|--|
|                                   |  |  |  |  |  |  |  |  |  |
| Movement                          | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |  |  |  |
| Lane Configurations               |  |                                                                                   |  |  |  |                                                                                   |  |  |  |
| Traffic Volume (veh/h)            | 61                                                                                | 84                                                                                | 70                                                                                | 361                                                                               | 392                                                                               | 60                                                                                |  |  |  |
| Future Volume (Veh/h)             | 61                                                                                | 84                                                                                | 70                                                                                | 361                                                                               | 392                                                                               | 60                                                                                |  |  |  |
| Sign Control                      | Stop                                                                              |                                                                                   |                                                                                   | Free                                                                              | Free                                                                              |                                                                                   |  |  |  |
| Grade                             | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                | 0%                                                                                |                                                                                   |  |  |  |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |  |  |  |
| Hourly flow rate (vph)            | 68                                                                                | 93                                                                                | 78                                                                                | 401                                                                               | 436                                                                               | 67                                                                                |  |  |  |
| Pedestrians                       | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Lane Width (m)                    | 3.6                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Walking Speed (m/s)               | 1.2                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Percent Blockage                  | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Median type                       |                                                                                   |                                                                                   |                                                                                   | TWLTL                                                                             | TWLTL                                                                             |                                                                                   |  |  |  |
| Median storage (veh)              |                                                                                   |                                                                                   |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   |  |  |  |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| pX, platoon unblocked             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| vC, conflicting volume            | 1028                                                                              | 472                                                                               | 505                                                                               |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| vC1, stage 1 conf vol             | 472                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| vC2, stage 2 conf vol             | 557                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| vCu, unblocked vol                | 1028                                                                              | 472                                                                               | 505                                                                               |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| tC, single (s)                    | 6.4                                                                               | 6.2                                                                               | 4.1                                                                               |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| tC, 2 stage (s)                   | 5.4                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| tF (s)                            | 3.5                                                                               | 3.3                                                                               | 2.2                                                                               |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| p0 queue free %                   | 85                                                                                | 84                                                                                | 93                                                                                |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| cM capacity (veh/h)               | 449                                                                               | 591                                                                               | 1058                                                                              |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Direction, Lane #                 | EB 1                                                                              | NB 1                                                                              | NB 2                                                                              | SB 1                                                                              |                                                                                   |                                                                                   |  |  |  |
| Volume Total                      | 161                                                                               | 78                                                                                | 401                                                                               | 503                                                                               |                                                                                   |                                                                                   |  |  |  |
| Volume Left                       | 68                                                                                | 78                                                                                | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |  |  |  |
| Volume Right                      | 93                                                                                | 0                                                                                 | 0                                                                                 | 67                                                                                |                                                                                   |                                                                                   |  |  |  |
| cSH                               | 522                                                                               | 1058                                                                              | 1700                                                                              | 1700                                                                              |                                                                                   |                                                                                   |  |  |  |
| Volume to Capacity                | 0.31                                                                              | 0.07                                                                              | 0.24                                                                              | 0.30                                                                              |                                                                                   |                                                                                   |  |  |  |
| Queue Length 95th (m)             | 9.1                                                                               | 1.7                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |  |  |  |
| Control Delay (s)                 | 15.0                                                                              | 8.7                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |  |  |  |
| Lane LOS                          | B                                                                                 | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Approach Delay (s)                | 15.0                                                                              | 1.4                                                                               |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   |  |  |  |
| Approach LOS                      | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Average Delay                     | 2.7                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Intersection Capacity Utilization | 48.8%                                                                             |                                                                                   |                                                                                   | ICU Level of Service                                                              | A                                                                                 |                                                                                   |  |  |  |
| Analysis Period (min)             | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |

# HCM Unsignalized Intersection Capacity Analysis8: David St & Caron St

Phase 1  
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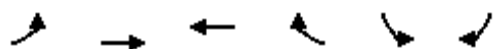
|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--|--|
|                                   |  |  |  |  |  |  |  |  |
| Movement                          | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |  |  |
| Lane Configurations               |  |                                                                                   |  |                                                                                   |  |  |  |  |
| Sign Control                      | Stop                                                                              |                                                                                   | Stop                                                                              |                                                                                   | Stop                                                                              | Stop                                                                              |  |  |
| Traffic Volume (vph)              | 27                                                                                | 180                                                                               | 263                                                                               | 26                                                                                | 184                                                                               | 263                                                                               |  |  |
| Future Volume (vph)               | 27                                                                                | 180                                                                               | 263                                                                               | 26                                                                                | 184                                                                               | 263                                                                               |  |  |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |  |  |
| Hourly flow rate (vph)            | 30                                                                                | 200                                                                               | 292                                                                               | 29                                                                                | 204                                                                               | 292                                                                               |  |  |
| Direction, Lane #                 | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                   |                                                                                   |  |  |
| Volume Total (vph)                | 230                                                                               | 321                                                                               | 204                                                                               | 292                                                                               |                                                                                   |                                                                                   |  |  |
| Volume Left (vph)                 | 30                                                                                | 0                                                                                 | 204                                                                               | 0                                                                                 |                                                                                   |                                                                                   |  |  |
| Volume Right (vph)                | 200                                                                               | 29                                                                                | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |  |  |
| Hadj (s)                          | -0.46                                                                             | -0.02                                                                             | 0.53                                                                              | 0.03                                                                              |                                                                                   |                                                                                   |  |  |
| Departure Headway (s)             | 5.3                                                                               | 5.3                                                                               | 6.1                                                                               | 5.6                                                                               |                                                                                   |                                                                                   |  |  |
| Degree Utilization, x             | 0.34                                                                              | 0.47                                                                              | 0.34                                                                              | 0.45                                                                              |                                                                                   |                                                                                   |  |  |
| Capacity (veh/h)                  | 622                                                                               | 660                                                                               | 574                                                                               | 628                                                                               |                                                                                   |                                                                                   |  |  |
| Control Delay (s)                 | 11.1                                                                              | 12.9                                                                              | 11.0                                                                              | 11.9                                                                              |                                                                                   |                                                                                   |  |  |
| Approach Delay (s)                | 11.1                                                                              | 12.9                                                                              | 11.5                                                                              |                                                                                   |                                                                                   |                                                                                   |  |  |
| Approach LOS                      | B                                                                                 | B                                                                                 | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |  |  |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
| Delay                             |                                                                                   |                                                                                   | 11.8                                                                              |                                                                                   |                                                                                   |                                                                                   |  |  |
| Level of Service                  |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |  |  |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 50.3%                                                                             | ICU Level of Service                                                              | A                                                                                 |                                                                                   |  |  |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |  |  |

# HCM Unsignalized Intersection Capacity Analysis

## 9: Baseline Rd & Caron St

Phase 1

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| Movement                          | EBL  | EBT                                                                               | WBT                                                                               | WBR                  | SBL                                                                               | SBR  |
|-----------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations               |      |  |  |                      |  |      |
| Traffic Volume (veh/h)            | 63   | 102                                                                               | 41                                                                                | 121                  | 142                                                                               | 38   |
| Future Volume (Veh/h)             | 63   | 102                                                                               | 41                                                                                | 121                  | 142                                                                               | 38   |
| Sign Control                      |      | Free                                                                              | Free                                                                              |                      | Stop                                                                              |      |
| Grade                             |      | 0%                                                                                | 0%                                                                                |                      | 0%                                                                                |      |
| Peak Hour Factor                  | 0.90 | 0.90                                                                              | 0.90                                                                              | 0.90                 | 0.90                                                                              | 0.90 |
| Hourly flow rate (vph)            | 70   | 113                                                                               | 46                                                                                | 134                  | 158                                                                               | 42   |
| Pedestrians                       |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Lane Width (m)                    |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Walking Speed (m/s)               |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Percent Blockage                  |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Right turn flare (veh)            |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Median type                       |      | None                                                                              | None                                                                              |                      |                                                                                   |      |
| Median storage (veh)              |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Upstream signal (m)               |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| pX, platoon unblocked             |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| vC, conflicting volume            | 180  |                                                                                   |                                                                                   |                      | 366                                                                               | 113  |
| vC1, stage 1 conf vol             |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| vC2, stage 2 conf vol             |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| vCu, unblocked vol                | 180  |                                                                                   |                                                                                   |                      | 366                                                                               | 113  |
| tC, single (s)                    | 4.1  |                                                                                   |                                                                                   |                      | 6.4                                                                               | 6.2  |
| tC, 2 stage (s)                   |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| tF (s)                            | 2.2  |                                                                                   |                                                                                   |                      | 3.5                                                                               | 3.3  |
| p0 queue free %                   | 95   |                                                                                   |                                                                                   |                      | 74                                                                                | 96   |
| cM capacity (veh/h)               | 1396 |                                                                                   |                                                                                   |                      | 602                                                                               | 940  |
| Direction, Lane #                 | EB 1 | WB 1                                                                              | SB 1                                                                              |                      |                                                                                   |      |
| Volume Total                      | 183  | 180                                                                               | 200                                                                               |                      |                                                                                   |      |
| Volume Left                       | 70   | 0                                                                                 | 158                                                                               |                      |                                                                                   |      |
| Volume Right                      | 0    | 134                                                                               | 42                                                                                |                      |                                                                                   |      |
| cSH                               | 1396 | 1700                                                                              | 651                                                                               |                      |                                                                                   |      |
| Volume to Capacity                | 0.05 | 0.11                                                                              | 0.31                                                                              |                      |                                                                                   |      |
| Queue Length 95th (m)             | 1.1  | 0.0                                                                               | 9.1                                                                               |                      |                                                                                   |      |
| Control Delay (s)                 | 3.2  | 0.0                                                                               | 13.0                                                                              |                      |                                                                                   |      |
| Lane LOS                          | A    |                                                                                   | B                                                                                 |                      |                                                                                   |      |
| Approach Delay (s)                | 3.2  | 0.0                                                                               | 13.0                                                                              |                      |                                                                                   |      |
| Approach LOS                      |      |                                                                                   | B                                                                                 |                      |                                                                                   |      |
| Intersection Summary              |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Average Delay                     |      |                                                                                   | 5.6                                                                               |                      |                                                                                   |      |
| Intersection Capacity Utilization |      |                                                                                   | 40.2%                                                                             | ICU Level of Service |                                                                                   | A    |
| Analysis Period (min)             |      |                                                                                   | 15                                                                                |                      |                                                                                   |      |

# HCM Unsignalized Intersection Capacity Analysis

## 10: Street B & David St

Phase 1  
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|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                   |  |  |  |  |  |  |
| Movement                          | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBR                                                                               |
| Lane Configurations               |  |                                                                                   |                                                                                   |  |  |                                                                                   |
| Traffic Volume (veh/h)            | 15                                                                                | 174                                                                               | 43                                                                                | 15                                                                                | 170                                                                               | 42                                                                                |
| Future Volume (Veh/h)             | 15                                                                                | 174                                                                               | 43                                                                                | 15                                                                                | 170                                                                               | 42                                                                                |
| Sign Control                      | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              | Stop                                                                              |                                                                                   |
| Grade                             | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                | 0%                                                                                |                                                                                   |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |
| Hourly flow rate (vph)            | 17                                                                                | 193                                                                               | 48                                                                                | 17                                                                                | 189                                                                               | 47                                                                                |
| Pedestrians                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Width (m)                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Walking Speed (m/s)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Percent Blockage                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Median type                       | None                                                                              |                                                                                   |                                                                                   | None                                                                              |                                                                                   |                                                                                   |
| Median storage (veh)              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| pX, platoon unblocked             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC, conflicting volume            |                                                                                   |                                                                                   | 210                                                                               |                                                                                   | 226                                                                               | 114                                                                               |
| vC1, stage 1 conf vol             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC2, stage 2 conf vol             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vCu, unblocked vol                |                                                                                   |                                                                                   | 210                                                                               |                                                                                   | 226                                                                               | 114                                                                               |
| tC, single (s)                    |                                                                                   |                                                                                   | 4.1                                                                               |                                                                                   | 6.4                                                                               | 6.2                                                                               |
| tC, 2 stage (s)                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| tF (s)                            |                                                                                   |                                                                                   | 2.2                                                                               |                                                                                   | 3.5                                                                               | 3.3                                                                               |
| p0 queue free %                   |                                                                                   |                                                                                   | 96                                                                                |                                                                                   | 74                                                                                | 95                                                                                |
| cM capacity (veh/h)               |                                                                                   |                                                                                   | 1361                                                                              |                                                                                   | 735                                                                               | 939                                                                               |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Volume Total                      | 210                                                                               | 65                                                                                | 236                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Volume Left                       | 0                                                                                 | 48                                                                                | 189                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Volume Right                      | 193                                                                               | 0                                                                                 | 47                                                                                |                                                                                   |                                                                                   |                                                                                   |
| cSH                               | 1700                                                                              | 1361                                                                              | 768                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Volume to Capacity                | 0.12                                                                              | 0.04                                                                              | 0.31                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Queue Length 95th (m)             | 0.0                                                                               | 0.8                                                                               | 9.1                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Control Delay (s)                 | 0.0                                                                               | 5.8                                                                               | 11.8                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Lane LOS                          |                                                                                   | A                                                                                 | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Approach Delay (s)                | 0.0                                                                               | 5.8                                                                               | 11.8                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Approach LOS                      |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Average Delay                     |                                                                                   |                                                                                   | 6.2                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 38.2%                                                                             | ICU Level of Service                                                              |                                                                                   | A                                                                                 |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |

# HCM Unsignalized Intersection Capacity Analysis12: Street A & Street B

Phase 1  
PM.syn

|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Sign Control                      |                                                                                   | Stop                                                                              |                                                                                   |                                                                                   | Stop                                                                              |                                                                                   |                                                                                    | Stop                                                                                |                                                                                     |                                                                                     | Stop                                                                                |                                                                                     |
| Traffic Volume (vph)              | 129                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 129                                                                                 |
| Future Volume (vph)               | 129                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 129                                                                                 |
| 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                                                                                |
| Hourly flow rate (vph)            | 143                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 143                                                                                 |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Total (vph)                | 143                                                                               | 0                                                                                 | 0                                                                                 | 143                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Left (vph)                 | 143                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Right (vph)                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 143                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Hadj (s)                          | 0.23                                                                              | 0.00                                                                              | 0.00                                                                              | -0.57                                                                             |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Departure Headway (s)             | 4.4                                                                               | 4.3                                                                               | 4.4                                                                               | 3.7                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Degree Utilization, x             | 0.18                                                                              | 0.00                                                                              | 0.00                                                                              | 0.15                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Capacity (veh/h)                  | 790                                                                               | 802                                                                               | 797                                                                               | 943                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Control Delay (s)                 | 8.4                                                                               | 7.3                                                                               | 7.4                                                                               | 7.3                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay (s)                | 8.4                                                                               | 0.0                                                                               | 0.0                                                                               | 7.3                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                      | A                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Delay                             |                                                                                   |                                                                                   |                                                                                   | 7.8                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Level of Service                  |                                                                                   |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   |                                                                                   | 22.6%                                                                             | ICU Level of Service                                                              | A                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM Unsignalized Intersection Capacity Analysis15: Caron St & Street A

Phase 1  
PM.syn

|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                   |  |  |  |  |  |  |
| Movement                          | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |
| Lane Configurations               |  |                                                                                   |  |                                                                                   |  |  |
| Sign Control                      | Stop                                                                              |                                                                                   | Stop                                                                              |                                                                                   | Stop                                                                              | Stop                                                                              |
| Traffic Volume (vph)              | 64                                                                                | 128                                                                               | 140                                                                               | 65                                                                                | 130                                                                               | 138                                                                               |
| Future Volume (vph)               | 64                                                                                | 128                                                                               | 140                                                                               | 65                                                                                | 130                                                                               | 138                                                                               |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |
| Hourly flow rate (vph)            | 71                                                                                | 142                                                                               | 156                                                                               | 72                                                                                | 144                                                                               | 153                                                                               |
| Direction, Lane #                 | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                   |                                                                                   |
| Volume Total (vph)                | 213                                                                               | 228                                                                               | 96                                                                                | 201                                                                               |                                                                                   |                                                                                   |
| Volume Left (vph)                 | 71                                                                                | 0                                                                                 | 96                                                                                | 48                                                                                |                                                                                   |                                                                                   |
| Volume Right (vph)                | 142                                                                               | 72                                                                                | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |
| Hadj (s)                          | -0.30                                                                             | -0.16                                                                             | 0.53                                                                              | 0.15                                                                              |                                                                                   |                                                                                   |
| Departure Headway (s)             | 4.9                                                                               | 4.8                                                                               | 5.8                                                                               | 5.4                                                                               |                                                                                   |                                                                                   |
| Degree Utilization, x             | 0.29                                                                              | 0.30                                                                              | 0.16                                                                              | 0.30                                                                              |                                                                                   |                                                                                   |
| Capacity (veh/h)                  | 687                                                                               | 717                                                                               | 592                                                                               | 636                                                                               |                                                                                   |                                                                                   |
| Control Delay (s)                 | 9.8                                                                               | 9.9                                                                               | 8.7                                                                               | 9.6                                                                               |                                                                                   |                                                                                   |
| Approach Delay (s)                | 9.8                                                                               | 9.9                                                                               | 9.3                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Approach LOS                      | A                                                                                 | A                                                                                 | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Delay                             |                                                                                   |                                                                                   | 9.6                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Level of Service                  |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 41.7%                                                                             | ICU Level of Service                                                              |                                                                                   | A                                                                                 |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |

# D

## Appendix D

### Projected Phase 1 Traffic Operations with Improvements

| Direction                                       | Mov. | Storage Length (m) | AM Peak Hour |           |     |           | PM Peak Hour |           |     |           |
|-------------------------------------------------|------|--------------------|--------------|-----------|-----|-----------|--------------|-----------|-----|-----------|
|                                                 |      |                    | v/c          | Delay (s) | LOS | Queue (m) | v/c          | Delay (s) | LOS | Queue (m) |
| Caron Street at HWY 17 (Signalized)             |      |                    |              |           |     |           |              |           |     |           |
| EB                                              | L    | 90                 | 0.04         | 10        | A   | 3         | 0.08         | 17        | B   | 10        |
|                                                 | T    | -                  | 0.40         | 16        | B   | 72        | 0.32         | 26        | C   | 51        |
|                                                 | R    | 85                 | 0.36         | 3         | A   | 14        | 0.48         | 5         | A   | 20        |
| WB                                              | L    | 60                 | 0.04         | 9         | A   | 5         | 0.07         | 17        | B   | 9         |
|                                                 | T    | -                  | 0.78         | 24        | C   | 213       | 0.18         | 24        | C   | 30        |
|                                                 | R    | 56                 | 0.00         | 0         | A   | 0         | 0.04         | 1         | A   | 0         |
| NB                                              | L    | 80                 | 0.84         | 50        | D   | 80        | 0.65         | 42        | D   | 46        |
|                                                 | T/R  | -                  | 0.12         | 14        | B   | 9         | 0.24         | 21        | C   | 29        |
| SB                                              | L    | 40                 | 0.01         | 26        | C   | 1         | 0.13         | 19        | B   | 9         |
|                                                 | T/R  | -                  | 0.08         | 29        | C   | 7         | 0.63         | 44        | D   | 51        |
| Overall                                         |      |                    | 0.84         | 25        | C   | -         | 0.65         | 25        | C   | -         |
| Caron Street at Laurier Street (Signalized)     |      |                    |              |           |     |           |              |           |     |           |
| EB                                              | L    | 35                 | 0.04         | 15        | B   | 5         | 0.08         | 16        | B   | 9         |
|                                                 | T/R  | -                  | 0.18         | 15        | B   | 19        | 0.46         | 25        | C   | 53        |
| WB                                              | L    | 60                 | 0.09         | 16        | B   | 10        | 0.09         | 16        | B   | 8         |
|                                                 | T/R  | -                  | 0.31         | 21        | C   | 42        | 0.22         | 22        | C   | 26        |
| NB                                              | L    | 55                 | 0.23         | 17        | B   | 13        | 0.37         | 20        | B   | 15        |
|                                                 | T/R  | -                  | 0.72         | 30        | C   | 123       | 0.74         | 35        | C   | 115       |
| SB                                              | L    | 50                 | 0.05         | 16        | B   | 4         | 0.15         | 16        | B   | 9         |
|                                                 | T/R  | -                  | 0.75         | 37        | D   | 81        | 0.90         | 50        | D   | 134       |
| Overall                                         |      |                    | 0.75         | 28        | C   | -         | 0.90         | 35        | C   | -         |
| Caron Street at Hélène Street (Unsignalized)    |      |                    |              |           |     |           |              |           |     |           |
| EB                                              | L/R  | -                  | 0.01         | 10        | B   | 1         | 0.02         | 11        | B   | 1         |
| NB                                              | L    | 15                 | 0.01         | 8         | A   | 1         | 0.01         | 9         | A   | 1         |
|                                                 | T    | -                  | 0.32         | 0         | A   | 0         | 0.31         | 0         | A   | 0         |
| SB                                              | T/R  | -                  | 0.27         | 0         | A   | 0         | 0.35         | 0         | A   | 0         |
| Overall                                         |      |                    | 0.27         | 1         | A   | -         | 0.35         | 1         | A   | -         |
| Caron Street at Françoise Street (Unsignalized) |      |                    |              |           |     |           |              |           |     |           |
| EB                                              | L/R  | -                  | 0.02         | 9         | A   | -         | 0.02         | 10        | A   | -         |
| NB                                              | L    | 15                 | 0.00         | 7         | A   | -         | 0.01         | 7         | A   | -         |
|                                                 | T    | -                  | 0.64         | 15        | B   | -         | 0.74         | 19        | A   | -         |
| SB                                              | T/R  | -                  | 0.58         | 14        | B   | -         | 0.78         | 22        | C   | -         |
| Overall                                         |      |                    | 0.64         | 14        | B   | -         | 0.78         | 21        | C   | -         |

| Direction                                                | Mov.  | Storage Length (m) | AM Peak Hour |           |     |           | PM Peak Hour |           |     |           |
|----------------------------------------------------------|-------|--------------------|--------------|-----------|-----|-----------|--------------|-----------|-----|-----------|
|                                                          |       |                    | v/c          | Delay (s) | LOS | Queue (m) | v/c          | Delay (s) | LOS | Queue (m) |
| Caron Street at Des Cèdres Avenue (Unsignalized)         |       |                    |              |           |     |           |              |           |     |           |
| WB                                                       | L/R   | -                  | 0.03         | 12        | B   | 1         | 0.02         | 11        | B   | 1         |
| NB                                                       | T/R   | -                  | 0.27         | 0         | A   | 0         | 0.27         | 0         | A   | 0         |
| SB                                                       | L     | 15                 | 0.01         | 8         | A   | 1         | 0.03         | 8         | A   | 1         |
|                                                          | T     | -                  | 0.26         | 0         | A   | 0         | 0.34         | 0         | A   | 0         |
| Overall                                                  |       |                    | 0.27         | 1         | A   | -         | 0.34         | 1         | A   | -         |
| Caron Street at Cote Street/Potvin Avenue (Unsignalized) |       |                    |              |           |     |           |              |           |     |           |
| EB                                                       | L/T/R | -                  | 0.03         | 9         | A   | -         | 0.05         | 10        | A   | -         |
| WB                                                       | L/T/R | -                  | 0.03         | 9         | A   | -         | 0.03         | 10        | A   | -         |
| NB                                                       | L     | 15                 | 0.01         | 7         | A   | -         | 0.02         | 8         | A   | -         |
|                                                          | T/R   | -                  | 0.62         | 15        | B   | -         | 0.65         | 16        | C   | -         |
| SB                                                       | L     | 15                 | 0.01         | 7         | A   | -         | 0.03         | 8         | A   | -         |
|                                                          | T/R   | -                  | 0.62         | 15        | B   | -         | 0.78         | 22        | C   | -         |
| Overall                                                  |       |                    | 0.62         | 14        | B   | -         | 0.78         | 19        | C   | -         |
| Caron Street at Docteur Corbeil Boulevard (Unsignalized) |       |                    |              |           |     |           |              |           |     |           |
| EB                                                       | L/R   | -                  | 0.19         | 13        | B   | 5         | 0.31         | 15        | B   | 9         |
| NB                                                       | L     | 15                 | 0.08         | 9         | A   | 2         | 0.07         | 9         | A   | 2         |
|                                                          | T     | -                  | 0.24         | 0         | A   | 0         | 0.24         | 0         | A   | 0         |
| SB                                                       | T/R   | -                  | 0.25         | 0         | A   | 0         | 0.30         | 0         | A   | 0         |
| Overall                                                  |       |                    | 0.25         | 2         | A   | -         | 0.30         | 3         | A   | -         |
| Caron Street at David Street (Unsignalized)              |       |                    |              |           |     |           |              |           |     |           |
| WB                                                       | L/R   | -                  | 0.33         | 11        | B   | -         | 0.34         | 11        | B   | -         |
| NB                                                       | T/R   | -                  | 0.42         | 12        | B   | -         | 0.47         | 13        | B   | -         |
| SB                                                       | L     | 40                 | 0.32         | 11        | B   | -         | 0.34         | 11        | B   | -         |
|                                                          | T     | -                  | 0.38         | 11        | B   | -         | 0.45         | 12        | B   | -         |
| Overall                                                  |       |                    | 0.42         | 11        | B   | -         | 0.47         | 12        | B   | -         |
| Caron Street at Baseline Road (Unsignalized)             |       |                    |              |           |     |           |              |           |     |           |
| EB                                                       | L/T   | -                  | 0.02         | 4         | A   | 1         | 0.05         | 3         | A   | 1         |
| WB                                                       | T/R   | -                  | 0.12         | 0         | A   | 0         | 0.11         | 0         | A   | 0         |
| SB                                                       | L/R   | -                  | 0.20         | 11        | B   | 5         | 0.31         | 13        | B   | 9         |
| Overall                                                  |       |                    | 0.20         | 5         | A   | -         | 0.31         | 6         | A   | -         |
| Caron Street at Street A (Unsignalized)                  |       |                    |              |           |     |           |              |           |     |           |
| WB                                                       | L     | -                  | 0.27         | 9         | A   | -         | 0.29         | 10        | A   | -         |
|                                                          | R     | -                  | 0.27         | 9         | A   | -         | 0.29         | 10        | A   | -         |
| NB                                                       | T/R   | -                  | 0.26         | 9         | A   | -         | 0.30         | 10        | A   | -         |
| SB                                                       | L/T   | 25                 | 0.24         | 9         | A   | -         | 0.30         | 10        | A   | -         |

| Direction                               | Mov.  | Storage Length (m) | AM Peak Hour |           |     |           | PM Peak Hour |           |     |           |
|-----------------------------------------|-------|--------------------|--------------|-----------|-----|-----------|--------------|-----------|-----|-----------|
|                                         |       |                    | v/c          | Delay (s) | LOS | Queue (m) | v/c          | Delay (s) | LOS | Queue (m) |
| Overall                                 |       |                    | 0.27         | 9         | A   | -         | 0.30         | 10        | A   | -         |
| Street B at David Street (Unsignalized) |       |                    |              |           |     |           |              |           |     |           |
| EB                                      | T/R   | -                  | 0.12         | 0         | A   | 0         | 0.12         | 0         | A   | 0         |
| WB                                      | L/T   | -                  | 0.03         | 6         | A   | 1         | 0.04         | 6         | A   | 1         |
| NB                                      | L/R   | -                  | 0.30         | 12        | B   | 9         | 0.31         | 12        | B   | 9         |
| Overall                                 |       |                    | 0.30         | 6         | A   | -         | 0.31         | 6         | A   | 6         |
| Street B at Street A (Unsignalized)     |       |                    |              |           |     |           |              |           |     |           |
| EB                                      | L/T/R | -                  | 0.18         | 8         | A   | -         | 0.18         | 8         | A   | -         |
| WB                                      | L/T/R | -                  | -            | -         | -   | -         | -            | -         | -   | -         |
| NB                                      | L/T/R | -                  | -            | -         | -   | -         | -            | -         | -   | -         |
| SB                                      | L/T/R | -                  | 0.14         | 7         | A   | -         | 0.15         | 7         | A   | -         |
| Overall                                 |       |                    | 0.18         | 8         | A   | -         | 0.18         | 8         | A   | -         |

# Lanes, Volumes, Timings

## 1: Rue Caron/Rue Industrielle & HWY 17

Phase 1 AM+Improvements

04/25/2019

|                        |  |  |  |  |  |  |   |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | SBL                                                                                 | SBT                                                                                 |                                                                                     |
| Lane Configurations    |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph)   | 8                                                                                 | 346                                                                               | 319                                                                               | 21                                                                                | 708                                                                               | 3                                                                                 | 452                                                                                 | 8                                                                                   | 1                                                                                   | 6                                                                                   |                                                                                     |
| Future Volume (vph)    | 8                                                                                 | 346                                                                               | 319                                                                               | 21                                                                                | 708                                                                               | 3                                                                                 | 452                                                                                 | 8                                                                                   | 1                                                                                   | 6                                                                                   |                                                                                     |
| Lane Group Flow (vph)  | 9                                                                                 | 384                                                                               | 354                                                                               | 23                                                                                | 787                                                                               | 3                                                                                 | 502                                                                                 | 43                                                                                  | 1                                                                                   | 16                                                                                  |                                                                                     |
| Turn Type              | pm+pt                                                                             | NA                                                                                | Perm                                                                              | pm+pt                                                                             | NA                                                                                | Perm                                                                              | Prot                                                                                | NA                                                                                  | pm+pt                                                                               | NA                                                                                  |                                                                                     |
| Protected Phases       | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                   | 2                                                                                   | 1                                                                                   | 6                                                                                   |                                                                                     |
| Permitted Phases       | 4                                                                                 |                                                                                   | 4                                                                                 | 8                                                                                 |                                                                                   | 8                                                                                 |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     |
| Detector Phase         | 7                                                                                 | 4                                                                                 | 4                                                                                 | 3                                                                                 | 8                                                                                 | 8                                                                                 | 5                                                                                   | 2                                                                                   | 1                                                                                   | 6                                                                                   |                                                                                     |
| Switch Phase           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)    | 5.0                                                                               | 10.0                                                                              | 10.0                                                                              | 5.0                                                                               | 10.0                                                                              | 10.0                                                                              | 5.0                                                                                 | 10.0                                                                                | 5.0                                                                                 | 10.0                                                                                |                                                                                     |
| Minimum Split (s)      | 11.9                                                                              | 32.9                                                                              | 32.9                                                                              | 11.9                                                                              | 32.9                                                                              | 32.9                                                                              | 10.9                                                                                | 33.3                                                                                | 10.9                                                                                | 33.3                                                                                |                                                                                     |
| Total Split (s)        | 11.9                                                                              | 52.0                                                                              | 52.0                                                                              | 11.9                                                                              | 52.0                                                                              | 52.0                                                                              | 21.0                                                                                | 45.2                                                                                | 10.9                                                                                | 35.1                                                                                |                                                                                     |
| Total Split (%)        | 9.9%                                                                              | 43.3%                                                                             | 43.3%                                                                             | 9.9%                                                                              | 43.3%                                                                             | 43.3%                                                                             | 17.5%                                                                               | 37.7%                                                                               | 9.1%                                                                                | 29.3%                                                                               |                                                                                     |
| Yellow Time (s)        | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               | 3.3                                                                                 | 3.3                                                                                 | 3.3                                                                                 | 3.3                                                                                 |                                                                                     |
| All-Red Time (s)       | 2.7                                                                               | 2.7                                                                               | 2.7                                                                               | 2.7                                                                               | 2.7                                                                               | 2.7                                                                               | 2.6                                                                                 | 3.0                                                                                 | 2.6                                                                                 | 3.0                                                                                 |                                                                                     |
| Lost Time Adjust (s)   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)    | 6.9                                                                               | 6.9                                                                               | 6.9                                                                               | 6.9                                                                               | 6.9                                                                               | 6.9                                                                               | 5.9                                                                                 | 6.3                                                                                 | 5.9                                                                                 | 6.3                                                                                 |                                                                                     |
| Lead/Lag               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                                | Lag                                                                                 | Lead                                                                                | Lag                                                                                 |                                                                                     |
| Lead-Lag Optimize?     | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |                                                                                     |
| Recall Mode            | None                                                                              | Max                                                                               | Max                                                                               | None                                                                              | Max                                                                               | Max                                                                               | None                                                                                | None                                                                                | None                                                                                | None                                                                                |                                                                                     |
| Act Effct Green (s)    | 47.9                                                                              | 46.3                                                                              | 46.3                                                                              | 49.1                                                                              | 48.3                                                                              | 48.3                                                                              | 15.5                                                                                | 18.7                                                                                | 8.6                                                                                 | 10.3                                                                                |                                                                                     |
| Actuated g/C Ratio     | 0.57                                                                              | 0.55                                                                              | 0.55                                                                              | 0.58                                                                              | 0.57                                                                              | 0.57                                                                              | 0.18                                                                                | 0.22                                                                                | 0.10                                                                                | 0.12                                                                                |                                                                                     |
| v/c Ratio              | 0.04                                                                              | 0.40                                                                              | 0.36                                                                              | 0.04                                                                              | 0.78                                                                              | 0.00                                                                              | 0.84                                                                                | 0.12                                                                                | 0.01                                                                                | 0.08                                                                                |                                                                                     |
| Control Delay          | 9.6                                                                               | 15.6                                                                              | 3.1                                                                               | 9.2                                                                               | 23.8                                                                              | 0.0                                                                               | 50.1                                                                                | 14.1                                                                                | 26.0                                                                                | 28.9                                                                                |                                                                                     |
| Queue Delay            | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Delay            | 9.6                                                                               | 15.6                                                                              | 3.1                                                                               | 9.2                                                                               | 23.8                                                                              | 0.0                                                                               | 50.1                                                                                | 14.1                                                                                | 26.0                                                                                | 28.9                                                                                |                                                                                     |
| LOS                    | A                                                                                 | B                                                                                 | A                                                                                 | A                                                                                 | C                                                                                 | A                                                                                 | D                                                                                   | B                                                                                   | C                                                                                   | C                                                                                   |                                                                                     |
| Approach Delay         |                                                                                   | 9.6                                                                               |                                                                                   |                                                                                   | 23.3                                                                              |                                                                                   |                                                                                     | 47.2                                                                                |                                                                                     | 28.8                                                                                |                                                                                     |
| Approach LOS           |                                                                                   | A                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                     | D                                                                                   |                                                                                     | C                                                                                   |                                                                                     |
| Queue Length 50th (m)  | 0.4                                                                               | 21.0                                                                              | 0.0                                                                               | 1.0                                                                               | 60.5                                                                              | 0.0                                                                               | 30.8                                                                                | 0.9                                                                                 | 0.1                                                                                 | 0.8                                                                                 |                                                                                     |
| Queue Length 95th (m)  | 2.6                                                                               | 71.5                                                                              | 14.0                                                                              | 4.9                                                                               | #212.8                                                                            | 0.0                                                                               | #79.4                                                                               | 9.4                                                                                 | 1.3                                                                                 | 7.0                                                                                 |                                                                                     |
| Internal Link Dist (m) |                                                                                   | 820.6                                                                             |                                                                                   |                                                                                   | 792.2                                                                             |                                                                                   |                                                                                     | 422.2                                                                               |                                                                                     | 103.9                                                                               |                                                                                     |
| Turn Bay Length (m)    | 90.0                                                                              |                                                                                   | 85.0                                                                              | 60.0                                                                              |                                                                                   | 56.0                                                                              | 80.0                                                                                |                                                                                     | 40.0                                                                                |                                                                                     |                                                                                     |
| Base Capacity (vph)    | 235                                                                               | 968                                                                               | 983                                                                               | 524                                                                               | 1010                                                                              | 944                                                                               | 597                                                                                 | 754                                                                                 | 174                                                                                 | 572                                                                                 |                                                                                     |
| Starvation Cap Reductn | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Storage Cap Reductn    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio      | 0.04                                                                              | 0.40                                                                              | 0.36                                                                              | 0.04                                                                              | 0.78                                                                              | 0.00                                                                              | 0.84                                                                                | 0.06                                                                                | 0.01                                                                                | 0.03                                                                                |                                                                                     |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 84.3

Natural Cycle: 150

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 24.7

Intersection LOS: C

Intersection Capacity Utilization 70.6%

ICU Level of Service C

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: Rue Caron/Rue Industrielle & HWY 17

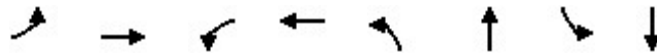
|                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |  |
| 10.9 s                                                                              | 45.2 s                                                                              | 11.9 s                                                                              | 52 s                                                                                |
|  |  |  |  |
| 21 s                                                                                | 35.1 s                                                                              | 11.9 s                                                                              | 52 s                                                                                |

# Lanes, Volumes, Timings

## 2: Caron St/Rue Caron & Laurier St

Phase 1 AM+Improvements

04/25/2019



| Lane Group             | EBL   | EBT   | WBL   | WBT   | NBL   | NBT    | SBL   | SBT   |
|------------------------|-------|-------|-------|-------|-------|--------|-------|-------|
| Lane Configurations    |       |       |       |       |       |        |       |       |
| Traffic Volume (vph)   | 17    | 54    | 41    | 148   | 60    | 390    | 12    | 320   |
| Future Volume (vph)    | 17    | 54    | 41    | 148   | 60    | 390    | 12    | 320   |
| Lane Group Flow (vph)  | 19    | 111   | 46    | 207   | 67    | 472    | 13    | 373   |
| Turn Type              | pm+pt | NA    | pm+pt | NA    | pm+pt | NA     | pm+pt | NA    |
| Protected Phases       | 7     | 4     | 3     | 8     | 5     | 2      | 1     | 6     |
| Permitted Phases       | 4     |       | 8     |       | 2     |        | 6     |       |
| Detector Phase         | 7     | 4     | 3     | 8     | 5     | 2      | 1     | 6     |
| Switch Phase           |       |       |       |       |       |        |       |       |
| Minimum Initial (s)    | 5.0   | 10.0  | 5.0   | 10.0  | 5.0   | 10.0   | 5.0   | 10.0  |
| Minimum Split (s)      | 11.5  | 31.5  | 11.5  | 31.5  | 11.1  | 27.1   | 11.1  | 27.1  |
| Total Split (s)        | 12.0  | 33.0  | 12.0  | 33.0  | 12.0  | 33.0   | 12.0  | 33.0  |
| Total Split (%)        | 13.3% | 36.7% | 13.3% | 36.7% | 13.3% | 36.7%  | 13.3% | 36.7% |
| Yellow Time (s)        | 3.3   | 3.3   | 3.3   | 3.3   | 3.3   | 3.3    | 3.3   | 3.3   |
| All-Red Time (s)       | 3.2   | 3.2   | 3.2   | 3.2   | 2.8   | 2.8    | 2.8   | 2.8   |
| Lost Time Adjust (s)   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0   | 0.0   |
| Total Lost Time (s)    | 6.5   | 6.5   | 6.5   | 6.5   | 6.1   | 6.1    | 6.1   | 6.1   |
| Lead/Lag               | Lead  | Lag   | Lead  | Lag   | Lead  | Lag    | Lead  | Lag   |
| Lead-Lag Optimize?     | Yes   | Yes   | Yes   | Yes   | Yes   | Yes    | Yes   | Yes   |
| Recall Mode            | None  | Max   | None  | Max   | None  | None   | None  | None  |
| Act Effct Green (s)    | 30.4  | 27.5  | 31.5  | 29.6  | 30.1  | 29.1   | 26.4  | 22.1  |
| Actuated g/C Ratio     | 0.39  | 0.35  | 0.40  | 0.38  | 0.39  | 0.37   | 0.34  | 0.28  |
| v/c Ratio              | 0.04  | 0.18  | 0.09  | 0.31  | 0.23  | 0.72   | 0.05  | 0.75  |
| Control Delay          | 15.2  | 15.2  | 15.5  | 21.1  | 17.2  | 30.4   | 15.5  | 37.4  |
| Queue Delay            | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0   | 0.0   |
| Total Delay            | 15.2  | 15.2  | 15.5  | 21.1  | 17.2  | 30.4   | 15.5  | 37.4  |
| LOS                    | B     | B     | B     | C     | B     | C      | B     | D     |
| Approach Delay         |       | 15.2  |       | 20.1  |       | 28.7   |       | 36.7  |
| Approach LOS           |       | B     |       | C     |       | C      |       | D     |
| Queue Length 50th (m)  | 1.6   | 6.9   | 3.8   | 17.5  | 6.1   | 56.1   | 1.2   | 52.2  |
| Queue Length 95th (m)  | 5.3   | 18.6  | 9.9   | 41.9  | 13.1  | #122.5 | 4.1   | 80.9  |
| Internal Link Dist (m) |       | 919.9 |       | 690.6 |       | 145.4  |       | 422.2 |
| Turn Bay Length (m)    | 35.0  |       | 60.0  |       | 55.0  |        | 50.0  |       |
| Base Capacity (vph)    | 472   | 609   | 509   | 659   | 289   | 716    | 262   | 627   |
| Starvation Cap Reductn | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0     |
| Spillback Cap Reductn  | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0     |
| Storage Cap Reductn    | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0     |
| Reduced v/c Ratio      | 0.04  | 0.18  | 0.09  | 0.31  | 0.23  | 0.66   | 0.05  | 0.59  |

### Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 78

Natural Cycle: 85

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 28.1

Intersection LOS: C

Intersection Capacity Utilization 58.6%

ICU Level of Service B

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 2: Caron St/Rue Caron & Laurier St

|      |    |      |    |      |    |      |    |
|------|----|------|----|------|----|------|----|
|      | Ø1 |      | Ø2 |      | Ø3 |      | Ø4 |
| 12 s |    | 33 s |    | 12 s |    | 33 s |    |
|      | Ø5 |      | Ø6 |      | Ø7 |      | Ø8 |
| 12 s |    | 33 s |    | 12 s |    | 33 s |    |

City of Ottawa Inc.

04/06/2019

# HCM Unsignalized Intersection Capacity Analysis

## 3: Caron St & Hélène St

Phase 1 AM+Improvements

04/27/2019



| Movement                          | EBL                                                                               | EBR  | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR  |
|-----------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations               |  |      |  |  |  |      |
| Traffic Volume (veh/h)            | 0                                                                                 | 5    | 6                                                                                 | 485                                                                               | 404                                                                               | 3    |
| Future Volume (Veh/h)             | 0                                                                                 | 5    | 6                                                                                 | 485                                                                               | 404                                                                               | 3    |
| Sign Control                      | Stop                                                                              |      |                                                                                   | Free                                                                              | Free                                                                              |      |
| Grade                             | 0%                                                                                |      |                                                                                   | 0%                                                                                | 0%                                                                                |      |
| Peak Hour Factor                  | 0.90                                                                              | 0.90 | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90 |
| Hourly flow rate (vph)            | 0                                                                                 | 6    | 7                                                                                 | 539                                                                               | 449                                                                               | 3    |
| Pedestrians                       |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Lane Width (m)                    |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Walking Speed (m/s)               |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Percent Blockage                  |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Right turn flare (veh)            |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Median type                       |                                                                                   |      |                                                                                   | TWLTL                                                                             | None                                                                              |      |
| Median storage veh)               |                                                                                   |      |                                                                                   | 2                                                                                 |                                                                                   |      |
| Upstream signal (m)               |                                                                                   |      |                                                                                   |                                                                                   | 169                                                                               |      |
| pX, platoon unblocked             | 0.82                                                                              | 0.82 | 0.82                                                                              |                                                                                   |                                                                                   |      |
| vC, conflicting volume            | 1004                                                                              | 450  | 452                                                                               |                                                                                   |                                                                                   |      |
| vC1, stage 1 conf vol             | 450                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |
| vC2, stage 2 conf vol             | 553                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |
| vCu, unblocked vol                | 894                                                                               | 219  | 221                                                                               |                                                                                   |                                                                                   |      |
| tC, single (s)                    | 6.4                                                                               | 6.2  | 4.1                                                                               |                                                                                   |                                                                                   |      |
| tC, 2 stage (s)                   | 5.4                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |
| tF (s)                            | 3.5                                                                               | 3.3  | 2.2                                                                               |                                                                                   |                                                                                   |      |
| p0 queue free %                   | 100                                                                               | 99   | 99                                                                                |                                                                                   |                                                                                   |      |
| cM capacity (veh/h)               | 481                                                                               | 672  | 1105                                                                              |                                                                                   |                                                                                   |      |
| Direction, Lane #                 | EB 1                                                                              | NB 1 | NB 2                                                                              | SB 1                                                                              |                                                                                   |      |
| Volume Total                      | 6                                                                                 | 7    | 539                                                                               | 452                                                                               |                                                                                   |      |
| Volume Left                       | 0                                                                                 | 7    | 0                                                                                 | 0                                                                                 |                                                                                   |      |
| Volume Right                      | 6                                                                                 | 0    | 0                                                                                 | 3                                                                                 |                                                                                   |      |
| cSH                               | 672                                                                               | 1105 | 1700                                                                              | 1700                                                                              |                                                                                   |      |
| Volume to Capacity                | 0.01                                                                              | 0.01 | 0.32                                                                              | 0.27                                                                              |                                                                                   |      |
| Queue Length 95th (m)             | 0.2                                                                               | 0.1  | 0.0                                                                               | 0.0                                                                               |                                                                                   |      |
| Control Delay (s)                 | 10.4                                                                              | 8.3  | 0.0                                                                               | 0.0                                                                               |                                                                                   |      |
| Lane LOS                          | B                                                                                 | A    |                                                                                   |                                                                                   |                                                                                   |      |
| Approach Delay (s)                | 10.4                                                                              | 0.1  |                                                                                   | 0.0                                                                               |                                                                                   |      |
| Approach LOS                      | B                                                                                 |      |                                                                                   |                                                                                   |                                                                                   |      |
| Intersection Summary              |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Average Delay                     |                                                                                   |      | 0.1                                                                               |                                                                                   |                                                                                   |      |
| Intersection Capacity Utilization |                                                                                   |      | 36.9%                                                                             | ICU Level of Service                                                              |                                                                                   | A    |
| Analvsis Period (min)             |                                                                                   |      | 15                                                                                |                                                                                   |                                                                                   |      |

# HCM Unsignalized Intersection Capacity Analysis

## 4: Caron St & Francois St

Phase 1 AM+Improvements

04/27/2019



| Movement                          | EBL                                                                               | EBR  | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR  |
|-----------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations               |  |      |  |  |  |      |
| Sign Control                      | Stop                                                                              |      |                                                                                   | Stop                                                                              | Stop                                                                              |      |
| Traffic Volume (vph)              | 9                                                                                 | 3    | 1                                                                                 | 421                                                                               | 407                                                                               | 2    |
| Future Volume (vph)               | 9                                                                                 | 3    | 1                                                                                 | 421                                                                               | 407                                                                               | 2    |
| Peak Hour Factor                  | 0.90                                                                              | 0.90 | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90 |
| Hourly flow rate (vph)            | 10                                                                                | 3    | 1                                                                                 | 468                                                                               | 452                                                                               | 2    |
| Direction, Lane #                 | EB 1                                                                              | NB 1 | NB 2                                                                              | SB 1                                                                              |                                                                                   |      |
| Volume Total (vph)                | 13                                                                                | 1    | 468                                                                               | 454                                                                               |                                                                                   |      |
| Volume Left (vph)                 | 10                                                                                | 1    | 0                                                                                 | 0                                                                                 |                                                                                   |      |
| Volume Right (vph)                | 3                                                                                 | 0    | 0                                                                                 | 2                                                                                 |                                                                                   |      |
| Hadj (s)                          | 0.05                                                                              | 0.53 | 0.03                                                                              | 0.03                                                                              |                                                                                   |      |
| Departure Headway (s)             | 6.0                                                                               | 5.4  | 4.9                                                                               | 4.6                                                                               |                                                                                   |      |
| Degree Utilization, x             | 0.02                                                                              | 0.00 | 0.64                                                                              | 0.58                                                                              |                                                                                   |      |
| Capacity (veh/h)                  | 512                                                                               | 654  | 729                                                                               | 774                                                                               |                                                                                   |      |
| Control Delay (s)                 | 9.1                                                                               | 7.2  | 14.8                                                                              | 13.7                                                                              |                                                                                   |      |
| Approach Delay (s)                | 9.1                                                                               | 14.8 |                                                                                   | 13.7                                                                              |                                                                                   |      |
| Approach LOS                      | A                                                                                 | B    |                                                                                   | B                                                                                 |                                                                                   |      |
| Intersection Summary              |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Delay                             |                                                                                   |      | 14.2                                                                              |                                                                                   |                                                                                   |      |
| Level of Service                  |                                                                                   |      | B                                                                                 |                                                                                   |                                                                                   |      |
| Intersection Capacity Utilization |                                                                                   |      | 33.4%                                                                             | ICU Level of Service                                                              | A                                                                                 |      |
| Analysis Period (min)             |                                                                                   |      | 15                                                                                |                                                                                   |                                                                                   |      |

# HCM Unsignalized Intersection Capacity Analysis

## 5: Caron St & Des Cedres Ave

Phase 1 AM+Improvements

04/27/2019

|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                   |  |  |  |  |  |  |
| Movement                          | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |
| Lane Configurations               |  |                                                                                   |  |                                                                                   |  |  |
| Traffic Volume (veh/h)            | 5                                                                                 | 10                                                                                | 412                                                                               | 1                                                                                 | 5                                                                                 | 405                                                                               |
| Future Volume (Veh/h)             | 5                                                                                 | 10                                                                                | 412                                                                               | 1                                                                                 | 5                                                                                 | 405                                                                               |
| Sign Control                      | Stop                                                                              |                                                                                   | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              |
| Grade                             | 0%                                                                                |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |
| Hourly flow rate (vph)            | 6                                                                                 | 11                                                                                | 458                                                                               | 1                                                                                 | 6                                                                                 | 450                                                                               |
| Pedestrians                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Width (m)                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Walking Speed (m/s)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Percent Blockage                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Median type                       |                                                                                   |                                                                                   | TWLTL                                                                             |                                                                                   | TWLTL                                                                             |                                                                                   |
| Median storage veh)               |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   | 2                                                                                 |                                                                                   |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| pX, platoon unblocked             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC, conflicting volume            | 920                                                                               | 458                                                                               |                                                                                   |                                                                                   | 459                                                                               |                                                                                   |
| vC1, stage 1 conf vol             | 458                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC2, stage 2 conf vol             | 462                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vCu, unblocked vol                | 920                                                                               | 458                                                                               |                                                                                   |                                                                                   | 459                                                                               |                                                                                   |
| tC, single (s)                    | 6.4                                                                               | 6.2                                                                               |                                                                                   |                                                                                   | 4.1                                                                               |                                                                                   |
| tC, 2 stage (s)                   | 5.4                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| tF (s)                            | 3.5                                                                               | 3.3                                                                               |                                                                                   |                                                                                   | 2.2                                                                               |                                                                                   |
| p0 queue free %                   | 99                                                                                | 98                                                                                |                                                                                   |                                                                                   | 99                                                                                |                                                                                   |
| cM capacity (veh/h)               | 510                                                                               | 602                                                                               |                                                                                   |                                                                                   | 1102                                                                              |                                                                                   |
| Direction, Lane #                 | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                   |                                                                                   |
| Volume Total                      | 17                                                                                | 459                                                                               | 6                                                                                 | 450                                                                               |                                                                                   |                                                                                   |
| Volume Left                       | 6                                                                                 | 0                                                                                 | 6                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |
| Volume Right                      | 11                                                                                | 1                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |
| cSH                               | 566                                                                               | 1700                                                                              | 1102                                                                              | 1700                                                                              |                                                                                   |                                                                                   |
| Volume to Capacity                | 0.03                                                                              | 0.27                                                                              | 0.01                                                                              | 0.26                                                                              |                                                                                   |                                                                                   |
| Queue Length 95th (m)             | 0.6                                                                               | 0.0                                                                               | 0.1                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |
| Control Delay (s)                 | 11.6                                                                              | 0.0                                                                               | 8.3                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |
| Lane LOS                          | B                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Approach Delay (s)                | 11.6                                                                              | 0.0                                                                               | 0.1                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Approach LOS                      | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Average Delay                     |                                                                                   |                                                                                   | 0.3                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 33.0%                                                                             | ICU Level of Service                                                              |                                                                                   | A                                                                                 |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |

# HCM Unsignalized Intersection Capacity Analysis 6: Caron St & Cote St/Potvin Ave

Phase 1 AM+Improvements

04/27/2019

|                                   |  |  |  |  |  |  |   |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |  |  |                                                                                     |  |  |                                                                                     |
| Sign Control                      |                                                                                   | Stop                                                                              |                                                                                   |                                                                                   | Stop                                                                              |                                                                                   |                                                                                     | Stop                                                                                |                                                                                     |                                                                                     | Stop                                                                                |                                                                                     |
| Traffic Volume (vph)              | 9                                                                                 | 0                                                                                 | 8                                                                                 | 9                                                                                 | 1                                                                                 | 6                                                                                 | 4                                                                                   | 398                                                                                 | 6                                                                                   | 5                                                                                   | 405                                                                                 | 0                                                                                   |
| Future Volume (vph)               | 9                                                                                 | 0                                                                                 | 8                                                                                 | 9                                                                                 | 1                                                                                 | 6                                                                                 | 4                                                                                   | 398                                                                                 | 6                                                                                   | 5                                                                                   | 405                                                                                 | 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                                                                                |
| Hourly flow rate (vph)            | 10                                                                                | 0                                                                                 | 9                                                                                 | 10                                                                                | 1                                                                                 | 7                                                                                 | 4                                                                                   | 442                                                                                 | 7                                                                                   | 6                                                                                   | 450                                                                                 | 0                                                                                   |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              | NB 2                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Total (vph)                | 19                                                                                | 18                                                                                | 4                                                                                 | 449                                                                               | 6                                                                                 | 450                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Left (vph)                 | 10                                                                                | 10                                                                                | 4                                                                                 | 0                                                                                 | 6                                                                                 | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Right (vph)                | 9                                                                                 | 7                                                                                 | 0                                                                                 | 7                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Hadj (s)                          | -0.14                                                                             | -0.09                                                                             | 0.53                                                                              | 0.02                                                                              | 0.53                                                                              | 0.03                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Departure Headway (s)             | 5.9                                                                               | 5.9                                                                               | 5.5                                                                               | 5.0                                                                               | 5.5                                                                               | 5.0                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Degree Utilization, x             | 0.03                                                                              | 0.03                                                                              | 0.01                                                                              | 0.62                                                                              | 0.01                                                                              | 0.62                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Capacity (veh/h)                  | 513                                                                               | 516                                                                               | 636                                                                               | 714                                                                               | 636                                                                               | 713                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Control Delay (s)                 | 9.0                                                                               | 9.1                                                                               | 7.3                                                                               | 14.6                                                                              | 7.3                                                                               | 14.7                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay (s)                | 9.0                                                                               | 9.1                                                                               | 14.5                                                                              |                                                                                   | 14.6                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                      | A                                                                                 | A                                                                                 | B                                                                                 |                                                                                   | B                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Delay                             |                                                                                   |                                                                                   | 14.4                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Level of Service                  |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 32.5%                                                                             |                                                                                   | ICU Level of Service                                                              |                                                                                   | A                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM Unsignalized Intersection Capacity Analysis

## 7: Caron St & Docteur Corbeil Blvd

Phase 1 AM+Improvements

04/27/2019



| Movement                          | EBL                                                                               | EBR  | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|--|--|--|
| Lane Configurations               |  |      |  |  |  |      |  |  |  |
| Traffic Volume (veh/h)            | 38                                                                                | 57   | 81                                                                                | 370                                                                               | 339                                                                               | 43   |  |  |  |
| Future Volume (Veh/h)             | 38                                                                                | 57   | 81                                                                                | 370                                                                               | 339                                                                               | 43   |  |  |  |
| Sign Control                      | Stop                                                                              |      |                                                                                   | Free                                                                              | Free                                                                              |      |  |  |  |
| Grade                             | 0%                                                                                |      |                                                                                   | 0%                                                                                | 0%                                                                                |      |  |  |  |
| Peak Hour Factor                  | 0.90                                                                              | 0.90 | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90 |  |  |  |
| Hourly flow rate (vph)            | 42                                                                                | 63   | 90                                                                                | 411                                                                               | 377                                                                               | 48   |  |  |  |
| Pedestrians                       | 2                                                                                 |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |
| Lane Width (m)                    | 3.6                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |
| Walking Speed (m/s)               | 1.2                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |
| Percent Blockage                  | 0                                                                                 |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |
| Right turn flare (veh)            |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |
| Median type                       |                                                                                   |      |                                                                                   | TWLTL                                                                             | TWLTL                                                                             |      |  |  |  |
| Median storage veh)               |                                                                                   |      |                                                                                   | 2                                                                                 | 2                                                                                 |      |  |  |  |
| Upstream signal (m)               |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |
| pX, platoon unblocked             |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |
| vC, conflicting volume            | 994                                                                               | 403  | 427                                                                               |                                                                                   |                                                                                   |      |  |  |  |
| vC1, stage 1 conf vol             | 403                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |
| vC2, stage 2 conf vol             | 591                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |
| vCu, unblocked vol                | 994                                                                               | 403  | 427                                                                               |                                                                                   |                                                                                   |      |  |  |  |
| tC, single (s)                    | 6.4                                                                               | 6.2  | 4.1                                                                               |                                                                                   |                                                                                   |      |  |  |  |
| tC, 2 stage (s)                   | 5.4                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |
| tF (s)                            | 3.5                                                                               | 3.3  | 2.2                                                                               |                                                                                   |                                                                                   |      |  |  |  |
| p0 queue free %                   | 91                                                                                | 90   | 92                                                                                |                                                                                   |                                                                                   |      |  |  |  |
| cM capacity (veh/h)               | 449                                                                               | 646  | 1130                                                                              |                                                                                   |                                                                                   |      |  |  |  |
| Direction, Lane #                 | EB 1                                                                              | NB 1 | NB 2                                                                              | SB 1                                                                              |                                                                                   |      |  |  |  |
| Volume Total                      | 105                                                                               | 90   | 411                                                                               | 425                                                                               |                                                                                   |      |  |  |  |
| Volume Left                       | 42                                                                                | 90   | 0                                                                                 | 0                                                                                 |                                                                                   |      |  |  |  |
| Volume Right                      | 63                                                                                | 0    | 0                                                                                 | 48                                                                                |                                                                                   |      |  |  |  |
| cSH                               | 550                                                                               | 1130 | 1700                                                                              | 1700                                                                              |                                                                                   |      |  |  |  |
| Volume to Capacity                | 0.19                                                                              | 0.08 | 0.24                                                                              | 0.25                                                                              |                                                                                   |      |  |  |  |
| Queue Length 95th (m)             | 4.9                                                                               | 1.8  | 0.0                                                                               | 0.0                                                                               |                                                                                   |      |  |  |  |
| Control Delay (s)                 | 13.1                                                                              | 8.5  | 0.0                                                                               | 0.0                                                                               |                                                                                   |      |  |  |  |
| Lane LOS                          | B                                                                                 | A    |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |
| Approach Delay (s)                | 13.1                                                                              | 1.5  |                                                                                   | 0.0                                                                               |                                                                                   |      |  |  |  |
| Approach LOS                      | B                                                                                 |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |
| Intersection Summary              |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |
| Average Delay                     | 2.1                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |
| Intersection Capacity Utilization | 42.3%                                                                             |      |                                                                                   | ICU Level of Service                                                              | A                                                                                 |      |  |  |  |
| Analvsis Period (min)             | 15                                                                                |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |

# HCM Unsignalized Intersection Capacity Analysis

## 8: David St & Caron St

Phase 1 AM+Improvements

04/27/2019

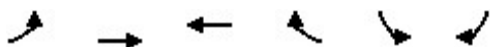
|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--|--|
|                                   |  |  |  |  |  |  |  |  |
| Movement                          | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |  |  |
| Lane Configurations               |  |                                                                                   |  |                                                                                   |  |  |  |  |
| Sign Control                      | Stop                                                                              |                                                                                   | Stop                                                                              |                                                                                   | Stop                                                                              | Stop                                                                              |  |  |
| Traffic Volume (vph)              | 26                                                                                | 179                                                                               | 240                                                                               | 23                                                                                | 174                                                                               | 222                                                                               |  |  |
| Future Volume (vph)               | 26                                                                                | 179                                                                               | 240                                                                               | 23                                                                                | 174                                                                               | 222                                                                               |  |  |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |  |  |
| Hourly flow rate (vph)            | 29                                                                                | 199                                                                               | 267                                                                               | 26                                                                                | 193                                                                               | 247                                                                               |  |  |
| Direction, Lane #                 | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                   |                                                                                   |  |  |
| Volume Total (vph)                | 228                                                                               | 293                                                                               | 193                                                                               | 247                                                                               |                                                                                   |                                                                                   |  |  |
| Volume Left (vph)                 | 29                                                                                | 0                                                                                 | 193                                                                               | 0                                                                                 |                                                                                   |                                                                                   |  |  |
| Volume Right (vph)                | 199                                                                               | 26                                                                                | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |  |  |
| Hadj (s)                          | -0.46                                                                             | -0.02                                                                             | 0.53                                                                              | 0.03                                                                              |                                                                                   |                                                                                   |  |  |
| Departure Headway (s)             | 5.1                                                                               | 5.2                                                                               | 6.0                                                                               | 5.5                                                                               |                                                                                   |                                                                                   |  |  |
| Degree Utilization, x             | 0.33                                                                              | 0.42                                                                              | 0.32                                                                              | 0.38                                                                              |                                                                                   |                                                                                   |  |  |
| Capacity (veh/h)                  | 643                                                                               | 669                                                                               | 579                                                                               | 634                                                                               |                                                                                   |                                                                                   |  |  |
| Control Delay (s)                 | 10.6                                                                              | 11.8                                                                              | 10.6                                                                              | 10.6                                                                              |                                                                                   |                                                                                   |  |  |
| Approach Delay (s)                | 10.6                                                                              | 11.8                                                                              | 10.6                                                                              |                                                                                   |                                                                                   |                                                                                   |  |  |
| Approach LOS                      | B                                                                                 | B                                                                                 | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |  |  |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
| Delay                             |                                                                                   |                                                                                   | 11.0                                                                              |                                                                                   |                                                                                   |                                                                                   |  |  |
| Level of Service                  |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |  |  |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 48.2%                                                                             | ICU Level of Service                                                              | A                                                                                 |                                                                                   |  |  |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |  |  |

# HCM Unsignalized Intersection Capacity Analysis

## 9: Baseline Rd & Caron St

Phase 1 AM+Improvements

04/27/2019



| Movement                          | EBL  | EBT                                                                               | WBT                                                                               | WBR                  | SBL                                                                               | SBR  |
|-----------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations               |      |  |  |                      |  |      |
| Traffic Volume (veh/h)            | 30   | 28                                                                                | 58                                                                                | 127                  | 95                                                                                | 47   |
| Future Volume (Veh/h)             | 30   | 28                                                                                | 58                                                                                | 127                  | 95                                                                                | 47   |
| Sign Control                      |      | Free                                                                              | Free                                                                              |                      | Stop                                                                              |      |
| Grade                             |      | 0%                                                                                | 0%                                                                                |                      | 0%                                                                                |      |
| Peak Hour Factor                  | 0.90 | 0.90                                                                              | 0.90                                                                              | 0.90                 | 0.90                                                                              | 0.90 |
| Hourly flow rate (vph)            | 33   | 31                                                                                | 64                                                                                | 141                  | 106                                                                               | 52   |
| Pedestrians                       |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Lane Width (m)                    |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Walking Speed (m/s)               |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Percent Blockage                  |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Right turn flare (veh)            |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Median type                       |      | None                                                                              | None                                                                              |                      |                                                                                   |      |
| Median storage (veh)              |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Upstream signal (m)               |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| pX, platoon unblocked             |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| vC, conflicting volume            | 205  |                                                                                   |                                                                                   |                      | 232                                                                               | 134  |
| vC1, stage 1 conf vol             |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| vC2, stage 2 conf vol             |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| vCu, unblocked vol                | 205  |                                                                                   |                                                                                   |                      | 232                                                                               | 134  |
| tC, single (s)                    | 4.1  |                                                                                   |                                                                                   |                      | 6.4                                                                               | 6.2  |
| tC, 2 stage (s)                   |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| tF (s)                            | 2.2  |                                                                                   |                                                                                   |                      | 3.5                                                                               | 3.3  |
| p0 queue free %                   | 98   |                                                                                   |                                                                                   |                      | 86                                                                                | 94   |
| cM capacity (veh/h)               | 1366 |                                                                                   |                                                                                   |                      | 738                                                                               | 914  |
| Direction, Lane #                 | EB 1 | WB 1                                                                              | SB 1                                                                              |                      |                                                                                   |      |
| Volume Total                      | 64   | 205                                                                               | 158                                                                               |                      |                                                                                   |      |
| Volume Left                       | 33   | 0                                                                                 | 106                                                                               |                      |                                                                                   |      |
| Volume Right                      | 0    | 141                                                                               | 52                                                                                |                      |                                                                                   |      |
| cSH                               | 1366 | 1700                                                                              | 788                                                                               |                      |                                                                                   |      |
| Volume to Capacity                | 0.02 | 0.12                                                                              | 0.20                                                                              |                      |                                                                                   |      |
| Queue Length 95th (m)             | 0.5  | 0.0                                                                               | 5.2                                                                               |                      |                                                                                   |      |
| Control Delay (s)                 | 4.1  | 0.0                                                                               | 10.7                                                                              |                      |                                                                                   |      |
| Lane LOS                          | A    |                                                                                   | B                                                                                 |                      |                                                                                   |      |
| Approach Delay (s)                | 4.1  | 0.0                                                                               | 10.7                                                                              |                      |                                                                                   |      |
| Approach LOS                      |      |                                                                                   | B                                                                                 |                      |                                                                                   |      |
| Intersection Summary              |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Average Delay                     |      |                                                                                   | 4.6                                                                               |                      |                                                                                   |      |
| Intersection Capacity Utilization |      |                                                                                   | 33.4%                                                                             | ICU Level of Service |                                                                                   | A    |
| Analysis Period (min)             |      |                                                                                   | 15                                                                                |                      |                                                                                   |      |

# HCM Unsignalized Intersection Capacity Analysis

## 10: Street B & David St

Phase 1 AM+Improvements

04/27/2019

|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                   |  |  |  |  |  |  |
| Movement                          | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBR                                                                               |
| Lane Configurations               |  |                                                                                   |                                                                                   |  |  |                                                                                   |
| Traffic Volume (veh/h)            | 7                                                                                 | 169                                                                               | 42                                                                                | 15                                                                                | 169                                                                               | 43                                                                                |
| Future Volume (Veh/h)             | 7                                                                                 | 169                                                                               | 42                                                                                | 15                                                                                | 169                                                                               | 43                                                                                |
| Sign Control                      | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              | Stop                                                                              |                                                                                   |
| Grade                             | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                | 0%                                                                                |                                                                                   |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |
| Hourly flow rate (vph)            | 8                                                                                 | 188                                                                               | 47                                                                                | 17                                                                                | 188                                                                               | 48                                                                                |
| Pedestrians                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Width (m)                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Walking Speed (m/s)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Percent Blockage                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Median type                       | None                                                                              |                                                                                   |                                                                                   | None                                                                              |                                                                                   |                                                                                   |
| Median storage (veh)              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| pX, platoon unblocked             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC, conflicting volume            |                                                                                   |                                                                                   | 196                                                                               |                                                                                   | 213                                                                               | 102                                                                               |
| vC1, stage 1 conf vol             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC2, stage 2 conf vol             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vCu, unblocked vol                |                                                                                   |                                                                                   | 196                                                                               |                                                                                   | 213                                                                               | 102                                                                               |
| tC, single (s)                    |                                                                                   |                                                                                   | 4.1                                                                               |                                                                                   | 6.4                                                                               | 6.2                                                                               |
| tC, 2 stage (s)                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| tF (s)                            |                                                                                   |                                                                                   | 2.2                                                                               |                                                                                   | 3.5                                                                               | 3.3                                                                               |
| p0 queue free %                   |                                                                                   |                                                                                   | 97                                                                                |                                                                                   | 75                                                                                | 95                                                                                |
| cM capacity (veh/h)               |                                                                                   |                                                                                   | 1377                                                                              |                                                                                   | 749                                                                               | 953                                                                               |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Volume Total                      | 196                                                                               | 64                                                                                | 236                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Volume Left                       | 0                                                                                 | 47                                                                                | 188                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Volume Right                      | 188                                                                               | 0                                                                                 | 48                                                                                |                                                                                   |                                                                                   |                                                                                   |
| cSH                               | 1700                                                                              | 1377                                                                              | 783                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Volume to Capacity                | 0.12                                                                              | 0.03                                                                              | 0.30                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Queue Length 95th (m)             | 0.0                                                                               | 0.7                                                                               | 8.9                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Control Delay (s)                 | 0.0                                                                               | 5.7                                                                               | 11.6                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Lane LOS                          |                                                                                   | A                                                                                 | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Approach Delay (s)                | 0.0                                                                               | 5.7                                                                               | 11.6                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Approach LOS                      |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Average Delay                     |                                                                                   |                                                                                   | 6.2                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 37.4%                                                                             | ICU Level of Service                                                              | A                                                                                 |                                                                                   |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |

# HCM Unsignalized Intersection Capacity Analysis 12: Street B & Street A

Phase 1 AM+Improvements

04/27/2019

|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Sign Control                      |                                                                                   | Stop                                                                              |                                                                                   |                                                                                   | Stop                                                                              |                                                                                   |                                                                                    | Stop                                                                                |                                                                                     |                                                                                     | Stop                                                                                |                                                                                     |
| Traffic Volume (vph)              | 127                                                                               | 0                                                                                 | 5                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 126                                                                                 |
| Future Volume (vph)               | 127                                                                               | 0                                                                                 | 5                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 126                                                                                 |
| 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                                                                                |
| Hourly flow rate (vph)            | 141                                                                               | 0                                                                                 | 6                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 140                                                                                 |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Total (vph)                | 147                                                                               | 0                                                                                 | 0                                                                                 | 140                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Left (vph)                 | 141                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Right (vph)                | 6                                                                                 | 0                                                                                 | 0                                                                                 | 140                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Hadj (s)                          | 0.20                                                                              | 0.00                                                                              | 0.00                                                                              | -0.57                                                                             |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Departure Headway (s)             | 4.4                                                                               | 4.3                                                                               | 4.4                                                                               | 3.7                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Degree Utilization, x             | 0.18                                                                              | 0.00                                                                              | 0.00                                                                              | 0.14                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Capacity (veh/h)                  | 797                                                                               | 803                                                                               | 795                                                                               | 941                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Control Delay (s)                 | 8.3                                                                               | 7.3                                                                               | 7.4                                                                               | 7.3                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay (s)                | 8.3                                                                               | 0.0                                                                               | 0.0                                                                               | 7.3                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                      | A                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Delay                             |                                                                                   |                                                                                   | 7.8                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Level of Service                  |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 22.6%                                                                             | ICU Level of Service                                                              | A                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM Unsignalized Intersection Capacity Analysis

## 15: Caron St & Street A

Phase 1 AM+Improvements

04/27/2019

|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--|--|
|                                   |  |  |  |  |  |  |  |  |
| Movement                          | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |  |  |
| Lane Configurations               |  |                                                                                   |  |                                                                                   |  |  |  |  |
| Sign Control                      | Stop                                                                              |                                                                                   | Stop                                                                              |                                                                                   | Stop                                                                              | Stop                                                                              |  |  |
| Traffic Volume (vph)              | 63                                                                                | 127                                                                               | 115                                                                               | 63                                                                                | 127                                                                               | 100                                                                               |  |  |
| Future Volume (vph)               | 63                                                                                | 127                                                                               | 115                                                                               | 63                                                                                | 127                                                                               | 100                                                                               |  |  |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |  |  |
| Hourly flow rate (vph)            | 70                                                                                | 141                                                                               | 128                                                                               | 70                                                                                | 141                                                                               | 111                                                                               |  |  |
| Direction, Lane #                 | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                   |                                                                                   |  |  |
| Volume Total (vph)                | 211                                                                               | 198                                                                               | 94                                                                                | 158                                                                               |                                                                                   |                                                                                   |  |  |
| Volume Left (vph)                 | 70                                                                                | 0                                                                                 | 94                                                                                | 47                                                                                |                                                                                   |                                                                                   |  |  |
| Volume Right (vph)                | 141                                                                               | 70                                                                                | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |  |  |
| Hadj (s)                          | -0.30                                                                             | -0.18                                                                             | 0.53                                                                              | 0.18                                                                              |                                                                                   |                                                                                   |  |  |
| Departure Headway (s)             | 4.7                                                                               | 4.7                                                                               | 5.8                                                                               | 5.4                                                                               |                                                                                   |                                                                                   |  |  |
| Degree Utilization, x             | 0.27                                                                              | 0.26                                                                              | 0.15                                                                              | 0.24                                                                              |                                                                                   |                                                                                   |  |  |
| Capacity (veh/h)                  | 715                                                                               | 731                                                                               | 597                                                                               | 638                                                                               |                                                                                   |                                                                                   |  |  |
| Control Delay (s)                 | 9.4                                                                               | 9.3                                                                               | 8.6                                                                               | 8.9                                                                               |                                                                                   |                                                                                   |  |  |
| Approach Delay (s)                | 9.4                                                                               | 9.3                                                                               | 8.8                                                                               |                                                                                   |                                                                                   |                                                                                   |  |  |
| Approach LOS                      | A                                                                                 | A                                                                                 | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |  |  |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
| Delay                             |                                                                                   |                                                                                   | 9.1                                                                               |                                                                                   |                                                                                   |                                                                                   |  |  |
| Level of Service                  |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |  |  |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 38.9%                                                                             | ICU Level of Service                                                              | A                                                                                 |                                                                                   |  |  |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |  |  |

# Lanes, Volumes, Timings

## 1: Rue Caron/Rue Industrielle & HWY 17

Phase 1 PM+Improvements

04/25/2019

|                        |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | SBL                                                                                 | SBT                                                                                 |
| Lane Configurations    |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph)   | 34                                                                                | 189                                                                               | 346                                                                               | 30                                                                                | 106                                                                               | 26                                                                                | 328                                                                                | 87                                                                                  | 35                                                                                  | 138                                                                                 |
| Future Volume (vph)    | 34                                                                                | 189                                                                               | 346                                                                               | 30                                                                                | 106                                                                               | 26                                                                                | 328                                                                                | 87                                                                                  | 35                                                                                  | 138                                                                                 |
| Lane Group Flow (vph)  | 38                                                                                | 210                                                                               | 384                                                                               | 33                                                                                | 118                                                                               | 29                                                                                | 364                                                                                | 144                                                                                 | 39                                                                                  | 187                                                                                 |
| Turn Type              | pm+pt                                                                             | NA                                                                                | Perm                                                                              | pm+pt                                                                             | NA                                                                                | Perm                                                                              | Prot                                                                               | NA                                                                                  | pm+pt                                                                               | NA                                                                                  |
| Protected Phases       | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                  | 2                                                                                   | 1                                                                                   | 6                                                                                   |
| Permitted Phases       | 4                                                                                 |                                                                                   | 4                                                                                 | 8                                                                                 |                                                                                   | 8                                                                                 |                                                                                    |                                                                                     | 6                                                                                   |                                                                                     |
| Detector Phase         | 7                                                                                 | 4                                                                                 | 4                                                                                 | 3                                                                                 | 8                                                                                 | 8                                                                                 | 5                                                                                  | 2                                                                                   | 1                                                                                   | 6                                                                                   |
| Switch Phase           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)    | 5.0                                                                               | 10.0                                                                              | 10.0                                                                              | 5.0                                                                               | 10.0                                                                              | 10.0                                                                              | 5.0                                                                                | 10.0                                                                                | 5.0                                                                                 | 10.0                                                                                |
| Minimum Split (s)      | 11.9                                                                              | 32.9                                                                              | 32.9                                                                              | 11.9                                                                              | 32.9                                                                              | 32.9                                                                              | 10.9                                                                               | 33.3                                                                                | 10.9                                                                                | 33.3                                                                                |
| Total Split (s)        | 12.0                                                                              | 39.0                                                                              | 39.0                                                                              | 12.0                                                                              | 39.0                                                                              | 39.0                                                                              | 29.0                                                                               | 58.0                                                                                | 11.0                                                                                | 40.0                                                                                |
| Total Split (%)        | 10.0%                                                                             | 32.5%                                                                             | 32.5%                                                                             | 10.0%                                                                             | 32.5%                                                                             | 32.5%                                                                             | 24.2%                                                                              | 48.3%                                                                               | 9.2%                                                                                | 33.3%                                                                               |
| Yellow Time (s)        | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               | 3.3                                                                                | 3.3                                                                                 | 3.3                                                                                 | 3.3                                                                                 |
| All-Red Time (s)       | 2.7                                                                               | 2.7                                                                               | 2.7                                                                               | 2.7                                                                               | 2.7                                                                               | 2.7                                                                               | 2.6                                                                                | 3.0                                                                                 | 2.6                                                                                 | 3.0                                                                                 |
| Lost Time Adjust (s)   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)    | 6.9                                                                               | 6.9                                                                               | 6.9                                                                               | 6.9                                                                               | 6.9                                                                               | 6.9                                                                               | 5.9                                                                                | 6.3                                                                                 | 5.9                                                                                 | 6.3                                                                                 |
| Lead/Lag               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                               | Lag                                                                                 | Lead                                                                                | Lag                                                                                 |
| Lead-Lag Optimize?     | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Recall Mode            | None                                                                              | Max                                                                               | Max                                                                               | None                                                                              | Max                                                                               | Max                                                                               | None                                                                               | None                                                                                | None                                                                                | None                                                                                |
| Act Effct Green (s)    | 35.6                                                                              | 32.9                                                                              | 32.9                                                                              | 35.6                                                                              | 32.9                                                                              | 32.9                                                                              | 15.3                                                                               | 30.6                                                                                | 20.8                                                                                | 15.1                                                                                |
| Actuated g/C Ratio     | 0.40                                                                              | 0.37                                                                              | 0.37                                                                              | 0.40                                                                              | 0.37                                                                              | 0.37                                                                              | 0.17                                                                               | 0.34                                                                                | 0.23                                                                                | 0.17                                                                                |
| v/c Ratio              | 0.08                                                                              | 0.32                                                                              | 0.48                                                                              | 0.07                                                                              | 0.18                                                                              | 0.04                                                                              | 0.65                                                                               | 0.24                                                                                | 0.13                                                                                | 0.63                                                                                |
| Control Delay          | 17.2                                                                              | 25.7                                                                              | 5.2                                                                               | 17.2                                                                              | 24.3                                                                              | 0.1                                                                               | 41.8                                                                               | 20.5                                                                                | 19.2                                                                                | 44.3                                                                                |
| Queue Delay            | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay            | 17.2                                                                              | 25.7                                                                              | 5.2                                                                               | 17.2                                                                              | 24.3                                                                              | 0.1                                                                               | 41.8                                                                               | 20.5                                                                                | 19.2                                                                                | 44.3                                                                                |
| LOS                    | B                                                                                 | C                                                                                 | A                                                                                 | B                                                                                 | C                                                                                 | A                                                                                 | D                                                                                  | C                                                                                   | B                                                                                   | D                                                                                   |
| Approach Delay         |                                                                                   | 12.7                                                                              |                                                                                   |                                                                                   | 19.1                                                                              |                                                                                   |                                                                                    | 35.7                                                                                |                                                                                     | 40.0                                                                                |
| Approach LOS           |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                    | D                                                                                   |                                                                                     | D                                                                                   |
| Queue Length 50th (m)  | 3.3                                                                               | 26.0                                                                              | 0.0                                                                               | 2.9                                                                               | 13.8                                                                              | 0.0                                                                               | 29.7                                                                               | 15.4                                                                                | 4.0                                                                                 | 28.2                                                                                |
| Queue Length 95th (m)  | 10.2                                                                              | 51.0                                                                              | 19.7                                                                              | 9.2                                                                               | 30.2                                                                              | 0.0                                                                               | 46.1                                                                               | 28.8                                                                                | 9.3                                                                                 | 50.5                                                                                |
| Internal Link Dist (m) |                                                                                   | 820.6                                                                             |                                                                                   |                                                                                   | 792.2                                                                             |                                                                                   |                                                                                    | 422.2                                                                               |                                                                                     | 103.9                                                                               |
| Turn Bay Length (m)    | 90.0                                                                              |                                                                                   | 85.0                                                                              | 60.0                                                                              |                                                                                   | 56.0                                                                              | 80.0                                                                               |                                                                                     | 40.0                                                                                |                                                                                     |
| Base Capacity (vph)    | 506                                                                               | 649                                                                               | 794                                                                               | 459                                                                               | 649                                                                               | 678                                                                               | 861                                                                                | 1005                                                                                | 302                                                                                 | 668                                                                                 |
| Starvation Cap Reductn | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio      | 0.08                                                                              | 0.32                                                                              | 0.48                                                                              | 0.07                                                                              | 0.18                                                                              | 0.04                                                                              | 0.42                                                                               | 0.14                                                                                | 0.13                                                                                | 0.28                                                                                |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 89.4

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.65

Intersection Signal Delay: 25.0

Intersection LOS: C

Intersection Capacity Utilization 55.9%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Rue Caron/Rue Industrielle & HWY 17

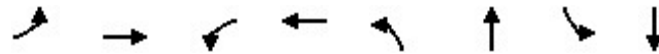
|                                                                                     |                                                                                     |                                                                                     |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |  |  |
| 11 s                                                                                | 58 s                                                                                | 12 s                                                                                | 39 s                                                                                  |
|  |  |  |  |
| 29 s                                                                                | 40 s                                                                                | 12 s                                                                                | 39 s                                                                                  |

# Lanes, Volumes, Timings

## 2: Caron St/Rue Caron & Laurier St

# Phase 1 PM+Improvements

04/25/2019



| Lane Group             | EBL   | EBT   | WBL   | WBT   | NBL   | NBT    | SBL   | SBT    |
|------------------------|-------|-------|-------|-------|-------|--------|-------|--------|
| Lane Configurations    |       |       |       |       |       |        |       |        |
| Traffic Volume (vph)   | 34    | 155   | 30    | 87    | 72    | 364    | 35    | 420    |
| Future Volume (vph)    | 34    | 155   | 30    | 87    | 72    | 364    | 35    | 420    |
| Lane Group Flow (vph)  | 38    | 268   | 33    | 126   | 80    | 451    | 39    | 501    |
| Turn Type              | pm+pt | NA    | pm+pt | NA    | pm+pt | NA     | pm+pt | NA     |
| Protected Phases       | 7     | 4     | 3     | 8     | 5     | 2      | 1     | 6      |
| Permitted Phases       | 4     |       | 8     |       | 2     |        | 6     |        |
| Detector Phase         | 7     | 4     | 3     | 8     | 5     | 2      | 1     | 6      |
| Switch Phase           |       |       |       |       |       |        |       |        |
| Minimum Initial (s)    | 5.0   | 10.0  | 5.0   | 10.0  | 5.0   | 10.0   | 5.0   | 10.0   |
| Minimum Split (s)      | 11.5  | 31.5  | 11.5  | 31.5  | 11.1  | 27.1   | 11.1  | 27.1   |
| Total Split (s)        | 12.0  | 33.0  | 12.0  | 33.0  | 12.0  | 33.0   | 12.0  | 33.0   |
| Total Split (%)        | 13.3% | 36.7% | 13.3% | 36.7% | 13.3% | 36.7%  | 13.3% | 36.7%  |
| Yellow Time (s)        | 3.3   | 3.3   | 3.3   | 3.3   | 3.3   | 3.3    | 3.3   | 3.3    |
| All-Red Time (s)       | 3.2   | 3.2   | 3.2   | 3.2   | 2.8   | 2.8    | 2.8   | 2.8    |
| Lost Time Adjust (s)   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0   | 0.0    |
| Total Lost Time (s)    | 6.5   | 6.5   | 6.5   | 6.5   | 6.1   | 6.1    | 6.1   | 6.1    |
| Lead/Lag               | Lead  | Lag   | Lead  | Lag   | Lead  | Lag    | Lead  | Lag    |
| Lead-Lag Optimize?     | Yes   | Yes   | Yes   | Yes   | Yes   | Yes    | Yes   | Yes    |
| Recall Mode            | None  | Max   | None  | Max   | None  | None   | None  | None   |
| Act Effct Green (s)    | 30.2  | 27.2  | 30.2  | 27.2  | 31.6  | 28.4   | 30.3  | 25.8   |
| Actuated g/C Ratio     | 0.37  | 0.33  | 0.37  | 0.33  | 0.39  | 0.35   | 0.37  | 0.32   |
| v/c Ratio              | 0.08  | 0.46  | 0.09  | 0.22  | 0.37  | 0.74   | 0.15  | 0.90   |
| Control Delay          | 16.1  | 24.7  | 16.1  | 21.5  | 19.9  | 35.0   | 16.1  | 50.4   |
| Queue Delay            | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0   | 0.0    |
| Total Delay            | 16.1  | 24.7  | 16.1  | 21.5  | 19.9  | 35.0   | 16.1  | 50.4   |
| LOS                    | B     | C     | B     | C     | B     | C      | B     | D      |
| Approach Delay         |       | 23.6  |       | 20.4  |       | 32.7   |       | 47.9   |
| Approach LOS           |       | C     |       | C     |       | C      |       | D      |
| Queue Length 50th (m)  | 3.5   | 31.0  | 3.0   | 13.0  | 7.4   | 66.5   | 3.5   | 77.3   |
| Queue Length 95th (m)  | 8.6   | 52.6  | 7.8   | 25.7  | 15.1  | #114.6 | 8.8   | #133.9 |
| Internal Link Dist (m) |       | 919.9 |       | 690.6 |       | 145.4  |       | 422.2  |
| Turn Bay Length (m)    | 35.0  |       | 60.0  |       | 55.0  |        | 50.0  |        |
| Base Capacity (vph)    | 475   | 578   | 385   | 579   | 220   | 645    | 268   | 593    |
| Starvation Cap Reductn | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0      |
| Spillback Cap Reductn  | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0      |
| Storage Cap Reductn    | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0      |
| Reduced v/c Ratio      | 0.08  | 0.46  | 0.09  | 0.22  | 0.36  | 0.70   | 0.15  | 0.84   |

### Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 81.5

Natural Cycle: 85

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.90

Intersection Signal Delay: 35.0

Intersection LOS: C

Intersection Capacity Utilization 68.8%

ICU Level of Service C

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 2: Caron St/Rue Caron & Laurier St

|      |    |      |    |      |    |      |    |
|------|----|------|----|------|----|------|----|
|      | Ø1 |      | Ø2 |      | Ø3 |      | Ø4 |
| 12 s |    | 33 s |    | 12 s |    | 33 s |    |
|      | Ø5 |      | Ø6 |      | Ø7 |      | Ø8 |
| 12 s |    | 33 s |    | 12 s |    | 33 s |    |

# HCM Unsignalized Intersection Capacity Analysis

## 3: Caron St & Hélène St

Phase 1 PM+Improvements

04/27/2019

|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                   |  |  |  |  |  |  |
| Movement                          | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations               |  |                                                                                   |  |  |  |                                                                                   |
| Traffic Volume (veh/h)            | 0                                                                                 | 8                                                                                 | 7                                                                                 | 478                                                                               | 533                                                                               | 3                                                                                 |
| Future Volume (Veh/h)             | 0                                                                                 | 8                                                                                 | 7                                                                                 | 478                                                                               | 533                                                                               | 3                                                                                 |
| Sign Control                      | Stop                                                                              |                                                                                   |                                                                                   | Free                                                                              | Free                                                                              |                                                                                   |
| Grade                             | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                | 0%                                                                                |                                                                                   |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |
| Hourly flow rate (vph)            | 0                                                                                 | 9                                                                                 | 8                                                                                 | 531                                                                               | 592                                                                               | 3                                                                                 |
| Pedestrians                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Width (m)                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Walking Speed (m/s)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Percent Blockage                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Median type                       |                                                                                   |                                                                                   |                                                                                   | TWLT                                                                              | TWLT                                                                              |                                                                                   |
| Median storage (veh)              |                                                                                   |                                                                                   |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 169                                                                               |                                                                                   |
| pX, platoon unblocked             | 0.73                                                                              | 0.73                                                                              | 0.73                                                                              |                                                                                   |                                                                                   |                                                                                   |
| vC, conflicting volume            | 1140                                                                              | 594                                                                               | 595                                                                               |                                                                                   |                                                                                   |                                                                                   |
| vC1, stage 1 conf vol             | 594                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC2, stage 2 conf vol             | 547                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vCu, unblocked vol                | 1009                                                                              | 261                                                                               | 264                                                                               |                                                                                   |                                                                                   |                                                                                   |
| tC, single (s)                    | 6.4                                                                               | 6.2                                                                               | 4.1                                                                               |                                                                                   |                                                                                   |                                                                                   |
| tC, 2 stage (s)                   | 5.4                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| tF (s)                            | 3.5                                                                               | 3.3                                                                               | 2.2                                                                               |                                                                                   |                                                                                   |                                                                                   |
| p0 queue free %                   | 100                                                                               | 98                                                                                | 99                                                                                |                                                                                   |                                                                                   |                                                                                   |
| cM capacity (veh/h)               | 436                                                                               | 569                                                                               | 952                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Direction, Lane #                 | EB 1                                                                              | NB 1                                                                              | NB 2                                                                              | SB 1                                                                              |                                                                                   |                                                                                   |
| Volume Total                      | 9                                                                                 | 8                                                                                 | 531                                                                               | 595                                                                               |                                                                                   |                                                                                   |
| Volume Left                       | 0                                                                                 | 8                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |
| Volume Right                      | 9                                                                                 | 0                                                                                 | 0                                                                                 | 3                                                                                 |                                                                                   |                                                                                   |
| cSH                               | 569                                                                               | 952                                                                               | 1700                                                                              | 1700                                                                              |                                                                                   |                                                                                   |
| Volume to Capacity                | 0.02                                                                              | 0.01                                                                              | 0.31                                                                              | 0.35                                                                              |                                                                                   |                                                                                   |
| Queue Length 95th (m)             | 0.3                                                                               | 0.2                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |
| Control Delay (s)                 | 11.4                                                                              | 8.8                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |
| Lane LOS                          | B                                                                                 | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Approach Delay (s)                | 11.4                                                                              | 0.1                                                                               |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   |
| Approach LOS                      | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Average Delay                     |                                                                                   |                                                                                   | 0.2                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 39.8%                                                                             | ICU Level of Service                                                              |                                                                                   | A                                                                                 |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |

# HCM Unsignalized Intersection Capacity Analysis

## 4: Caron St & Francois St

Phase 1 PM+Improvements

04/27/2019



| Movement                          | EBL                                                                               | EBR  | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR  |
|-----------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations               |  |      |  |  |  |      |
| Sign Control                      | Stop                                                                              |      |                                                                                   | Stop                                                                              | Stop                                                                              |      |
| Traffic Volume (vph)              | 7                                                                                 | 3    | 6                                                                                 | 478                                                                               | 537                                                                               | 4    |
| Future Volume (vph)               | 7                                                                                 | 3    | 6                                                                                 | 478                                                                               | 537                                                                               | 4    |
| Peak Hour Factor                  | 0.90                                                                              | 0.90 | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90 |
| Hourly flow rate (vph)            | 8                                                                                 | 3    | 7                                                                                 | 531                                                                               | 597                                                                               | 4    |
| Direction, Lane #                 | EB 1                                                                              | NB 1 | NB 2                                                                              | SB 1                                                                              |                                                                                   |      |
| Volume Total (vph)                | 11                                                                                | 7    | 531                                                                               | 601                                                                               |                                                                                   |      |
| Volume Left (vph)                 | 8                                                                                 | 7    | 0                                                                                 | 0                                                                                 |                                                                                   |      |
| Volume Right (vph)                | 3                                                                                 | 0    | 0                                                                                 | 4                                                                                 |                                                                                   |      |
| Hadj (s)                          | 0.02                                                                              | 0.53 | 0.03                                                                              | 0.03                                                                              |                                                                                   |      |
| Departure Headway (s)             | 6.4                                                                               | 5.5  | 5.0                                                                               | 4.7                                                                               |                                                                                   |      |
| Degree Utilization, x             | 0.02                                                                              | 0.01 | 0.74                                                                              | 0.78                                                                              |                                                                                   |      |
| Capacity (veh/h)                  | 508                                                                               | 642  | 707                                                                               | 766                                                                               |                                                                                   |      |
| Control Delay (s)                 | 9.6                                                                               | 7.4  | 19.4                                                                              | 21.9                                                                              |                                                                                   |      |
| Approach Delay (s)                | 9.6                                                                               | 19.2 |                                                                                   | 21.9                                                                              |                                                                                   |      |
| Approach LOS                      | A                                                                                 | C    |                                                                                   | C                                                                                 |                                                                                   |      |
| Intersection Summary              |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Delay                             |                                                                                   |      | 20.6                                                                              |                                                                                   |                                                                                   |      |
| Level of Service                  |                                                                                   |      | C                                                                                 |                                                                                   |                                                                                   |      |
| Intersection Capacity Utilization |                                                                                   |      | 40.1%                                                                             | ICU Level of Service                                                              | A                                                                                 |      |
| Analysis Period (min)             |                                                                                   |      | 15                                                                                |                                                                                   |                                                                                   |      |

# HCM Unsignalized Intersection Capacity Analysis

## 5: Caron St & Des Cedres Ave

Phase 1 PM+Improvements

04/27/2019

|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                   |  |  |  |  |  |  |
| Movement                          | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |
| Lane Configurations               |  |                                                                                   |  |                                                                                   |  |  |
| Traffic Volume (veh/h)            | 1                                                                                 | 10                                                                                | 411                                                                               | 7                                                                                 | 26                                                                                | 514                                                                               |
| Future Volume (Veh/h)             | 1                                                                                 | 10                                                                                | 411                                                                               | 7                                                                                 | 26                                                                                | 514                                                                               |
| Sign Control                      | Stop                                                                              |                                                                                   | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              |
| Grade                             | 0%                                                                                |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |
| Hourly flow rate (vph)            | 1                                                                                 | 11                                                                                | 457                                                                               | 8                                                                                 | 29                                                                                | 571                                                                               |
| Pedestrians                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Width (m)                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Walking Speed (m/s)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Percent Blockage                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Median type                       |                                                                                   |                                                                                   | TWLTL                                                                             |                                                                                   | TWLTL                                                                             |                                                                                   |
| Median storage veh)               |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   | 2                                                                                 |                                                                                   |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| pX, platoon unblocked             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC, conflicting volume            | 1090                                                                              | 461                                                                               |                                                                                   |                                                                                   | 465                                                                               |                                                                                   |
| vC1, stage 1 conf vol             | 461                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC2, stage 2 conf vol             | 629                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vCu, unblocked vol                | 1090                                                                              | 461                                                                               |                                                                                   |                                                                                   | 465                                                                               |                                                                                   |
| tC, single (s)                    | 6.4                                                                               | 6.2                                                                               |                                                                                   |                                                                                   | 4.1                                                                               |                                                                                   |
| tC, 2 stage (s)                   | 5.4                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| tF (s)                            | 3.5                                                                               | 3.3                                                                               |                                                                                   |                                                                                   | 2.2                                                                               |                                                                                   |
| p0 queue free %                   | 100                                                                               | 98                                                                                |                                                                                   |                                                                                   | 97                                                                                |                                                                                   |
| cM capacity (veh/h)               | 442                                                                               | 600                                                                               |                                                                                   |                                                                                   | 1096                                                                              |                                                                                   |
| Direction, Lane #                 | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                   |                                                                                   |
| Volume Total                      | 12                                                                                | 465                                                                               | 29                                                                                | 571                                                                               |                                                                                   |                                                                                   |
| Volume Left                       | 1                                                                                 | 0                                                                                 | 29                                                                                | 0                                                                                 |                                                                                   |                                                                                   |
| Volume Right                      | 11                                                                                | 8                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |
| cSH                               | 583                                                                               | 1700                                                                              | 1096                                                                              | 1700                                                                              |                                                                                   |                                                                                   |
| Volume to Capacity                | 0.02                                                                              | 0.27                                                                              | 0.03                                                                              | 0.34                                                                              |                                                                                   |                                                                                   |
| Queue Length 95th (m)             | 0.4                                                                               | 0.0                                                                               | 0.6                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |
| Control Delay (s)                 | 11.3                                                                              | 0.0                                                                               | 8.4                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |
| Lane LOS                          | B                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Approach Delay (s)                | 11.3                                                                              | 0.0                                                                               | 0.4                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Approach LOS                      | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Average Delay                     |                                                                                   |                                                                                   | 0.4                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 38.6%                                                                             | ICU Level of Service                                                              |                                                                                   | A                                                                                 |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |

# HCM Unsignalized Intersection Capacity Analysis

## 6: Caron St & Cote St/Potvin Ave

Phase 1 PM+Improvements

04/27/2019

|                                   |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|--|--|--|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |  |  |  |  |  |  |
| Lane Configurations               |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |  |  |                                                                                     |  |  |                                                                                     |  |  |  |  |  |  |
| Sign Control                      |                                                                                   | Stop                                                                              |                                                                                   |                                                                                   | Stop                                                                              |                                                                                   |                                                                                     | Stop                                                                                |                                                                                     |                                                                                     | Stop                                                                                |                                                                                     |  |  |  |  |  |  |
| Traffic Volume (vph)              | 17                                                                                | 1                                                                                 | 10                                                                                | 9                                                                                 | 1                                                                                 | 4                                                                                 | 12                                                                                  | 397                                                                                 | 13                                                                                  | 16                                                                                  | 482                                                                                 | 17                                                                                  |  |  |  |  |  |  |
| Future Volume (vph)               | 17                                                                                | 1                                                                                 | 10                                                                                | 9                                                                                 | 1                                                                                 | 4                                                                                 | 12                                                                                  | 397                                                                                 | 13                                                                                  | 16                                                                                  | 482                                                                                 | 17                                                                                  |  |  |  |  |  |  |
| 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                                                                                |  |  |  |  |  |  |
| Hourly flow rate (vph)            | 19                                                                                | 1                                                                                 | 11                                                                                | 10                                                                                | 1                                                                                 | 4                                                                                 | 13                                                                                  | 441                                                                                 | 14                                                                                  | 18                                                                                  | 536                                                                                 | 19                                                                                  |  |  |  |  |  |  |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              | NB 2                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Volume Total (vph)                | 31                                                                                | 15                                                                                | 13                                                                                | 455                                                                               | 18                                                                                | 555                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Volume Left (vph)                 | 19                                                                                | 10                                                                                | 13                                                                                | 0                                                                                 | 18                                                                                | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Volume Right (vph)                | 11                                                                                | 4                                                                                 | 0                                                                                 | 14                                                                                | 0                                                                                 | 19                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Hadj (s)                          | -0.06                                                                             | 0.01                                                                              | 0.53                                                                              | 0.01                                                                              | 0.53                                                                              | 0.01                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Departure Headway (s)             | 6.2                                                                               | 6.3                                                                               | 5.6                                                                               | 5.1                                                                               | 5.6                                                                               | 5.0                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Degree Utilization, x             | 0.05                                                                              | 0.03                                                                              | 0.02                                                                              | 0.65                                                                              | 0.03                                                                              | 0.78                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Capacity (veh/h)                  | 517                                                                               | 500                                                                               | 617                                                                               | 693                                                                               | 627                                                                               | 700                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Control Delay (s)                 | 9.6                                                                               | 9.5                                                                               | 7.6                                                                               | 15.8                                                                              | 7.5                                                                               | 22.1                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Approach Delay (s)                | 9.6                                                                               | 9.5                                                                               | 15.6                                                                              |                                                                                   | 21.6                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Approach LOS                      | A                                                                                 | A                                                                                 | C                                                                                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Delay                             |                                                                                   |                                                                                   | 18.5                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Level of Service                  |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 37.9%                                                                             | ICU Level of Service                                                              |                                                                                   | A                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |

# HCM Unsignalized Intersection Capacity Analysis

## 7: Caron St & Docteur Corbeil Blvd

Phase 1 PM+Improvements

04/27/2019



| Movement                          | EBL  | EBR  | NBL   | NBT                  | SBT   | SBR  |
|-----------------------------------|------|------|-------|----------------------|-------|------|
| Lane Configurations               |      |      |       |                      |       |      |
| Traffic Volume (veh/h)            | 61   | 84   | 70    | 361                  | 392   | 60   |
| Future Volume (Veh/h)             | 61   | 84   | 70    | 361                  | 392   | 60   |
| Sign Control                      | Stop |      |       | Free                 | Free  |      |
| Grade                             | 0%   |      |       | 0%                   | 0%    |      |
| Peak Hour Factor                  | 0.90 | 0.90 | 0.90  | 0.90                 | 0.90  | 0.90 |
| Hourly flow rate (vph)            | 68   | 93   | 78    | 401                  | 436   | 67   |
| Pedestrians                       | 2    |      |       |                      |       |      |
| Lane Width (m)                    | 3.6  |      |       |                      |       |      |
| Walking Speed (m/s)               | 1.2  |      |       |                      |       |      |
| Percent Blockage                  | 0    |      |       |                      |       |      |
| Right turn flare (veh)            |      |      |       |                      |       |      |
| Median type                       |      |      |       | TWLTL                | TWLTL |      |
| Median storage (veh)              |      |      |       | 2                    | 2     |      |
| Upstream signal (m)               |      |      |       |                      |       |      |
| pX, platoon unblocked             |      |      |       |                      |       |      |
| vC, conflicting volume            | 1028 | 472  | 505   |                      |       |      |
| vC1, stage 1 conf vol             | 472  |      |       |                      |       |      |
| vC2, stage 2 conf vol             | 557  |      |       |                      |       |      |
| vCu, unblocked vol                | 1028 | 472  | 505   |                      |       |      |
| tC, single (s)                    | 6.4  | 6.2  | 4.1   |                      |       |      |
| tC, 2 stage (s)                   | 5.4  |      |       |                      |       |      |
| tF (s)                            | 3.5  | 3.3  | 2.2   |                      |       |      |
| p0 queue free %                   | 85   | 84   | 93    |                      |       |      |
| cM capacity (veh/h)               | 449  | 591  | 1058  |                      |       |      |
| Direction, Lane #                 | EB 1 | NB 1 | NB 2  | SB 1                 |       |      |
| Volume Total                      | 161  | 78   | 401   | 503                  |       |      |
| Volume Left                       | 68   | 78   | 0     | 0                    |       |      |
| Volume Right                      | 93   | 0    | 0     | 67                   |       |      |
| cSH                               | 522  | 1058 | 1700  | 1700                 |       |      |
| Volume to Capacity                | 0.31 | 0.07 | 0.24  | 0.30                 |       |      |
| Queue Length 95th (m)             | 9.1  | 1.7  | 0.0   | 0.0                  |       |      |
| Control Delay (s)                 | 15.0 | 8.7  | 0.0   | 0.0                  |       |      |
| Lane LOS                          | B    | A    |       |                      |       |      |
| Approach Delay (s)                | 15.0 | 1.4  |       | 0.0                  |       |      |
| Approach LOS                      | B    |      |       |                      |       |      |
| Intersection Summary              |      |      |       |                      |       |      |
| Average Delay                     |      |      | 2.7   |                      |       |      |
| Intersection Capacity Utilization |      |      | 48.8% | ICU Level of Service |       | A    |
| Analysis Period (min)             |      |      | 15    |                      |       |      |

# HCM Unsignalized Intersection Capacity Analysis

## 8: David St & Caron St

Phase 1 PM+Improvements

04/27/2019

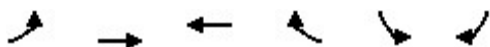
|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--|--|
|                                   |  |  |  |  |  |  |  |  |
| Movement                          | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |  |  |
| Lane Configurations               |  |                                                                                   |  |                                                                                   |  |  |  |  |
| Sign Control                      | Stop                                                                              |                                                                                   | Stop                                                                              |                                                                                   | Stop                                                                              | Stop                                                                              |  |  |
| Traffic Volume (vph)              | 27                                                                                | 180                                                                               | 263                                                                               | 26                                                                                | 184                                                                               | 263                                                                               |  |  |
| Future Volume (vph)               | 27                                                                                | 180                                                                               | 263                                                                               | 26                                                                                | 184                                                                               | 263                                                                               |  |  |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |  |  |
| Hourly flow rate (vph)            | 30                                                                                | 200                                                                               | 292                                                                               | 29                                                                                | 204                                                                               | 292                                                                               |  |  |
| Direction, Lane #                 | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                   |                                                                                   |  |  |
| Volume Total (vph)                | 230                                                                               | 321                                                                               | 204                                                                               | 292                                                                               |                                                                                   |                                                                                   |  |  |
| Volume Left (vph)                 | 30                                                                                | 0                                                                                 | 204                                                                               | 0                                                                                 |                                                                                   |                                                                                   |  |  |
| Volume Right (vph)                | 200                                                                               | 29                                                                                | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |  |  |
| Hadj (s)                          | -0.46                                                                             | -0.02                                                                             | 0.53                                                                              | 0.03                                                                              |                                                                                   |                                                                                   |  |  |
| Departure Headway (s)             | 5.3                                                                               | 5.3                                                                               | 6.1                                                                               | 5.6                                                                               |                                                                                   |                                                                                   |  |  |
| Degree Utilization, x             | 0.34                                                                              | 0.47                                                                              | 0.34                                                                              | 0.45                                                                              |                                                                                   |                                                                                   |  |  |
| Capacity (veh/h)                  | 622                                                                               | 660                                                                               | 574                                                                               | 628                                                                               |                                                                                   |                                                                                   |  |  |
| Control Delay (s)                 | 11.1                                                                              | 12.9                                                                              | 11.0                                                                              | 11.9                                                                              |                                                                                   |                                                                                   |  |  |
| Approach Delay (s)                | 11.1                                                                              | 12.9                                                                              | 11.5                                                                              |                                                                                   |                                                                                   |                                                                                   |  |  |
| Approach LOS                      | B                                                                                 | B                                                                                 | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |  |  |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
| Delay                             |                                                                                   |                                                                                   | 11.8                                                                              |                                                                                   |                                                                                   |                                                                                   |  |  |
| Level of Service                  |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |  |  |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 50.3%                                                                             | ICU Level of Service                                                              | A                                                                                 |                                                                                   |  |  |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |  |  |

# HCM Unsignalized Intersection Capacity Analysis

## 9: Baseline Rd & Caron St

Phase 1 PM+Improvements

04/27/2019



| Movement                          | EBL  | EBT  | WBT   | WBR                  | SBL  | SBR  |
|-----------------------------------|------|------|-------|----------------------|------|------|
| Lane Configurations               |      |      |       |                      |      |      |
| Traffic Volume (veh/h)            | 63   | 102  | 41    | 121                  | 142  | 38   |
| Future Volume (Veh/h)             | 63   | 102  | 41    | 121                  | 142  | 38   |
| Sign Control                      |      | Free | Free  |                      | Stop |      |
| Grade                             |      | 0%   | 0%    |                      | 0%   |      |
| Peak Hour Factor                  | 0.90 | 0.90 | 0.90  | 0.90                 | 0.90 | 0.90 |
| Hourly flow rate (vph)            | 70   | 113  | 46    | 134                  | 158  | 42   |
| Pedestrians                       |      |      |       |                      |      |      |
| Lane Width (m)                    |      |      |       |                      |      |      |
| Walking Speed (m/s)               |      |      |       |                      |      |      |
| Percent Blockage                  |      |      |       |                      |      |      |
| Right turn flare (veh)            |      |      |       |                      |      |      |
| Median type                       |      | None | None  |                      |      |      |
| Median storage (veh)              |      |      |       |                      |      |      |
| Upstream signal (m)               |      |      |       |                      |      |      |
| pX, platoon unblocked             |      |      |       |                      |      |      |
| vC, conflicting volume            | 180  |      |       |                      | 366  | 113  |
| vC1, stage 1 conf vol             |      |      |       |                      |      |      |
| vC2, stage 2 conf vol             |      |      |       |                      |      |      |
| vCu, unblocked vol                | 180  |      |       |                      | 366  | 113  |
| tC, single (s)                    | 4.1  |      |       |                      | 6.4  | 6.2  |
| tC, 2 stage (s)                   |      |      |       |                      |      |      |
| tF (s)                            | 2.2  |      |       |                      | 3.5  | 3.3  |
| p0 queue free %                   | 95   |      |       |                      | 74   | 96   |
| cM capacity (veh/h)               | 1396 |      |       |                      | 602  | 940  |
| Direction, Lane #                 | EB 1 | WB 1 | SB 1  |                      |      |      |
| Volume Total                      | 183  | 180  | 200   |                      |      |      |
| Volume Left                       | 70   | 0    | 158   |                      |      |      |
| Volume Right                      | 0    | 134  | 42    |                      |      |      |
| cSH                               | 1396 | 1700 | 651   |                      |      |      |
| Volume to Capacity                | 0.05 | 0.11 | 0.31  |                      |      |      |
| Queue Length 95th (m)             | 1.1  | 0.0  | 9.1   |                      |      |      |
| Control Delay (s)                 | 3.2  | 0.0  | 13.0  |                      |      |      |
| Lane LOS                          | A    |      | B     |                      |      |      |
| Approach Delay (s)                | 3.2  | 0.0  | 13.0  |                      |      |      |
| Approach LOS                      |      |      | B     |                      |      |      |
| Intersection Summary              |      |      |       |                      |      |      |
| Average Delay                     |      |      | 5.6   |                      |      |      |
| Intersection Capacity Utilization |      |      | 40.2% | ICU Level of Service |      | A    |
| Analysis Period (min)             |      |      | 15    |                      |      |      |

# HCM Unsignalized Intersection Capacity Analysis

## 10: Street B & David St

Phase 1 PM+Improvements

04/27/2019

|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                   |  |  |  |  |  |  |
| Movement                          | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBR                                                                               |
| Lane Configurations               |  |                                                                                   |                                                                                   |  |  |                                                                                   |
| Traffic Volume (veh/h)            | 15                                                                                | 174                                                                               | 43                                                                                | 15                                                                                | 170                                                                               | 42                                                                                |
| Future Volume (Veh/h)             | 15                                                                                | 174                                                                               | 43                                                                                | 15                                                                                | 170                                                                               | 42                                                                                |
| Sign Control                      | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              | Stop                                                                              |                                                                                   |
| Grade                             | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                | 0%                                                                                |                                                                                   |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |
| Hourly flow rate (vph)            | 17                                                                                | 193                                                                               | 48                                                                                | 17                                                                                | 189                                                                               | 47                                                                                |
| Pedestrians                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Width (m)                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Walking Speed (m/s)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Percent Blockage                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Median type                       | None                                                                              |                                                                                   |                                                                                   | None                                                                              |                                                                                   |                                                                                   |
| Median storage (veh)              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| pX, platoon unblocked             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC, conflicting volume            |                                                                                   |                                                                                   | 210                                                                               |                                                                                   | 226                                                                               | 114                                                                               |
| vC1, stage 1 conf vol             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC2, stage 2 conf vol             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vCu, unblocked vol                |                                                                                   |                                                                                   | 210                                                                               |                                                                                   | 226                                                                               | 114                                                                               |
| tC, single (s)                    |                                                                                   |                                                                                   | 4.1                                                                               |                                                                                   | 6.4                                                                               | 6.2                                                                               |
| tC, 2 stage (s)                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| tF (s)                            |                                                                                   |                                                                                   | 2.2                                                                               |                                                                                   | 3.5                                                                               | 3.3                                                                               |
| p0 queue free %                   |                                                                                   |                                                                                   | 96                                                                                |                                                                                   | 74                                                                                | 95                                                                                |
| cM capacity (veh/h)               |                                                                                   |                                                                                   | 1361                                                                              |                                                                                   | 735                                                                               | 939                                                                               |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Volume Total                      | 210                                                                               | 65                                                                                | 236                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Volume Left                       | 0                                                                                 | 48                                                                                | 189                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Volume Right                      | 193                                                                               | 0                                                                                 | 47                                                                                |                                                                                   |                                                                                   |                                                                                   |
| cSH                               | 1700                                                                              | 1361                                                                              | 768                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Volume to Capacity                | 0.12                                                                              | 0.04                                                                              | 0.31                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Queue Length 95th (m)             | 0.0                                                                               | 0.8                                                                               | 9.1                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Control Delay (s)                 | 0.0                                                                               | 5.8                                                                               | 11.8                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Lane LOS                          |                                                                                   | A                                                                                 | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Approach Delay (s)                | 0.0                                                                               | 5.8                                                                               | 11.8                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Approach LOS                      |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Average Delay                     |                                                                                   |                                                                                   | 6.2                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 38.2%                                                                             | ICU Level of Service                                                              | A                                                                                 |                                                                                   |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |

# HCM Unsignalized Intersection Capacity Analysis12: Street A & Street B

Phase 1 PM+Improvements

04/27/2019

|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Sign Control                      |                                                                                   | Stop                                                                              |                                                                                   |                                                                                   | Stop                                                                              |                                                                                   |                                                                                    | Stop                                                                                |                                                                                     |                                                                                     | Stop                                                                                |                                                                                     |
| Traffic Volume (vph)              | 129                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 129                                                                                 |
| Future Volume (vph)               | 129                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 129                                                                                 |
| 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                                                                                |
| Hourly flow rate (vph)            | 143                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   | 143                                                                                 |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Total (vph)                | 143                                                                               | 0                                                                                 | 0                                                                                 | 143                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Left (vph)                 | 143                                                                               | 0                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Right (vph)                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 143                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Hadj (s)                          | 0.23                                                                              | 0.00                                                                              | 0.00                                                                              | -0.57                                                                             |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Departure Headway (s)             | 4.4                                                                               | 4.3                                                                               | 4.4                                                                               | 3.7                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Degree Utilization, x             | 0.18                                                                              | 0.00                                                                              | 0.00                                                                              | 0.15                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Capacity (veh/h)                  | 790                                                                               | 802                                                                               | 797                                                                               | 943                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Control Delay (s)                 | 8.4                                                                               | 7.3                                                                               | 7.4                                                                               | 7.3                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay (s)                | 8.4                                                                               | 0.0                                                                               | 0.0                                                                               | 7.3                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                      | A                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Delay                             |                                                                                   |                                                                                   | 7.8                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Level of Service                  |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 22.6%                                                                             | ICU Level of Service                                                              | A                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM Unsignalized Intersection Capacity Analysis 15: Caron St & Street A

Phase 1 PM+Improvements

04/27/2019

|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--|--|
|                                   |  |  |  |  |  |  |  |  |
| Movement                          | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |  |  |
| Lane Configurations               |  |                                                                                   |  |                                                                                   |  |  |  |  |
| Sign Control                      | Stop                                                                              |                                                                                   | Stop                                                                              |                                                                                   | Stop                                                                              | Stop                                                                              |  |  |
| Traffic Volume (vph)              | 64                                                                                | 128                                                                               | 140                                                                               | 65                                                                                | 130                                                                               | 138                                                                               |  |  |
| Future Volume (vph)               | 64                                                                                | 128                                                                               | 140                                                                               | 65                                                                                | 130                                                                               | 138                                                                               |  |  |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |  |  |
| Hourly flow rate (vph)            | 71                                                                                | 142                                                                               | 156                                                                               | 72                                                                                | 144                                                                               | 153                                                                               |  |  |
| Direction, Lane #                 | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                   |                                                                                   |  |  |
| Volume Total (vph)                | 213                                                                               | 228                                                                               | 96                                                                                | 201                                                                               |                                                                                   |                                                                                   |  |  |
| Volume Left (vph)                 | 71                                                                                | 0                                                                                 | 96                                                                                | 48                                                                                |                                                                                   |                                                                                   |  |  |
| Volume Right (vph)                | 142                                                                               | 72                                                                                | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |  |  |
| Hadj (s)                          | -0.30                                                                             | -0.16                                                                             | 0.53                                                                              | 0.15                                                                              |                                                                                   |                                                                                   |  |  |
| Departure Headway (s)             | 4.9                                                                               | 4.8                                                                               | 5.8                                                                               | 5.4                                                                               |                                                                                   |                                                                                   |  |  |
| Degree Utilization, x             | 0.29                                                                              | 0.30                                                                              | 0.16                                                                              | 0.30                                                                              |                                                                                   |                                                                                   |  |  |
| Capacity (veh/h)                  | 687                                                                               | 717                                                                               | 592                                                                               | 636                                                                               |                                                                                   |                                                                                   |  |  |
| Control Delay (s)                 | 9.8                                                                               | 9.9                                                                               | 8.7                                                                               | 9.6                                                                               |                                                                                   |                                                                                   |  |  |
| Approach Delay (s)                | 9.8                                                                               | 9.9                                                                               | 9.3                                                                               |                                                                                   |                                                                                   |                                                                                   |  |  |
| Approach LOS                      | A                                                                                 | A                                                                                 | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |  |  |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
| Delay                             |                                                                                   |                                                                                   | 9.6                                                                               |                                                                                   |                                                                                   |                                                                                   |  |  |
| Level of Service                  |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |  |  |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 41.7%                                                                             | ICU Level of Service                                                              | A                                                                                 |                                                                                   |  |  |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |  |  |

# E

## Appendix E

### Projected Phase 2 Traffic Operations

| Direction                                       | Mov. | Storage Length (m) | AM Peak Hour |           |     |           | PM Peak Hour |           |     |           |
|-------------------------------------------------|------|--------------------|--------------|-----------|-----|-----------|--------------|-----------|-----|-----------|
|                                                 |      |                    | v/c          | Delay (s) | LOS | Queue (m) | v/c          | Delay (s) | LOS | Queue (m) |
| Caron Street at HWY 17 (Signalized)             |      |                    |              |           |     |           |              |           |     |           |
| EB                                              | L    | 90                 | 0.05         | 9         | A   | 3         | 0.08         | 18        | B   | 11        |
|                                                 | T    | -                  | 0.47         | 16        | B   | 90        | 0.39         | 27        | C   | 65        |
|                                                 | R    | 85                 | 0.37         | 3         | A   | 14        | 0.55         | 6         | A   | 22        |
| WB                                              | L    | 60                 | 0.05         | 9         | A   | 5         | 0.08         | 18        | B   | 10        |
|                                                 | T    | -                  | 0.92         | 34        | C   | 278       | 0.22         | 25        | C   | 37        |
|                                                 | R    | 56                 | 0.00         | 0         | A   | 0         | 0.04         | 1         | A   | 0         |
| NB                                              | L    | 80                 | 1.05         | 90        | F   | 100       | 0.69         | 44        | D   | 53        |
|                                                 | T/R  | -                  | 0.12         | 15        | B   | 10        | 0.24         | 21        | C   | 29        |
| SB                                              | L    | 40                 | 0.01         | 27        | C   | 1         | 0.13         | 20        | C   | 10        |
|                                                 | T/R  | -                  | 0.08         | 29        | C   | 7         | 0.17         | 47        | D   | 53        |
| Overall                                         |      |                    | 1.05         | 38        | D   | -         | 0.69         | 26        | C   | -         |
| Caron Street at Laurier Street (Signalized)     |      |                    |              |           |     |           |              |           |     |           |
| EB                                              | L    | 35                 | 0.04         | 15        | B   | 5         | 0.08         | 16        | B   | 9         |
|                                                 | T/R  | -                  | 0.19         | 15        | B   | 19        | 0.48         | 25        | C   | 54        |
| WB                                              | L    | 60                 | 0.09         | 16        | B   | 10        | 0.09         | 16        | B   | 8         |
|                                                 | T/R  | -                  | 0.33         | 22        | C   | 42        | 0.22         | 21        | C   | 26        |
| NB                                              | L    | 55                 | 0.24         | 17        | B   | 14        | 0.42         | 22        | C   | 16        |
|                                                 | T/R  | -                  | 0.79         | 33        | C   | 152       | 0.79         | 38        | D   | 132       |
| SB                                              | L    | 50                 | 0.06         | 16        | B   | 4         | 0.16         | 16        | B   | 9         |
|                                                 | T/R  | -                  | 0.73         | 36        | D   | 94        | 1.01         | 71        | E   | 165       |
| Overall                                         |      |                    | 0.79         | 29        | C   | -         | 1.01         | 44        | D   | -         |
| Caron Street at Hélène Street (Unsignalized)    |      |                    |              |           |     |           |              |           |     |           |
| EB                                              | L/R  | -                  | 0.01         | 11        | B   | 1         | 0.02         | 12        | B   | 0.4       |
| NB                                              | L    | 15                 | 0.01         | 8         | A   | 1         | 0.01         | 9         | A   | 0.2       |
|                                                 | T    | -                  | 0.37         | 0         | A   | 0         | 0.34         | 0         | A   | 0         |
| SB                                              | T/R  | -                  | 0.28         | 0         | A   | 0         | 0.40         | 0         | A   | 0         |
| Overall                                         |      |                    | 0.37         | 0.1       | A   | -         | 0.40         | 0.1       | A   | -         |
| Caron Street at Françoise Street (Unsignalized) |      |                    |              |           |     |           |              |           |     |           |
| EB                                              | L/R  | -                  | 0.02         | 9         | A   | -         | 0.02         | 10        | A   | -         |
| NB                                              | L    | 15                 | 0.00         | 7         | A   | -         | 0.01         | 7         | A   | -         |
|                                                 | T    | -                  | 0.75         | 20        | C   | -         | 0.82         | 25        | D   | -         |
| SB                                              | T/R  | -                  | 0.62         | 15        | C   | -         | 0.90         | 35        | A   | -         |
| Overall                                         |      |                    | 0.75         | 18        | C   | -         | 0.90         | 30        | D   | -         |

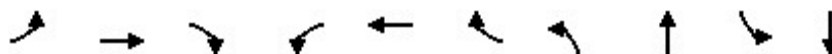
| Direction                                                | Mov.  | Storage Length (m) | AM Peak Hour |           |     |           | PM Peak Hour |           |     |           |
|----------------------------------------------------------|-------|--------------------|--------------|-----------|-----|-----------|--------------|-----------|-----|-----------|
|                                                          |       |                    | v/c          | Delay (s) | LOS | Queue (m) | v/c          | Delay (s) | LOS | Queue (m) |
| Caron Street at Des Cèdres Avenue (Unsignalized)         |       |                    |              |           |     |           |              |           |     |           |
| WB                                                       | L/R   | -                  | 0.03         | 12        | B   | 1         | 0.02         | 12        | B   | 1         |
| NB                                                       | T/R   | -                  | 0.32         | 0         | A   | 0         | 0.30         | 0         | A   | 0         |
| SB                                                       | L     | 15                 | 0.01         | 8.5       | A   | 1         | 0.03         | 9         | A   | 1         |
|                                                          | T     | -                  | 0.28         | 0         | A   | 0         | 0.39         | 0         | A   | 0         |
| Overall                                                  |       |                    | 0.32         | 0.2       | A   | -         | 0.39         | 0.3       | A   | -         |
| Caron Street at Cote Street/Potvin Avenue (Unsignalized) |       |                    |              |           |     |           |              |           |     |           |
| EB                                                       | L/T/R | -                  | 0.03         | 9         | A   | -         | 0.06         | 10        | A   | -         |
| WB                                                       | L/T/R | -                  | 0.03         | 9         | A   | -         | 0.03         | 10        | A   | -         |
| NB                                                       | L     | 15                 | 0.01         | 7         | A   | -         | 0.02         | 8         | A   | -         |
|                                                          | T/R   | -                  | 0.74         | 20        | C   | -         | 0.73         | 20        | C   | -         |
| SB                                                       | L     | 15                 | 0.01         | 7         | A   | -         | 0.03         | 8         | A   | -         |
|                                                          | T/R   | -                  | 0.67         | 17        | C   | -         | 0.91         | 37        | E   | -         |
| Overall                                                  |       |                    | 0.74         | 18        | C   | -         | 0.91         | 28        | D   | -         |
| Caron Street at Docteur Corbeil Boulevard (Unsignalized) |       |                    |              |           |     |           |              |           |     |           |
| EB                                                       | L/R   | -                  | 0.21         | 14        | B   | 6         | 0.35         | 17        | C   | 11        |
| NB                                                       | L     | 15                 | 0.09         | 9         | A   | 2         | 0.08         | 9         | A   | 2         |
|                                                          | T     | -                  | 0.29         | 0         | A   | 0         | 0.26         | 0         | A   | 0         |
| SB                                                       | T/R   | -                  | 0.27         | 0         | A   | 0         | 0.35         | 0         | A   | 0         |
| Overall                                                  |       |                    | 0.29         | 2         | A   | -         | 0.35         | 3         | A   | -         |
| Caron Street at David Street (Unsignalized)              |       |                    |              |           |     |           |              |           |     |           |
| WB                                                       | L/R   | -                  | 0.36         | 11        | B   | -         | 0.35         | 11        | B   | -         |
| NB                                                       | T/R   | -                  | 0.46         | 13        | B   | -         | 0.49         | 14        | B   | -         |
| SB                                                       | L     | 40                 | 0.36         | 11        | B   | -         | 0.43         | 13        | B   | -         |
|                                                          | T     | -                  | 0.41         | 11        | B   | -         | 0.52         | 13        | B   | -         |
| Overall                                                  |       |                    | 0.46         | 12        | B   | -         | 0.52         | 13        | B   | -         |
| Caron Street at Baseline Road (Unsignalized)             |       |                    |              |           |     |           |              |           |     |           |
| EB                                                       | L/T   | -                  | 0.03         | 4         | A   | 1         | 0.06         | 3         | A   | 1         |
| WB                                                       | T/R   | -                  | 0.12         | 0         | A   | 0         | 0.11         | 0         | A   | 0         |
| SB                                                       | L/R   | -                  | 0.23         | 11        | B   | 6         | 0.33         | 13        | B   | 10        |
| Overall                                                  |       |                    | 0.23         | 5         | A   | -         | 0.33         | 6         | A   | -         |
| Caron Street at Street A (Unsignalized)                  |       |                    |              |           |     |           |              |           |     |           |
| WB                                                       | L     | -                  | 0.28         | 10        | A   | -         | 0.27         | 10        | B   | -         |
|                                                          | R     | -                  | 0.28         | 10        | A   | -         | 0.27         | 10        | B   | -         |
| NB                                                       | T/R   | -                  | 0.35         | 10        | B   | -         | 0.41         | 11        | B   | -         |
| SB                                                       | L/T   | 25                 | 0.30         | 10        | A   | -         | 0.39         | 11        | B   | -         |

| Direction                               | Mov.  | Storage Length (m) | AM Peak Hour |           |     |           | PM Peak Hour |           |     |           |
|-----------------------------------------|-------|--------------------|--------------|-----------|-----|-----------|--------------|-----------|-----|-----------|
|                                         |       |                    | v/c          | Delay (s) | LOS | Queue (m) | v/c          | Delay (s) | LOS | Queue (m) |
| Overall                                 |       |                    | 0.35         | 10        | A   | -         | 0.41         | 11        | B   | -         |
| Street B at David Street (Unsignalized) |       |                    |              |           |     |           |              |           |     |           |
| EB                                      | T/R   | -                  | 0.12         | 0         | A   | 0         | 0.15         | 0         | A   | 0         |
| WB                                      | L/T   | -                  | 0.02         | 2         | A   | 1         | 0.02         | 3         | A   | 1         |
| NB                                      | L/R   | -                  | 0.28         | 12        | B   | 8         | 0.27         | 12        | B   | 8         |
| Overall                                 |       |                    | 0.28         | 5         | A   | -         | 0.27         | 5         | A   | -         |
| Street B at Street A (Unsignalized)     |       |                    |              |           |     |           |              |           |     |           |
| EB                                      | L/T/R | -                  | 0.30         | 10        | A   | -         | 0.32         | 10        | B   | -         |
| WB                                      | L/T/R | -                  | 0.22         | 9         | A   | -         | 0.23         | 9         | A   | -         |
| NB                                      | L/T/R |                    | 0.12         | 9         | A   | -         | 0.11         | 9         | A   | -         |
| SB                                      | L/T/R | -                  | 0.25         | 9         | A   | -         | 0.27         | 10        | A   | -         |
| Overall                                 |       |                    | 0.30         | 9         | A   | -         | 0.32         | 10        | A   | -         |
| Street A at David Street (Unsignalized) |       |                    |              |           |     |           |              |           |     |           |
| EB                                      | T/R   | -                  | 0.05         | 0         | A   | 0         | 0.06         | 0         | A   | 0         |
| WB                                      | L/T   | -                  | 0.02         | 3         | A   | 1         | 0.02         | 3         | A   | 1         |
| NB                                      | L/R   | -                  | 0.10         | 10        | A   | 2         | 0.10         | 10        | A   | 2         |
| Overall                                 |       |                    | 0.10         | 4         | A   | -         | 0.10         | 4         | A   | -         |

# Lanes, Volumes, Timings

## 1: Rue Caron/Rue Industrielle & HWY 17

Phase 2  
AM.syn



| Lane Group             | EBL   | EBT   | EBR   | WBL   | WBT    | WBR   | NBL    | NBT   | SBL   | SBT   |
|------------------------|-------|-------|-------|-------|--------|-------|--------|-------|-------|-------|
| Lane Configurations    |       |       |       |       |        |       |        |       |       |       |
| Traffic Volume (vph)   | 8     | 422   | 341   | 21    | 863    | 3     | 521    | 8     | 1     | 6     |
| Future Volume (vph)    | 8     | 422   | 341   | 21    | 863    | 3     | 521    | 8     | 1     | 6     |
| Lane Group Flow (vph)  | 9     | 469   | 379   | 23    | 959    | 3     | 579    | 43    | 1     | 16    |
| Turn Type              | pm+pt | NA    | Perm  | pm+pt | NA     | Perm  | pm+pt  | NA    | pm+pt | NA    |
| Protected Phases       | 7     | 4     |       | 3     | 8      |       | 5      | 2     | 1     | 6     |
| Permitted Phases       | 4     |       | 4     | 8     |        | 8     | 2      |       | 6     |       |
| Detector Phase         | 7     | 4     | 4     | 3     | 8      | 8     | 5      | 2     | 1     | 6     |
| Switch Phase           |       |       |       |       |        |       |        |       |       |       |
| Minimum Initial (s)    | 5.0   | 5.0   | 5.0   | 5.0   | 5.0    | 5.0   | 5.0    | 10.0  | 5.0   | 10.0  |
| Minimum Split (s)      | 11.9  | 51.9  | 51.9  | 11.9  | 51.9   | 51.9  | 10.9   | 33.3  | 10.9  | 33.3  |
| Total Split (s)        | 18.9  | 51.9  | 51.9  | 18.9  | 51.9   | 51.9  | 15.9   | 33.3  | 15.9  | 33.3  |
| Total Split (%)        | 15.8% | 43.3% | 43.3% | 15.8% | 43.3%  | 43.3% | 13.3%  | 27.8% | 13.3% | 27.8% |
| Yellow Time (s)        | 4.2   | 4.2   | 4.2   | 4.2   | 4.2    | 4.2   | 3.3    | 3.3   | 3.3   | 3.3   |
| All-Red Time (s)       | 2.7   | 2.7   | 2.7   | 2.7   | 2.7    | 2.7   | 2.6    | 3.0   | 2.6   | 3.0   |
| Lost Time Adjust (s)   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0   | 0.0    | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)    | 6.9   | 6.9   | 6.9   | 6.9   | 6.9    | 6.9   | 5.9    | 6.3   | 5.9   | 6.3   |
| Lead/Lag               | Lead  | Lag   | Lag   | Lead  | Lag    | Lag   | Lead   | Lag   | Lead  | Lag   |
| Lead-Lag Optimize?     | Yes   | Yes   | Yes   | Yes   | Yes    | Yes   | Yes    | Yes   | Yes   | Yes   |
| Recall Mode            | None  | Max   | Max   | None  | Max    | Max   | None   | None  | None  | None  |
| Act Effct Green (s)    | 48.0  | 45.9  | 45.9  | 49.5  | 48.5   | 48.5  | 12.8   | 10.9  | 7.3   | 10.2  |
| Actuated g/C Ratio     | 0.63  | 0.60  | 0.60  | 0.65  | 0.63   | 0.63  | 0.17   | 0.14  | 0.10  | 0.13  |
| v/c Ratio              | 0.04  | 0.44  | 0.36  | 0.04  | 0.86   | 0.00  | 2.24   | 0.17  | 0.01  | 0.07  |
| Control Delay          | 6.6   | 12.7  | 2.6   | 6.0   | 23.9   | 0.0   | 593.1  | 17.2  | 29.0  | 25.9  |
| Queue Delay            | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0   | 0.0    | 0.0   | 0.0   | 0.0   |
| Total Delay            | 6.6   | 12.7  | 2.6   | 6.0   | 23.9   | 0.0   | 593.1  | 17.2  | 29.0  | 25.9  |
| LOS                    | A     | B     | A     | A     | C      | A     | F      | B     | C     | C     |
| Approach Delay         |       | 8.2   |       |       | 23.4   |       |        | 553.3 |       | 26.0  |
| Approach LOS           |       | A     |       |       | C      |       |        | F     |       | C     |
| Queue Length 50th (m)  | 0.3   | 21.4  | 0.0   | 0.8   | 70.4   | 0.0   | ~112.7 | 0.9   | 0.1   | 0.7   |
| Queue Length 95th (m)  | 2.3   | 86.3  | 13.7  | 4.3   | #266.3 | 0.0   | #184.9 | 9.9   | 1.3   | 6.7   |
| Internal Link Dist (m) |       | 820.6 |       |       | 792.2  |       |        | 422.2 |       | 103.9 |
| Turn Bay Length (m)    | 90.0  |       | 85.0  | 60.0  |        | 56.0  | 60.0   |       | 40.0  |       |
| Base Capacity (vph)    | 341   | 1057  | 1050  | 624   | 1115   | 1001  | 258    | 580   | 260   | 586   |
| Starvation Cap Reductn | 0     | 0     | 0     | 0     | 0      | 0     | 0      | 0     | 0     | 0     |
| Spillback Cap Reductn  | 0     | 0     | 0     | 0     | 0      | 0     | 0      | 0     | 0     | 0     |
| Storage Cap Reductn    | 0     | 0     | 0     | 0     | 0      | 0     | 0      | 0     | 0     | 0     |
| Reduced v/c Ratio      | 0.03  | 0.44  | 0.36  | 0.04  | 0.86   | 0.00  | 2.24   | 0.07  | 0.00  | 0.03  |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 76.7

Natural Cycle: 150

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 2.24

Intersection Signal Delay: 151.0

Intersection LOS: F

Intersection Capacity Utilization 96.1%

ICU Level of Service F

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

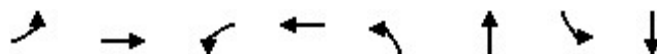
Splits and Phases: 1: Rue Caron/Rue Industrielle & HWY 17

|        |        |        |        |
|--------|--------|--------|--------|
|        |        |        |        |
| 15.9 s | 33.3 s | 18.9 s | 51.9 s |
|        |        |        |        |
| 15.9 s | 33.3 s | 18.9 s | 51.9 s |

# Lanes, Volumes, Timings

## 2: Caron St/Rue Caron & Laurier St

Phase 2  
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| Lane Group             | EBL   | EBT   | WBL   | WBT   | NBL   | NBT    | SBL   | SBT   |
|------------------------|-------|-------|-------|-------|-------|--------|-------|-------|
| Lane Configurations    |       |       |       |       |       |        |       |       |
| Traffic Volume (vph)   | 17    | 54    | 41    | 148   | 65    | 459    | 12    | 342   |
| Future Volume (vph)    | 17    | 54    | 41    | 148   | 65    | 459    | 12    | 342   |
| Lane Group Flow (vph)  | 19    | 113   | 46    | 207   | 72    | 549    | 13    | 397   |
| Turn Type              | pm+pt | NA    | pm+pt | NA    | pm+pt | NA     | pm+pt | NA    |
| Protected Phases       | 7     | 4     | 3     | 8     | 5     | 2      | 1     | 6     |
| Permitted Phases       | 4     |       | 8     |       | 2     |        | 6     |       |
| Detector Phase         | 7     | 4     | 3     | 8     | 5     | 2      | 1     | 6     |
| Switch Phase           |       |       |       |       |       |        |       |       |
| Minimum Initial (s)    | 5.0   | 10.0  | 5.0   | 10.0  | 5.0   | 10.0   | 5.0   | 10.0  |
| Minimum Split (s)      | 11.5  | 31.5  | 11.5  | 31.5  | 11.1  | 27.1   | 11.1  | 27.1  |
| Total Split (s)        | 12.0  | 33.0  | 12.0  | 33.0  | 12.0  | 33.0   | 12.0  | 33.0  |
| Total Split (%)        | 13.3% | 36.7% | 13.3% | 36.7% | 13.3% | 36.7%  | 13.3% | 36.7% |
| Yellow Time (s)        | 3.3   | 3.3   | 3.3   | 3.3   | 3.3   | 3.3    | 3.3   | 3.3   |
| All-Red Time (s)       | 3.2   | 3.2   | 3.2   | 3.2   | 2.8   | 2.8    | 2.8   | 2.8   |
| Lost Time Adjust (s)   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0   | 0.0   |
| Total Lost Time (s)    | 6.5   | 6.5   | 6.5   | 6.5   | 6.1   | 6.1    | 6.1   | 6.1   |
| Lead/Lag               | Lead  | Lag   | Lead  | Lag   | Lead  | Lag    | Lead  | Lag   |
| Lead-Lag Optimize?     | Yes   | Yes   | Yes   | Yes   | Yes   | Yes    | Yes   | Yes   |
| Recall Mode            | None  | Max   | None  | Max   | None  | None   | None  | None  |
| Act Effct Green (s)    | 30.0  | 27.0  | 31.2  | 29.2  | 33.3  | 32.2   | 29.5  | 25.1  |
| Actuated g/C Ratio     | 0.37  | 0.33  | 0.39  | 0.36  | 0.41  | 0.40   | 0.37  | 0.31  |
| v/c Ratio              | 0.04  | 0.19  | 0.09  | 0.33  | 0.24  | 0.79   | 0.06  | 0.73  |
| Control Delay          | 15.4  | 14.9  | 15.7  | 21.6  | 17.2  | 33.3   | 15.5  | 35.8  |
| Queue Delay            | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0   | 0.0   |
| Total Delay            | 15.4  | 14.9  | 15.7  | 21.6  | 17.2  | 33.3   | 15.5  | 35.8  |
| LOS                    | B     | B     | B     | C     | B     | C      | B     | D     |
| Approach Delay         |       | 15.0  |       | 20.5  |       | 31.4   |       | 35.2  |
| Approach LOS           |       | B     |       | C     |       | C      |       | D     |
| Queue Length 50th (m)  | 1.6   | 7.1   | 4.0   | 18.3  | 6.6   | 69.7   | 1.2   | 56.6  |
| Queue Length 95th (m)  | 5.3   | 18.8  | 9.9   | 41.9  | 13.8  | #152.2 | 4.1   | #93.8 |
| Internal Link Dist (m) |       | 919.9 |       | 690.6 |       | 145.4  |       | 422.2 |
| Turn Bay Length (m)    | 35.0  |       | 60.0  |       | 55.0  |        | 50.0  |       |
| Base Capacity (vph)    | 446   | 582   | 485   | 628   | 296   | 698    | 232   | 597   |
| Starvation Cap Reductn | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0     |
| Spillback Cap Reductn  | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0     |
| Storage Cap Reductn    | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0     |
| Reduced v/c Ratio      | 0.04  | 0.19  | 0.09  | 0.33  | 0.24  | 0.79   | 0.06  | 0.66  |

### Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 80.7

Natural Cycle: 85

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 29.0

Intersection LOS: C

Intersection Capacity Utilization 62.4%

ICU Level of Service B

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 2: Caron St/Rue Caron & Laurier St

|      |    |      |    |      |    |      |    |
|------|----|------|----|------|----|------|----|
|      | Ø1 |      | Ø2 |      | Ø3 |      | Ø4 |
| 12 s |    | 33 s |    | 12 s |    | 33 s |    |
|      | Ø5 |      | Ø6 |      | Ø7 |      | Ø8 |
| 12 s |    | 33 s |    | 12 s |    | 33 s |    |

City of Concord Inc.

06/06/2010

# HCM Unsignalized Intersection Capacity Analysis

## 3: Caron St & Hélène St

Phase 2  
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| Movement                          | EBL                                                                               | EBR  | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR  |
|-----------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations               |  |      |  |  |  |      |
| Traffic Volume (veh/h)            | 0                                                                                 | 5    | 6                                                                                 | 559                                                                               | 428                                                                               | 3    |
| Future Volume (Veh/h)             | 0                                                                                 | 5    | 6                                                                                 | 559                                                                               | 428                                                                               | 3    |
| Sign Control                      | Stop                                                                              |      |                                                                                   | Free                                                                              | Free                                                                              |      |
| Grade                             | 0%                                                                                |      |                                                                                   | 0%                                                                                | 0%                                                                                |      |
| Peak Hour Factor                  | 0.90                                                                              | 0.90 | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90 |
| Hourly flow rate (vph)            | 0                                                                                 | 6    | 7                                                                                 | 621                                                                               | 476                                                                               | 3    |
| Pedestrians                       |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Lane Width (m)                    |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Walking Speed (m/s)               |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Percent Blockage                  |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Right turn flare (veh)            |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Median type                       |                                                                                   |      |                                                                                   | TWLTL                                                                             | TWLTL                                                                             |      |
| Median storage veh)               |                                                                                   |      |                                                                                   | 2                                                                                 | 2                                                                                 |      |
| Upstream signal (m)               |                                                                                   |      |                                                                                   |                                                                                   | 169                                                                               |      |
| pX, platoon unblocked             | 0.81                                                                              | 0.81 | 0.81                                                                              |                                                                                   |                                                                                   |      |
| vC, conflicting volume            | 1112                                                                              | 478  | 479                                                                               |                                                                                   |                                                                                   |      |
| vC1, stage 1 conf vol             | 478                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |
| vC2, stage 2 conf vol             | 635                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |
| vCu, unblocked vol                | 1021                                                                              | 236  | 238                                                                               |                                                                                   |                                                                                   |      |
| tC, single (s)                    | 6.4                                                                               | 6.2  | 4.1                                                                               |                                                                                   |                                                                                   |      |
| tC, 2 stage (s)                   | 5.4                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |
| tF (s)                            | 3.5                                                                               | 3.3  | 2.2                                                                               |                                                                                   |                                                                                   |      |
| p0 queue free %                   | 100                                                                               | 99   | 99                                                                                |                                                                                   |                                                                                   |      |
| cM capacity (veh/h)               | 442                                                                               | 650  | 1075                                                                              |                                                                                   |                                                                                   |      |
| Direction, Lane #                 | EB 1                                                                              | NB 1 | NB 2                                                                              | SB 1                                                                              |                                                                                   |      |
| Volume Total                      | 6                                                                                 | 7    | 621                                                                               | 479                                                                               |                                                                                   |      |
| Volume Left                       | 0                                                                                 | 7    | 0                                                                                 | 0                                                                                 |                                                                                   |      |
| Volume Right                      | 6                                                                                 | 0    | 0                                                                                 | 3                                                                                 |                                                                                   |      |
| cSH                               | 650                                                                               | 1075 | 1700                                                                              | 1700                                                                              |                                                                                   |      |
| Volume to Capacity                | 0.01                                                                              | 0.01 | 0.37                                                                              | 0.28                                                                              |                                                                                   |      |
| Queue Length 95th (m)             | 0.2                                                                               | 0.1  | 0.0                                                                               | 0.0                                                                               |                                                                                   |      |
| Control Delay (s)                 | 10.6                                                                              | 8.4  | 0.0                                                                               | 0.0                                                                               |                                                                                   |      |
| Lane LOS                          | B                                                                                 | A    |                                                                                   |                                                                                   |                                                                                   |      |
| Approach Delay (s)                | 10.6                                                                              | 0.1  |                                                                                   | 0.0                                                                               |                                                                                   |      |
| Approach LOS                      | B                                                                                 |      |                                                                                   |                                                                                   |                                                                                   |      |
| Intersection Summary              |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Average Delay                     |                                                                                   |      | 0.1                                                                               |                                                                                   |                                                                                   |      |
| Intersection Capacity Utilization |                                                                                   |      | 41.1%                                                                             | ICU Level of Service                                                              |                                                                                   | A    |
| Analvsis Period (min)             |                                                                                   |      | 15                                                                                |                                                                                   |                                                                                   |      |

# HCM Unsignalized Intersection Capacity Analysis

## 4: Caron St & Francois St

Phase 2  
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| Movement                          | EBL                                                                               | EBR  | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR  |
|-----------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations               |  |      |  |  |  |      |
| Sign Control                      | Stop                                                                              |      |                                                                                   | Stop                                                                              | Stop                                                                              |      |
| Traffic Volume (vph)              | 9                                                                                 | 3    | 1                                                                                 | 495                                                                               | 431                                                                               | 2    |
| Future Volume (vph)               | 9                                                                                 | 3    | 1                                                                                 | 495                                                                               | 431                                                                               | 2    |
| Peak Hour Factor                  | 0.90                                                                              | 0.90 | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90 |
| Hourly flow rate (vph)            | 10                                                                                | 3    | 1                                                                                 | 550                                                                               | 479                                                                               | 2    |
| Direction, Lane #                 | EB 1                                                                              | NB 1 | NB 2                                                                              | SB 1                                                                              |                                                                                   |      |
| Volume Total (vph)                | 13                                                                                | 1    | 550                                                                               | 481                                                                               |                                                                                   |      |
| Volume Left (vph)                 | 10                                                                                | 1    | 0                                                                                 | 0                                                                                 |                                                                                   |      |
| Volume Right (vph)                | 3                                                                                 | 0    | 0                                                                                 | 2                                                                                 |                                                                                   |      |
| Hadj (s)                          | 0.05                                                                              | 0.53 | 0.03                                                                              | 0.03                                                                              |                                                                                   |      |
| Departure Headway (s)             | 6.3                                                                               | 5.4  | 4.9                                                                               | 4.7                                                                               |                                                                                   |      |
| Degree Utilization, x             | 0.02                                                                              | 0.00 | 0.75                                                                              | 0.62                                                                              |                                                                                   |      |
| Capacity (veh/h)                  | 511                                                                               | 652  | 719                                                                               | 759                                                                               |                                                                                   |      |
| Control Delay (s)                 | 9.4                                                                               | 7.2  | 20.0                                                                              | 15.1                                                                              |                                                                                   |      |
| Approach Delay (s)                | 9.4                                                                               | 20.0 |                                                                                   | 15.1                                                                              |                                                                                   |      |
| Approach LOS                      | A                                                                                 | C    |                                                                                   | C                                                                                 |                                                                                   |      |
| Intersection Summary              |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Delay                             |                                                                                   |      | 17.6                                                                              |                                                                                   |                                                                                   |      |
| Level of Service                  |                                                                                   |      | C                                                                                 |                                                                                   |                                                                                   |      |
| Intersection Capacity Utilization |                                                                                   |      | 37.5%                                                                             | ICU Level of Service                                                              | A                                                                                 |      |
| Analysis Period (min)             |                                                                                   |      | 15                                                                                |                                                                                   |                                                                                   |      |

# HCM Unsignalized Intersection Capacity Analysis

## 5: Caron St & Des Cedres Ave

Phase 2  
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|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                   |  |  |  |  |  |  |
| Movement                          | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |
| Lane Configurations               |  |                                                                                   |  |                                                                                   |  |  |
| Traffic Volume (veh/h)            | 5                                                                                 | 10                                                                                | 486                                                                               | 1                                                                                 | 5                                                                                 | 429                                                                               |
| Future Volume (Veh/h)             | 5                                                                                 | 10                                                                                | 486                                                                               | 1                                                                                 | 5                                                                                 | 429                                                                               |
| Sign Control                      | Stop                                                                              |                                                                                   | Free                                                                              |                                                                                   | Free                                                                              | Free                                                                              |
| Grade                             | 0%                                                                                |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |
| Hourly flow rate (vph)            | 6                                                                                 | 11                                                                                | 540                                                                               | 1                                                                                 | 6                                                                                 | 477                                                                               |
| Pedestrians                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Width (m)                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Walking Speed (m/s)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Percent Blockage                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Median type                       |                                                                                   |                                                                                   | TWLTL                                                                             |                                                                                   | TWLTL                                                                             |                                                                                   |
| Median storage veh)               |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   | 2                                                                                 |                                                                                   |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| pX, platoon unblocked             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC, conflicting volume            | 1030                                                                              | 540                                                                               |                                                                                   |                                                                                   | 541                                                                               |                                                                                   |
| vC1, stage 1 conf vol             | 540                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC2, stage 2 conf vol             | 489                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vCu, unblocked vol                | 1030                                                                              | 540                                                                               |                                                                                   |                                                                                   | 541                                                                               |                                                                                   |
| tC, single (s)                    | 6.4                                                                               | 6.2                                                                               |                                                                                   |                                                                                   | 4.1                                                                               |                                                                                   |
| tC, 2 stage (s)                   | 5.4                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| tF (s)                            | 3.5                                                                               | 3.3                                                                               |                                                                                   |                                                                                   | 2.2                                                                               |                                                                                   |
| p0 queue free %                   | 99                                                                                | 98                                                                                |                                                                                   |                                                                                   | 99                                                                                |                                                                                   |
| cM capacity (veh/h)               | 473                                                                               | 541                                                                               |                                                                                   |                                                                                   | 1028                                                                              |                                                                                   |
| Direction, Lane #                 | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                   |                                                                                   |
| Volume Total                      | 17                                                                                | 541                                                                               | 6                                                                                 | 477                                                                               |                                                                                   |                                                                                   |
| Volume Left                       | 6                                                                                 | 0                                                                                 | 6                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |
| Volume Right                      | 11                                                                                | 1                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |
| cSH                               | 515                                                                               | 1700                                                                              | 1028                                                                              | 1700                                                                              |                                                                                   |                                                                                   |
| Volume to Capacity                | 0.03                                                                              | 0.32                                                                              | 0.01                                                                              | 0.28                                                                              |                                                                                   |                                                                                   |
| Queue Length 95th (m)             | 0.7                                                                               | 0.0                                                                               | 0.1                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |
| Control Delay (s)                 | 12.2                                                                              | 0.0                                                                               | 8.5                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |
| Lane LOS                          | B                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Approach Delay (s)                | 12.2                                                                              | 0.0                                                                               | 0.1                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Approach LOS                      | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Average Delay                     |                                                                                   |                                                                                   | 0.2                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 37.1%                                                                             | ICU Level of Service                                                              |                                                                                   | A                                                                                 |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |

# HCM Unsignalized Intersection Capacity Analysis

## 6: Caron St & Cote St/Potvin Ave

Phase 2  
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|                                   |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|--|--|--|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |  |  |  |  |  |  |
| Lane Configurations               |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |  |  |                                                                                     |  |  |                                                                                     |  |  |  |  |  |  |
| Sign Control                      |                                                                                   | Stop                                                                              |                                                                                   |                                                                                   | Stop                                                                              |                                                                                   |                                                                                     | Stop                                                                                |                                                                                     |                                                                                     | Stop                                                                                |                                                                                     |  |  |  |  |  |  |
| Traffic Volume (vph)              | 9                                                                                 | 0                                                                                 | 8                                                                                 | 9                                                                                 | 1                                                                                 | 6                                                                                 | 4                                                                                   | 472                                                                                 | 6                                                                                   | 5                                                                                   | 429                                                                                 | 0                                                                                   |  |  |  |  |  |  |
| Future Volume (vph)               | 9                                                                                 | 0                                                                                 | 8                                                                                 | 9                                                                                 | 1                                                                                 | 6                                                                                 | 4                                                                                   | 472                                                                                 | 6                                                                                   | 5                                                                                   | 429                                                                                 | 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                                                                                |  |  |  |  |  |  |
| Hourly flow rate (vph)            | 10                                                                                | 0                                                                                 | 9                                                                                 | 10                                                                                | 1                                                                                 | 7                                                                                 | 4                                                                                   | 524                                                                                 | 7                                                                                   | 6                                                                                   | 477                                                                                 | 0                                                                                   |  |  |  |  |  |  |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              | NB 2                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Volume Total (vph)                | 19                                                                                | 18                                                                                | 4                                                                                 | 531                                                                               | 6                                                                                 | 477                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Volume Left (vph)                 | 10                                                                                | 10                                                                                | 4                                                                                 | 0                                                                                 | 6                                                                                 | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Volume Right (vph)                | 9                                                                                 | 7                                                                                 | 0                                                                                 | 7                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Hadj (s)                          | -0.14                                                                             | -0.09                                                                             | 0.53                                                                              | 0.02                                                                              | 0.53                                                                              | 0.03                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Departure Headway (s)             | 6.1                                                                               | 6.2                                                                               | 5.5                                                                               | 5.0                                                                               | 5.6                                                                               | 5.1                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Degree Utilization, x             | 0.03                                                                              | 0.03                                                                              | 0.01                                                                              | 0.74                                                                              | 0.01                                                                              | 0.67                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Capacity (veh/h)                  | 516                                                                               | 509                                                                               | 632                                                                               | 702                                                                               | 627                                                                               | 703                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Control Delay (s)                 | 9.3                                                                               | 9.3                                                                               | 7.4                                                                               | 19.7                                                                              | 7.4                                                                               | 16.5                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Approach Delay (s)                | 9.3                                                                               | 9.3                                                                               | 19.6                                                                              |                                                                                   | 16.4                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Approach LOS                      | A                                                                                 | A                                                                                 | C                                                                                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Delay                             |                                                                                   |                                                                                   | 17.8                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Level of Service                  |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 36.6%                                                                             | ICU Level of Service                                                              |                                                                                   | A                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |

# HCM Unsignalized Intersection Capacity Analysis

## 7: Caron St & Docteur Corbeil Blvd

Phase 2  
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| Movement                          | EBL                                                                               | EBR  | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|--|--|--|--|--|--|
| Lane Configurations               |  |      |  |  |  |      |  |  |  |  |  |  |
| Traffic Volume (veh/h)            | 38                                                                                | 59   | 86                                                                                | 444                                                                               | 363                                                                               | 43   |  |  |  |  |  |  |
| Future Volume (Veh/h)             | 38                                                                                | 59   | 86                                                                                | 444                                                                               | 363                                                                               | 43   |  |  |  |  |  |  |
| Sign Control                      | Stop                                                                              |      |                                                                                   | Free                                                                              | Free                                                                              |      |  |  |  |  |  |  |
| Grade                             | 0%                                                                                |      |                                                                                   | 0%                                                                                | 0%                                                                                |      |  |  |  |  |  |  |
| Peak Hour Factor                  | 0.90                                                                              | 0.90 | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90 |  |  |  |  |  |  |
| Hourly flow rate (vph)            | 42                                                                                | 66   | 96                                                                                | 493                                                                               | 403                                                                               | 48   |  |  |  |  |  |  |
| Pedestrians                       | 2                                                                                 |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |  |  |  |
| Lane Width (m)                    | 3.6                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |  |  |  |
| Walking Speed (m/s)               | 1.2                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |  |  |  |
| Percent Blockage                  | 0                                                                                 |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |  |  |  |
| Right turn flare (veh)            |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |  |  |  |
| Median type                       |                                                                                   |      |                                                                                   | TWLTL                                                                             | TWLTL                                                                             |      |  |  |  |  |  |  |
| Median storage (veh)              |                                                                                   |      |                                                                                   | 2                                                                                 | 2                                                                                 |      |  |  |  |  |  |  |
| Upstream signal (m)               |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |  |  |  |
| pX, platoon unblocked             |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |  |  |  |
| vC, conflicting volume            | 1114                                                                              | 429  | 453                                                                               |                                                                                   |                                                                                   |      |  |  |  |  |  |  |
| vC1, stage 1 conf vol             | 429                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |  |  |  |
| vC2, stage 2 conf vol             | 685                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |  |  |  |
| vCu, unblocked vol                | 1114                                                                              | 429  | 453                                                                               |                                                                                   |                                                                                   |      |  |  |  |  |  |  |
| tC, single (s)                    | 6.4                                                                               | 6.2  | 4.1                                                                               |                                                                                   |                                                                                   |      |  |  |  |  |  |  |
| tC, 2 stage (s)                   | 5.4                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |  |  |  |
| tF (s)                            | 3.5                                                                               | 3.3  | 2.2                                                                               |                                                                                   |                                                                                   |      |  |  |  |  |  |  |
| p0 queue free %                   | 90                                                                                | 89   | 91                                                                                |                                                                                   |                                                                                   |      |  |  |  |  |  |  |
| cM capacity (veh/h)               | 406                                                                               | 625  | 1106                                                                              |                                                                                   |                                                                                   |      |  |  |  |  |  |  |
| Direction, Lane #                 | EB 1                                                                              | NB 1 | NB 2                                                                              | SB 1                                                                              |                                                                                   |      |  |  |  |  |  |  |
| Volume Total                      | 108                                                                               | 96   | 493                                                                               | 451                                                                               |                                                                                   |      |  |  |  |  |  |  |
| Volume Left                       | 42                                                                                | 96   | 0                                                                                 | 0                                                                                 |                                                                                   |      |  |  |  |  |  |  |
| Volume Right                      | 66                                                                                | 0    | 0                                                                                 | 48                                                                                |                                                                                   |      |  |  |  |  |  |  |
| cSH                               | 517                                                                               | 1106 | 1700                                                                              | 1700                                                                              |                                                                                   |      |  |  |  |  |  |  |
| Volume to Capacity                | 0.21                                                                              | 0.09 | 0.29                                                                              | 0.27                                                                              |                                                                                   |      |  |  |  |  |  |  |
| Queue Length 95th (m)             | 5.5                                                                               | 2.0  | 0.0                                                                               | 0.0                                                                               |                                                                                   |      |  |  |  |  |  |  |
| Control Delay (s)                 | 13.8                                                                              | 8.6  | 0.0                                                                               | 0.0                                                                               |                                                                                   |      |  |  |  |  |  |  |
| Lane LOS                          | B                                                                                 | A    |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |  |  |  |
| Approach Delay (s)                | 13.8                                                                              | 1.4  | 0.0                                                                               |                                                                                   |                                                                                   |      |  |  |  |  |  |  |
| Approach LOS                      | B                                                                                 |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |  |  |  |
| Intersection Summary              |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |  |  |  |
| Average Delay                     | 2.0                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |  |  |  |
| Intersection Capacity Utilization | 44.0%                                                                             |      |                                                                                   | ICU Level of Service                                                              | A                                                                                 |      |  |  |  |  |  |  |
| Analvsis Period (min)             | 15                                                                                |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |  |  |  |

# HCM Unsignalized Intersection Capacity Analysis

## 8: David St & Caron St

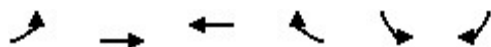
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|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--|--|
|                                   |  |  |  |  |  |  |  |  |
| Movement                          | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |  |  |
| Lane Configurations               |  |                                                                                   |  |                                                                                   |  |  |  |  |
| Sign Control                      | Stop                                                                              |                                                                                   | Stop                                                                              |                                                                                   | Stop                                                                              | Stop                                                                              |  |  |
| Traffic Volume (vph)              | 5                                                                                 | 221                                                                               | 277                                                                               | 2                                                                                 | 188                                                                               | 234                                                                               |  |  |
| Future Volume (vph)               | 5                                                                                 | 221                                                                               | 277                                                                               | 2                                                                                 | 188                                                                               | 234                                                                               |  |  |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |  |  |
| Hourly flow rate (vph)            | 6                                                                                 | 246                                                                               | 308                                                                               | 2                                                                                 | 209                                                                               | 260                                                                               |  |  |
| Direction, Lane #                 | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                   |                                                                                   |  |  |
| Volume Total (vph)                | 252                                                                               | 310                                                                               | 209                                                                               | 260                                                                               |                                                                                   |                                                                                   |  |  |
| Volume Left (vph)                 | 6                                                                                 | 0                                                                                 | 209                                                                               | 0                                                                                 |                                                                                   |                                                                                   |  |  |
| Volume Right (vph)                | 246                                                                               | 2                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |  |  |
| Hadj (s)                          | -0.55                                                                             | 0.03                                                                              | 0.53                                                                              | 0.03                                                                              |                                                                                   |                                                                                   |  |  |
| Departure Headway (s)             | 5.2                                                                               | 5.3                                                                               | 6.1                                                                               | 5.6                                                                               |                                                                                   |                                                                                   |  |  |
| Degree Utilization, x             | 0.36                                                                              | 0.46                                                                              | 0.36                                                                              | 0.41                                                                              |                                                                                   |                                                                                   |  |  |
| Capacity (veh/h)                  | 640                                                                               | 648                                                                               | 569                                                                               | 621                                                                               |                                                                                   |                                                                                   |  |  |
| Control Delay (s)                 | 11.2                                                                              | 12.8                                                                              | 11.3                                                                              | 11.2                                                                              |                                                                                   |                                                                                   |  |  |
| Approach Delay (s)                | 11.2                                                                              | 12.8                                                                              | 11.2                                                                              |                                                                                   |                                                                                   |                                                                                   |  |  |
| Approach LOS                      | B                                                                                 | B                                                                                 | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |  |  |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
| Delay                             |                                                                                   |                                                                                   | 11.7                                                                              |                                                                                   |                                                                                   |                                                                                   |  |  |
| Level of Service                  |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |  |  |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 51.2%                                                                             | ICU Level of Service                                                              | A                                                                                 |                                                                                   |  |  |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |  |  |

# HCM Unsignalized Intersection Capacity Analysis

## 9: Baseline Rd & Caron St

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| Movement                          | EBL  | EBT                                                                               | WBT                                                                               | WBR                  | SBL                                                                               | SBR  |
|-----------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations               |      |  |  |                      |  |      |
| Traffic Volume (veh/h)            | 32   | 28                                                                                | 58                                                                                | 131                  | 106                                                                               | 52   |
| Future Volume (Veh/h)             | 32   | 28                                                                                | 58                                                                                | 131                  | 106                                                                               | 52   |
| Sign Control                      |      | Free                                                                              | Free                                                                              |                      | Stop                                                                              |      |
| Grade                             |      | 0%                                                                                | 0%                                                                                |                      | 0%                                                                                |      |
| Peak Hour Factor                  | 0.90 | 0.90                                                                              | 0.90                                                                              | 0.90                 | 0.90                                                                              | 0.90 |
| Hourly flow rate (vph)            | 36   | 31                                                                                | 64                                                                                | 146                  | 118                                                                               | 58   |
| Pedestrians                       |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Lane Width (m)                    |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Walking Speed (m/s)               |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Percent Blockage                  |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Right turn flare (veh)            |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Median type                       |      | None                                                                              | None                                                                              |                      |                                                                                   |      |
| Median storage veh                |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Upstream signal (m)               |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| pX, platoon unblocked             |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| vC, conflicting volume            | 210  |                                                                                   |                                                                                   |                      | 240                                                                               | 137  |
| vC1, stage 1 conf vol             |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| vC2, stage 2 conf vol             |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| vCu, unblocked vol                | 210  |                                                                                   |                                                                                   |                      | 240                                                                               | 137  |
| tC, single (s)                    | 4.1  |                                                                                   |                                                                                   |                      | 6.4                                                                               | 6.2  |
| tC, 2 stage (s)                   |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| tF (s)                            | 2.2  |                                                                                   |                                                                                   |                      | 3.5                                                                               | 3.3  |
| p0 queue free %                   | 97   |                                                                                   |                                                                                   |                      | 84                                                                                | 94   |
| cM capacity (veh/h)               | 1361 |                                                                                   |                                                                                   |                      | 728                                                                               | 911  |
| Direction, Lane #                 | EB 1 | WB 1                                                                              | SB 1                                                                              |                      |                                                                                   |      |
| Volume Total                      | 67   | 210                                                                               | 176                                                                               |                      |                                                                                   |      |
| Volume Left                       | 36   | 0                                                                                 | 118                                                                               |                      |                                                                                   |      |
| Volume Right                      | 0    | 146                                                                               | 58                                                                                |                      |                                                                                   |      |
| cSH                               | 1361 | 1700                                                                              | 780                                                                               |                      |                                                                                   |      |
| Volume to Capacity                | 0.03 | 0.12                                                                              | 0.23                                                                              |                      |                                                                                   |      |
| Queue Length 95th (m)             | 0.6  | 0.0                                                                               | 6.0                                                                               |                      |                                                                                   |      |
| Control Delay (s)                 | 4.2  | 0.0                                                                               | 11.0                                                                              |                      |                                                                                   |      |
| Lane LOS                          | A    |                                                                                   | B                                                                                 |                      |                                                                                   |      |
| Approach Delay (s)                | 4.2  | 0.0                                                                               | 11.0                                                                              |                      |                                                                                   |      |
| Approach LOS                      |      |                                                                                   | B                                                                                 |                      |                                                                                   |      |
| Intersection Summary              |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Average Delay                     |      |                                                                                   | 4.9                                                                               |                      |                                                                                   |      |
| Intersection Capacity Utilization |      |                                                                                   | 34.7%                                                                             | ICU Level of Service |                                                                                   | A    |
| Analvsis Period (min)             |      |                                                                                   | 15                                                                                |                      |                                                                                   |      |

# HCM Unsignalized Intersection Capacity Analysis

## 10: Street B & David St

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|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                   |  |  |  |  |  |  |
| Movement                          | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBR                                                                               |
| Lane Configurations               |  |                                                                                   |                                                                                   |  |  |                                                                                   |
| Traffic Volume (veh/h)            | 53                                                                                | 137                                                                               | 23                                                                                | 68                                                                                | 159                                                                               | 27                                                                                |
| Future Volume (Veh/h)             | 53                                                                                | 137                                                                               | 23                                                                                | 68                                                                                | 159                                                                               | 27                                                                                |
| Sign Control                      | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              | Stop                                                                              |                                                                                   |
| Grade                             | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                | 0%                                                                                |                                                                                   |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |
| Hourly flow rate (vph)            | 59                                                                                | 152                                                                               | 26                                                                                | 76                                                                                | 177                                                                               | 30                                                                                |
| Pedestrians                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Width (m)                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Walking Speed (m/s)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Percent Blockage                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Median type                       | None                                                                              |                                                                                   |                                                                                   | None                                                                              |                                                                                   |                                                                                   |
| Median storage (veh)              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| pX, platoon unblocked             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC, conflicting volume            |                                                                                   |                                                                                   | 211                                                                               |                                                                                   | 263                                                                               | 135                                                                               |
| vC1, stage 1 conf vol             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC2, stage 2 conf vol             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vCu, unblocked vol                |                                                                                   |                                                                                   | 211                                                                               |                                                                                   | 263                                                                               | 135                                                                               |
| tC, single (s)                    |                                                                                   |                                                                                   | 4.1                                                                               |                                                                                   | 6.4                                                                               | 6.2                                                                               |
| tC, 2 stage (s)                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| tF (s)                            |                                                                                   |                                                                                   | 2.2                                                                               |                                                                                   | 3.5                                                                               | 3.3                                                                               |
| p0 queue free %                   |                                                                                   |                                                                                   | 98                                                                                |                                                                                   | 75                                                                                | 97                                                                                |
| cM capacity (veh/h)               |                                                                                   |                                                                                   | 1360                                                                              |                                                                                   | 712                                                                               | 914                                                                               |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Volume Total                      | 211                                                                               | 102                                                                               | 207                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Volume Left                       | 0                                                                                 | 26                                                                                | 177                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Volume Right                      | 152                                                                               | 0                                                                                 | 30                                                                                |                                                                                   |                                                                                   |                                                                                   |
| cSH                               | 1700                                                                              | 1360                                                                              | 736                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Volume to Capacity                | 0.12                                                                              | 0.02                                                                              | 0.28                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Queue Length 95th (m)             | 0.0                                                                               | 0.4                                                                               | 8.1                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Control Delay (s)                 | 0.0                                                                               | 2.1                                                                               | 11.8                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Lane LOS                          |                                                                                   | A                                                                                 | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Approach Delay (s)                | 0.0                                                                               | 2.1                                                                               | 11.8                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Approach LOS                      |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Average Delay                     |                                                                                   |                                                                                   | 5.1                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 38.0%                                                                             | ICU Level of Service                                                              | A                                                                                 |                                                                                   |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |

# HCM Unsignalized Intersection Capacity Analysis

## 11: Street A & David St

Phase 2  
AM.syn

|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                   |  |  |  |  |  |  |
| Movement                          | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBR                                                                               |
| Lane Configurations               |  |                                                                                   |                                                                                   |  |  |                                                                                   |
| Traffic Volume (veh/h)            | 34                                                                                | 46                                                                                | 23                                                                                | 38                                                                                | 53                                                                                | 26                                                                                |
| Future Volume (Veh/h)             | 34                                                                                | 46                                                                                | 23                                                                                | 38                                                                                | 53                                                                                | 26                                                                                |
| Sign Control                      | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              | Stop                                                                              |                                                                                   |
| Grade                             | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                | 0%                                                                                |                                                                                   |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |
| Hourly flow rate (vph)            | 38                                                                                | 51                                                                                | 26                                                                                | 42                                                                                | 59                                                                                | 29                                                                                |
| Pedestrians                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Width (m)                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Walking Speed (m/s)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Percent Blockage                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Median type                       | None                                                                              |                                                                                   |                                                                                   | None                                                                              |                                                                                   |                                                                                   |
| Median storage (veh)              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| pX, platoon unblocked             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC, conflicting volume            |                                                                                   |                                                                                   | 89                                                                                |                                                                                   | 158                                                                               | 64                                                                                |
| vC1, stage 1 conf vol             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC2, stage 2 conf vol             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vCu, unblocked vol                |                                                                                   |                                                                                   | 89                                                                                |                                                                                   | 158                                                                               | 64                                                                                |
| tC, single (s)                    |                                                                                   |                                                                                   | 4.1                                                                               |                                                                                   | 6.4                                                                               | 6.2                                                                               |
| tC, 2 stage (s)                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| tF (s)                            |                                                                                   |                                                                                   | 2.2                                                                               |                                                                                   | 3.5                                                                               | 3.3                                                                               |
| p0 queue free %                   |                                                                                   |                                                                                   | 98                                                                                |                                                                                   | 93                                                                                | 97                                                                                |
| cM capacity (veh/h)               |                                                                                   |                                                                                   | 1506                                                                              |                                                                                   | 819                                                                               | 1001                                                                              |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Volume Total                      | 89                                                                                | 68                                                                                | 88                                                                                |                                                                                   |                                                                                   |                                                                                   |
| Volume Left                       | 0                                                                                 | 26                                                                                | 59                                                                                |                                                                                   |                                                                                   |                                                                                   |
| Volume Right                      | 51                                                                                | 0                                                                                 | 29                                                                                |                                                                                   |                                                                                   |                                                                                   |
| cSH                               | 1700                                                                              | 1506                                                                              | 871                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Volume to Capacity                | 0.05                                                                              | 0.02                                                                              | 0.10                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Queue Length 95th (m)             | 0.0                                                                               | 0.4                                                                               | 2.4                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Control Delay (s)                 | 0.0                                                                               | 2.9                                                                               | 9.6                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Lane LOS                          |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Approach Delay (s)                | 0.0                                                                               | 2.9                                                                               | 9.6                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Approach LOS                      |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Average Delay                     |                                                                                   |                                                                                   | 4.3                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 21.6%                                                                             | ICU Level of Service                                                              | A                                                                                 |                                                                                   |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |

# HCM Unsignalized Intersection Capacity Analysis

## 12: Street B & Street A

Phase 2  
AM.syn

|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Sign Control                      |                                                                                   | Stop                                                                              |                                                                                   |                                                                                   | Stop                                                                              |                                                                                   |                                                                                    | Stop                                                                                |                                                                                     |                                                                                     | Stop                                                                                |                                                                                     |
| Traffic Volume (vph)              | 99                                                                                | 71                                                                                | 28                                                                                | 23                                                                                | 76                                                                                | 53                                                                                | 26                                                                                 | 26                                                                                  | 26                                                                                  | 46                                                                                  | 23                                                                                  | 99                                                                                  |
| Future Volume (vph)               | 99                                                                                | 71                                                                                | 28                                                                                | 23                                                                                | 76                                                                                | 53                                                                                | 26                                                                                 | 26                                                                                  | 26                                                                                  | 46                                                                                  | 23                                                                                  | 99                                                                                  |
| 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                                                                                |
| Hourly flow rate (vph)            | 110                                                                               | 79                                                                                | 31                                                                                | 26                                                                                | 84                                                                                | 59                                                                                | 29                                                                                 | 29                                                                                  | 29                                                                                  | 51                                                                                  | 26                                                                                  | 110                                                                                 |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Total (vph)                | 220                                                                               | 169                                                                               | 87                                                                                | 187                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Left (vph)                 | 110                                                                               | 26                                                                                | 29                                                                                | 51                                                                                |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Right (vph)                | 31                                                                                | 59                                                                                | 29                                                                                | 110                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Hadj (s)                          | 0.05                                                                              | -0.14                                                                             | -0.10                                                                             | -0.26                                                                             |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Departure Headway (s)             | 4.9                                                                               | 4.7                                                                               | 5.0                                                                               | 4.7                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Degree Utilization, x             | 0.30                                                                              | 0.22                                                                              | 0.12                                                                              | 0.25                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Capacity (veh/h)                  | 694                                                                               | 706                                                                               | 647                                                                               | 700                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Control Delay (s)                 | 9.9                                                                               | 9.1                                                                               | 8.7                                                                               | 9.2                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay (s)                | 9.9                                                                               | 9.1                                                                               | 8.7                                                                               | 9.2                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                      | A                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Delay                             |                                                                                   |                                                                                   | 9.3                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Level of Service                  |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 43.3%                                                                             | ICU Level of Service                                                              | A                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM Unsignalized Intersection Capacity Analysis 15: Caron St & Street A

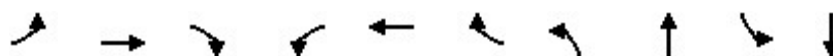
Phase 2  
AM.syn

|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--|--|
|                                   |  |  |  |  |  |  |  |  |
| Movement                          | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |  |  |
| Lane Configurations               |  |                                                                                   |  |                                                                                   |  |  |  |  |
| Sign Control                      | Stop                                                                              |                                                                                   | Stop                                                                              |                                                                                   | Stop                                                                              | Stop                                                                              |  |  |
| Traffic Volume (vph)              | 79                                                                                | 106                                                                               | 173                                                                               | 68                                                                                | 91                                                                                | 148                                                                               |  |  |
| Future Volume (vph)               | 79                                                                                | 106                                                                               | 173                                                                               | 68                                                                                | 91                                                                                | 148                                                                               |  |  |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |  |  |
| Hourly flow rate (vph)            | 88                                                                                | 118                                                                               | 192                                                                               | 76                                                                                | 101                                                                               | 164                                                                               |  |  |
| Direction, Lane #                 | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                   |                                                                                   |  |  |
| Volume Total (vph)                | 206                                                                               | 268                                                                               | 67                                                                                | 198                                                                               |                                                                                   |                                                                                   |  |  |
| Volume Left (vph)                 | 88                                                                                | 0                                                                                 | 67                                                                                | 34                                                                                |                                                                                   |                                                                                   |  |  |
| Volume Right (vph)                | 118                                                                               | 76                                                                                | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |  |  |
| Hadj (s)                          | -0.22                                                                             | -0.14                                                                             | 0.53                                                                              | 0.12                                                                              |                                                                                   |                                                                                   |  |  |
| Departure Headway (s)             | 5.0                                                                               | 4.8                                                                               | 5.9                                                                               | 5.4                                                                               |                                                                                   |                                                                                   |  |  |
| Degree Utilization, x             | 0.28                                                                              | 0.35                                                                              | 0.11                                                                              | 0.30                                                                              |                                                                                   |                                                                                   |  |  |
| Capacity (veh/h)                  | 671                                                                               | 723                                                                               | 587                                                                               | 635                                                                               |                                                                                   |                                                                                   |  |  |
| Control Delay (s)                 | 9.9                                                                               | 10.4                                                                              | 8.4                                                                               | 9.5                                                                               |                                                                                   |                                                                                   |  |  |
| Approach Delay (s)                | 9.9                                                                               | 10.4                                                                              | 9.2                                                                               |                                                                                   |                                                                                   |                                                                                   |  |  |
| Approach LOS                      | A                                                                                 | B                                                                                 | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |  |  |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
| Delay                             |                                                                                   |                                                                                   | 9.8                                                                               |                                                                                   |                                                                                   |                                                                                   |  |  |
| Level of Service                  |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |  |  |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 43.7%                                                                             | ICU Level of Service                                                              | A                                                                                 |                                                                                   |  |  |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |  |  |

# Lanes, Volumes, Timings

## 1: Rue Caron/Rue Industrielle & HWY 17

Phase 2  
PM.syn



| Lane Group             | EBL   | EBT   | EBR   | WBL   | WBT   | WBR   | NBL    | NBT   | SBL   | SBT   |
|------------------------|-------|-------|-------|-------|-------|-------|--------|-------|-------|-------|
| Lane Configurations    |       |       |       |       |       |       |        |       |       |       |
| Traffic Volume (vph)   | 34    | 230   | 420   | 30    | 129   | 26    | 369    | 87    | 35    | 138   |
| Future Volume (vph)    | 34    | 230   | 420   | 30    | 129   | 26    | 369    | 87    | 35    | 138   |
| Lane Group Flow (vph)  | 38    | 256   | 467   | 33    | 143   | 29    | 410    | 144   | 39    | 187   |
| Turn Type              | pm+pt | NA    | Perm  | pm+pt | NA    | Perm  | pm+pt  | NA    | pm+pt | NA    |
| Protected Phases       | 7     | 4     |       | 3     | 8     |       | 5      | 2     | 1     | 6     |
| Permitted Phases       | 4     |       | 4     | 8     |       | 8     | 2      |       | 6     |       |
| Detector Phase         | 7     | 4     | 4     | 3     | 8     | 8     | 5      | 2     | 1     | 6     |
| Switch Phase           |       |       |       |       |       |       |        |       |       |       |
| Minimum Initial (s)    | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0    | 10.0  | 5.0   | 10.0  |
| Minimum Split (s)      | 11.9  | 51.9  | 51.9  | 11.9  | 51.9  | 51.9  | 10.9   | 33.3  | 10.9  | 33.3  |
| Total Split (s)        | 18.9  | 51.9  | 51.9  | 18.9  | 51.9  | 51.9  | 15.9   | 33.3  | 15.9  | 33.3  |
| Total Split (%)        | 15.8% | 43.3% | 43.3% | 15.8% | 43.3% | 43.3% | 13.3%  | 27.8% | 13.3% | 27.8% |
| Yellow Time (s)        | 4.2   | 4.2   | 4.2   | 4.2   | 4.2   | 4.2   | 3.3    | 3.3   | 3.3   | 3.3   |
| All-Red Time (s)       | 2.7   | 2.7   | 2.7   | 2.7   | 2.7   | 2.7   | 2.6    | 3.0   | 2.6   | 3.0   |
| Lost Time Adjust (s)   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)    | 6.9   | 6.9   | 6.9   | 6.9   | 6.9   | 6.9   | 5.9    | 6.3   | 5.9   | 6.3   |
| Lead/Lag               | Lead  | Lag   | Lag   | Lead  | Lag   | Lag   | Lead   | Lag   | Lead  | Lag   |
| Lead-Lag Optimize?     | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   | Yes    | Yes   | Yes   | Yes   |
| Recall Mode            | None  | Max   | Max   | None  | Max   | Max   | None   | None  | None  | None  |
| Act Effct Green (s)    | 49.7  | 45.7  | 45.7  | 49.5  | 45.6  | 45.6  | 30.0   | 24.0  | 23.2  | 15.6  |
| Actuated g/C Ratio     | 0.50  | 0.46  | 0.46  | 0.50  | 0.46  | 0.46  | 0.30   | 0.24  | 0.24  | 0.16  |
| v/c Ratio              | 0.06  | 0.31  | 0.49  | 0.06  | 0.18  | 0.04  | 1.32   | 0.34  | 0.12  | 0.67  |
| Control Delay          | 11.9  | 20.3  | 4.0   | 11.9  | 19.0  | 0.1   | 192.5  | 32.9  | 25.6  | 50.2  |
| Queue Delay            | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0   | 0.0   | 0.0   |
| Total Delay            | 11.9  | 20.3  | 4.0   | 11.9  | 19.0  | 0.1   | 192.5  | 32.9  | 25.6  | 50.2  |
| LOS                    | B     | C     | A     | B     | B     | A     | F      | C     | C     | D     |
| Approach Delay         |       | 9.9   |       |       | 15.1  |       |        | 151.0 |       | 46.0  |
| Approach LOS           |       | A     |       |       | B     |       |        | F     |       | D     |
| Queue Length 50th (m)  | 3.0   | 30.5  | 0.0   | 2.6   | 15.9  | 0.0   | ~76.7  | 20.7  | 5.1   | 31.5  |
| Queue Length 95th (m)  | 8.1   | 54.4  | 17.4  | 7.3   | 31.3  | 0.0   | #130.7 | 38.9  | 11.9  | 52.9  |
| Internal Link Dist (m) |       | 820.6 |       |       | 792.2 |       |        | 422.2 |       | 103.9 |
| Turn Bay Length (m)    | 90.0  |       | 85.0  | 60.0  |       | 56.0  | 60.0   |       | 40.0  |       |
| Base Capacity (vph)    | 684   | 819   | 946   | 612   | 817   | 773   | 311    | 484   | 363   | 483   |
| Starvation Cap Reductn | 0     | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     |
| Spillback Cap Reductn  | 0     | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     |
| Storage Cap Reductn    | 0     | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     |
| Reduced v/c Ratio      | 0.06  | 0.31  | 0.49  | 0.05  | 0.18  | 0.04  | 1.32   | 0.30  | 0.11  | 0.39  |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 98.5

Natural Cycle: 110

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.32

Intersection Signal Delay: 59.9

Intersection LOS: E

Intersection Capacity Utilization 69.8%

ICU Level of Service C

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

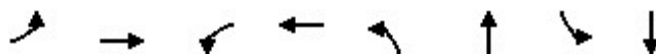
Splits and Phases: 1: Rue Caron/Rue Industrielle & HWY 17

|        |        |        |        |        |        |        |        |        |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|        |        |        |        |        |        |        |        |        |
| 15.9 s | 33.3 s | 18.9 s | 51.9 s | 15.9 s | 33.3 s | 18.9 s | 51.9 s | 15.9 s |
|        |        |        |        |        |        |        |        |        |
| 15.9 s | 33.3 s | 18.9 s | 51.9 s | 15.9 s | 33.3 s | 18.9 s | 51.9 s | 15.9 s |

# Lanes, Volumes, Timings

## 2: Caron St/Rue Caron & Laurier St

Phase 2  
PM.syn



| Lane Group             | EBL   | EBT   | WBL   | WBT   | NBL   | NBT    | SBL   | SBT    |
|------------------------|-------|-------|-------|-------|-------|--------|-------|--------|
| Lane Configurations    |       |       |       |       |       |        |       |        |
| Traffic Volume (vph)   | 34    | 155   | 30    | 87    | 75    | 405    | 35    | 494    |
| Future Volume (vph)    | 34    | 155   | 30    | 87    | 75    | 405    | 35    | 494    |
| Lane Group Flow (vph)  | 38    | 273   | 33    | 126   | 83    | 497    | 39    | 583    |
| Turn Type              | pm+pt | NA    | pm+pt | NA    | pm+pt | NA     | pm+pt | NA     |
| Protected Phases       | 7     | 4     | 3     | 8     | 5     | 2      | 1     | 6      |
| Permitted Phases       | 4     |       | 8     |       | 2     |        | 6     |        |
| Detector Phase         | 7     | 4     | 3     | 8     | 5     | 2      | 1     | 6      |
| Switch Phase           |       |       |       |       |       |        |       |        |
| Minimum Initial (s)    | 5.0   | 10.0  | 5.0   | 10.0  | 5.0   | 10.0   | 5.0   | 10.0   |
| Minimum Split (s)      | 11.5  | 31.5  | 11.5  | 31.5  | 11.1  | 27.1   | 11.1  | 27.1   |
| Total Split (s)        | 12.0  | 33.0  | 12.0  | 33.0  | 12.0  | 33.0   | 12.0  | 33.0   |
| Total Split (%)        | 13.3% | 36.7% | 13.3% | 36.7% | 13.3% | 36.7%  | 13.3% | 36.7%  |
| Yellow Time (s)        | 3.3   | 3.3   | 3.3   | 3.3   | 3.3   | 3.3    | 3.3   | 3.3    |
| All-Red Time (s)       | 3.2   | 3.2   | 3.2   | 3.2   | 2.8   | 2.8    | 2.8   | 2.8    |
| Lost Time Adjust (s)   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0   | 0.0    |
| Total Lost Time (s)    | 6.5   | 6.5   | 6.5   | 6.5   | 6.1   | 6.1    | 6.1   | 6.1    |
| Lead/Lag               | Lead  | Lag   | Lead  | Lag   | Lead  | Lag    | Lead  | Lag    |
| Lead-Lag Optimize?     | Yes   | Yes   | Yes   | Yes   | Yes   | Yes    | Yes   | Yes    |
| Recall Mode            | None  | Max   | None  | Max   | None  | None   | None  | None   |
| Act Effct Green (s)    | 29.9  | 26.9  | 29.9  | 26.9  | 33.1  | 29.9   | 31.8  | 27.3   |
| Actuated g/C Ratio     | 0.36  | 0.32  | 0.36  | 0.32  | 0.40  | 0.36   | 0.38  | 0.33   |
| v/c Ratio              | 0.08  | 0.48  | 0.09  | 0.22  | 0.42  | 0.79   | 0.16  | 1.01   |
| Control Delay          | 16.1  | 25.2  | 16.1  | 21.4  | 21.9  | 37.8   | 16.3  | 71.2   |
| Queue Delay            | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0   | 0.0    |
| Total Delay            | 16.1  | 25.2  | 16.1  | 21.4  | 21.9  | 37.8   | 16.3  | 71.2   |
| LOS                    | B     | C     | B     | C     | C     | D      | B     | E      |
| Approach Delay         |       | 24.0  |       | 20.3  |       | 35.5   |       | 67.7   |
| Approach LOS           |       | C     |       | C     |       | D      |       | E      |
| Queue Length 50th (m)  | 3.5   | 31.6  | 3.0   | 13.0  | 7.7   | 76.3   | 3.5   | ~107.1 |
| Queue Length 95th (m)  | 8.6   | 53.7  | 7.8   | 25.7  | 15.5  | #132.1 | 8.8   | #164.6 |
| Internal Link Dist (m) |       | 919.9 |       | 690.6 |       | 145.4  |       | 422.2  |
| Turn Bay Length (m)    | 35.0  |       | 60.0  |       | 55.0  |        | 50.0  |        |
| Base Capacity (vph)    | 463   | 564   | 368   | 564   | 198   | 631    | 248   | 579    |
| Starvation Cap Reductn | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0      |
| Spillback Cap Reductn  | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0      |
| Storage Cap Reductn    | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0      |
| Reduced v/c Ratio      | 0.08  | 0.48  | 0.09  | 0.22  | 0.42  | 0.79   | 0.16  | 1.01   |

### Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 82.8

Natural Cycle: 85

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.01

Intersection Signal Delay: 43.9

Intersection LOS: D

Intersection Capacity Utilization 73.4%

ICU Level of Service D

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 2: Caron St/Rue Caron & Laurier St

|      |      |      |      |
|------|------|------|------|
|      |      |      |      |
| 12 s | 33 s | 12 s | 33 s |
|      |      |      |      |
| 12 s | 33 s | 12 s | 33 s |

# HCM Unsignalized Intersection Capacity Analysis

## 3: Caron St & Hélène St

Phase 2  
PM.syn



| Movement                          | EBL                                                                               | EBR  | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR  |
|-----------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations               |  |      |  |  |  |      |
| Traffic Volume (veh/h)            | 0                                                                                 | 8    | 7                                                                                 | 522                                                                               | 612                                                                               | 3    |
| Future Volume (Veh/h)             | 0                                                                                 | 8    | 7                                                                                 | 522                                                                               | 612                                                                               | 3    |
| Sign Control                      | Stop                                                                              |      |                                                                                   | Free                                                                              | Free                                                                              |      |
| Grade                             | 0%                                                                                |      |                                                                                   | 0%                                                                                | 0%                                                                                |      |
| Peak Hour Factor                  | 0.90                                                                              | 0.90 | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90 |
| Hourly flow rate (vph)            | 0                                                                                 | 9    | 8                                                                                 | 580                                                                               | 680                                                                               | 3    |
| Pedestrians                       |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Lane Width (m)                    |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Walking Speed (m/s)               |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Percent Blockage                  |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Right turn flare (veh)            |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Median type                       |                                                                                   |      |                                                                                   | TWLTL                                                                             | TWLTL                                                                             |      |
| Median storage veh)               |                                                                                   |      |                                                                                   | 2                                                                                 | 2                                                                                 |      |
| Upstream signal (m)               |                                                                                   |      |                                                                                   |                                                                                   | 169                                                                               |      |
| pX, platoon unblocked             | 0.69                                                                              | 0.69 | 0.69                                                                              |                                                                                   |                                                                                   |      |
| vC, conflicting volume            | 1278                                                                              | 682  | 683                                                                               |                                                                                   |                                                                                   |      |
| vC1, stage 1 conf vol             | 682                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |
| vC2, stage 2 conf vol             | 596                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |
| vCu, unblocked vol                | 1178                                                                              | 317  | 319                                                                               |                                                                                   |                                                                                   |      |
| tC, single (s)                    | 6.4                                                                               | 6.2  | 4.1                                                                               |                                                                                   |                                                                                   |      |
| tC, 2 stage (s)                   | 5.4                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |
| tF (s)                            | 3.5                                                                               | 3.3  | 2.2                                                                               |                                                                                   |                                                                                   |      |
| p0 queue free %                   | 100                                                                               | 98   | 99                                                                                |                                                                                   |                                                                                   |      |
| cM capacity (veh/h)               | 390                                                                               | 501  | 859                                                                               |                                                                                   |                                                                                   |      |
| Direction, Lane #                 | EB 1                                                                              | NB 1 | NB 2                                                                              | SB 1                                                                              |                                                                                   |      |
| Volume Total                      | 9                                                                                 | 8    | 580                                                                               | 683                                                                               |                                                                                   |      |
| Volume Left                       | 0                                                                                 | 8    | 0                                                                                 | 0                                                                                 |                                                                                   |      |
| Volume Right                      | 9                                                                                 | 0    | 0                                                                                 | 3                                                                                 |                                                                                   |      |
| cSH                               | 501                                                                               | 859  | 1700                                                                              | 1700                                                                              |                                                                                   |      |
| Volume to Capacity                | 0.02                                                                              | 0.01 | 0.34                                                                              | 0.40                                                                              |                                                                                   |      |
| Queue Length 95th (m)             | 0.4                                                                               | 0.2  | 0.0                                                                               | 0.0                                                                               |                                                                                   |      |
| Control Delay (s)                 | 12.3                                                                              | 9.2  | 0.0                                                                               | 0.0                                                                               |                                                                                   |      |
| Lane LOS                          | B                                                                                 | A    |                                                                                   |                                                                                   |                                                                                   |      |
| Approach Delay (s)                | 12.3                                                                              | 0.1  |                                                                                   | 0.0                                                                               |                                                                                   |      |
| Approach LOS                      | B                                                                                 |      |                                                                                   |                                                                                   |                                                                                   |      |
| Intersection Summary              |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Average Delay                     |                                                                                   |      | 0.1                                                                               |                                                                                   |                                                                                   |      |
| Intersection Capacity Utilization |                                                                                   |      | 44.2%                                                                             | ICU Level of Service                                                              |                                                                                   | A    |
| Analvsis Period (min)             |                                                                                   |      | 15                                                                                |                                                                                   |                                                                                   |      |

# HCM Unsignalized Intersection Capacity Analysis

## 4: Caron St & Francois St

Phase 2  
PM.syn



| Movement                          | EBL                                                                               | EBR  | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR  |
|-----------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations               |  |      |  |  |  |      |
| Sign Control                      | Stop                                                                              |      |                                                                                   | Stop                                                                              | Stop                                                                              |      |
| Traffic Volume (vph)              | 7                                                                                 | 3    | 6                                                                                 | 522                                                                               | 616                                                                               | 4    |
| Future Volume (vph)               | 7                                                                                 | 3    | 6                                                                                 | 522                                                                               | 616                                                                               | 4    |
| Peak Hour Factor                  | 0.90                                                                              | 0.90 | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90 |
| Hourly flow rate (vph)            | 8                                                                                 | 3    | 7                                                                                 | 580                                                                               | 684                                                                               | 4    |
| Direction, Lane #                 | EB 1                                                                              | NB 1 | NB 2                                                                              | SB 1                                                                              |                                                                                   |      |
| Volume Total (vph)                | 11                                                                                | 7    | 580                                                                               | 688                                                                               |                                                                                   |      |
| Volume Left (vph)                 | 8                                                                                 | 7    | 0                                                                                 | 0                                                                                 |                                                                                   |      |
| Volume Right (vph)                | 3                                                                                 | 0    | 0                                                                                 | 4                                                                                 |                                                                                   |      |
| Hadj (s)                          | 0.02                                                                              | 0.53 | 0.03                                                                              | 0.03                                                                              |                                                                                   |      |
| Departure Headway (s)             | 6.7                                                                               | 5.6  | 5.1                                                                               | 4.7                                                                               |                                                                                   |      |
| Degree Utilization, x             | 0.02                                                                              | 0.01 | 0.82                                                                              | 0.90                                                                              |                                                                                   |      |
| Capacity (veh/h)                  | 508                                                                               | 635  | 701                                                                               | 752                                                                               |                                                                                   |      |
| Control Delay (s)                 | 9.9                                                                               | 7.4  | 25.2                                                                              | 34.8                                                                              |                                                                                   |      |
| Approach Delay (s)                | 9.9                                                                               | 25.0 |                                                                                   | 34.8                                                                              |                                                                                   |      |
| Approach LOS                      | A                                                                                 | C    |                                                                                   | D                                                                                 |                                                                                   |      |
| Intersection Summary              |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Delay                             |                                                                                   |      | 30.1                                                                              |                                                                                   |                                                                                   |      |
| Level of Service                  |                                                                                   |      | D                                                                                 |                                                                                   |                                                                                   |      |
| Intersection Capacity Utilization |                                                                                   |      | 44.5%                                                                             | ICU Level of Service                                                              | A                                                                                 |      |
| Analysis Period (min)             |                                                                                   |      | 15                                                                                |                                                                                   |                                                                                   |      |

# HCM Unsignalized Intersection Capacity Analysis

## 5: Caron St & Des Cedres Ave

Phase 2  
PM.syn

|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                   |  |  |  |  |  |  |
| Movement                          | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |
| Lane Configurations               |  |                                                                                   |  |                                                                                   |  |  |
| Traffic Volume (veh/h)            | 1                                                                                 | 10                                                                                | 455                                                                               | 7                                                                                 | 26                                                                                | 593                                                                               |
| Future Volume (Veh/h)             | 1                                                                                 | 10                                                                                | 455                                                                               | 7                                                                                 | 26                                                                                | 593                                                                               |
| Sign Control                      | Stop                                                                              |                                                                                   | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              |
| Grade                             | 0%                                                                                |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |
| Hourly flow rate (vph)            | 1                                                                                 | 11                                                                                | 506                                                                               | 8                                                                                 | 29                                                                                | 659                                                                               |
| Pedestrians                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Width (m)                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Walking Speed (m/s)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Percent Blockage                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Median type                       |                                                                                   |                                                                                   | TWLTL                                                                             |                                                                                   | TWLTL                                                                             |                                                                                   |
| Median storage (veh)              |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   | 2                                                                                 |                                                                                   |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| pX, platoon unblocked             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC, conflicting volume            | 1227                                                                              | 510                                                                               |                                                                                   |                                                                                   | 514                                                                               |                                                                                   |
| vC1, stage 1 conf vol             | 510                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC2, stage 2 conf vol             | 717                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vCu, unblocked vol                | 1227                                                                              | 510                                                                               |                                                                                   |                                                                                   | 514                                                                               |                                                                                   |
| tC, single (s)                    | 6.4                                                                               | 6.2                                                                               |                                                                                   |                                                                                   | 4.1                                                                               |                                                                                   |
| tC, 2 stage (s)                   | 5.4                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| tF (s)                            | 3.5                                                                               | 3.3                                                                               |                                                                                   |                                                                                   | 2.2                                                                               |                                                                                   |
| p0 queue free %                   | 100                                                                               | 98                                                                                |                                                                                   |                                                                                   | 97                                                                                |                                                                                   |
| cM capacity (veh/h)               | 401                                                                               | 563                                                                               |                                                                                   |                                                                                   | 1052                                                                              |                                                                                   |
| Direction, Lane #                 | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                   |                                                                                   |
| Volume Total                      | 12                                                                                | 514                                                                               | 29                                                                                | 659                                                                               |                                                                                   |                                                                                   |
| Volume Left                       | 1                                                                                 | 0                                                                                 | 29                                                                                | 0                                                                                 |                                                                                   |                                                                                   |
| Volume Right                      | 11                                                                                | 8                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |
| cSH                               | 545                                                                               | 1700                                                                              | 1052                                                                              | 1700                                                                              |                                                                                   |                                                                                   |
| Volume to Capacity                | 0.02                                                                              | 0.30                                                                              | 0.03                                                                              | 0.39                                                                              |                                                                                   |                                                                                   |
| Queue Length 95th (m)             | 0.5                                                                               | 0.0                                                                               | 0.6                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |
| Control Delay (s)                 | 11.8                                                                              | 0.0                                                                               | 8.5                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |
| Lane LOS                          | B                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Approach Delay (s)                | 11.8                                                                              | 0.0                                                                               | 0.4                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Approach LOS                      | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Average Delay                     |                                                                                   |                                                                                   | 0.3                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 42.9%                                                                             | ICU Level of Service                                                              |                                                                                   | A                                                                                 |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |

# HCM Unsignalized Intersection Capacity Analysis

## 6: Caron St & Cote St/Potvin Ave

Phase 2  
PM.syn

|                                   |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|--|--|--|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |  |  |  |  |  |  |
| Lane Configurations               |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |  |  |                                                                                     |  |  |                                                                                     |  |  |  |  |  |  |
| Sign Control                      |                                                                                   | Stop                                                                              |                                                                                   |                                                                                   | Stop                                                                              |                                                                                   |                                                                                     | Stop                                                                                |                                                                                     |                                                                                     | Stop                                                                                |                                                                                     |  |  |  |  |  |  |
| Traffic Volume (vph)              | 17                                                                                | 1                                                                                 | 10                                                                                | 9                                                                                 | 1                                                                                 | 4                                                                                 | 12                                                                                  | 441                                                                                 | 13                                                                                  | 16                                                                                  | 561                                                                                 | 17                                                                                  |  |  |  |  |  |  |
| Future Volume (vph)               | 17                                                                                | 1                                                                                 | 10                                                                                | 9                                                                                 | 1                                                                                 | 4                                                                                 | 12                                                                                  | 441                                                                                 | 13                                                                                  | 16                                                                                  | 561                                                                                 | 17                                                                                  |  |  |  |  |  |  |
| 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                                                                                |  |  |  |  |  |  |
| Hourly flow rate (vph)            | 19                                                                                | 1                                                                                 | 11                                                                                | 10                                                                                | 1                                                                                 | 4                                                                                 | 13                                                                                  | 490                                                                                 | 14                                                                                  | 18                                                                                  | 623                                                                                 | 19                                                                                  |  |  |  |  |  |  |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              | NB 2                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Volume Total (vph)                | 31                                                                                | 15                                                                                | 13                                                                                | 504                                                                               | 18                                                                                | 642                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Volume Left (vph)                 | 19                                                                                | 10                                                                                | 13                                                                                | 0                                                                                 | 18                                                                                | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Volume Right (vph)                | 11                                                                                | 4                                                                                 | 0                                                                                 | 14                                                                                | 0                                                                                 | 19                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Hadj (s)                          | -0.06                                                                             | 0.01                                                                              | 0.53                                                                              | 0.01                                                                              | 0.53                                                                              | 0.01                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Departure Headway (s)             | 6.5                                                                               | 6.6                                                                               | 5.7                                                                               | 5.2                                                                               | 5.6                                                                               | 5.1                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Degree Utilization, x             | 0.06                                                                              | 0.03                                                                              | 0.02                                                                              | 0.73                                                                              | 0.03                                                                              | 0.91                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Capacity (veh/h)                  | 509                                                                               | 493                                                                               | 615                                                                               | 676                                                                               | 620                                                                               | 699                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Control Delay (s)                 | 9.9                                                                               | 9.8                                                                               | 7.7                                                                               | 19.8                                                                              | 7.6                                                                               | 36.6                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Approach Delay (s)                | 9.9                                                                               | 9.8                                                                               | 19.5                                                                              |                                                                                   | 35.9                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Approach LOS                      | A                                                                                 | A                                                                                 | C                                                                                 |                                                                                   | E                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Delay                             |                                                                                   |                                                                                   | 28.0                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Level of Service                  |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 42.3%                                                                             | ICU Level of Service                                                              |                                                                                   |                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |

# HCM Unsignalized Intersection Capacity Analysis

## 7: Caron St & Docteur Corbeil Blvd

Phase 2  
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| Movement                          | EBL                                                                               | EBR  | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|--|--|--|--|--|--|--|--|--|--|--|
| Lane Configurations               |  |      |  |  |  |      |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)            | 61                                                                                | 89   | 73                                                                                | 405                                                                               | 471                                                                               | 60   |  |  |  |  |  |  |  |  |  |  |  |
| Future Volume (Veh/h)             | 61                                                                                | 89   | 73                                                                                | 405                                                                               | 471                                                                               | 60   |  |  |  |  |  |  |  |  |  |  |  |
| Sign Control                      | Stop                                                                              |      |                                                                                   | Free                                                                              | Free                                                                              |      |  |  |  |  |  |  |  |  |  |  |  |
| Grade                             | 0%                                                                                |      |                                                                                   | 0%                                                                                | 0%                                                                                |      |  |  |  |  |  |  |  |  |  |  |  |
| Peak Hour Factor                  | 0.90                                                                              | 0.90 | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90 |  |  |  |  |  |  |  |  |  |  |  |
| Hourly flow rate (vph)            | 68                                                                                | 99   | 81                                                                                | 450                                                                               | 523                                                                               | 67   |  |  |  |  |  |  |  |  |  |  |  |
| Pedestrians                       | 2                                                                                 |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| Lane Width (m)                    | 3.6                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| Walking Speed (m/s)               | 1.2                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| Percent Blockage                  | 0                                                                                 |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| Right turn flare (veh)            |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| Median type                       |                                                                                   |      |                                                                                   | TWLTL                                                                             | TWLTL                                                                             |      |  |  |  |  |  |  |  |  |  |  |  |
| Median storage (veh)              |                                                                                   |      |                                                                                   | 2                                                                                 | 2                                                                                 |      |  |  |  |  |  |  |  |  |  |  |  |
| Upstream signal (m)               |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| pX, platoon unblocked             |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| vC, conflicting volume            | 1170                                                                              | 558  | 592                                                                               |                                                                                   |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| vC1, stage 1 conf vol             | 558                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| vC2, stage 2 conf vol             | 612                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| vCu, unblocked vol                | 1170                                                                              | 558  | 592                                                                               |                                                                                   |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| tC, single (s)                    | 6.4                                                                               | 6.2  | 4.1                                                                               |                                                                                   |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| tC, 2 stage (s)                   | 5.4                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| tF (s)                            | 3.5                                                                               | 3.3  | 2.2                                                                               |                                                                                   |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| p0 queue free %                   | 83                                                                                | 81   | 92                                                                                |                                                                                   |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| cM capacity (veh/h)               | 407                                                                               | 528  | 982                                                                               |                                                                                   |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| Direction, Lane #                 | EB 1                                                                              | NB 1 | NB 2                                                                              | SB 1                                                                              |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| Volume Total                      | 167                                                                               | 81   | 450                                                                               | 590                                                                               |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| Volume Left                       | 68                                                                                | 81   | 0                                                                                 | 0                                                                                 |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| Volume Right                      | 99                                                                                | 0    | 0                                                                                 | 67                                                                                |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| cSH                               | 471                                                                               | 982  | 1700                                                                              | 1700                                                                              |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| Volume to Capacity                | 0.35                                                                              | 0.08 | 0.26                                                                              | 0.35                                                                              |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| Queue Length 95th (m)             | 11.1                                                                              | 1.9  | 0.0                                                                               | 0.0                                                                               |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| Control Delay (s)                 | 16.8                                                                              | 9.0  | 0.0                                                                               | 0.0                                                                               |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| Lane LOS                          | C                                                                                 | A    |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| Approach Delay (s)                | 16.8                                                                              | 1.4  | 0.0                                                                               |                                                                                   |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| Approach LOS                      | C                                                                                 |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| Intersection Summary              |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| Average Delay                     | 2.7                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| Intersection Capacity Utilization | 53.6%                                                                             |      |                                                                                   | ICU Level of Service                                                              |                                                                                   | A    |  |  |  |  |  |  |  |  |  |  |  |
| Analvsis Period (min)             | 15                                                                                |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |

# HCM Unsignalized Intersection Capacity Analysis

## 8: David St & Caron St

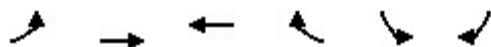
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|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--|--|
|                                   |  |  |  |  |  |  |  |  |
| Movement                          | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |  |  |
| Lane Configurations               |  |                                                                                   |  |                                                                                   |  |  |  |  |
| Sign Control                      | Stop                                                                              |                                                                                   | Stop                                                                              |                                                                                   | Stop                                                                              | Stop                                                                              |  |  |
| Traffic Volume (vph)              | 5                                                                                 | 205                                                                               | 285                                                                               | 5                                                                                 | 229                                                                               | 302                                                                               |  |  |
| Future Volume (vph)               | 5                                                                                 | 205                                                                               | 285                                                                               | 5                                                                                 | 229                                                                               | 302                                                                               |  |  |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |  |  |
| Hourly flow rate (vph)            | 6                                                                                 | 228                                                                               | 317                                                                               | 6                                                                                 | 254                                                                               | 336                                                                               |  |  |
| Direction, Lane #                 | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                   |                                                                                   |  |  |
| Volume Total (vph)                | 234                                                                               | 323                                                                               | 254                                                                               | 336                                                                               |                                                                                   |                                                                                   |  |  |
| Volume Left (vph)                 | 6                                                                                 | 0                                                                                 | 254                                                                               | 0                                                                                 |                                                                                   |                                                                                   |  |  |
| Volume Right (vph)                | 228                                                                               | 6                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |  |  |
| Hadj (s)                          | -0.55                                                                             | 0.02                                                                              | 0.53                                                                              | 0.03                                                                              |                                                                                   |                                                                                   |  |  |
| Departure Headway (s)             | 5.4                                                                               | 5.4                                                                               | 6.1                                                                               | 5.6                                                                               |                                                                                   |                                                                                   |  |  |
| Degree Utilization, x             | 0.35                                                                              | 0.49                                                                              | 0.43                                                                              | 0.52                                                                              |                                                                                   |                                                                                   |  |  |
| Capacity (veh/h)                  | 614                                                                               | 642                                                                               | 574                                                                               | 627                                                                               |                                                                                   |                                                                                   |  |  |
| Control Delay (s)                 | 11.3                                                                              | 13.5                                                                              | 12.5                                                                              | 13.4                                                                              |                                                                                   |                                                                                   |  |  |
| Approach Delay (s)                | 11.3                                                                              | 13.5                                                                              | 13.0                                                                              |                                                                                   |                                                                                   |                                                                                   |  |  |
| Approach LOS                      | B                                                                                 | B                                                                                 | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |  |  |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
| Delay                             |                                                                                   |                                                                                   | 12.8                                                                              |                                                                                   |                                                                                   |                                                                                   |  |  |
| Level of Service                  |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |  |  |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 53.2%                                                                             | ICU Level of Service                                                              | A                                                                                 |                                                                                   |  |  |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |  |  |

# HCM Unsignalized Intersection Capacity Analysis

## 9: Baseline Rd & Caron St

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| Movement                          | EBL  | EBT                                                                               | WBT                                                                               | WBR                  | SBL                                                                               | SBR  |
|-----------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations               |      |  |  |                      |  |      |
| Traffic Volume (veh/h)            | 68   | 102                                                                               | 41                                                                                | 133                  | 148                                                                               | 41   |
| Future Volume (Veh/h)             | 68   | 102                                                                               | 41                                                                                | 133                  | 148                                                                               | 41   |
| Sign Control                      |      | Free                                                                              | Free                                                                              |                      | Stop                                                                              |      |
| Grade                             |      | 0%                                                                                | 0%                                                                                |                      | 0%                                                                                |      |
| Peak Hour Factor                  | 0.90 | 0.90                                                                              | 0.90                                                                              | 0.90                 | 0.90                                                                              | 0.90 |
| Hourly flow rate (vph)            | 76   | 113                                                                               | 46                                                                                | 148                  | 164                                                                               | 46   |
| Pedestrians                       |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Lane Width (m)                    |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Walking Speed (m/s)               |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Percent Blockage                  |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Right turn flare (veh)            |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Median type                       |      | None                                                                              | None                                                                              |                      |                                                                                   |      |
| Median storage (veh)              |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Upstream signal (m)               |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| pX, platoon unblocked             |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| vC, conflicting volume            | 194  |                                                                                   |                                                                                   |                      | 385                                                                               | 120  |
| vC1, stage 1 conf vol             |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| vC2, stage 2 conf vol             |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| vCu, unblocked vol                | 194  |                                                                                   |                                                                                   |                      | 385                                                                               | 120  |
| tC, single (s)                    | 4.1  |                                                                                   |                                                                                   |                      | 6.4                                                                               | 6.2  |
| tC, 2 stage (s)                   |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| tF (s)                            | 2.2  |                                                                                   |                                                                                   |                      | 3.5                                                                               | 3.3  |
| p0 queue free %                   | 94   |                                                                                   |                                                                                   |                      | 72                                                                                | 95   |
| cM capacity (veh/h)               | 1379 |                                                                                   |                                                                                   |                      | 584                                                                               | 931  |
| Direction, Lane #                 | EB 1 | WB 1                                                                              | SB 1                                                                              |                      |                                                                                   |      |
| Volume Total                      | 189  | 194                                                                               | 210                                                                               |                      |                                                                                   |      |
| Volume Left                       | 76   | 0                                                                                 | 164                                                                               |                      |                                                                                   |      |
| Volume Right                      | 0    | 148                                                                               | 46                                                                                |                      |                                                                                   |      |
| cSH                               | 1379 | 1700                                                                              | 636                                                                               |                      |                                                                                   |      |
| Volume to Capacity                | 0.06 | 0.11                                                                              | 0.33                                                                              |                      |                                                                                   |      |
| Queue Length 95th (m)             | 1.2  | 0.0                                                                               | 10.1                                                                              |                      |                                                                                   |      |
| Control Delay (s)                 | 3.4  | 0.0                                                                               | 13.4                                                                              |                      |                                                                                   |      |
| Lane LOS                          | A    |                                                                                   | B                                                                                 |                      |                                                                                   |      |
| Approach Delay (s)                | 3.4  | 0.0                                                                               | 13.4                                                                              |                      |                                                                                   |      |
| Approach LOS                      |      |                                                                                   | B                                                                                 |                      |                                                                                   |      |
| Intersection Summary              |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Average Delay                     |      |                                                                                   | 5.8                                                                               |                      |                                                                                   |      |
| Intersection Capacity Utilization |      |                                                                                   | 41.9%                                                                             | ICU Level of Service |                                                                                   | A    |
| Analysis Period (min)             |      |                                                                                   | 15                                                                                |                      |                                                                                   |      |

# HCM Unsignalized Intersection Capacity Analysis

## 10: Street B & David St

Phase 2  
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|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--|--|--|
|                                   |  |  |  |  |  |  |  |  |  |
| Movement                          | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBR                                                                               |  |  |  |
| Lane Configurations               |  |                                                                                   |                                                                                   |  |  |                                                                                   |  |  |  |
| Traffic Volume (veh/h)            | 70                                                                                | 164                                                                               | 27                                                                                | 64                                                                                | 147                                                                               | 24                                                                                |  |  |  |
| Future Volume (Veh/h)             | 70                                                                                | 164                                                                               | 27                                                                                | 64                                                                                | 147                                                                               | 24                                                                                |  |  |  |
| Sign Control                      | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              | Stop                                                                              |                                                                                   |  |  |  |
| Grade                             | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                | 0%                                                                                |                                                                                   |  |  |  |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |  |  |  |
| Hourly flow rate (vph)            | 78                                                                                | 182                                                                               | 30                                                                                | 71                                                                                | 163                                                                               | 27                                                                                |  |  |  |
| Pedestrians                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Lane Width (m)                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Walking Speed (m/s)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Percent Blockage                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Median type                       | None                                                                              |                                                                                   |                                                                                   | None                                                                              |                                                                                   |                                                                                   |  |  |  |
| Median storage (veh)              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| pX, platoon unblocked             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| vC, conflicting volume            |                                                                                   |                                                                                   | 260                                                                               |                                                                                   | 300                                                                               | 169                                                                               |  |  |  |
| vC1, stage 1 conf vol             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| vC2, stage 2 conf vol             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| vCu, unblocked vol                |                                                                                   |                                                                                   | 260                                                                               |                                                                                   | 300                                                                               | 169                                                                               |  |  |  |
| tC, single (s)                    |                                                                                   |                                                                                   | 4.1                                                                               |                                                                                   | 6.4                                                                               | 6.2                                                                               |  |  |  |
| tC, 2 stage (s)                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| tF (s)                            |                                                                                   |                                                                                   | 2.2                                                                               |                                                                                   | 3.5                                                                               | 3.3                                                                               |  |  |  |
| p0 queue free %                   |                                                                                   |                                                                                   | 98                                                                                |                                                                                   | 76                                                                                | 97                                                                                |  |  |  |
| cM capacity (veh/h)               |                                                                                   |                                                                                   | 1304                                                                              |                                                                                   | 676                                                                               | 875                                                                               |  |  |  |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Volume Total                      | 260                                                                               | 101                                                                               | 190                                                                               |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Volume Left                       | 0                                                                                 | 30                                                                                | 163                                                                               |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Volume Right                      | 182                                                                               | 0                                                                                 | 27                                                                                |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| cSH                               | 1700                                                                              | 1304                                                                              | 698                                                                               |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Volume to Capacity                | 0.15                                                                              | 0.02                                                                              | 0.27                                                                              |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Queue Length 95th (m)             | 0.0                                                                               | 0.5                                                                               | 7.7                                                                               |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Control Delay (s)                 | 0.0                                                                               | 2.5                                                                               | 12.1                                                                              |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Lane LOS                          |                                                                                   | A                                                                                 | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Approach Delay (s)                | 0.0                                                                               | 2.5                                                                               | 12.1                                                                              |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Approach LOS                      |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Average Delay                     | 4.6                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Intersection Capacity Utilization | 39.8%                                                                             |                                                                                   | ICU Level of Service                                                              |                                                                                   | A                                                                                 |                                                                                   |  |  |  |
| Analysis Period (min)             | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |

# HCM Unsignalized Intersection Capacity Analysis

## 11: Street A & David St

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|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                   |  |  |  |  |  |  |
| Movement                          | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBR                                                                               |
| Lane Configurations               |  |                                                                                   |                                                                                   |  |  |                                                                                   |
| Traffic Volume (veh/h)            | 39                                                                                | 55                                                                                | 27                                                                                | 42                                                                                | 49                                                                                | 24                                                                                |
| Future Volume (Veh/h)             | 39                                                                                | 55                                                                                | 27                                                                                | 42                                                                                | 49                                                                                | 24                                                                                |
| Sign Control                      | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              | Stop                                                                              |                                                                                   |
| Grade                             | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                | 0%                                                                                |                                                                                   |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |
| Hourly flow rate (vph)            | 43                                                                                | 61                                                                                | 30                                                                                | 47                                                                                | 54                                                                                | 27                                                                                |
| Pedestrians                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Width (m)                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Walking Speed (m/s)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Percent Blockage                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Median type                       | None                                                                              |                                                                                   |                                                                                   | None                                                                              |                                                                                   |                                                                                   |
| Median storage (veh)              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| pX, platoon unblocked             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC, conflicting volume            |                                                                                   |                                                                                   | 104                                                                               |                                                                                   | 180                                                                               | 74                                                                                |
| vC1, stage 1 conf vol             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC2, stage 2 conf vol             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vCu, unblocked vol                |                                                                                   |                                                                                   | 104                                                                               |                                                                                   | 180                                                                               | 74                                                                                |
| tC, single (s)                    |                                                                                   |                                                                                   | 4.1                                                                               |                                                                                   | 6.4                                                                               | 6.2                                                                               |
| tC, 2 stage (s)                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| tF (s)                            |                                                                                   |                                                                                   | 2.2                                                                               |                                                                                   | 3.5                                                                               | 3.3                                                                               |
| p0 queue free %                   |                                                                                   |                                                                                   | 98                                                                                |                                                                                   | 93                                                                                | 97                                                                                |
| cM capacity (veh/h)               |                                                                                   |                                                                                   | 1488                                                                              |                                                                                   | 793                                                                               | 988                                                                               |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Volume Total                      | 104                                                                               | 77                                                                                | 81                                                                                |                                                                                   |                                                                                   |                                                                                   |
| Volume Left                       | 0                                                                                 | 30                                                                                | 54                                                                                |                                                                                   |                                                                                   |                                                                                   |
| Volume Right                      | 61                                                                                | 0                                                                                 | 27                                                                                |                                                                                   |                                                                                   |                                                                                   |
| cSH                               | 1700                                                                              | 1488                                                                              | 849                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Volume to Capacity                | 0.06                                                                              | 0.02                                                                              | 0.10                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Queue Length 95th (m)             | 0.0                                                                               | 0.4                                                                               | 2.2                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Control Delay (s)                 | 0.0                                                                               | 3.0                                                                               | 9.7                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Lane LOS                          |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Approach Delay (s)                | 0.0                                                                               | 3.0                                                                               | 9.7                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Approach LOS                      |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Average Delay                     |                                                                                   |                                                                                   | 3.9                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 21.7%                                                                             | ICU Level of Service                                                              | A                                                                                 |                                                                                   |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |

# HCM Unsignalized Intersection Capacity Analysis12: Street B & Street A

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|                                   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|--|--|--|--|--|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |  |  |  |  |  |  |  |  |
| Lane Configurations               |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |  |  |  |  |  |  |  |  |
| Sign Control                      |                                                                                   | Stop                                                                              |                                                                                   |                                                                                   | Stop                                                                              |                                                                                   |                                                                                    | Stop                                                                                |                                                                                     |                                                                                     | Stop                                                                                |                                                                                     |  |  |  |  |  |  |  |  |
| Traffic Volume (vph)              | 104                                                                               | 79                                                                                | 27                                                                                | 27                                                                                | 76                                                                                | 49                                                                                | 24                                                                                 | 24                                                                                  | 24                                                                                  | 55                                                                                  | 27                                                                                  | 104                                                                                 |  |  |  |  |  |  |  |  |
| Future Volume (vph)               | 104                                                                               | 79                                                                                | 27                                                                                | 27                                                                                | 76                                                                                | 49                                                                                | 24                                                                                 | 24                                                                                  | 24                                                                                  | 55                                                                                  | 27                                                                                  | 104                                                                                 |  |  |  |  |  |  |  |  |
| 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                                                                                |  |  |  |  |  |  |  |  |
| Hourly flow rate (vph)            | 116                                                                               | 88                                                                                | 30                                                                                | 30                                                                                | 84                                                                                | 54                                                                                | 27                                                                                 | 27                                                                                  | 27                                                                                  | 61                                                                                  | 30                                                                                  | 116                                                                                 |  |  |  |  |  |  |  |  |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |  |  |
| Volume Total (vph)                | 234                                                                               | 168                                                                               | 81                                                                                | 207                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |  |  |
| Volume Left (vph)                 | 116                                                                               | 30                                                                                | 27                                                                                | 61                                                                                |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |  |  |
| Volume Right (vph)                | 30                                                                                | 54                                                                                | 27                                                                                | 116                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |  |  |
| Hadj (s)                          | 0.06                                                                              | -0.12                                                                             | -0.10                                                                             | -0.24                                                                             |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |  |  |
| Departure Headway (s)             | 4.9                                                                               | 4.8                                                                               | 5.1                                                                               | 4.8                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |  |  |
| Degree Utilization, x             | 0.32                                                                              | 0.23                                                                              | 0.11                                                                              | 0.27                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |  |  |
| Capacity (veh/h)                  | 687                                                                               | 690                                                                               | 634                                                                               | 692                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |  |  |
| Control Delay (s)                 | 10.2                                                                              | 9.2                                                                               | 8.8                                                                               | 9.6                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |  |  |
| Approach Delay (s)                | 10.2                                                                              | 9.2                                                                               | 8.8                                                                               | 9.6                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |  |  |
| Approach LOS                      | B                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |  |  |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |  |  |
| Delay                             |                                                                                   |                                                                                   | 9.6                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |  |  |
| Level of Service                  |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |  |  |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 45.6%                                                                             | ICU Level of Service                                                              | A                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |  |  |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |  |  |

# HCM Unsignalized Intersection Capacity Analysis 15: Caron St & Street A

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|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--|--|
|                                   |  |  |  |  |  |  |  |  |
| Movement                          | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |  |  |
| Lane Configurations               |  |                                                                                   |  |                                                                                   |  |  |  |  |
| Sign Control                      | Stop                                                                              |                                                                                   | Stop                                                                              |                                                                                   | Stop                                                                              | Stop                                                                              |  |  |
| Traffic Volume (vph)              | 73                                                                                | 98                                                                                | 192                                                                               | 82                                                                                | 109                                                                               | 198                                                                               |  |  |
| Future Volume (vph)               | 73                                                                                | 98                                                                                | 192                                                                               | 82                                                                                | 109                                                                               | 198                                                                               |  |  |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |  |  |
| Hourly flow rate (vph)            | 81                                                                                | 109                                                                               | 213                                                                               | 91                                                                                | 121                                                                               | 220                                                                               |  |  |
| Direction, Lane #                 | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                   |                                                                                   |  |  |
| Volume Total (vph)                | 190                                                                               | 304                                                                               | 81                                                                                | 260                                                                               |                                                                                   |                                                                                   |  |  |
| Volume Left (vph)                 | 81                                                                                | 0                                                                                 | 81                                                                                | 40                                                                                |                                                                                   |                                                                                   |  |  |
| Volume Right (vph)                | 109                                                                               | 91                                                                                | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |  |  |
| Hadj (s)                          | -0.22                                                                             | -0.15                                                                             | 0.53                                                                              | 0.11                                                                              |                                                                                   |                                                                                   |  |  |
| Departure Headway (s)             | 5.2                                                                               | 4.8                                                                               | 5.9                                                                               | 5.4                                                                               |                                                                                   |                                                                                   |  |  |
| Degree Utilization, x             | 0.27                                                                              | 0.41                                                                              | 0.13                                                                              | 0.39                                                                              |                                                                                   |                                                                                   |  |  |
| Capacity (veh/h)                  | 632                                                                               | 717                                                                               | 589                                                                               | 638                                                                               |                                                                                   |                                                                                   |  |  |
| Control Delay (s)                 | 10.1                                                                              | 11.1                                                                              | 8.6                                                                               | 10.7                                                                              |                                                                                   |                                                                                   |  |  |
| Approach Delay (s)                | 10.1                                                                              | 11.1                                                                              | 10.2                                                                              |                                                                                   |                                                                                   |                                                                                   |  |  |
| Approach LOS                      | B                                                                                 | B                                                                                 | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |  |  |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
| Delay                             |                                                                                   |                                                                                   | 10.5                                                                              |                                                                                   |                                                                                   |                                                                                   |  |  |
| Level of Service                  |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |  |  |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 47.6%                                                                             | ICU Level of Service                                                              | A                                                                                 |                                                                                   |  |  |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |  |  |

# F

## Appendix F

### Projected Phase 2 Traffic Operations with Improvements

| Direction                                       | Mov. | Storage Length (m) | AM Peak Hour |           |     |           | PM Peak Hour |           |     |           |
|-------------------------------------------------|------|--------------------|--------------|-----------|-----|-----------|--------------|-----------|-----|-----------|
|                                                 |      |                    | v/c          | Delay (s) | LOS | Queue (m) | v/c          | Delay (s) | LOS | Queue (m) |
| Caron Street at HWY 17 (Signalized)             |      |                    |              |           |     |           |              |           |     |           |
| EB                                              | L    | 90                 | 0.05         | 10        | B   | 3         | 0.08         | 18        | B   | 11        |
|                                                 | T    | -                  | 0.49         | 18        | B   | 18        | 0.39         | 27        | C   | 65        |
|                                                 | R    | 85                 | 0.38         | 3         | A   | 3         | 0.55         | 6         | A   | 22        |
| WB                                              | L    | 60                 | 0.05         | 10        | A   | 10        | 0.08         | 18        | B   | 10        |
|                                                 | T    | -                  | 0.96         | 42        | D   | 42        | 0.22         | 25        | C   | 37        |
|                                                 | R    | 56                 | 0.00         | 0         | A   | 0         | 0.04         | 1         | A   | 0         |
| NB                                              | L    | 80                 | 0.92         | 58        | E   | 58        | 0.69         | 44        | D   | 53        |
|                                                 | T/R  | -                  | 0.11         | 14        | B   | 14        | 0.24         | 21        | C   | 29        |
| SB                                              | L    | 40                 | 0.01         | 26        | C   | 26        | 0.13         | 20        | C   | 10        |
|                                                 | T/R  | -                  | 0.08         | 29        | C   | 29        | 0.64         | 47        | D   | 53        |
| Overall                                         |      |                    | 0.96         | 34        | C   | -         | 0.69         | 26        | C   | -         |
| Caron Street at Laurier Street (Signalized)     |      |                    |              |           |     |           |              |           |     |           |
| EB                                              | L    | 35                 | 0.04         | 16        | B   | 6         | 0.09         | 17        | B   | 9         |
|                                                 | T/R  | -                  | 0.20         | 16        | B   | 19        | 0.51         | 27        | C   | 55        |
| WB                                              | L    | 60                 | 0.10         | 16        | B   | 10        | 0.10         | 17        | B   | 8         |
|                                                 | T/R  | -                  | 0.33         | 22        | C   | 43        | 0.24         | 23        | C   | 26        |
| NB                                              | L    | 55                 | 0.25         | 17        | B   | 13        | 0.44         | 21        | C   | 15        |
|                                                 | T/R  | -                  | 0.79         | 32        | C   | 143       | 0.73         | 32        | C   | 123       |
| SB                                              | L    | 50                 | 0.06         | 15        | B   | 4         | 0.15         | 15        | B   | 8         |
|                                                 | T/R  | -                  | 0.73         | 34        | C   | 83        | 0.92         | 51        | D   | 156       |
| Overall                                         |      |                    | 0.79         | 28        | C   | -         | 0.92         | 36        | D   | -         |
| Caron Street at Hélène Street (Unsignalized)    |      |                    |              |           |     |           |              |           |     |           |
| EB                                              | L/R  | -                  | 0.01         | 11        | B   | 1         | 0.02         | 12        | B   | 0.4       |
| NB                                              | L    | 15                 | 0.01         | 8         | A   | 1         | 0.01         | 9         | A   | 0.2       |
|                                                 | T    | -                  | 0.37         | 0         | A   | 0         | 0.34         | 0         | A   | 0         |
| SB                                              | T/R  | -                  | 0.28         | 0         | A   | 0         | 0.40         | 0         | A   | 0         |
| Overall                                         |      |                    | 0.37         | 0.1       | A   | -         | 0.40         | 0.1       | A   | -         |
| Caron Street at Françoise Street (Unsignalized) |      |                    |              |           |     |           |              |           |     |           |
| EB                                              | L/R  | -                  | 0.02         | 9         | A   | -         | 0.02         | 10        | A   | -         |
| NB                                              | L    | 15                 | 0.00         | 7         | A   | -         | 0.01         | 7         | A   | -         |
|                                                 | T    | -                  | 0.75         | 20        | C   | -         | 0.82         | 25        | D   | -         |
| SB                                              | T/R  | -                  | 0.62         | 15        | C   | -         | 0.90         | 35        | A   | -         |
| Overall                                         |      |                    | 0.75         | 18        | C   | -         | 0.90         | 30        | D   | -         |

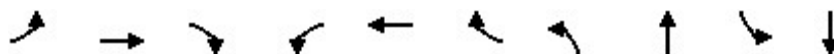
| Direction                                                | Mov.  | Storage Length (m) | AM Peak Hour |           |     |           | PM Peak Hour |           |     |           |
|----------------------------------------------------------|-------|--------------------|--------------|-----------|-----|-----------|--------------|-----------|-----|-----------|
|                                                          |       |                    | v/c          | Delay (s) | LOS | Queue (m) | v/c          | Delay (s) | LOS | Queue (m) |
| Caron Street at Des Cèdres Avenue (Unsignalized)         |       |                    |              |           |     |           |              |           |     |           |
| WB                                                       | L/R   | -                  | 0.03         | 12        | B   | 1         | 0.02         | 12        | B   | 1         |
| NB                                                       | T/R   | -                  | 0.32         | 0         | A   | 0         | 0.30         | 0         | A   | 0         |
| SB                                                       | L     | 15                 | 0.01         | 8.5       | A   | 1         | 0.03         | 9         | A   | 1         |
|                                                          | T     | -                  | 0.28         | 0         | A   | 0         | 0.39         | 0         | A   | 0         |
| Overall                                                  |       |                    | 0.32         | 0.2       | A   | -         | 0.39         | 0.3       | A   | -         |
| Caron Street at Cote Street/Potvin Avenue (Unsignalized) |       |                    |              |           |     |           |              |           |     |           |
| EB                                                       | L/T/R | -                  | 0.03         | 9         | A   | -         | 0.06         | 10        | A   | -         |
| WB                                                       | L/T/R | -                  | 0.03         | 9         | A   | -         | 0.03         | 10        | A   | -         |
| NB                                                       | L     | 15                 | 0.01         | 7         | A   | -         | 0.02         | 8         | A   | -         |
|                                                          | T/R   | -                  | 0.74         | 20        | C   | -         | 0.73         | 20        | C   | -         |
| SB                                                       | L     | 15                 | 0.01         | 7         | A   | -         | 0.03         | 8         | A   | -         |
|                                                          | T/R   | -                  | 0.67         | 17        | C   | -         | 0.91         | 37        | E   | -         |
| Overall                                                  |       |                    | 0.74         | 18        | C   | -         | 0.91         | 28        | D   | -         |
| Caron Street at Docteur Corbeil Boulevard (Unsignalized) |       |                    |              |           |     |           |              |           |     |           |
| EB                                                       | L/R   | -                  | 0.21         | 14        | B   | 6         | 0.35         | 17        | C   | 11        |
| NB                                                       | L     | 15                 | 0.09         | 9         | A   | 2         | 0.08         | 9         | A   | 2         |
|                                                          | T     | -                  | 0.29         | 0         | A   | 0         | 0.26         | 0         | A   | 0         |
| SB                                                       | T/R   | -                  | 0.27         | 0         | A   | 0         | 0.35         | 0         | A   | 0         |
| Overall                                                  |       |                    | 0.29         | 2         | A   | -         | 0.35         | 3         | A   | -         |
| Caron Street at David Street (Unsignalized)              |       |                    |              |           |     |           |              |           |     |           |
| WB                                                       | L/R   | -                  | 0.36         | 11        | B   | -         | 0.35         | 11        | B   | -         |
| NB                                                       | T/R   | -                  | 0.46         | 13        | B   | -         | 0.49         | 14        | B   | -         |
| SB                                                       | L     | 40                 | 0.36         | 11        | B   | -         | 0.43         | 13        | B   | -         |
|                                                          | T     | -                  | 0.41         | 11        | B   | -         | 0.52         | 13        | B   | -         |
| Overall                                                  |       |                    | 0.46         | 12        | B   | -         | 0.52         | 13        | B   | -         |
| Caron Street at Baseline Road (Unsignalized)             |       |                    |              |           |     |           |              |           |     |           |
| EB                                                       | L/T   | -                  | 0.03         | 4         | A   | 1         | 0.06         | 3         | A   | 1         |
| WB                                                       | T/R   | -                  | 0.12         | 0         | A   | 0         | 0.11         | 0         | A   | 0         |
| SB                                                       | L/R   | -                  | 0.23         | 11        | B   | 6         | 0.33         | 13        | B   | 10        |
| Overall                                                  |       |                    | 0.23         | 5         | A   | -         | 0.33         | 6         | A   | -         |
| Caron Street at Street A (Unsignalized)                  |       |                    |              |           |     |           |              |           |     |           |
| WB                                                       | L     | -                  | 0.28         | 10        | A   | -         | 0.27         | 10        | B   | -         |
|                                                          | R     | -                  | 0.28         | 10        | A   | -         | 0.27         | 10        | B   | -         |
| NB                                                       | T/R   | -                  | 0.35         | 10        | B   | -         | 0.41         | 11        | B   | -         |
| SB                                                       | L/T   | 25                 | 0.30         | 10        | A   | -         | 0.39         | 11        | B   | -         |

| Direction                               | Mov.  | Storage Length (m) | AM Peak Hour |           |     |           | PM Peak Hour |           |     |           |
|-----------------------------------------|-------|--------------------|--------------|-----------|-----|-----------|--------------|-----------|-----|-----------|
|                                         |       |                    | v/c          | Delay (s) | LOS | Queue (m) | v/c          | Delay (s) | LOS | Queue (m) |
| Overall                                 |       |                    | 0.35         | 10        | A   | -         | 0.41         | 11        | B   | -         |
| Street B at David Street (Unsignalized) |       |                    |              |           |     |           |              |           |     |           |
| EB                                      | T/R   | -                  | 0.12         | 0         | A   | 0         | 0.15         | 0         | A   | 0         |
| WB                                      | L/T   | -                  | 0.02         | 2         | A   | 1         | 0.02         | 3         | A   | 1         |
| NB                                      | L/R   | -                  | 0.28         | 12        | B   | 8         | 0.27         | 12        | B   | 8         |
| Overall                                 |       |                    | 0.28         | 5         | A   | -         | 0.27         | 5         | A   | -         |
| Street B at Street A (Unsignalized)     |       |                    |              |           |     |           |              |           |     |           |
| EB                                      | L/T/R | -                  | 0.30         | 10        | A   | -         | 0.32         | 10        | B   | -         |
| WB                                      | L/T/R | -                  | 0.22         | 9         | A   | -         | 0.23         | 9         | A   | -         |
| NB                                      | L/T/R |                    | 0.12         | 9         | A   | -         | 0.11         | 9         | A   | -         |
| SB                                      | L/T/R | -                  | 0.25         | 9         | A   | -         | 0.27         | 10        | A   | -         |
| Overall                                 |       |                    | 0.30         | 9         | A   | -         | 0.32         | 10        | A   | -         |
| Street A at David Street (Unsignalized) |       |                    |              |           |     |           |              |           |     |           |
| EB                                      | T/R   | -                  | 0.05         | 0         | A   | 0         | 0.06         | 0         | A   | 0         |
| WB                                      | L/T   | -                  | 0.02         | 3         | A   | 1         | 0.02         | 3         | A   | 1         |
| NB                                      | L/R   | -                  | 0.10         | 10        | A   | 2         | 0.10         | 10        | A   | 2         |
| Overall                                 |       |                    | 0.10         | 4         | A   | -         | 0.10         | 4         | A   | -         |

# Lanes, Volumes, Timings

## 1: Rue Caron/Rue Industrielle & HWY 17

Phase 2  
AM+Improvement.syn



| Lane Group             | EBL   | EBT   | EBR   | WBL   | WBT    | WBR   | NBL   | NBT   | SBL   | SBT   |
|------------------------|-------|-------|-------|-------|--------|-------|-------|-------|-------|-------|
| Lane Configurations    |       |       |       |       |        |       |       |       |       |       |
| Traffic Volume (vph)   | 8     | 422   | 341   | 21    | 863    | 3     | 521   | 8     | 1     | 6     |
| Future Volume (vph)    | 8     | 422   | 341   | 21    | 863    | 3     | 521   | 8     | 1     | 6     |
| Lane Group Flow (vph)  | 9     | 469   | 379   | 23    | 959    | 3     | 579   | 43    | 1     | 16    |
| Turn Type              | pm+pt | NA    | Perm  | pm+pt | NA     | Perm  | Prot  | NA    | pm+pt | NA    |
| Protected Phases       | 7     | 4     |       | 3     | 8      |       | 5     | 2     | 1     | 6     |
| Permitted Phases       | 4     |       | 4     | 8     |        | 8     |       |       | 6     |       |
| Detector Phase         | 7     | 4     | 4     | 3     | 8      | 8     | 5     | 2     | 1     | 6     |
| Switch Phase           |       |       |       |       |        |       |       |       |       |       |
| Minimum Initial (s)    | 5.0   | 10.0  | 10.0  | 5.0   | 10.0   | 10.0  | 5.0   | 10.0  | 5.0   | 10.0  |
| Minimum Split (s)      | 11.9  | 32.9  | 32.9  | 11.9  | 32.9   | 32.9  | 10.9  | 33.3  | 10.9  | 33.3  |
| Total Split (s)        | 12.0  | 52.0  | 52.0  | 12.0  | 52.0   | 52.0  | 22.0  | 45.1  | 10.9  | 34.0  |
| Total Split (%)        | 10.0% | 43.3% | 43.3% | 10.0% | 43.3%  | 43.3% | 18.3% | 37.6% | 9.1%  | 28.3% |
| Yellow Time (s)        | 4.2   | 4.2   | 4.2   | 4.2   | 4.2    | 4.2   | 3.3   | 3.3   | 3.3   | 3.3   |
| All-Red Time (s)       | 2.7   | 2.7   | 2.7   | 2.7   | 2.7    | 2.7   | 2.6   | 3.0   | 2.6   | 3.0   |
| Lost Time Adjust (s)   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)    | 6.9   | 6.9   | 6.9   | 6.9   | 6.9    | 6.9   | 5.9   | 6.3   | 5.9   | 6.3   |
| Lead/Lag               | Lead  | Lag   | Lag   | Lead  | Lag    | Lag   | Lead  | Lag   | Lead  | Lag   |
| Lead-Lag Optimize?     | Yes   | Yes   | Yes   | Yes   | Yes    | Yes   | Yes   | Yes   | Yes   | Yes   |
| Recall Mode            | None  | Max   | Max   | None  | Max    | Max   | None  | None  | None  | None  |
| Act Effct Green (s)    | 47.9  | 46.2  | 46.2  | 49.1  | 48.2   | 48.2  | 16.5  | 19.7  | 8.6   | 10.3  |
| Actuated g/C Ratio     | 0.56  | 0.54  | 0.54  | 0.58  | 0.57   | 0.57  | 0.19  | 0.23  | 0.10  | 0.12  |
| v/c Ratio              | 0.05  | 0.49  | 0.38  | 0.05  | 0.96   | 0.00  | 0.92  | 0.11  | 0.01  | 0.08  |
| Control Delay          | 10.2  | 17.6  | 3.2   | 9.6   | 41.9   | 0.0   | 58.2  | 13.9  | 26.0  | 29.0  |
| Queue Delay            | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Delay            | 10.2  | 17.6  | 3.2   | 9.6   | 41.9   | 0.0   | 58.2  | 13.9  | 26.0  | 29.0  |
| LOS                    | B     | B     | A     | A     | D      | A     | E     | B     | C     | C     |
| Approach Delay         |       | 11.1  |       |       | 41.0   |       |       | 55.1  |       | 28.8  |
| Approach LOS           |       | B     |       |       | D      |       |       | E     |       | C     |
| Queue Length 50th (m)  | 0.4   | 28.5  | 0.0   | 1.1   | 93.7   | 0.0   | 36.6  | 0.9   | 0.1   | 0.8   |
| Queue Length 95th (m)  | 2.7   | 93.4  | 14.5  | 5.0   | #285.3 | 0.0   | #94.0 | 9.4   | 1.3   | 7.1   |
| Internal Link Dist (m) |       | 820.6 |       |       | 792.2  |       |       | 422.2 |       | 103.9 |
| Turn Bay Length (m)    | 90.0  |       | 85.0  | 60.0  |        | 56.0  | 80.0  |       | 40.0  |       |
| Base Capacity (vph)    | 176   | 956   | 986   | 450   | 998    | 935   | 629   | 743   | 172   | 544   |
| Starvation Cap Reductn | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     | 0     | 0     |
| Spillback Cap Reductn  | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     | 0     | 0     |
| Storage Cap Reductn    | 0     | 0     | 0     | 0     | 0      | 0     | 0     | 0     | 0     | 0     |
| Reduced v/c Ratio      | 0.05  | 0.49  | 0.38  | 0.05  | 0.96   | 0.00  | 0.92  | 0.06  | 0.01  | 0.03  |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 85.3

Natural Cycle: 150

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.96

Intersection Signal Delay: 34.1

Intersection LOS: C

Intersection Capacity Utilization 81.3%

ICU Level of Service D

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: Rue Caron/Rue Industrielle & HWY 17

|        |        |  |      |      |  |
|--------|--------|--|------|------|--|
|        |        |  |      |      |  |
| 10.9 s | 45.1 s |  | 12 s | 52 s |  |
|        |        |  |      |      |  |
| 22 s   | 34 s   |  | 12 s | 52 s |  |

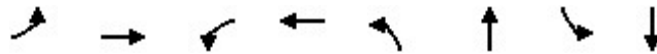
Signal Plan: Standard Inc.

06/06/2010

# Lanes, Volumes, Timings

## 2: Caron St/Rue Caron & Laurier St

Phase 2  
AM+Improvement.syn



| Lane Group             | EBL   | EBT   | WBL   | WBT   | NBL   | NBT    | SBL   | SBT   |
|------------------------|-------|-------|-------|-------|-------|--------|-------|-------|
| Lane Configurations    |       |       |       |       |       |        |       |       |
| Traffic Volume (vph)   | 17    | 54    | 41    | 148   | 65    | 459    | 12    | 342   |
| Future Volume (vph)    | 17    | 54    | 41    | 148   | 65    | 459    | 12    | 342   |
| Lane Group Flow (vph)  | 19    | 113   | 46    | 207   | 72    | 549    | 13    | 397   |
| Turn Type              | pm+pt | NA    | pm+pt | NA    | pm+pt | NA     | pm+pt | NA    |
| Protected Phases       | 7     | 4     | 3     | 8     | 5     | 2      | 1     | 6     |
| Permitted Phases       | 4     |       | 8     |       | 2     |        | 6     |       |
| Detector Phase         | 7     | 4     | 3     | 8     | 5     | 2      | 1     | 6     |
| Switch Phase           |       |       |       |       |       |        |       |       |
| Minimum Initial (s)    | 5.0   | 10.0  | 5.0   | 10.0  | 5.0   | 10.0   | 5.0   | 10.0  |
| Minimum Split (s)      | 11.5  | 31.5  | 11.5  | 31.5  | 11.1  | 27.1   | 11.1  | 27.1  |
| Total Split (s)        | 11.6  | 31.6  | 11.6  | 31.6  | 11.2  | 35.7   | 11.1  | 35.6  |
| Total Split (%)        | 12.9% | 35.1% | 12.9% | 35.1% | 12.4% | 39.7%  | 12.3% | 39.6% |
| Yellow Time (s)        | 3.3   | 3.3   | 3.3   | 3.3   | 3.3   | 3.3    | 3.3   | 3.3   |
| All-Red Time (s)       | 3.2   | 3.2   | 3.2   | 3.2   | 2.8   | 2.8    | 2.8   | 2.8   |
| Lost Time Adjust (s)   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0   | 0.0   |
| Total Lost Time (s)    | 6.5   | 6.5   | 6.5   | 6.5   | 6.1   | 6.1    | 6.1   | 6.1   |
| Lead/Lag               | Lead  | Lag   | Lead  | Lag   | Lead  | Lag    | Lead  | Lag   |
| Lead-Lag Optimize?     | Yes   | Yes   | Yes   | Yes   | Yes   | Yes    | Yes   | Yes   |
| Recall Mode            | None  | Max   | None  | Max   | None  | None   | None  | None  |
| Act Effct Green (s)    | 28.5  | 25.8  | 29.7  | 27.9  | 31.6  | 30.8   | 27.9  | 24.1  |
| Actuated g/C Ratio     | 0.37  | 0.33  | 0.38  | 0.36  | 0.41  | 0.40   | 0.36  | 0.31  |
| v/c Ratio              | 0.04  | 0.20  | 0.10  | 0.33  | 0.25  | 0.79   | 0.06  | 0.73  |
| Control Delay          | 15.9  | 15.5  | 16.1  | 21.9  | 16.5  | 32.3   | 14.8  | 34.1  |
| Queue Delay            | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0   | 0.0   |
| Total Delay            | 15.9  | 15.5  | 16.1  | 21.9  | 16.5  | 32.3   | 14.8  | 34.1  |
| LOS                    | B     | B     | B     | C     | B     | C      | B     | C     |
| Approach Delay         |       | 15.6  |       | 20.8  |       | 30.5   |       | 33.5  |
| Approach LOS           |       | B     |       | C     |       | C      |       | C     |
| Queue Length 50th (m)  | 1.6   | 6.9   | 3.8   | 17.5  | 6.4   | 66.8   | 1.1   | 54.0  |
| Queue Length 95th (m)  | 5.5   | 19.3  | 10.3  | 42.9  | 13.3  | #142.8 | 4.0   | 83.1  |
| Internal Link Dist (m) |       | 919.9 |       | 690.6 |       | 145.4  |       | 422.2 |
| Turn Bay Length (m)    | 35.0  |       | 60.0  |       | 55.0  |        | 50.0  |       |
| Base Capacity (vph)    | 442   | 578   | 481   | 625   | 290   | 746    | 216   | 687   |
| Starvation Cap Reductn | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0     |
| Spillback Cap Reductn  | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0     |
| Storage Cap Reductn    | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0     |
| Reduced v/c Ratio      | 0.04  | 0.20  | 0.10  | 0.33  | 0.25  | 0.74   | 0.06  | 0.58  |

### Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 77.6

Natural Cycle: 85

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 28.2

Intersection LOS: C

Intersection Capacity Utilization 62.4%

ICU Level of Service B

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 2: Caron St/Rue Caron & Laurier St

|        |        |        |        |
|--------|--------|--------|--------|
|        |        |        |        |
| 11.1 s | 35.7 s | 11.6 s | 31.6 s |
|        |        |        |        |
| 11.2 s | 35.6 s | 11.6 s | 31.6 s |

0.0000000000000000

0.0000000000000000

# HCM Unsignalized Intersection Capacity Analysis

## 3: Caron St & Hélène St

Phase 2  
AM+Improvement.syn



| Movement                          | EBL                                                                               | EBR  | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR  |
|-----------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations               |  |      |  |  |  |      |
| Traffic Volume (veh/h)            | 0                                                                                 | 5    | 6                                                                                 | 559                                                                               | 428                                                                               | 3    |
| Future Volume (Veh/h)             | 0                                                                                 | 5    | 6                                                                                 | 559                                                                               | 428                                                                               | 3    |
| Sign Control                      | Stop                                                                              |      |                                                                                   | Free                                                                              | Free                                                                              |      |
| Grade                             | 0%                                                                                |      |                                                                                   | 0%                                                                                | 0%                                                                                |      |
| Peak Hour Factor                  | 0.90                                                                              | 0.90 | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90 |
| Hourly flow rate (vph)            | 0                                                                                 | 6    | 7                                                                                 | 621                                                                               | 476                                                                               | 3    |
| Pedestrians                       |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Lane Width (m)                    |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Walking Speed (m/s)               |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Percent Blockage                  |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Right turn flare (veh)            |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Median type                       |                                                                                   |      |                                                                                   | TWLTL                                                                             | TWLTL                                                                             |      |
| Median storage (veh)              |                                                                                   |      |                                                                                   | 2                                                                                 | 2                                                                                 |      |
| Upstream signal (m)               |                                                                                   |      |                                                                                   |                                                                                   | 169                                                                               |      |
| pX, platoon unblocked             | 0.81                                                                              | 0.81 | 0.81                                                                              |                                                                                   |                                                                                   |      |
| vC, conflicting volume            | 1112                                                                              | 478  | 479                                                                               |                                                                                   |                                                                                   |      |
| vC1, stage 1 conf vol             | 478                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |
| vC2, stage 2 conf vol             | 635                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |
| vCu, unblocked vol                | 1021                                                                              | 237  | 239                                                                               |                                                                                   |                                                                                   |      |
| tC, single (s)                    | 6.4                                                                               | 6.2  | 4.1                                                                               |                                                                                   |                                                                                   |      |
| tC, 2 stage (s)                   | 5.4                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |
| tF (s)                            | 3.5                                                                               | 3.3  | 2.2                                                                               |                                                                                   |                                                                                   |      |
| p0 queue free %                   | 100                                                                               | 99   | 99                                                                                |                                                                                   |                                                                                   |      |
| cM capacity (veh/h)               | 442                                                                               | 649  | 1075                                                                              |                                                                                   |                                                                                   |      |
| Direction, Lane #                 | EB 1                                                                              | NB 1 | NB 2                                                                              | SB 1                                                                              |                                                                                   |      |
| Volume Total                      | 6                                                                                 | 7    | 621                                                                               | 479                                                                               |                                                                                   |      |
| Volume Left                       | 0                                                                                 | 7    | 0                                                                                 | 0                                                                                 |                                                                                   |      |
| Volume Right                      | 6                                                                                 | 0    | 0                                                                                 | 3                                                                                 |                                                                                   |      |
| cSH                               | 649                                                                               | 1075 | 1700                                                                              | 1700                                                                              |                                                                                   |      |
| Volume to Capacity                | 0.01                                                                              | 0.01 | 0.37                                                                              | 0.28                                                                              |                                                                                   |      |
| Queue Length 95th (m)             | 0.2                                                                               | 0.1  | 0.0                                                                               | 0.0                                                                               |                                                                                   |      |
| Control Delay (s)                 | 10.6                                                                              | 8.4  | 0.0                                                                               | 0.0                                                                               |                                                                                   |      |
| Lane LOS                          | B                                                                                 | A    |                                                                                   |                                                                                   |                                                                                   |      |
| Approach Delay (s)                | 10.6                                                                              | 0.1  |                                                                                   | 0.0                                                                               |                                                                                   |      |
| Approach LOS                      | B                                                                                 |      |                                                                                   |                                                                                   |                                                                                   |      |
| Intersection Summary              |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Average Delay                     |                                                                                   |      | 0.1                                                                               |                                                                                   |                                                                                   |      |
| Intersection Capacity Utilization |                                                                                   |      | 41.1%                                                                             | ICU Level of Service                                                              |                                                                                   | A    |
| Analvsis Period (min)             |                                                                                   |      | 15                                                                                |                                                                                   |                                                                                   |      |

# HCM Unsignalized Intersection Capacity Analysis

## 4: Caron St & Francois St

Phase 2  
AM+Improvement.syn



| Movement                          | EBL                                                                               | EBR  | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR  |
|-----------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations               |  |      |  |  |  |      |
| Sign Control                      | Stop                                                                              |      |                                                                                   | Stop                                                                              | Stop                                                                              |      |
| Traffic Volume (vph)              | 9                                                                                 | 3    | 1                                                                                 | 495                                                                               | 431                                                                               | 2    |
| Future Volume (vph)               | 9                                                                                 | 3    | 1                                                                                 | 495                                                                               | 431                                                                               | 2    |
| Peak Hour Factor                  | 0.90                                                                              | 0.90 | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90 |
| Hourly flow rate (vph)            | 10                                                                                | 3    | 1                                                                                 | 550                                                                               | 479                                                                               | 2    |
| Direction, Lane #                 | EB 1                                                                              | NB 1 | NB 2                                                                              | SB 1                                                                              |                                                                                   |      |
| Volume Total (vph)                | 13                                                                                | 1    | 550                                                                               | 481                                                                               |                                                                                   |      |
| Volume Left (vph)                 | 10                                                                                | 1    | 0                                                                                 | 0                                                                                 |                                                                                   |      |
| Volume Right (vph)                | 3                                                                                 | 0    | 0                                                                                 | 2                                                                                 |                                                                                   |      |
| Hadj (s)                          | 0.05                                                                              | 0.53 | 0.03                                                                              | 0.03                                                                              |                                                                                   |      |
| Departure Headway (s)             | 6.3                                                                               | 5.4  | 4.9                                                                               | 4.7                                                                               |                                                                                   |      |
| Degree Utilization, x             | 0.02                                                                              | 0.00 | 0.75                                                                              | 0.62                                                                              |                                                                                   |      |
| Capacity (veh/h)                  | 511                                                                               | 652  | 719                                                                               | 759                                                                               |                                                                                   |      |
| Control Delay (s)                 | 9.4                                                                               | 7.2  | 20.0                                                                              | 15.1                                                                              |                                                                                   |      |
| Approach Delay (s)                | 9.4                                                                               | 20.0 |                                                                                   | 15.1                                                                              |                                                                                   |      |
| Approach LOS                      | A                                                                                 | C    |                                                                                   | C                                                                                 |                                                                                   |      |
| Intersection Summary              |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Delay                             |                                                                                   |      | 17.6                                                                              |                                                                                   |                                                                                   |      |
| Level of Service                  |                                                                                   |      | C                                                                                 |                                                                                   |                                                                                   |      |
| Intersection Capacity Utilization |                                                                                   |      | 37.5%                                                                             | ICU Level of Service                                                              | A                                                                                 |      |
| Analysis Period (min)             |                                                                                   |      | 15                                                                                |                                                                                   |                                                                                   |      |

# HCM Unsignalized Intersection Capacity Analysis

## 5: Caron St & Des Cedres Ave

Phase 2  
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|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                   |  |  |  |  |  |  |
| Movement                          | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |
| Lane Configurations               |  |                                                                                   |  |                                                                                   |  |  |
| Traffic Volume (veh/h)            | 5                                                                                 | 10                                                                                | 486                                                                               | 1                                                                                 | 5                                                                                 | 429                                                                               |
| Future Volume (Veh/h)             | 5                                                                                 | 10                                                                                | 486                                                                               | 1                                                                                 | 5                                                                                 | 429                                                                               |
| Sign Control                      | Stop                                                                              |                                                                                   | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              |
| Grade                             | 0%                                                                                |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |
| Hourly flow rate (vph)            | 6                                                                                 | 11                                                                                | 540                                                                               | 1                                                                                 | 6                                                                                 | 477                                                                               |
| Pedestrians                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Width (m)                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Walking Speed (m/s)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Percent Blockage                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Median type                       |                                                                                   |                                                                                   | TWLT                                                                              |                                                                                   | TWLT                                                                              |                                                                                   |
| Median storage veh)               |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   | 2                                                                                 |                                                                                   |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| pX, platoon unblocked             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC, conflicting volume            | 1030                                                                              | 540                                                                               |                                                                                   |                                                                                   | 541                                                                               |                                                                                   |
| vC1, stage 1 conf vol             | 540                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC2, stage 2 conf vol             | 489                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vCu, unblocked vol                | 1030                                                                              | 540                                                                               |                                                                                   |                                                                                   | 541                                                                               |                                                                                   |
| tC, single (s)                    | 6.4                                                                               | 6.2                                                                               |                                                                                   |                                                                                   | 4.1                                                                               |                                                                                   |
| tC, 2 stage (s)                   | 5.4                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| tF (s)                            | 3.5                                                                               | 3.3                                                                               |                                                                                   |                                                                                   | 2.2                                                                               |                                                                                   |
| p0 queue free %                   | 99                                                                                | 98                                                                                |                                                                                   |                                                                                   | 99                                                                                |                                                                                   |
| cM capacity (veh/h)               | 473                                                                               | 541                                                                               |                                                                                   |                                                                                   | 1028                                                                              |                                                                                   |
| Direction, Lane #                 | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                   |                                                                                   |
| Volume Total                      | 17                                                                                | 541                                                                               | 6                                                                                 | 477                                                                               |                                                                                   |                                                                                   |
| Volume Left                       | 6                                                                                 | 0                                                                                 | 6                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |
| Volume Right                      | 11                                                                                | 1                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |
| cSH                               | 515                                                                               | 1700                                                                              | 1028                                                                              | 1700                                                                              |                                                                                   |                                                                                   |
| Volume to Capacity                | 0.03                                                                              | 0.32                                                                              | 0.01                                                                              | 0.28                                                                              |                                                                                   |                                                                                   |
| Queue Length 95th (m)             | 0.7                                                                               | 0.0                                                                               | 0.1                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |
| Control Delay (s)                 | 12.2                                                                              | 0.0                                                                               | 8.5                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |
| Lane LOS                          | B                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Approach Delay (s)                | 12.2                                                                              | 0.0                                                                               | 0.1                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Approach LOS                      | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Average Delay                     |                                                                                   | 0.2                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization |                                                                                   | 37.1%                                                                             |                                                                                   | ICU Level of Service                                                              |                                                                                   | A                                                                                 |
| Analysis Period (min)             |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |

# HCM Unsignalized Intersection Capacity Analysis

## 6: Caron St & Cote St/Potvin Ave

Phase 2  
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|                                   |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|--|--|--|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |  |  |  |  |  |  |
| Lane Configurations               |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |  |  |                                                                                     |  |  |                                                                                     |  |  |  |  |  |  |
| Sign Control                      |                                                                                   | Stop                                                                              |                                                                                   |                                                                                   | Stop                                                                              |                                                                                   |                                                                                     | Stop                                                                                |                                                                                     |                                                                                     | Stop                                                                                |                                                                                     |  |  |  |  |  |  |
| Traffic Volume (vph)              | 9                                                                                 | 0                                                                                 | 8                                                                                 | 9                                                                                 | 1                                                                                 | 6                                                                                 | 4                                                                                   | 472                                                                                 | 6                                                                                   | 5                                                                                   | 429                                                                                 | 0                                                                                   |  |  |  |  |  |  |
| Future Volume (vph)               | 9                                                                                 | 0                                                                                 | 8                                                                                 | 9                                                                                 | 1                                                                                 | 6                                                                                 | 4                                                                                   | 472                                                                                 | 6                                                                                   | 5                                                                                   | 429                                                                                 | 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                                                                                |  |  |  |  |  |  |
| Hourly flow rate (vph)            | 10                                                                                | 0                                                                                 | 9                                                                                 | 10                                                                                | 1                                                                                 | 7                                                                                 | 4                                                                                   | 524                                                                                 | 7                                                                                   | 6                                                                                   | 477                                                                                 | 0                                                                                   |  |  |  |  |  |  |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              | NB 2                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Volume Total (vph)                | 19                                                                                | 18                                                                                | 4                                                                                 | 531                                                                               | 6                                                                                 | 477                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Volume Left (vph)                 | 10                                                                                | 10                                                                                | 4                                                                                 | 0                                                                                 | 6                                                                                 | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Volume Right (vph)                | 9                                                                                 | 7                                                                                 | 0                                                                                 | 7                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Hadj (s)                          | -0.14                                                                             | -0.09                                                                             | 0.53                                                                              | 0.02                                                                              | 0.53                                                                              | 0.03                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Departure Headway (s)             | 6.1                                                                               | 6.2                                                                               | 5.5                                                                               | 5.0                                                                               | 5.6                                                                               | 5.1                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Degree Utilization, x             | 0.03                                                                              | 0.03                                                                              | 0.01                                                                              | 0.74                                                                              | 0.01                                                                              | 0.67                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Capacity (veh/h)                  | 516                                                                               | 509                                                                               | 632                                                                               | 702                                                                               | 627                                                                               | 703                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Control Delay (s)                 | 9.3                                                                               | 9.3                                                                               | 7.4                                                                               | 19.7                                                                              | 7.4                                                                               | 16.5                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Approach Delay (s)                | 9.3                                                                               | 9.3                                                                               | 19.6                                                                              |                                                                                   | 16.4                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Approach LOS                      | A                                                                                 | A                                                                                 | C                                                                                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Delay                             |                                                                                   |                                                                                   | 17.8                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Level of Service                  |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 36.6%                                                                             | ICU Level of Service                                                              |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |

# HCM Unsignalized Intersection Capacity Analysis

## 7: Caron St & Docteur Corbeil Blvd

Phase 2  
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| Movement                          | EBL  | EBR  | NBL   | NBT                  | SBT   | SBR  |
|-----------------------------------|------|------|-------|----------------------|-------|------|
| Lane Configurations               |      |      |       |                      |       |      |
| Traffic Volume (veh/h)            | 38   | 59   | 86    | 444                  | 363   | 43   |
| Future Volume (Veh/h)             | 38   | 59   | 86    | 444                  | 363   | 43   |
| Sign Control                      | Stop |      |       | Free                 | Free  |      |
| Grade                             | 0%   |      |       | 0%                   | 0%    |      |
| Peak Hour Factor                  | 0.90 | 0.90 | 0.90  | 0.90                 | 0.90  | 0.90 |
| Hourly flow rate (vph)            | 42   | 66   | 96    | 493                  | 403   | 48   |
| Pedestrians                       | 2    |      |       |                      |       |      |
| Lane Width (m)                    | 3.6  |      |       |                      |       |      |
| Walking Speed (m/s)               | 1.2  |      |       |                      |       |      |
| Percent Blockage                  | 0    |      |       |                      |       |      |
| Right turn flare (veh)            |      |      |       |                      |       |      |
| Median type                       |      |      |       | TWLTL                | TWLTL |      |
| Median storage (veh)              |      |      |       | 2                    | 2     |      |
| Upstream signal (m)               |      |      |       |                      |       |      |
| pX, platoon unblocked             |      |      |       |                      |       |      |
| vC, conflicting volume            | 1114 | 429  | 453   |                      |       |      |
| vC1, stage 1 conf vol             | 429  |      |       |                      |       |      |
| vC2, stage 2 conf vol             | 685  |      |       |                      |       |      |
| vCu, unblocked vol                | 1114 | 429  | 453   |                      |       |      |
| tC, single (s)                    | 6.4  | 6.2  | 4.1   |                      |       |      |
| tC, 2 stage (s)                   | 5.4  |      |       |                      |       |      |
| tF (s)                            | 3.5  | 3.3  | 2.2   |                      |       |      |
| p0 queue free %                   | 90   | 89   | 91    |                      |       |      |
| cM capacity (veh/h)               | 406  | 625  | 1106  |                      |       |      |
| Direction, Lane #                 | EB 1 | NB 1 | NB 2  | SB 1                 |       |      |
| Volume Total                      | 108  | 96   | 493   | 451                  |       |      |
| Volume Left                       | 42   | 96   | 0     | 0                    |       |      |
| Volume Right                      | 66   | 0    | 0     | 48                   |       |      |
| cSH                               | 517  | 1106 | 1700  | 1700                 |       |      |
| Volume to Capacity                | 0.21 | 0.09 | 0.29  | 0.27                 |       |      |
| Queue Length 95th (m)             | 5.5  | 2.0  | 0.0   | 0.0                  |       |      |
| Control Delay (s)                 | 13.8 | 8.6  | 0.0   | 0.0                  |       |      |
| Lane LOS                          | B    | A    |       |                      |       |      |
| Approach Delay (s)                | 13.8 | 1.4  |       | 0.0                  |       |      |
| Approach LOS                      | B    |      |       |                      |       |      |
| Intersection Summary              |      |      |       |                      |       |      |
| Average Delay                     |      |      | 2.0   |                      |       |      |
| Intersection Capacity Utilization |      |      | 44.0% | ICU Level of Service |       | A    |
| Analysis Period (min)             |      |      | 15    |                      |       |      |

# HCM Unsignalized Intersection Capacity Analysis

## 8: David St & Caron St

Phase 2  
AM+Improvement.syn

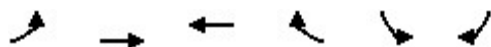
|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--|--|
|                                   |  |  |  |  |  |  |  |  |
| Movement                          | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |  |  |
| Lane Configurations               |  |                                                                                   |  |                                                                                   |  |  |  |  |
| Sign Control                      | Stop                                                                              |                                                                                   | Stop                                                                              |                                                                                   | Stop                                                                              | Stop                                                                              |  |  |
| Traffic Volume (vph)              | 5                                                                                 | 221                                                                               | 277                                                                               | 2                                                                                 | 188                                                                               | 234                                                                               |  |  |
| Future Volume (vph)               | 5                                                                                 | 221                                                                               | 277                                                                               | 2                                                                                 | 188                                                                               | 234                                                                               |  |  |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |  |  |
| Hourly flow rate (vph)            | 6                                                                                 | 246                                                                               | 308                                                                               | 2                                                                                 | 209                                                                               | 260                                                                               |  |  |
| Direction, Lane #                 | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                   |                                                                                   |  |  |
| Volume Total (vph)                | 252                                                                               | 310                                                                               | 209                                                                               | 260                                                                               |                                                                                   |                                                                                   |  |  |
| Volume Left (vph)                 | 6                                                                                 | 0                                                                                 | 209                                                                               | 0                                                                                 |                                                                                   |                                                                                   |  |  |
| Volume Right (vph)                | 246                                                                               | 2                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |  |  |
| Hadj (s)                          | -0.55                                                                             | 0.03                                                                              | 0.53                                                                              | 0.03                                                                              |                                                                                   |                                                                                   |  |  |
| Departure Headway (s)             | 5.2                                                                               | 5.3                                                                               | 6.1                                                                               | 5.6                                                                               |                                                                                   |                                                                                   |  |  |
| Degree Utilization, x             | 0.36                                                                              | 0.46                                                                              | 0.36                                                                              | 0.41                                                                              |                                                                                   |                                                                                   |  |  |
| Capacity (veh/h)                  | 640                                                                               | 648                                                                               | 569                                                                               | 621                                                                               |                                                                                   |                                                                                   |  |  |
| Control Delay (s)                 | 11.2                                                                              | 12.8                                                                              | 11.3                                                                              | 11.2                                                                              |                                                                                   |                                                                                   |  |  |
| Approach Delay (s)                | 11.2                                                                              | 12.8                                                                              | 11.2                                                                              |                                                                                   |                                                                                   |                                                                                   |  |  |
| Approach LOS                      | B                                                                                 | B                                                                                 | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |  |  |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
| Delay                             |                                                                                   |                                                                                   | 11.7                                                                              |                                                                                   |                                                                                   |                                                                                   |  |  |
| Level of Service                  |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |  |  |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 51.2%                                                                             | ICU Level of Service                                                              | A                                                                                 |                                                                                   |  |  |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |  |  |

# HCM Unsignalized Intersection Capacity Analysis

## 9: Baseline Rd & Caron St

Phase 2

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| Movement                          | EBL  | EBT                                                                               | WBT                                                                               | WBR                  | SBL                                                                               | SBR  |
|-----------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations               |      |  |  |                      |  |      |
| Traffic Volume (veh/h)            | 32   | 28                                                                                | 58                                                                                | 131                  | 106                                                                               | 52   |
| Future Volume (Veh/h)             | 32   | 28                                                                                | 58                                                                                | 131                  | 106                                                                               | 52   |
| Sign Control                      |      | Free                                                                              | Free                                                                              |                      | Stop                                                                              |      |
| Grade                             |      | 0%                                                                                | 0%                                                                                |                      | 0%                                                                                |      |
| Peak Hour Factor                  | 0.90 | 0.90                                                                              | 0.90                                                                              | 0.90                 | 0.90                                                                              | 0.90 |
| Hourly flow rate (vph)            | 36   | 31                                                                                | 64                                                                                | 146                  | 118                                                                               | 58   |
| Pedestrians                       |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Lane Width (m)                    |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Walking Speed (m/s)               |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Percent Blockage                  |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Right turn flare (veh)            |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Median type                       |      | None                                                                              | None                                                                              |                      |                                                                                   |      |
| Median storage veh)               |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Upstream signal (m)               |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| pX, platoon unblocked             |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| vC, conflicting volume            | 210  |                                                                                   |                                                                                   |                      | 240                                                                               | 137  |
| vC1, stage 1 conf vol             |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| vC2, stage 2 conf vol             |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| vCu, unblocked vol                | 210  |                                                                                   |                                                                                   |                      | 240                                                                               | 137  |
| tC, single (s)                    | 4.1  |                                                                                   |                                                                                   |                      | 6.4                                                                               | 6.2  |
| tC, 2 stage (s)                   |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| tF (s)                            | 2.2  |                                                                                   |                                                                                   |                      | 3.5                                                                               | 3.3  |
| p0 queue free %                   | 97   |                                                                                   |                                                                                   |                      | 84                                                                                | 94   |
| cM capacity (veh/h)               | 1361 |                                                                                   |                                                                                   |                      | 728                                                                               | 911  |
| Direction, Lane #                 | EB 1 | WB 1                                                                              | SB 1                                                                              |                      |                                                                                   |      |
| Volume Total                      | 67   | 210                                                                               | 176                                                                               |                      |                                                                                   |      |
| Volume Left                       | 36   | 0                                                                                 | 118                                                                               |                      |                                                                                   |      |
| Volume Right                      | 0    | 146                                                                               | 58                                                                                |                      |                                                                                   |      |
| cSH                               | 1361 | 1700                                                                              | 780                                                                               |                      |                                                                                   |      |
| Volume to Capacity                | 0.03 | 0.12                                                                              | 0.23                                                                              |                      |                                                                                   |      |
| Queue Length 95th (m)             | 0.6  | 0.0                                                                               | 6.0                                                                               |                      |                                                                                   |      |
| Control Delay (s)                 | 4.2  | 0.0                                                                               | 11.0                                                                              |                      |                                                                                   |      |
| Lane LOS                          | A    |                                                                                   | B                                                                                 |                      |                                                                                   |      |
| Approach Delay (s)                | 4.2  | 0.0                                                                               | 11.0                                                                              |                      |                                                                                   |      |
| Approach LOS                      |      |                                                                                   | B                                                                                 |                      |                                                                                   |      |
| Intersection Summary              |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Average Delay                     |      |                                                                                   | 4.9                                                                               |                      |                                                                                   |      |
| Intersection Capacity Utilization |      |                                                                                   | 34.7%                                                                             | ICU Level of Service |                                                                                   | A    |
| Analvsis Period (min)             |      |                                                                                   | 15                                                                                |                      |                                                                                   |      |

# HCM Unsignalized Intersection Capacity Analysis

## 10: Street B & David St

Phase 2  
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|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                   |  |  |  |  |  |  |
| Movement                          | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBR                                                                               |
| Lane Configurations               |  |                                                                                   |                                                                                   |  |  |  |
| Traffic Volume (veh/h)            | 53                                                                                | 137                                                                               | 23                                                                                | 68                                                                                | 159                                                                               | 27                                                                                |
| Future Volume (Veh/h)             | 53                                                                                | 137                                                                               | 23                                                                                | 68                                                                                | 159                                                                               | 27                                                                                |
| Sign Control                      | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              | Stop                                                                              |                                                                                   |
| Grade                             | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                | 0%                                                                                |                                                                                   |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |
| Hourly flow rate (vph)            | 59                                                                                | 152                                                                               | 26                                                                                | 76                                                                                | 177                                                                               | 30                                                                                |
| Pedestrians                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Width (m)                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Walking Speed (m/s)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Percent Blockage                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Median type                       | None                                                                              |                                                                                   |                                                                                   | None                                                                              |                                                                                   |                                                                                   |
| Median storage (veh)              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| pX, platoon unblocked             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC, conflicting volume            |                                                                                   |                                                                                   | 211                                                                               |                                                                                   | 263                                                                               | 135                                                                               |
| vC1, stage 1 conf vol             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC2, stage 2 conf vol             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vCu, unblocked vol                |                                                                                   |                                                                                   | 211                                                                               |                                                                                   | 263                                                                               | 135                                                                               |
| tC, single (s)                    |                                                                                   |                                                                                   | 4.1                                                                               |                                                                                   | 6.4                                                                               | 6.2                                                                               |
| tC, 2 stage (s)                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| tF (s)                            |                                                                                   |                                                                                   | 2.2                                                                               |                                                                                   | 3.5                                                                               | 3.3                                                                               |
| p0 queue free %                   |                                                                                   |                                                                                   | 98                                                                                |                                                                                   | 75                                                                                | 97                                                                                |
| cM capacity (veh/h)               |                                                                                   |                                                                                   | 1360                                                                              |                                                                                   | 712                                                                               | 914                                                                               |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Volume Total                      | 211                                                                               | 102                                                                               | 207                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Volume Left                       | 0                                                                                 | 26                                                                                | 177                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Volume Right                      | 152                                                                               | 0                                                                                 | 30                                                                                |                                                                                   |                                                                                   |                                                                                   |
| cSH                               | 1700                                                                              | 1360                                                                              | 736                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Volume to Capacity                | 0.12                                                                              | 0.02                                                                              | 0.28                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Queue Length 95th (m)             | 0.0                                                                               | 0.4                                                                               | 8.1                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Control Delay (s)                 | 0.0                                                                               | 2.1                                                                               | 11.8                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Lane LOS                          |                                                                                   | A                                                                                 | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Approach Delay (s)                | 0.0                                                                               | 2.1                                                                               | 11.8                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Approach LOS                      |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Average Delay                     |                                                                                   |                                                                                   | 5.1                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 38.0%                                                                             | ICU Level of Service                                                              | A                                                                                 |                                                                                   |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |

# HCM Unsignalized Intersection Capacity Analysis

## 11: Street A & David St

Phase 2  
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|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                   |  |  |  |  |  |  |
| Movement                          | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBR                                                                               |
| Lane Configurations               |  |                                                                                   |                                                                                   |  |  |                                                                                   |
| Traffic Volume (veh/h)            | 34                                                                                | 46                                                                                | 23                                                                                | 38                                                                                | 53                                                                                | 26                                                                                |
| Future Volume (Veh/h)             | 34                                                                                | 46                                                                                | 23                                                                                | 38                                                                                | 53                                                                                | 26                                                                                |
| Sign Control                      | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              | Stop                                                                              |                                                                                   |
| Grade                             | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                | 0%                                                                                |                                                                                   |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |
| Hourly flow rate (vph)            | 38                                                                                | 51                                                                                | 26                                                                                | 42                                                                                | 59                                                                                | 29                                                                                |
| Pedestrians                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Width (m)                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Walking Speed (m/s)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Percent Blockage                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Median type                       | None                                                                              |                                                                                   |                                                                                   | None                                                                              |                                                                                   |                                                                                   |
| Median storage (veh)              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| pX, platoon unblocked             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC, conflicting volume            |                                                                                   |                                                                                   | 89                                                                                |                                                                                   | 158                                                                               | 64                                                                                |
| vC1, stage 1 conf vol             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC2, stage 2 conf vol             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vCu, unblocked vol                |                                                                                   |                                                                                   | 89                                                                                |                                                                                   | 158                                                                               | 64                                                                                |
| tC, single (s)                    |                                                                                   |                                                                                   | 4.1                                                                               |                                                                                   | 6.4                                                                               | 6.2                                                                               |
| tC, 2 stage (s)                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| tF (s)                            |                                                                                   |                                                                                   | 2.2                                                                               |                                                                                   | 3.5                                                                               | 3.3                                                                               |
| p0 queue free %                   |                                                                                   |                                                                                   | 98                                                                                |                                                                                   | 93                                                                                | 97                                                                                |
| cM capacity (veh/h)               |                                                                                   |                                                                                   | 1506                                                                              |                                                                                   | 819                                                                               | 1001                                                                              |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Volume Total                      | 89                                                                                | 68                                                                                | 88                                                                                |                                                                                   |                                                                                   |                                                                                   |
| Volume Left                       | 0                                                                                 | 26                                                                                | 59                                                                                |                                                                                   |                                                                                   |                                                                                   |
| Volume Right                      | 51                                                                                | 0                                                                                 | 29                                                                                |                                                                                   |                                                                                   |                                                                                   |
| cSH                               | 1700                                                                              | 1506                                                                              | 871                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Volume to Capacity                | 0.05                                                                              | 0.02                                                                              | 0.10                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Queue Length 95th (m)             | 0.0                                                                               | 0.4                                                                               | 2.4                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Control Delay (s)                 | 0.0                                                                               | 2.9                                                                               | 9.6                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Lane LOS                          |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Approach Delay (s)                | 0.0                                                                               | 2.9                                                                               | 9.6                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Approach LOS                      |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Average Delay                     |                                                                                   |                                                                                   | 4.3                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 21.6%                                                                             | ICU Level of Service                                                              |                                                                                   | A                                                                                 |
| Analvsis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |

# HCM Unsignalized Intersection Capacity Analysis

## 12: Street B & Street A

Phase 2  
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|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Sign Control                      |                                                                                   | Stop                                                                              |                                                                                   |                                                                                   | Stop                                                                              |                                                                                   |                                                                                    | Stop                                                                                |                                                                                     |                                                                                     | Stop                                                                                |                                                                                     |
| Traffic Volume (vph)              | 99                                                                                | 71                                                                                | 28                                                                                | 23                                                                                | 76                                                                                | 53                                                                                | 26                                                                                 | 26                                                                                  | 26                                                                                  | 46                                                                                  | 23                                                                                  | 99                                                                                  |
| Future Volume (vph)               | 99                                                                                | 71                                                                                | 28                                                                                | 23                                                                                | 76                                                                                | 53                                                                                | 26                                                                                 | 26                                                                                  | 26                                                                                  | 46                                                                                  | 23                                                                                  | 99                                                                                  |
| 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                                                                                |
| Hourly flow rate (vph)            | 110                                                                               | 79                                                                                | 31                                                                                | 26                                                                                | 84                                                                                | 59                                                                                | 29                                                                                 | 29                                                                                  | 29                                                                                  | 51                                                                                  | 26                                                                                  | 110                                                                                 |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Total (vph)                | 220                                                                               | 169                                                                               | 87                                                                                | 187                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Left (vph)                 | 110                                                                               | 26                                                                                | 29                                                                                | 51                                                                                |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Right (vph)                | 31                                                                                | 59                                                                                | 29                                                                                | 110                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Hadj (s)                          | 0.05                                                                              | -0.14                                                                             | -0.10                                                                             | -0.26                                                                             |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Departure Headway (s)             | 4.9                                                                               | 4.7                                                                               | 5.0                                                                               | 4.7                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Degree Utilization, x             | 0.30                                                                              | 0.22                                                                              | 0.12                                                                              | 0.25                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Capacity (veh/h)                  | 694                                                                               | 706                                                                               | 647                                                                               | 700                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Control Delay (s)                 | 9.9                                                                               | 9.1                                                                               | 8.7                                                                               | 9.2                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay (s)                | 9.9                                                                               | 9.1                                                                               | 8.7                                                                               | 9.2                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                      | A                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Delay                             |                                                                                   |                                                                                   |                                                                                   | 9.3                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Level of Service                  |                                                                                   |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   |                                                                                   | 43.3%                                                                             | ICU Level of Service                                                              |                                                                                   |                                                                                    |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM Unsignalized Intersection Capacity Analysis

## 15: Caron St & Street A

Phase 2  
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|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--|--|
|                                   |  |  |  |  |  |  |  |  |
| Movement                          | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |  |  |
| Lane Configurations               |  |                                                                                   |  |                                                                                   |  |  |  |  |
| Sign Control                      | Stop                                                                              |                                                                                   | Stop                                                                              |                                                                                   | Stop                                                                              | Stop                                                                              |  |  |
| Traffic Volume (vph)              | 79                                                                                | 106                                                                               | 173                                                                               | 68                                                                                | 91                                                                                | 148                                                                               |  |  |
| Future Volume (vph)               | 79                                                                                | 106                                                                               | 173                                                                               | 68                                                                                | 91                                                                                | 148                                                                               |  |  |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |  |  |
| Hourly flow rate (vph)            | 88                                                                                | 118                                                                               | 192                                                                               | 76                                                                                | 101                                                                               | 164                                                                               |  |  |
| Direction, Lane #                 | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                   |                                                                                   |  |  |
| Volume Total (vph)                | 206                                                                               | 268                                                                               | 67                                                                                | 198                                                                               |                                                                                   |                                                                                   |  |  |
| Volume Left (vph)                 | 88                                                                                | 0                                                                                 | 67                                                                                | 34                                                                                |                                                                                   |                                                                                   |  |  |
| Volume Right (vph)                | 118                                                                               | 76                                                                                | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |  |  |
| Hadj (s)                          | -0.22                                                                             | -0.14                                                                             | 0.53                                                                              | 0.12                                                                              |                                                                                   |                                                                                   |  |  |
| Departure Headway (s)             | 5.0                                                                               | 4.8                                                                               | 5.9                                                                               | 5.4                                                                               |                                                                                   |                                                                                   |  |  |
| Degree Utilization, x             | 0.28                                                                              | 0.35                                                                              | 0.11                                                                              | 0.30                                                                              |                                                                                   |                                                                                   |  |  |
| Capacity (veh/h)                  | 671                                                                               | 723                                                                               | 587                                                                               | 635                                                                               |                                                                                   |                                                                                   |  |  |
| Control Delay (s)                 | 9.9                                                                               | 10.4                                                                              | 8.4                                                                               | 9.5                                                                               |                                                                                   |                                                                                   |  |  |
| Approach Delay (s)                | 9.9                                                                               | 10.4                                                                              | 9.2                                                                               |                                                                                   |                                                                                   |                                                                                   |  |  |
| Approach LOS                      | A                                                                                 | B                                                                                 | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |  |  |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
| Delay                             |                                                                                   |                                                                                   | 9.8                                                                               |                                                                                   |                                                                                   |                                                                                   |  |  |
| Level of Service                  |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |  |  |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 43.7%                                                                             | ICU Level of Service                                                              | A                                                                                 |                                                                                   |  |  |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |  |  |

# Lanes, Volumes, Timings

## 1: Rue Caron/Rue Industrielle & HWY 17

# Phase 2 PM+ Improvements

04/26/2019

|                        |  |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | SBL                                                                                 | SBT                                                                                 |                                                                                     |
| Lane Configurations    |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph)   | 34                                                                                | 230                                                                               | 420                                                                               | 30                                                                                | 129                                                                               | 26                                                                                | 369                                                                                | 87                                                                                  | 35                                                                                  | 138                                                                                 |                                                                                     |
| Future Volume (vph)    | 34                                                                                | 230                                                                               | 420                                                                               | 30                                                                                | 129                                                                               | 26                                                                                | 369                                                                                | 87                                                                                  | 35                                                                                  | 138                                                                                 |                                                                                     |
| Lane Group Flow (vph)  | 38                                                                                | 256                                                                               | 467                                                                               | 33                                                                                | 143                                                                               | 29                                                                                | 410                                                                                | 144                                                                                 | 39                                                                                  | 187                                                                                 |                                                                                     |
| Turn Type              | pm+pt                                                                             | NA                                                                                | Perm                                                                              | pm+pt                                                                             | NA                                                                                | Perm                                                                              | Prot                                                                               | NA                                                                                  | pm+pt                                                                               | NA                                                                                  |                                                                                     |
| Protected Phases       | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                  | 2                                                                                   | 1                                                                                   | 6                                                                                   |                                                                                     |
| Permitted Phases       | 4                                                                                 |                                                                                   | 4                                                                                 | 8                                                                                 |                                                                                   | 8                                                                                 |                                                                                    |                                                                                     | 6                                                                                   |                                                                                     |                                                                                     |
| Detector Phase         | 7                                                                                 | 4                                                                                 | 4                                                                                 | 3                                                                                 | 8                                                                                 | 8                                                                                 | 5                                                                                  | 2                                                                                   | 1                                                                                   | 6                                                                                   |                                                                                     |
| Switch Phase           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)    | 5.0                                                                               | 10.0                                                                              | 10.0                                                                              | 5.0                                                                               | 10.0                                                                              | 10.0                                                                              | 5.0                                                                                | 10.0                                                                                | 5.0                                                                                 | 10.0                                                                                |                                                                                     |
| Minimum Split (s)      | 11.9                                                                              | 32.9                                                                              | 32.9                                                                              | 11.9                                                                              | 32.9                                                                              | 32.9                                                                              | 10.9                                                                               | 33.3                                                                                | 10.9                                                                                | 33.3                                                                                |                                                                                     |
| Total Split (s)        | 12.0                                                                              | 41.0                                                                              | 41.0                                                                              | 12.0                                                                              | 41.0                                                                              | 41.0                                                                              | 30.0                                                                               | 56.0                                                                                | 11.0                                                                                | 37.0                                                                                |                                                                                     |
| Total Split (%)        | 10.0%                                                                             | 34.2%                                                                             | 34.2%                                                                             | 10.0%                                                                             | 34.2%                                                                             | 34.2%                                                                             | 25.0%                                                                              | 46.7%                                                                               | 9.2%                                                                                | 30.8%                                                                               |                                                                                     |
| Yellow Time (s)        | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               | 3.3                                                                                | 3.3                                                                                 | 3.3                                                                                 | 3.3                                                                                 |                                                                                     |
| All-Red Time (s)       | 2.7                                                                               | 2.7                                                                               | 2.7                                                                               | 2.7                                                                               | 2.7                                                                               | 2.7                                                                               | 2.6                                                                                | 3.0                                                                                 | 2.6                                                                                 | 3.0                                                                                 |                                                                                     |
| Lost Time Adjust (s)   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Lost Time (s)    | 6.9                                                                               | 6.9                                                                               | 6.9                                                                               | 6.9                                                                               | 6.9                                                                               | 6.9                                                                               | 5.9                                                                                | 6.3                                                                                 | 5.9                                                                                 | 6.3                                                                                 |                                                                                     |
| Lead/Lag               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                               | Lag                                                                                 | Lead                                                                                | Lag                                                                                 |                                                                                     |
| Lead-Lag Optimize?     | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |                                                                                     |
| Recall Mode            | None                                                                              | Max                                                                               | Max                                                                               | None                                                                              | Max                                                                               | Max                                                                               | None                                                                               | None                                                                                | None                                                                                | None                                                                                |                                                                                     |
| Act Effct Green (s)    | 37.7                                                                              | 35.0                                                                              | 35.0                                                                              | 37.7                                                                              | 35.0                                                                              | 35.0                                                                              | 17.1                                                                               | 32.7                                                                                | 21.1                                                                                | 15.5                                                                                |                                                                                     |
| Actuated g/C Ratio     | 0.40                                                                              | 0.37                                                                              | 0.37                                                                              | 0.40                                                                              | 0.37                                                                              | 0.37                                                                              | 0.18                                                                               | 0.35                                                                                | 0.23                                                                                | 0.17                                                                                |                                                                                     |
| v/c Ratio              | 0.08                                                                              | 0.39                                                                              | 0.55                                                                              | 0.08                                                                              | 0.22                                                                              | 0.04                                                                              | 0.69                                                                               | 0.24                                                                                | 0.13                                                                                | 0.64                                                                                |                                                                                     |
| Control Delay          | 18.0                                                                              | 27.3                                                                              | 5.5                                                                               | 18.0                                                                              | 25.2                                                                              | 0.1                                                                               | 43.5                                                                               | 20.8                                                                                | 20.1                                                                                | 47.0                                                                                |                                                                                     |
| Queue Delay            | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |                                                                                     |
| Total Delay            | 18.0                                                                              | 27.3                                                                              | 5.5                                                                               | 18.0                                                                              | 25.2                                                                              | 0.1                                                                               | 43.5                                                                               | 20.8                                                                                | 20.1                                                                                | 47.0                                                                                |                                                                                     |
| LOS                    | B                                                                                 | C                                                                                 | A                                                                                 | B                                                                                 | C                                                                                 | A                                                                                 | D                                                                                  | C                                                                                   | C                                                                                   | D                                                                                   |                                                                                     |
| Approach Delay         |                                                                                   | 13.4                                                                              |                                                                                   |                                                                                   | 20.5                                                                              |                                                                                   |                                                                                    | 37.6                                                                                |                                                                                     | 42.3                                                                                |                                                                                     |
| Approach LOS           |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | D                                                                                   |                                                                                     | D                                                                                   |                                                                                     |
| Queue Length 50th (m)  | 3.5                                                                               | 33.9                                                                              | 0.0                                                                               | 3.0                                                                               | 17.6                                                                              | 0.0                                                                               | 35.1                                                                               | 16.0                                                                                | 4.1                                                                                 | 29.7                                                                                |                                                                                     |
| Queue Length 95th (m)  | 10.6                                                                              | 64.5                                                                              | 22.3                                                                              | 9.6                                                                               | 36.9                                                                              | 0.0                                                                               | 53.2                                                                               | 29.4                                                                                | 9.5                                                                                 | 52.9                                                                                |                                                                                     |
| Internal Link Dist (m) |                                                                                   | 820.6                                                                             |                                                                                   |                                                                                   | 792.2                                                                             |                                                                                   |                                                                                    | 422.2                                                                               |                                                                                     | 103.9                                                                               |                                                                                     |
| Turn Bay Length (m)    | 90.0                                                                              |                                                                                   | 85.0                                                                              | 60.0                                                                              |                                                                                   | 56.0                                                                              | 80.0                                                                               |                                                                                     | 40.0                                                                                |                                                                                     |                                                                                     |
| Base Capacity (vph)    | 501                                                                               | 659                                                                               | 852                                                                               | 422                                                                               | 659                                                                               | 685                                                                               | 858                                                                                | 925                                                                                 | 293                                                                                 | 583                                                                                 |                                                                                     |
| Starvation Cap Reductn | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Spillback Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Storage Cap Reductn    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   |                                                                                     |
| Reduced v/c Ratio      | 0.08                                                                              | 0.39                                                                              | 0.55                                                                              | 0.08                                                                              | 0.22                                                                              | 0.04                                                                              | 0.48                                                                               | 0.16                                                                                | 0.13                                                                                | 0.32                                                                                |                                                                                     |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 93.6

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 25.7

Intersection LOS: C

Intersection Capacity Utilization 59.4%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Rue Caron/Rue Industrielle & HWY 17

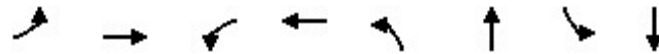


# Lanes, Volumes, Timings

## 2: Caron St/Rue Caron & Laurier St

# Phase 2 PM+ Improvements

04/26/2019



| Lane Group             | EBL   | EBT   | WBL   | WBT   | NBL   | NBT    | SBL   | SBT    |
|------------------------|-------|-------|-------|-------|-------|--------|-------|--------|
| Lane Configurations    |       |       |       |       |       |        |       |        |
| Traffic Volume (vph)   | 34    | 155   | 30    | 87    | 75    | 405    | 35    | 494    |
| Future Volume (vph)    | 34    | 155   | 30    | 87    | 75    | 405    | 35    | 494    |
| Lane Group Flow (vph)  | 38    | 273   | 33    | 126   | 83    | 497    | 39    | 583    |
| Turn Type              | pm+pt | NA    | pm+pt | NA    | pm+pt | NA     | pm+pt | NA     |
| Protected Phases       | 7     | 4     | 3     | 8     | 5     | 2      | 1     | 6      |
| Permitted Phases       | 4     |       | 8     |       | 2     |        | 6     |        |
| Detector Phase         | 7     | 4     | 3     | 8     | 5     | 2      | 1     | 6      |
| Switch Phase           |       |       |       |       |       |        |       |        |
| Minimum Initial (s)    | 5.0   | 10.0  | 5.0   | 10.0  | 5.0   | 10.0   | 5.0   | 10.0   |
| Minimum Split (s)      | 11.5  | 31.5  | 11.5  | 31.5  | 11.1  | 27.1   | 11.1  | 27.1   |
| Total Split (s)        | 11.6  | 31.6  | 11.6  | 31.6  | 11.2  | 35.7   | 11.1  | 35.6   |
| Total Split (%)        | 12.9% | 35.1% | 12.9% | 35.1% | 12.4% | 39.7%  | 12.3% | 39.6%  |
| Yellow Time (s)        | 3.3   | 3.3   | 3.3   | 3.3   | 3.3   | 3.3    | 3.3   | 3.3    |
| All-Red Time (s)       | 3.2   | 3.2   | 3.2   | 3.2   | 2.8   | 2.8    | 2.8   | 2.8    |
| Lost Time Adjust (s)   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0   | 0.0    |
| Total Lost Time (s)    | 6.5   | 6.5   | 6.5   | 6.5   | 6.1   | 6.1    | 6.1   | 6.1    |
| Lead/Lag               | Lead  | Lag   | Lead  | Lag   | Lead  | Lag    | Lead  | Lag    |
| Lead-Lag Optimize?     | Yes   | Yes   | Yes   | Yes   | Yes   | Yes    | Yes   | Yes    |
| Recall Mode            | None  | Max   | None  | Max   | None  | None   | None  | None   |
| Act Effct Green (s)    | 28.3  | 25.4  | 28.3  | 25.4  | 35.1  | 32.3   | 33.7  | 29.9   |
| Actuated g/C Ratio     | 0.34  | 0.31  | 0.34  | 0.31  | 0.42  | 0.39   | 0.41  | 0.36   |
| v/c Ratio              | 0.09  | 0.51  | 0.10  | 0.24  | 0.44  | 0.73   | 0.15  | 0.92   |
| Control Delay          | 17.2  | 26.8  | 17.3  | 22.5  | 21.4  | 32.3   | 15.1  | 50.8   |
| Queue Delay            | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0   | 0.0    |
| Total Delay            | 17.2  | 26.8  | 17.3  | 22.5  | 21.4  | 32.3   | 15.1  | 50.8   |
| LOS                    | B     | C     | B     | C     | C     | C      | B     | D      |
| Approach Delay         |       | 25.6  |       | 21.4  |       | 30.8   |       | 48.6   |
| Approach LOS           |       | C     |       | C     |       | C      |       | D      |
| Queue Length 50th (m)  | 3.6   | 32.4  | 3.1   | 13.4  | 7.4   | 72.6   | 3.4   | ~93.9  |
| Queue Length 95th (m)  | 9.0   | 55.0  | 8.2   | 26.3  | 14.9  | #123.0 | 8.4   | #155.8 |
| Internal Link Dist (m) |       | 919.9 |       | 690.6 |       | 145.4  |       | 422.2  |
| Turn Bay Length (m)    | 35.0  |       | 60.0  |       | 55.0  |        | 50.0  |        |
| Base Capacity (vph)    | 435   | 533   | 339   | 533   | 190   | 681    | 261   | 631    |
| Starvation Cap Reductn | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0      |
| Spillback Cap Reductn  | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0      |
| Storage Cap Reductn    | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0      |
| Reduced v/c Ratio      | 0.09  | 0.51  | 0.10  | 0.24  | 0.44  | 0.73   | 0.15  | 0.92   |

## Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 83.1

Natural Cycle: 85

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.92

Intersection Signal Delay: 35.6

Intersection LOS: D

Intersection Capacity Utilization 73.4%

ICU Level of Service D

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 2: Caron St/Rue Caron & Laurier St

|        |        |        |        |
|--------|--------|--------|--------|
|        |        |        |        |
| 11.1 s | 35.7 s | 11.6 s | 31.6 s |
|        |        |        |        |
| 11.2 s | 35.6 s | 11.6 s | 31.6 s |

# HCM Unsignalized Intersection Capacity Analysis

## 3: Caron St & Hélène St

# Phase 2 PM+ Improvements

04/27/2019

|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                   |  |  |  |  |  |  |
| Movement                          | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations               |  |                                                                                   |  |  |  |                                                                                   |
| Traffic Volume (veh/h)            | 0                                                                                 | 8                                                                                 | 7                                                                                 | 522                                                                               | 612                                                                               | 3                                                                                 |
| Future Volume (Veh/h)             | 0                                                                                 | 8                                                                                 | 7                                                                                 | 522                                                                               | 612                                                                               | 3                                                                                 |
| Sign Control                      | Stop                                                                              |                                                                                   |                                                                                   | Free                                                                              | Free                                                                              |                                                                                   |
| Grade                             | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                | 0%                                                                                |                                                                                   |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |
| Hourly flow rate (vph)            | 0                                                                                 | 9                                                                                 | 8                                                                                 | 580                                                                               | 680                                                                               | 3                                                                                 |
| Pedestrians                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Width (m)                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Walking Speed (m/s)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Percent Blockage                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Median type                       |                                                                                   |                                                                                   |                                                                                   | TWLTL                                                                             | TWLTL                                                                             |                                                                                   |
| Median storage veh)               |                                                                                   |                                                                                   |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 169                                                                               |                                                                                   |
| pX, platoon unblocked             | 0.68                                                                              | 0.68                                                                              | 0.68                                                                              |                                                                                   |                                                                                   |                                                                                   |
| vC, conflicting volume            | 1278                                                                              | 682                                                                               | 683                                                                               |                                                                                   |                                                                                   |                                                                                   |
| vC1, stage 1 conf vol             | 682                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC2, stage 2 conf vol             | 596                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vCu, unblocked vol                | 1175                                                                              | 303                                                                               | 306                                                                               |                                                                                   |                                                                                   |                                                                                   |
| tC, single (s)                    | 6.4                                                                               | 6.2                                                                               | 4.1                                                                               |                                                                                   |                                                                                   |                                                                                   |
| tC, 2 stage (s)                   | 5.4                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| tF (s)                            | 3.5                                                                               | 3.3                                                                               | 2.2                                                                               |                                                                                   |                                                                                   |                                                                                   |
| p0 queue free %                   | 100                                                                               | 98                                                                                | 99                                                                                |                                                                                   |                                                                                   |                                                                                   |
| cM capacity (veh/h)               | 390                                                                               | 504                                                                               | 859                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Direction, Lane #                 | EB 1                                                                              | NB 1                                                                              | NB 2                                                                              | SB 1                                                                              |                                                                                   |                                                                                   |
| Volume Total                      | 9                                                                                 | 8                                                                                 | 580                                                                               | 683                                                                               |                                                                                   |                                                                                   |
| Volume Left                       | 0                                                                                 | 8                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |
| Volume Right                      | 9                                                                                 | 0                                                                                 | 0                                                                                 | 3                                                                                 |                                                                                   |                                                                                   |
| cSH                               | 504                                                                               | 859                                                                               | 1700                                                                              | 1700                                                                              |                                                                                   |                                                                                   |
| Volume to Capacity                | 0.02                                                                              | 0.01                                                                              | 0.34                                                                              | 0.40                                                                              |                                                                                   |                                                                                   |
| Queue Length 95th (m)             | 0.4                                                                               | 0.2                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |
| Control Delay (s)                 | 12.3                                                                              | 9.2                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |
| Lane LOS                          | B                                                                                 | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Approach Delay (s)                | 12.3                                                                              | 0.1                                                                               |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   |
| Approach LOS                      | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Average Delay                     |                                                                                   |                                                                                   | 0.1                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 44.2%                                                                             | ICU Level of Service                                                              |                                                                                   | A                                                                                 |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |

# HCM Unsignalized Intersection Capacity Analysis

## 4: Caron St & Francois St

Phase 2 PM+ Improvements

04/27/2019



| Movement                          | EBL                                                                               | EBR  | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR  |
|-----------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations               |  |      |  |  |  |      |
| Sign Control                      | Stop                                                                              |      |                                                                                   | Stop                                                                              | Stop                                                                              |      |
| Traffic Volume (vph)              | 7                                                                                 | 3    | 6                                                                                 | 522                                                                               | 616                                                                               | 4    |
| Future Volume (vph)               | 7                                                                                 | 3    | 6                                                                                 | 522                                                                               | 616                                                                               | 4    |
| Peak Hour Factor                  | 0.90                                                                              | 0.90 | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90 |
| Hourly flow rate (vph)            | 8                                                                                 | 3    | 7                                                                                 | 580                                                                               | 684                                                                               | 4    |
| Direction, Lane #                 | EB 1                                                                              | NB 1 | NB 2                                                                              | SB 1                                                                              |                                                                                   |      |
| Volume Total (vph)                | 11                                                                                | 7    | 580                                                                               | 688                                                                               |                                                                                   |      |
| Volume Left (vph)                 | 8                                                                                 | 7    | 0                                                                                 | 0                                                                                 |                                                                                   |      |
| Volume Right (vph)                | 3                                                                                 | 0    | 0                                                                                 | 4                                                                                 |                                                                                   |      |
| Hadj (s)                          | 0.02                                                                              | 0.53 | 0.03                                                                              | 0.03                                                                              |                                                                                   |      |
| Departure Headway (s)             | 6.7                                                                               | 5.6  | 5.1                                                                               | 4.7                                                                               |                                                                                   |      |
| Degree Utilization, x             | 0.02                                                                              | 0.01 | 0.82                                                                              | 0.90                                                                              |                                                                                   |      |
| Capacity (veh/h)                  | 508                                                                               | 635  | 701                                                                               | 752                                                                               |                                                                                   |      |
| Control Delay (s)                 | 9.9                                                                               | 7.4  | 25.2                                                                              | 34.8                                                                              |                                                                                   |      |
| Approach Delay (s)                | 9.9                                                                               | 25.0 |                                                                                   | 34.8                                                                              |                                                                                   |      |
| Approach LOS                      | A                                                                                 | C    |                                                                                   | D                                                                                 |                                                                                   |      |
| Intersection Summary              |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Delay                             |                                                                                   |      | 30.1                                                                              |                                                                                   |                                                                                   |      |
| Level of Service                  |                                                                                   |      | D                                                                                 |                                                                                   |                                                                                   |      |
| Intersection Capacity Utilization |                                                                                   |      | 44.5%                                                                             | ICU Level of Service                                                              | A                                                                                 |      |
| Analysis Period (min)             |                                                                                   |      | 15                                                                                |                                                                                   |                                                                                   |      |

# HCM Unsignalized Intersection Capacity Analysis

## 5: Caron St & Des Cedres Ave

# Phase 2 PM+ Improvements

04/27/2019

|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                   |  |  |  |  |  |  |
| Movement                          | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |
| Lane Configurations               |  |                                                                                   |  |                                                                                   |  |  |
| Traffic Volume (veh/h)            | 1                                                                                 | 10                                                                                | 455                                                                               | 7                                                                                 | 26                                                                                | 593                                                                               |
| Future Volume (Veh/h)             | 1                                                                                 | 10                                                                                | 455                                                                               | 7                                                                                 | 26                                                                                | 593                                                                               |
| Sign Control                      | Stop                                                                              |                                                                                   | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              |
| Grade                             | 0%                                                                                |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |
| Hourly flow rate (vph)            | 1                                                                                 | 11                                                                                | 506                                                                               | 8                                                                                 | 29                                                                                | 659                                                                               |
| Pedestrians                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Width (m)                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Walking Speed (m/s)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Percent Blockage                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Median type                       |                                                                                   |                                                                                   | TWLTL                                                                             |                                                                                   | TWLTL                                                                             |                                                                                   |
| Median storage veh)               |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   | 2                                                                                 |                                                                                   |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| pX, platoon unblocked             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC, conflicting volume            | 1227                                                                              | 510                                                                               |                                                                                   |                                                                                   | 514                                                                               |                                                                                   |
| vC1, stage 1 conf vol             | 510                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC2, stage 2 conf vol             | 717                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vCu, unblocked vol                | 1227                                                                              | 510                                                                               |                                                                                   |                                                                                   | 514                                                                               |                                                                                   |
| tC, single (s)                    | 6.4                                                                               | 6.2                                                                               |                                                                                   |                                                                                   | 4.1                                                                               |                                                                                   |
| tC, 2 stage (s)                   | 5.4                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| tF (s)                            | 3.5                                                                               | 3.3                                                                               |                                                                                   |                                                                                   | 2.2                                                                               |                                                                                   |
| p0 queue free %                   | 100                                                                               | 98                                                                                |                                                                                   |                                                                                   | 97                                                                                |                                                                                   |
| cM capacity (veh/h)               | 401                                                                               | 563                                                                               |                                                                                   |                                                                                   | 1052                                                                              |                                                                                   |
| Direction, Lane #                 | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                   |                                                                                   |
| Volume Total                      | 12                                                                                | 514                                                                               | 29                                                                                | 659                                                                               |                                                                                   |                                                                                   |
| Volume Left                       | 1                                                                                 | 0                                                                                 | 29                                                                                | 0                                                                                 |                                                                                   |                                                                                   |
| Volume Right                      | 11                                                                                | 8                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |
| cSH                               | 545                                                                               | 1700                                                                              | 1052                                                                              | 1700                                                                              |                                                                                   |                                                                                   |
| Volume to Capacity                | 0.02                                                                              | 0.30                                                                              | 0.03                                                                              | 0.39                                                                              |                                                                                   |                                                                                   |
| Queue Length 95th (m)             | 0.5                                                                               | 0.0                                                                               | 0.6                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |
| Control Delay (s)                 | 11.8                                                                              | 0.0                                                                               | 8.5                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |
| Lane LOS                          | B                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Approach Delay (s)                | 11.8                                                                              | 0.0                                                                               | 0.4                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Approach LOS                      | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Average Delay                     |                                                                                   |                                                                                   | 0.3                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 42.9%                                                                             | ICU Level of Service                                                              |                                                                                   | A                                                                                 |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |

# HCM Unsignalized Intersection Capacity Analysis 6: Caron St & Cote St/Potvin Ave

Phase 2 PM+ Improvements

04/27/2019

|                                   |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|--|--|--|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |  |  |  |  |  |  |
| Lane Configurations               |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |  |  |                                                                                     |  |  |                                                                                     |  |  |  |  |  |  |
| Sign Control                      |                                                                                   | Stop                                                                              |                                                                                   |                                                                                   | Stop                                                                              |                                                                                   |                                                                                     | Stop                                                                                |                                                                                     |                                                                                     | Stop                                                                                |                                                                                     |  |  |  |  |  |  |
| Traffic Volume (vph)              | 17                                                                                | 1                                                                                 | 10                                                                                | 9                                                                                 | 1                                                                                 | 4                                                                                 | 12                                                                                  | 441                                                                                 | 13                                                                                  | 16                                                                                  | 561                                                                                 | 17                                                                                  |  |  |  |  |  |  |
| Future Volume (vph)               | 17                                                                                | 1                                                                                 | 10                                                                                | 9                                                                                 | 1                                                                                 | 4                                                                                 | 12                                                                                  | 441                                                                                 | 13                                                                                  | 16                                                                                  | 561                                                                                 | 17                                                                                  |  |  |  |  |  |  |
| 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                                                                                |  |  |  |  |  |  |
| Hourly flow rate (vph)            | 19                                                                                | 1                                                                                 | 11                                                                                | 10                                                                                | 1                                                                                 | 4                                                                                 | 13                                                                                  | 490                                                                                 | 14                                                                                  | 18                                                                                  | 623                                                                                 | 19                                                                                  |  |  |  |  |  |  |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              | NB 2                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Volume Total (vph)                | 31                                                                                | 15                                                                                | 13                                                                                | 504                                                                               | 18                                                                                | 642                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Volume Left (vph)                 | 19                                                                                | 10                                                                                | 13                                                                                | 0                                                                                 | 18                                                                                | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Volume Right (vph)                | 11                                                                                | 4                                                                                 | 0                                                                                 | 14                                                                                | 0                                                                                 | 19                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Hadj (s)                          | -0.06                                                                             | 0.01                                                                              | 0.53                                                                              | 0.01                                                                              | 0.53                                                                              | 0.01                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Departure Headway (s)             | 6.5                                                                               | 6.6                                                                               | 5.7                                                                               | 5.2                                                                               | 5.6                                                                               | 5.1                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Degree Utilization, x             | 0.06                                                                              | 0.03                                                                              | 0.02                                                                              | 0.73                                                                              | 0.03                                                                              | 0.91                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Capacity (veh/h)                  | 509                                                                               | 493                                                                               | 615                                                                               | 676                                                                               | 620                                                                               | 699                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Control Delay (s)                 | 9.9                                                                               | 9.8                                                                               | 7.7                                                                               | 19.8                                                                              | 7.6                                                                               | 36.6                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Approach Delay (s)                | 9.9                                                                               | 9.8                                                                               | 19.5                                                                              |                                                                                   | 35.9                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Approach LOS                      | A                                                                                 | A                                                                                 | C                                                                                 |                                                                                   | E                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Delay                             |                                                                                   |                                                                                   | 28.0                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Level of Service                  |                                                                                   |                                                                                   | D                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 42.3%                                                                             | ICU Level of Service                                                              |                                                                                   |                                                                                   |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |

# HCM Unsignalized Intersection Capacity Analysis

## 7: Caron St & Docteur Corbeil Blvd

# Phase 2 PM+ Improvements

04/27/2019



| Movement                          | EBL  | EBR  | NBL   | NBT                  | SBT   | SBR  |
|-----------------------------------|------|------|-------|----------------------|-------|------|
| Lane Configurations               |      |      |       |                      |       |      |
| Traffic Volume (veh/h)            | 61   | 89   | 73    | 405                  | 471   | 60   |
| Future Volume (Veh/h)             | 61   | 89   | 73    | 405                  | 471   | 60   |
| Sign Control                      | Stop |      |       | Free                 | Free  |      |
| Grade                             | 0%   |      |       | 0%                   | 0%    |      |
| Peak Hour Factor                  | 0.90 | 0.90 | 0.90  | 0.90                 | 0.90  | 0.90 |
| Hourly flow rate (vph)            | 68   | 99   | 81    | 450                  | 523   | 67   |
| Pedestrians                       | 2    |      |       |                      |       |      |
| Lane Width (m)                    | 3.6  |      |       |                      |       |      |
| Walking Speed (m/s)               | 1.2  |      |       |                      |       |      |
| Percent Blockage                  | 0    |      |       |                      |       |      |
| Right turn flare (veh)            |      |      |       |                      |       |      |
| Median type                       |      |      |       | TWLTL                | TWLTL |      |
| Median storage (veh)              |      |      |       | 2                    | 2     |      |
| Upstream signal (m)               |      |      |       |                      |       |      |
| pX, platoon unblocked             |      |      |       |                      |       |      |
| vC, conflicting volume            | 1170 | 558  | 592   |                      |       |      |
| vC1, stage 1 conf vol             | 558  |      |       |                      |       |      |
| vC2, stage 2 conf vol             | 612  |      |       |                      |       |      |
| vCu, unblocked vol                | 1170 | 558  | 592   |                      |       |      |
| tC, single (s)                    | 6.4  | 6.2  | 4.1   |                      |       |      |
| tC, 2 stage (s)                   | 5.4  |      |       |                      |       |      |
| tF (s)                            | 3.5  | 3.3  | 2.2   |                      |       |      |
| p0 queue free %                   | 83   | 81   | 92    |                      |       |      |
| cM capacity (veh/h)               | 407  | 528  | 982   |                      |       |      |
| Direction, Lane #                 | EB 1 | NB 1 | NB 2  | SB 1                 |       |      |
| Volume Total                      | 167  | 81   | 450   | 590                  |       |      |
| Volume Left                       | 68   | 81   | 0     | 0                    |       |      |
| Volume Right                      | 99   | 0    | 0     | 67                   |       |      |
| cSH                               | 471  | 982  | 1700  | 1700                 |       |      |
| Volume to Capacity                | 0.35 | 0.08 | 0.26  | 0.35                 |       |      |
| Queue Length 95th (m)             | 11.1 | 1.9  | 0.0   | 0.0                  |       |      |
| Control Delay (s)                 | 16.8 | 9.0  | 0.0   | 0.0                  |       |      |
| Lane LOS                          | C    | A    |       |                      |       |      |
| Approach Delay (s)                | 16.8 | 1.4  |       | 0.0                  |       |      |
| Approach LOS                      | C    |      |       |                      |       |      |
| Intersection Summary              |      |      |       |                      |       |      |
| Average Delay                     |      |      | 2.7   |                      |       |      |
| Intersection Capacity Utilization |      |      | 53.6% | ICU Level of Service |       | A    |
| Analysis Period (min)             |      |      | 15    |                      |       |      |

# HCM Unsignalized Intersection Capacity Analysis

## 8: David St & Caron St

Phase 2 PM+ Improvements

04/27/2019

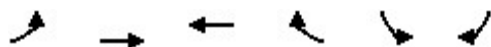
|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--|--|
|                                   |  |  |  |  |  |  |  |  |
| Movement                          | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |  |  |
| Lane Configurations               |  |                                                                                   |  |                                                                                   |  |  |  |  |
| Sign Control                      | Stop                                                                              |                                                                                   | Stop                                                                              |                                                                                   | Stop                                                                              | Stop                                                                              |  |  |
| Traffic Volume (vph)              | 5                                                                                 | 205                                                                               | 285                                                                               | 5                                                                                 | 229                                                                               | 302                                                                               |  |  |
| Future Volume (vph)               | 5                                                                                 | 205                                                                               | 285                                                                               | 5                                                                                 | 229                                                                               | 302                                                                               |  |  |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |  |  |
| Hourly flow rate (vph)            | 6                                                                                 | 228                                                                               | 317                                                                               | 6                                                                                 | 254                                                                               | 336                                                                               |  |  |
| Direction, Lane #                 | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                   |                                                                                   |  |  |
| Volume Total (vph)                | 234                                                                               | 323                                                                               | 254                                                                               | 336                                                                               |                                                                                   |                                                                                   |  |  |
| Volume Left (vph)                 | 6                                                                                 | 0                                                                                 | 254                                                                               | 0                                                                                 |                                                                                   |                                                                                   |  |  |
| Volume Right (vph)                | 228                                                                               | 6                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |  |  |
| Hadj (s)                          | -0.55                                                                             | 0.02                                                                              | 0.53                                                                              | 0.03                                                                              |                                                                                   |                                                                                   |  |  |
| Departure Headway (s)             | 5.4                                                                               | 5.4                                                                               | 6.1                                                                               | 5.6                                                                               |                                                                                   |                                                                                   |  |  |
| Degree Utilization, x             | 0.35                                                                              | 0.49                                                                              | 0.43                                                                              | 0.52                                                                              |                                                                                   |                                                                                   |  |  |
| Capacity (veh/h)                  | 614                                                                               | 642                                                                               | 574                                                                               | 627                                                                               |                                                                                   |                                                                                   |  |  |
| Control Delay (s)                 | 11.3                                                                              | 13.5                                                                              | 12.5                                                                              | 13.4                                                                              |                                                                                   |                                                                                   |  |  |
| Approach Delay (s)                | 11.3                                                                              | 13.5                                                                              | 13.0                                                                              |                                                                                   |                                                                                   |                                                                                   |  |  |
| Approach LOS                      | B                                                                                 | B                                                                                 | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |  |  |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
| Delay                             |                                                                                   |                                                                                   | 12.8                                                                              |                                                                                   |                                                                                   |                                                                                   |  |  |
| Level of Service                  |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |  |  |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 53.2%                                                                             | ICU Level of Service                                                              | A                                                                                 |                                                                                   |  |  |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |  |  |

# HCM Unsignalized Intersection Capacity Analysis

## 9: Baseline Rd & Caron St

Phase 2 PM+ Improvements

04/27/2019



| Movement                          | EBL  | EBT                                                                               | WBT                                                                               | WBR                  | SBL                                                                               | SBR  |
|-----------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations               |      |  |  |                      |  |      |
| Traffic Volume (veh/h)            | 68   | 102                                                                               | 41                                                                                | 133                  | 148                                                                               | 41   |
| Future Volume (Veh/h)             | 68   | 102                                                                               | 41                                                                                | 133                  | 148                                                                               | 41   |
| Sign Control                      |      | Free                                                                              | Free                                                                              |                      | Stop                                                                              |      |
| Grade                             |      | 0%                                                                                | 0%                                                                                |                      | 0%                                                                                |      |
| Peak Hour Factor                  | 0.90 | 0.90                                                                              | 0.90                                                                              | 0.90                 | 0.90                                                                              | 0.90 |
| Hourly flow rate (vph)            | 76   | 113                                                                               | 46                                                                                | 148                  | 164                                                                               | 46   |
| Pedestrians                       |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Lane Width (m)                    |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Walking Speed (m/s)               |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Percent Blockage                  |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Right turn flare (veh)            |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Median type                       |      | None                                                                              | None                                                                              |                      |                                                                                   |      |
| Median storage (veh)              |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Upstream signal (m)               |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| pX, platoon unblocked             |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| vC, conflicting volume            | 194  |                                                                                   |                                                                                   |                      | 385                                                                               | 120  |
| vC1, stage 1 conf vol             |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| vC2, stage 2 conf vol             |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| vCu, unblocked vol                | 194  |                                                                                   |                                                                                   |                      | 385                                                                               | 120  |
| tC, single (s)                    | 4.1  |                                                                                   |                                                                                   |                      | 6.4                                                                               | 6.2  |
| tC, 2 stage (s)                   |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| tF (s)                            | 2.2  |                                                                                   |                                                                                   |                      | 3.5                                                                               | 3.3  |
| p0 queue free %                   | 94   |                                                                                   |                                                                                   |                      | 72                                                                                | 95   |
| cM capacity (veh/h)               | 1379 |                                                                                   |                                                                                   |                      | 584                                                                               | 931  |
| Direction, Lane #                 | EB 1 | WB 1                                                                              | SB 1                                                                              |                      |                                                                                   |      |
| Volume Total                      | 189  | 194                                                                               | 210                                                                               |                      |                                                                                   |      |
| Volume Left                       | 76   | 0                                                                                 | 164                                                                               |                      |                                                                                   |      |
| Volume Right                      | 0    | 148                                                                               | 46                                                                                |                      |                                                                                   |      |
| cSH                               | 1379 | 1700                                                                              | 636                                                                               |                      |                                                                                   |      |
| Volume to Capacity                | 0.06 | 0.11                                                                              | 0.33                                                                              |                      |                                                                                   |      |
| Queue Length 95th (m)             | 1.2  | 0.0                                                                               | 10.1                                                                              |                      |                                                                                   |      |
| Control Delay (s)                 | 3.4  | 0.0                                                                               | 13.4                                                                              |                      |                                                                                   |      |
| Lane LOS                          | A    |                                                                                   | B                                                                                 |                      |                                                                                   |      |
| Approach Delay (s)                | 3.4  | 0.0                                                                               | 13.4                                                                              |                      |                                                                                   |      |
| Approach LOS                      |      |                                                                                   | B                                                                                 |                      |                                                                                   |      |
| Intersection Summary              |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Average Delay                     |      |                                                                                   | 5.8                                                                               |                      |                                                                                   |      |
| Intersection Capacity Utilization |      |                                                                                   | 41.9%                                                                             | ICU Level of Service |                                                                                   | A    |
| Analysis Period (min)             |      |                                                                                   | 15                                                                                |                      |                                                                                   |      |

# HCM Unsignalized Intersection Capacity Analysis

## 10: Street B & David St

# Phase 2 PM+ Improvements

04/27/2019

|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--|--|--|
|                                   |  |  |  |  |  |  |  |  |  |
| Movement                          | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBR                                                                               |  |  |  |
| Lane Configurations               |  |                                                                                   |                                                                                   |  |  |                                                                                   |  |  |  |
| Traffic Volume (veh/h)            | 70                                                                                | 164                                                                               | 27                                                                                | 64                                                                                | 147                                                                               | 24                                                                                |  |  |  |
| Future Volume (Veh/h)             | 70                                                                                | 164                                                                               | 27                                                                                | 64                                                                                | 147                                                                               | 24                                                                                |  |  |  |
| Sign Control                      | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              | Stop                                                                              |                                                                                   |  |  |  |
| Grade                             | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                | 0%                                                                                |                                                                                   |  |  |  |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |  |  |  |
| Hourly flow rate (vph)            | 78                                                                                | 182                                                                               | 30                                                                                | 71                                                                                | 163                                                                               | 27                                                                                |  |  |  |
| Pedestrians                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Lane Width (m)                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Walking Speed (m/s)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Percent Blockage                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Median type                       | None                                                                              |                                                                                   |                                                                                   | None                                                                              |                                                                                   |                                                                                   |  |  |  |
| Median storage (veh)              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| pX, platoon unblocked             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| vC, conflicting volume            |                                                                                   |                                                                                   | 260                                                                               |                                                                                   | 300                                                                               | 169                                                                               |  |  |  |
| vC1, stage 1 conf vol             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| vC2, stage 2 conf vol             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| vCu, unblocked vol                |                                                                                   |                                                                                   | 260                                                                               |                                                                                   | 300                                                                               | 169                                                                               |  |  |  |
| tC, single (s)                    |                                                                                   |                                                                                   | 4.1                                                                               |                                                                                   | 6.4                                                                               | 6.2                                                                               |  |  |  |
| tC, 2 stage (s)                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| tF (s)                            |                                                                                   |                                                                                   | 2.2                                                                               |                                                                                   | 3.5                                                                               | 3.3                                                                               |  |  |  |
| p0 queue free %                   |                                                                                   |                                                                                   | 98                                                                                |                                                                                   | 76                                                                                | 97                                                                                |  |  |  |
| cM capacity (veh/h)               |                                                                                   |                                                                                   | 1304                                                                              |                                                                                   | 676                                                                               | 875                                                                               |  |  |  |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Volume Total                      | 260                                                                               | 101                                                                               | 190                                                                               |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Volume Left                       | 0                                                                                 | 30                                                                                | 163                                                                               |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Volume Right                      | 182                                                                               | 0                                                                                 | 27                                                                                |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| cSH                               | 1700                                                                              | 1304                                                                              | 698                                                                               |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Volume to Capacity                | 0.15                                                                              | 0.02                                                                              | 0.27                                                                              |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Queue Length 95th (m)             | 0.0                                                                               | 0.5                                                                               | 7.7                                                                               |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Control Delay (s)                 | 0.0                                                                               | 2.5                                                                               | 12.1                                                                              |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Lane LOS                          |                                                                                   | A                                                                                 | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Approach Delay (s)                | 0.0                                                                               | 2.5                                                                               | 12.1                                                                              |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Approach LOS                      |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Average Delay                     | 4.6                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Intersection Capacity Utilization | 39.8%                                                                             |                                                                                   | ICU Level of Service                                                              |                                                                                   | A                                                                                 |                                                                                   |  |  |  |
| Analysis Period (min)             | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |

# HCM Unsignalized Intersection Capacity Analysis

## 11: Street A & David St

# Phase 2 PM+ Improvements

04/27/2019

|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                   |  |  |  |  |  |  |
| Movement                          | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBR                                                                               |
| Lane Configurations               |  |                                                                                   |                                                                                   |  |  |                                                                                   |
| Traffic Volume (veh/h)            | 39                                                                                | 55                                                                                | 27                                                                                | 42                                                                                | 49                                                                                | 24                                                                                |
| Future Volume (Veh/h)             | 39                                                                                | 55                                                                                | 27                                                                                | 42                                                                                | 49                                                                                | 24                                                                                |
| Sign Control                      | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              | Stop                                                                              |                                                                                   |
| Grade                             | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                | 0%                                                                                |                                                                                   |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |
| Hourly flow rate (vph)            | 43                                                                                | 61                                                                                | 30                                                                                | 47                                                                                | 54                                                                                | 27                                                                                |
| Pedestrians                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Width (m)                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Walking Speed (m/s)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Percent Blockage                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Median type                       | None                                                                              |                                                                                   | None                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Median storage (veh)              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| pX, platoon unblocked             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC, conflicting volume            |                                                                                   |                                                                                   | 104                                                                               |                                                                                   | 180                                                                               | 74                                                                                |
| vC1, stage 1 conf vol             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC2, stage 2 conf vol             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vCu, unblocked vol                |                                                                                   |                                                                                   | 104                                                                               |                                                                                   | 180                                                                               | 74                                                                                |
| tC, single (s)                    |                                                                                   |                                                                                   | 4.1                                                                               |                                                                                   | 6.4                                                                               | 6.2                                                                               |
| tC, 2 stage (s)                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| tF (s)                            |                                                                                   |                                                                                   | 2.2                                                                               |                                                                                   | 3.5                                                                               | 3.3                                                                               |
| p0 queue free %                   |                                                                                   |                                                                                   | 98                                                                                |                                                                                   | 93                                                                                | 97                                                                                |
| cM capacity (veh/h)               |                                                                                   |                                                                                   | 1488                                                                              |                                                                                   | 793                                                                               | 988                                                                               |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Volume Total                      | 104                                                                               | 77                                                                                | 81                                                                                |                                                                                   |                                                                                   |                                                                                   |
| Volume Left                       | 0                                                                                 | 30                                                                                | 54                                                                                |                                                                                   |                                                                                   |                                                                                   |
| Volume Right                      | 61                                                                                | 0                                                                                 | 27                                                                                |                                                                                   |                                                                                   |                                                                                   |
| cSH                               | 1700                                                                              | 1488                                                                              | 849                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Volume to Capacity                | 0.06                                                                              | 0.02                                                                              | 0.10                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Queue Length 95th (m)             | 0.0                                                                               | 0.4                                                                               | 2.2                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Control Delay (s)                 | 0.0                                                                               | 3.0                                                                               | 9.7                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Lane LOS                          |                                                                                   | A                                                                                 | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Approach Delay (s)                | 0.0                                                                               | 3.0                                                                               | 9.7                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Approach LOS                      |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Average Delay                     |                                                                                   |                                                                                   | 3.9                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 21.7%                                                                             | ICU Level of Service                                                              |                                                                                   | A                                                                                 |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |

# HCM Unsignalized Intersection Capacity Analysis 12: Street B & Street A

Phase 2 PM+ Improvements

04/27/2019

|                                   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|--|--|--|--|--|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |  |  |  |  |  |  |  |  |
| Lane Configurations               |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |  |  |  |  |  |  |  |  |
| Sign Control                      |                                                                                   | Stop                                                                              |                                                                                   |                                                                                   | Stop                                                                              |                                                                                   |                                                                                    | Stop                                                                                |                                                                                     |                                                                                     | Stop                                                                                |                                                                                     |  |  |  |  |  |  |  |  |
| Traffic Volume (vph)              | 104                                                                               | 79                                                                                | 27                                                                                | 27                                                                                | 76                                                                                | 49                                                                                | 24                                                                                 | 24                                                                                  | 24                                                                                  | 55                                                                                  | 27                                                                                  | 104                                                                                 |  |  |  |  |  |  |  |  |
| Future Volume (vph)               | 104                                                                               | 79                                                                                | 27                                                                                | 27                                                                                | 76                                                                                | 49                                                                                | 24                                                                                 | 24                                                                                  | 24                                                                                  | 55                                                                                  | 27                                                                                  | 104                                                                                 |  |  |  |  |  |  |  |  |
| 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                                                                                |  |  |  |  |  |  |  |  |
| Hourly flow rate (vph)            | 116                                                                               | 88                                                                                | 30                                                                                | 30                                                                                | 84                                                                                | 54                                                                                | 27                                                                                 | 27                                                                                  | 27                                                                                  | 61                                                                                  | 30                                                                                  | 116                                                                                 |  |  |  |  |  |  |  |  |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |  |  |
| Volume Total (vph)                | 234                                                                               | 168                                                                               | 81                                                                                | 207                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |  |  |
| Volume Left (vph)                 | 116                                                                               | 30                                                                                | 27                                                                                | 61                                                                                |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |  |  |
| Volume Right (vph)                | 30                                                                                | 54                                                                                | 27                                                                                | 116                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |  |  |
| Hadj (s)                          | 0.06                                                                              | -0.12                                                                             | -0.10                                                                             | -0.24                                                                             |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |  |  |
| Departure Headway (s)             | 4.9                                                                               | 4.8                                                                               | 5.1                                                                               | 4.8                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |  |  |
| Degree Utilization, x             | 0.32                                                                              | 0.23                                                                              | 0.11                                                                              | 0.27                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |  |  |
| Capacity (veh/h)                  | 687                                                                               | 690                                                                               | 634                                                                               | 692                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |  |  |
| Control Delay (s)                 | 10.2                                                                              | 9.2                                                                               | 8.8                                                                               | 9.6                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |  |  |
| Approach Delay (s)                | 10.2                                                                              | 9.2                                                                               | 8.8                                                                               | 9.6                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |  |  |
| Approach LOS                      | B                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |  |  |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |  |  |
| Delay                             |                                                                                   |                                                                                   | 9.6                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |  |  |
| Level of Service                  |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |  |  |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 45.6%                                                                             | ICU Level of Service                                                              |                                                                                   | A                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |  |  |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |  |  |

# HCM Unsignalized Intersection Capacity Analysis15: Caron St & Street A

Phase 2 PM+ Improvements

04/27/2019

|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--|--|
|                                   |  |  |  |  |  |  |  |  |
| Movement                          | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |  |  |
| Lane Configurations               |  |                                                                                   |  |                                                                                   |  |  |  |  |
| Sign Control                      | Stop                                                                              |                                                                                   | Stop                                                                              |                                                                                   | Stop                                                                              | Stop                                                                              |  |  |
| Traffic Volume (vph)              | 73                                                                                | 98                                                                                | 192                                                                               | 82                                                                                | 109                                                                               | 198                                                                               |  |  |
| Future Volume (vph)               | 73                                                                                | 98                                                                                | 192                                                                               | 82                                                                                | 109                                                                               | 198                                                                               |  |  |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |  |  |
| Hourly flow rate (vph)            | 81                                                                                | 109                                                                               | 213                                                                               | 91                                                                                | 121                                                                               | 220                                                                               |  |  |
| Direction, Lane #                 | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                   |                                                                                   |  |  |
| Volume Total (vph)                | 190                                                                               | 304                                                                               | 81                                                                                | 260                                                                               |                                                                                   |                                                                                   |  |  |
| Volume Left (vph)                 | 81                                                                                | 0                                                                                 | 81                                                                                | 40                                                                                |                                                                                   |                                                                                   |  |  |
| Volume Right (vph)                | 109                                                                               | 91                                                                                | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |  |  |
| Hadj (s)                          | -0.22                                                                             | -0.15                                                                             | 0.53                                                                              | 0.11                                                                              |                                                                                   |                                                                                   |  |  |
| Departure Headway (s)             | 5.2                                                                               | 4.8                                                                               | 5.9                                                                               | 5.4                                                                               |                                                                                   |                                                                                   |  |  |
| Degree Utilization, x             | 0.27                                                                              | 0.41                                                                              | 0.13                                                                              | 0.39                                                                              |                                                                                   |                                                                                   |  |  |
| Capacity (veh/h)                  | 632                                                                               | 717                                                                               | 589                                                                               | 638                                                                               |                                                                                   |                                                                                   |  |  |
| Control Delay (s)                 | 10.1                                                                              | 11.1                                                                              | 8.6                                                                               | 10.7                                                                              |                                                                                   |                                                                                   |  |  |
| Approach Delay (s)                | 10.1                                                                              | 11.1                                                                              | 10.2                                                                              |                                                                                   |                                                                                   |                                                                                   |  |  |
| Approach LOS                      | B                                                                                 | B                                                                                 | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |  |  |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
| Delay                             |                                                                                   |                                                                                   | 10.5                                                                              |                                                                                   |                                                                                   |                                                                                   |  |  |
| Level of Service                  |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |  |  |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 47.6%                                                                             | ICU Level of Service                                                              | A                                                                                 |                                                                                   |  |  |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |  |  |



## **Appendix G**

# Projected Full Build-out Traffic Operations



| Direction                                       | Mov. | Storage Length (m) | AM Peak Hour |           |     |           | PM Peak Hour |           |     |           |
|-------------------------------------------------|------|--------------------|--------------|-----------|-----|-----------|--------------|-----------|-----|-----------|
|                                                 |      |                    | v/c          | Delay (s) | LOS | Queue (m) | v/c          | Delay (s) | LOS | Queue (m) |
| Caron Street at HWY 17 (Signalized)             |      |                    |              |           |     |           |              |           |     |           |
| EB                                              | L    | 90                 | 0.05         | 10        | B   | 3         | 0.08         | 18        | B   | 11        |
|                                                 | T    | -                  | 0.54         | 19        | B   | 107       | 0.42         | 28        | C   | 72        |
|                                                 | R    | 85                 | 0.41         | 3         | A   | 15        | 0.60         | 6         | A   | 24        |
| WB                                              | L    | 60                 | 0.06         | 10        | A   | 5         | 0.08         | 18        | B   | 10        |
|                                                 | T    | -                  | 1.06         | 68        | E   | 325       | 0.23         | 26        | C   | 41        |
|                                                 | R    | 56                 | 0.00         | 0         | A   | 0         | 0.04         | 1         | A   | 0         |
| NB                                              | L    | 80                 | 1.04         | 85        | F   | 110       | 0.74         | 46        | D   | 61        |
|                                                 | T/R  | -                  | 0.11         | 14        | B   | 10        | 0.24         | 22        | C   | 31        |
| SB                                              | L    | 40                 | 0.01         | 26        | C   | 1         | 0.14         | 21        | C   | 10        |
|                                                 | T/R  | -                  | 0.08         | 29        | C   | 7         | 0.66         | 50        | D   | 55        |
| Overall                                         |      |                    | 1.06         | 51        | E   | -         | 0.74         | 27        | C   | -         |
| Caron Street at Laurier Street (Signalized)     |      |                    |              |           |     |           |              |           |     |           |
| EB                                              | L    | 35                 | 0.05         | 16        | B   | 6         | 0.09         | 17        | B   | 9         |
|                                                 | T/R  | -                  | 0.21         | 16        | B   | 19        | 0.53         | 27        | C   | 56        |
| WB                                              | L    | 60                 | 0.10         | 17        | B   | 10        | 0.10         | 17        | B   | 8         |
|                                                 | T/R  | -                  | 0.34         | 23        | C   | 43        | 0.24         | 23        | C   | 26        |
| NB                                              | L    | 55                 | 0.27         | 17        | B   | 14        | 0.48         | 24        | C   | 16        |
|                                                 | T/R  | -                  | 0.86         | 37        | D   | 172       | 0.79         | 36        | D   | 140       |
| SB                                              | L    | 50                 | 0.07         | 15        | B   | 4         | 0.17         | 16        | B   | 8         |
|                                                 | T/R  | -                  | 0.72         | 34        | C   | 90        | 1.05         | 79        | E   | 125       |
| Overall                                         |      |                    | 0.86         | 30        | C   | -         | 1.05         | 48        | D   | -         |
| Caron Street at Hélène Street (Unsignalized)    |      |                    |              |           |     |           |              |           |     |           |
| EB                                              | L/R  | -                  | 0.01         | 11        | B   | 0.2       | 0.02         | 13        | B   | 0.4       |
| NB                                              | L    | 15                 | 0.01         | 9         | A   | 0.1       | 0.01         | 10        | A   | 0.2       |
|                                                 | T    | -                  | 0.42         | 0         | A   | 0         | 0.37         | 0         | A   | 0         |
| SB                                              | T/R  | -                  | 0.30         | 0         | A   | 0         | 0.45         | 0         | A   | 0         |
| Overall                                         |      |                    | 0.42         | 0.1       | A   | -         | 0.45         | 0.1       | A   | -         |
| Caron Street at Françoise Street (Unsignalized) |      |                    |              |           |     |           |              |           |     |           |
| EB                                              | L/R  | -                  | 0.02         | 10        | A   | -         | 0.02         | 10        | A   | -         |
| NB                                              | L    | 15                 | 0            | 7         | A   | -         | 0.01         | 7         | A   | -         |
|                                                 | T    | -                  | 0.87         | 31        | D   | -         | 0.89         | 33        | D   | -         |
| SB                                              | T/R  | -                  | 0.67         | 17        | C   | -         | 1.03         | 62        | F   | -         |
| Overall                                         |      |                    | 0.87         | 24        | C   | -         | 1.03         | 48        | E   | -         |

| Direction                                                | Mov.  | Storage Length (m) | AM Peak Hour |           |     |           | PM Peak Hour |           |     |           |
|----------------------------------------------------------|-------|--------------------|--------------|-----------|-----|-----------|--------------|-----------|-----|-----------|
|                                                          |       |                    | v/c          | Delay (s) | LOS | Queue (m) | v/c          | Delay (s) | LOS | Queue (m) |
| Caron Street at Des Cèdres Avenue (Unsignalized)         |       |                    |              |           |     |           |              |           |     |           |
| WB                                                       | L/R   | -                  | 0.04         | 13        | B   | 1         | 0.02         | 12        | B   | 1         |
| NB                                                       | T/R   | -                  | 0.37         | 0         | A   | 0         | 0.33         | 0         | A   | 0         |
| SB                                                       | L     | 15                 | 0.01         | 9         | A   | 0.1       | 0.03         | 9         | A   | 1         |
|                                                          | T     | -                  | 0.30         | 0         | A   | 0         | 0.44         | 0         | A   | 0         |
| Overall                                                  |       |                    | 0.30         | 0.2       | A   | -         | 0.44         | 0.3       | A   | -         |
| Caron Street at Cote Street/Potvin Avenue (Unsignalized) |       |                    |              |           |     |           |              |           |     |           |
| EB                                                       | L/T/R | -                  | 0.03         | 10        | A   | -         | 0.06         | 10        | B   | -         |
| WB                                                       | L/T/R | -                  | 0.03         | 10        | A   | -         | 0.03         | 10        | B   | -         |
| NB                                                       | L     | 15                 | 0.01         | 7         | A   | -         | 0.02         | 8         | A   | -         |
|                                                          | T/R   | -                  | 0.86         | 30        | D   | -         | 0.80         | 25        | C   | -         |
| SB                                                       | L     | 15                 | 0.01         | 8         | A   | -         | 0.03         | 8         | A   | -         |
|                                                          | T/R   | -                  | 0.72         | 19        | C   | -         | 1.04         | 66        | F   | -         |
| Overall                                                  |       |                    | 0.86         | 24        | C   | -         | 1.04         | 46        | E   | -         |
| Caron Street at Docteur Corbeil Boulevard (Unsignalized) |       |                    |              |           |     |           |              |           |     |           |
| EB                                                       | L/R   | -                  | 0.23         | 15        | B   | 6         | 0.41         | 19        | C   | 14        |
| NB                                                       | L     | 15                 | 0.09         | 9         | A   | 2         | 0.09         | 9         | A   | 2         |
|                                                          | T     | -                  | 0.34         | 0         | A   | 0         | 0.29         | 0         | A   | 0         |
| SB                                                       | T/R   | -                  | 0.28         | 0         | A   | 0         | 0.40         | 0         | A   | 0         |
| Overall                                                  |       |                    | 0.34         | 2         | A   | -         | 0.41         | 3         | A   | -         |
| Caron Street at David Street (Unsignalized)              |       |                    |              |           |     |           |              |           |     |           |
| WB                                                       | L/R   | -                  | 0.44         | 16        | B   | -         | 0.41         | 13        | B   | -         |
| NB                                                       | T/R   | -                  | 0.21         | 0         | A   | -         | 0.54         | 15        | C   | -         |
| SB                                                       | L     | 40                 | 0.19         | 5         | A   | -         | 0.53         | 15        | B   | -         |
|                                                          | T     | -                  | 0.19         | 5         | A   | -         | 0.61         | 16        | C   | -         |
| Overall                                                  |       |                    | 0.44         | 6         | A   | -         | 0.61         | 15        | B   | -         |
| Caron Street at Baseline Road (Unsignalized)             |       |                    |              |           |     |           |              |           |     |           |
| EB                                                       | L/T   | -                  | 0.03         | 4         | A   | 1         | 0.06         | 4         | A   | 1         |
| WB                                                       | T/R   | -                  | 0.13         | 0         | A   | 0         | 0.12         | 0         | A   | 0         |
| SB                                                       | L/R   | -                  | 0.25         | 11        | B   | 7         | 0.36         | 14        | B   | 11        |
| Overall                                                  |       |                    | 0.25         | 5         | A   | -         | 0.36         | 6         | A   | -         |
| Caron Street at Street A (Unsignalized)                  |       |                    |              |           |     |           |              |           |     |           |
| WB                                                       | L     | -                  | 0.28         | 13        | B   | -         | 0.24         | 10        | B   | -         |
|                                                          | R     | -                  | 0.28         | 13        | B   | -         | 0.24         | 10        | B   | -         |
| NB                                                       | T/R   | -                  | 0.21         | 0         | A   | -         | 0.53         | 13        | B   | -         |
| SB                                                       | L/T   | 25                 | 0.13         | 8         | A   | -         | 0.50         | 13        | B   | -         |

| Direction                                     | Mov.  | Storage Length (m) | AM Peak Hour |           |     |           | PM Peak Hour |           |     |           |
|-----------------------------------------------|-------|--------------------|--------------|-----------|-----|-----------|--------------|-----------|-----|-----------|
|                                               |       |                    | v/c          | Delay (s) | LOS | Queue (m) | v/c          | Delay (s) | LOS | Queue (m) |
| Overall                                       |       |                    | 0.28         | 3         | A   | -         | 0.53         | 12        | B   | -         |
| Street B at David Street (Unsignalized)       |       |                    |              |           |     |           |              |           |     |           |
| EB                                            | T/R   | -                  | 0.13         | 0         | A   | 0         | 0.18         | 0         | A   | 0         |
| WB                                            | L/T   | -                  | 0.02         | 1         | A   | 1         | 0.03         | 2         | A   | 1         |
| NB                                            | L/R   | -                  | 0.23         | 13        | B   | 6         | 0.22         | 13        | B   | 6         |
| Overall                                       |       |                    | 0.23         | 4         | A   | -         | 0.22         | 3         | A   | -         |
| Street B at Street A (Unsignalized)           |       |                    |              |           |     |           |              |           |     |           |
| EB                                            | L/T/R | -                  | 0.20         | 9         | A   | -         | 0.23         | 9         | A   | -         |
| WB                                            | L/T/R | -                  | 0.21         | 9         | A   | -         | 0.22         | 9         | A   | -         |
| NB                                            | L/T/R |                    | 0.19         | 9         | A   | -         | 0.17         | 9         | A   | -         |
| SB                                            | L/T/R | -                  | 0.16         | 9         | A   | -         | 0.19         | 9         | A   | -         |
| Overall                                       |       |                    | 0.21         | 9         | A   | -         | 0.23         | 9         | A   | -         |
| Street A at David Street (Unsignalized)       |       |                    |              |           |     |           |              |           |     |           |
| EB                                            | T/R   | -                  | 0.11         | 0         | A   | 0         | 0.13         | 0         | A   | 0         |
| WB                                            | L/T   | -                  | 0.02         | 3         | A   | 1         | 0.03         | 3         | A   | 1         |
| NB                                            | L/R   | -                  | 0.27         | 11        | B   | 8         | 0.25         | 12        | B   | 7         |
| Overall                                       |       |                    | 0.27         | 6         | A   | -         | 0.25         | 5         | A   | -         |
| Caron Street North at Street C (Unsignalized) |       |                    |              |           |     |           |              |           |     |           |
| EB                                            | L/T/R | -                  | 0.06         | 12        | B   | 1         | 0.06         | 13        | B   | 1         |
| WB                                            | L/T/R | -                  | 0.05         | 10        | A   | 1         | 0.04         | 10        | B   | 1         |
| NB                                            | L/T/R | -                  | 0            | 0         | A   | 0         | 0.00         | 0         | A   | 0         |
| SB                                            | L     | 25                 | 0.02         | 8         | A   | 1         | 0.03         | 8         | A   | 1         |
|                                               | T/R   | -                  | 0.16         | 0         | A   | 0         | 0.19         | 0         | A   | 0         |
| Overall                                       |       |                    | 0.16         | 1.6       | A   | -         | 0.19         | 1         | A   | -         |
| Caron Street South at Street C (Unsignalized) |       |                    |              |           |     |           |              |           |     |           |
| EB                                            | L/T/R | -                  | 0.06         | 11        | B   | 1         | 0.05         | 12        | B   | 1         |
| WB                                            | L/T/R | -                  | 0.04         | 9         | A   | 1         | 0.04         | 10        | A   | 1         |
| NB                                            | L/T/R | -                  | 0            | 0         | A   | 0         | 0.00         | 0         | A   | 0         |
| SB                                            | L     | 25                 | 0.02         | 8         | A   | 1         | 0.03         | 8         | A   | 1         |
|                                               | T/R   | -                  | 0.13         | 0         | A   | 0         | 0.15         | 0         | A   | 0         |
| Overall                                       |       |                    | 0.13         | 2         | A   | -         | 0.15         | 2         | A   | -         |

# Lanes, Volumes, Timings

## 1: Rue Caron/Rue Industrielle & HWY 17

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|                        |  |  |  |  |  |  |  |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | SBL                                                                                 | SBT                                                                                 |
| Lane Configurations    |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph)   | 34                                                                                | 254                                                                               | 490                                                                               | 30                                                                                | 143                                                                               | 26                                                                                | 409                                                                                | 87                                                                                  | 35                                                                                  | 138                                                                                 |
| Future Volume (vph)    | 34                                                                                | 254                                                                               | 490                                                                               | 30                                                                                | 143                                                                               | 26                                                                                | 409                                                                                | 87                                                                                  | 35                                                                                  | 138                                                                                 |
| Lane Group Flow (vph)  | 38                                                                                | 282                                                                               | 544                                                                               | 33                                                                                | 159                                                                               | 29                                                                                | 454                                                                                | 144                                                                                 | 39                                                                                  | 187                                                                                 |
| Turn Type              | pm+pt                                                                             | NA                                                                                | Perm                                                                              | pm+pt                                                                             | NA                                                                                | Perm                                                                              | Prot                                                                               | NA                                                                                  | pm+pt                                                                               | NA                                                                                  |
| Protected Phases       | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                  | 2                                                                                   | 1                                                                                   | 6                                                                                   |
| Permitted Phases       | 4                                                                                 |                                                                                   | 4                                                                                 | 8                                                                                 |                                                                                   | 8                                                                                 |                                                                                    |                                                                                     | 6                                                                                   |                                                                                     |
| Detector Phase         | 7                                                                                 | 4                                                                                 | 4                                                                                 | 3                                                                                 | 8                                                                                 | 8                                                                                 | 5                                                                                  | 2                                                                                   | 1                                                                                   | 6                                                                                   |
| Switch Phase           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)    | 5.0                                                                               | 10.0                                                                              | 10.0                                                                              | 5.0                                                                               | 10.0                                                                              | 10.0                                                                              | 5.0                                                                                | 10.0                                                                                | 5.0                                                                                 | 10.0                                                                                |
| Minimum Split (s)      | 11.9                                                                              | 32.9                                                                              | 32.9                                                                              | 11.9                                                                              | 32.9                                                                              | 32.9                                                                              | 10.9                                                                               | 33.3                                                                                | 10.9                                                                                | 33.3                                                                                |
| Total Split (s)        | 12.0                                                                              | 43.8                                                                              | 43.8                                                                              | 12.0                                                                              | 43.8                                                                              | 43.8                                                                              | 30.6                                                                               | 53.2                                                                                | 11.0                                                                                | 33.6                                                                                |
| Total Split (%)        | 10.0%                                                                             | 36.5%                                                                             | 36.5%                                                                             | 10.0%                                                                             | 36.5%                                                                             | 36.5%                                                                             | 25.5%                                                                              | 44.3%                                                                               | 9.2%                                                                                | 28.0%                                                                               |
| Yellow Time (s)        | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               | 3.3                                                                                | 3.3                                                                                 | 3.3                                                                                 | 3.3                                                                                 |
| All-Red Time (s)       | 2.7                                                                               | 2.7                                                                               | 2.7                                                                               | 2.7                                                                               | 2.7                                                                               | 2.7                                                                               | 2.6                                                                                | 3.0                                                                                 | 2.6                                                                                 | 3.0                                                                                 |
| Lost Time Adjust (s)   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)    | 6.9                                                                               | 6.9                                                                               | 6.9                                                                               | 6.9                                                                               | 6.9                                                                               | 6.9                                                                               | 5.9                                                                                | 6.3                                                                                 | 5.9                                                                                 | 6.3                                                                                 |
| Lead/Lag               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                               | Lag                                                                                 | Lead                                                                                | Lag                                                                                 |
| Lead-Lag Optimize?     | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Recall Mode            | None                                                                              | Max                                                                               | Max                                                                               | None                                                                              | Max                                                                               | Max                                                                               | None                                                                               | None                                                                                | None                                                                                | None                                                                                |
| Act Effct Green (s)    | 40.5                                                                              | 37.8                                                                              | 37.8                                                                              | 40.5                                                                              | 37.8                                                                              | 37.8                                                                              | 18.6                                                                               | 34.6                                                                                | 21.5                                                                                | 15.9                                                                                |
| Actuated g/C Ratio     | 0.41                                                                              | 0.38                                                                              | 0.38                                                                              | 0.41                                                                              | 0.38                                                                              | 0.38                                                                              | 0.19                                                                               | 0.35                                                                                | 0.22                                                                                | 0.16                                                                                |
| v/c Ratio              | 0.08                                                                              | 0.42                                                                              | 0.60                                                                              | 0.08                                                                              | 0.23                                                                              | 0.04                                                                              | 0.74                                                                               | 0.24                                                                                | 0.14                                                                                | 0.66                                                                                |
| Control Delay          | 18.3                                                                              | 28.1                                                                              | 5.6                                                                               | 18.4                                                                              | 25.6                                                                              | 0.1                                                                               | 46.4                                                                               | 21.6                                                                                | 21.1                                                                                | 49.9                                                                                |
| Queue Delay            | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay            | 18.3                                                                              | 28.1                                                                              | 5.6                                                                               | 18.4                                                                              | 25.6                                                                              | 0.1                                                                               | 46.4                                                                               | 21.6                                                                                | 21.1                                                                                | 49.9                                                                                |
| LOS                    | B                                                                                 | C                                                                                 | A                                                                                 | B                                                                                 | C                                                                                 | A                                                                                 | D                                                                                  | C                                                                                   | C                                                                                   | D                                                                                   |
| Approach Delay         |                                                                                   | 13.5                                                                              |                                                                                   |                                                                                   | 21.2                                                                              |                                                                                   |                                                                                    | 40.5                                                                                |                                                                                     | 44.9                                                                                |
| Approach LOS           |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                    | D                                                                                   |                                                                                     | D                                                                                   |
| Queue Length 50th (m)  | 3.7                                                                               | 39.7                                                                              | 0.0                                                                               | 3.2                                                                               | 20.7                                                                              | 0.0                                                                               | 41.2                                                                               | 16.9                                                                                | 4.3                                                                                 | 31.6                                                                                |
| Queue Length 95th (m)  | 10.7                                                                              | 71.9                                                                              | 24.3                                                                              | 9.6                                                                               | 41.0                                                                              | 0.0                                                                               | 61.0                                                                               | 30.7                                                                                | 9.8                                                                                 | 54.7                                                                                |
| Internal Link Dist (m) |                                                                                   | 820.6                                                                             |                                                                                   |                                                                                   | 792.2                                                                             |                                                                                   |                                                                                    | 422.2                                                                               |                                                                                     | 103.9                                                                               |
| Turn Bay Length (m)    | 90.0                                                                              |                                                                                   | 85.0                                                                              | 60.0                                                                              |                                                                                   | 56.0                                                                              | 60.0                                                                               |                                                                                     | 40.0                                                                                |                                                                                     |
| Base Capacity (vph)    | 504                                                                               | 678                                                                               | 911                                                                               | 407                                                                               | 678                                                                               | 699                                                                               | 836                                                                                | 831                                                                                 | 283                                                                                 | 494                                                                                 |
| Starvation Cap Reductn | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                  | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio      | 0.08                                                                              | 0.42                                                                              | 0.60                                                                              | 0.08                                                                              | 0.23                                                                              | 0.04                                                                              | 0.54                                                                               | 0.17                                                                                | 0.14                                                                                | 0.38                                                                                |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 98.3

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 26.6

Intersection LOS: C

Intersection Capacity Utilization 62.6%

ICU Level of Service B

Analysis Period (min) 15

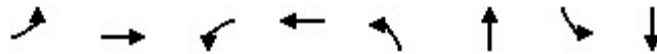
Splits and Phases: 1: Rue Caron/Rue Industrielle & HWY 17

|                                                                                     |                                                                                     |                                                                                     |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|  |  |  |  |
| Ø1                                                                                  | Ø2                                                                                  | Ø3                                                                                  | Ø4                                                                                    |
| 11 s                                                                                | 53.2 s                                                                              | 12 s                                                                                | 43.8 s                                                                                |
|  |  |  |  |
| Ø5                                                                                  | Ø6                                                                                  | Ø7                                                                                  | Ø8                                                                                    |
| 30.6 s                                                                              | 33.6 s                                                                              | 12 s                                                                                | 43.8 s                                                                                |

# Lanes, Volumes, Timings

## 2: Caron St/Rue Caron & Laurier St

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| Lane Group             | EBL   | EBT   | WBL   | WBT   | NBL   | NBT    | SBL   | SBT    |
|------------------------|-------|-------|-------|-------|-------|--------|-------|--------|
| Lane Configurations    |       |       |       |       |       |        |       |        |
| Traffic Volume (vph)   | 34    | 155   | 30    | 87    | 79    | 445    | 35    | 564    |
| Future Volume (vph)    | 34    | 155   | 30    | 87    | 79    | 445    | 35    | 564    |
| Lane Group Flow (vph)  | 38    | 280   | 33    | 126   | 88    | 541    | 39    | 661    |
| Turn Type              | pm+pt | NA    | pm+pt | NA    | pm+pt | NA     | pm+pt | NA     |
| Protected Phases       | 7     | 4     | 3     | 8     | 5     | 2      | 1     | 6      |
| Permitted Phases       | 4     |       | 8     |       | 2     |        | 6     |        |
| Detector Phase         | 7     | 4     | 3     | 8     | 5     | 2      | 1     | 6      |
| Switch Phase           |       |       |       |       |       |        |       |        |
| Minimum Initial (s)    | 5.0   | 10.0  | 5.0   | 10.0  | 5.0   | 10.0   | 5.0   | 10.0   |
| Minimum Split (s)      | 11.5  | 31.5  | 11.5  | 31.5  | 11.1  | 27.1   | 11.1  | 27.1   |
| Total Split (s)        | 11.6  | 31.6  | 11.6  | 31.6  | 11.2  | 35.7   | 11.1  | 35.6   |
| Total Split (%)        | 12.9% | 35.1% | 12.9% | 35.1% | 12.4% | 39.7%  | 12.3% | 39.6%  |
| Yellow Time (s)        | 3.3   | 3.3   | 3.3   | 3.3   | 3.3   | 3.3    | 3.3   | 3.3    |
| All-Red Time (s)       | 3.2   | 3.2   | 3.2   | 3.2   | 2.8   | 2.8    | 2.8   | 2.8    |
| Lost Time Adjust (s)   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0   | 0.0    |
| Total Lost Time (s)    | 6.5   | 6.5   | 6.5   | 6.5   | 6.1   | 6.1    | 6.1   | 6.1    |
| Lead/Lag               | Lead  | Lag   | Lead  | Lag   | Lead  | Lag    | Lead  | Lag    |
| Lead-Lag Optimize?     | Yes   | Yes   | Yes   | Yes   | Yes   | Yes    | Yes   | Yes    |
| Recall Mode            | None  | Max   | None  | Max   | None  | None   | None  | None   |
| Act Effct Green (s)    | 28.3  | 25.4  | 28.3  | 25.4  | 35.1  | 32.3   | 33.7  | 29.9   |
| Actuated g/C Ratio     | 0.34  | 0.31  | 0.34  | 0.31  | 0.42  | 0.39   | 0.41  | 0.36   |
| v/c Ratio              | 0.09  | 0.53  | 0.10  | 0.24  | 0.48  | 0.79   | 0.17  | 1.05   |
| Control Delay          | 17.2  | 27.0  | 17.3  | 22.5  | 23.5  | 36.1   | 15.5  | 79.1   |
| Queue Delay            | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0   | 0.0    |
| Total Delay            | 17.2  | 27.0  | 17.3  | 22.5  | 23.5  | 36.1   | 15.5  | 79.1   |
| LOS                    | B     | C     | B     | C     | C     | D      | B     | E      |
| Approach Delay         |       | 25.8  |       | 21.4  |       | 34.3   |       | 75.6   |
| Approach LOS           |       | C     |       | C     |       | C      |       | E      |
| Queue Length 50th (m)  | 3.6   | 33.3  | 3.1   | 13.4  | 7.8   | 82.0   | 3.4   | ~125.1 |
| Queue Length 95th (m)  | 9.0   | 56.2  | 8.2   | 26.3  | 15.6  | #139.7 | 8.4   | #184.7 |
| Internal Link Dist (m) |       | 919.9 |       | 690.6 |       | 145.4  |       | 422.2  |
| Turn Bay Length (m)    | 35.0  |       | 60.0  |       | 55.0  |        | 50.0  |        |
| Base Capacity (vph)    | 435   | 532   | 334   | 533   | 183   | 681    | 230   | 631    |
| Starvation Cap Reductn | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0      |
| Spillback Cap Reductn  | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0      |
| Storage Cap Reductn    | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0      |
| Reduced v/c Ratio      | 0.09  | 0.53  | 0.10  | 0.24  | 0.48  | 0.79   | 0.17  | 1.05   |

### Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 83.1

Natural Cycle: 95

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.05

Intersection Signal Delay: 47.7

Intersection LOS: D

Intersection Capacity Utilization 78.0%

ICU Level of Service D

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

Splits and Phases: 2: Caron St/Rue Caron & Laurier St

|        |        |        |        |
|--------|--------|--------|--------|
|        |        |        |        |
| 11.1 s | 35.7 s | 11.6 s | 31.6 s |
|        |        |        |        |
| 11.2 s | 35.6 s | 11.6 s | 31.6 s |

# HCM Unsignalized Intersection Capacity Analysis

## 3: Caron St & Hélène St

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| Movement                          | EBL                                                                               | EBR  | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR  |
|-----------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations               |  |      |  |  |  |      |
| Traffic Volume (veh/h)            | 0                                                                                 | 5    | 6                                                                                 | 635                                                                               | 452                                                                               | 3    |
| Future Volume (Veh/h)             | 0                                                                                 | 5    | 6                                                                                 | 635                                                                               | 452                                                                               | 3    |
| Sign Control                      | Stop                                                                              |      |                                                                                   | Free                                                                              | Free                                                                              |      |
| Grade                             | 0%                                                                                |      |                                                                                   | 0%                                                                                | 0%                                                                                |      |
| Peak Hour Factor                  | 0.90                                                                              | 0.90 | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90 |
| Hourly flow rate (vph)            | 0                                                                                 | 6    | 7                                                                                 | 706                                                                               | 502                                                                               | 3    |
| Pedestrians                       |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Lane Width (m)                    |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Walking Speed (m/s)               |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Percent Blockage                  |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Right turn flare (veh)            |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Median type                       |                                                                                   |      |                                                                                   | TWLTL                                                                             | TWLTL                                                                             |      |
| Median storage veh)               |                                                                                   |      |                                                                                   | 2                                                                                 | 2                                                                                 |      |
| Upstream signal (m)               |                                                                                   |      |                                                                                   |                                                                                   | 169                                                                               |      |
| pX, platoon unblocked             | 0.80                                                                              | 0.80 | 0.80                                                                              |                                                                                   |                                                                                   |      |
| vC, conflicting volume            | 1224                                                                              | 504  | 505                                                                               |                                                                                   |                                                                                   |      |
| vC1, stage 1 conf vol             | 504                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |
| vC2, stage 2 conf vol             | 720                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |
| vCu, unblocked vol                | 1153                                                                              | 250  | 252                                                                               |                                                                                   |                                                                                   |      |
| tC, single (s)                    | 6.4                                                                               | 6.2  | 4.1                                                                               |                                                                                   |                                                                                   |      |
| tC, 2 stage (s)                   | 5.4                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |
| tF (s)                            | 3.5                                                                               | 3.3  | 2.2                                                                               |                                                                                   |                                                                                   |      |
| p0 queue free %                   | 100                                                                               | 99   | 99                                                                                |                                                                                   |                                                                                   |      |
| cM capacity (veh/h)               | 404                                                                               | 629  | 1047                                                                              |                                                                                   |                                                                                   |      |
| Direction, Lane #                 | EB 1                                                                              | NB 1 | NB 2                                                                              | SB 1                                                                              |                                                                                   |      |
| Volume Total                      | 6                                                                                 | 7    | 706                                                                               | 505                                                                               |                                                                                   |      |
| Volume Left                       | 0                                                                                 | 7    | 0                                                                                 | 0                                                                                 |                                                                                   |      |
| Volume Right                      | 6                                                                                 | 0    | 0                                                                                 | 3                                                                                 |                                                                                   |      |
| cSH                               | 629                                                                               | 1047 | 1700                                                                              | 1700                                                                              |                                                                                   |      |
| Volume to Capacity                | 0.01                                                                              | 0.01 | 0.42                                                                              | 0.30                                                                              |                                                                                   |      |
| Queue Length 95th (m)             | 0.2                                                                               | 0.1  | 0.0                                                                               | 0.0                                                                               |                                                                                   |      |
| Control Delay (s)                 | 10.8                                                                              | 8.5  | 0.0                                                                               | 0.0                                                                               |                                                                                   |      |
| Lane LOS                          | B                                                                                 | A    |                                                                                   |                                                                                   |                                                                                   |      |
| Approach Delay (s)                | 10.8                                                                              | 0.1  |                                                                                   | 0.0                                                                               |                                                                                   |      |
| Approach LOS                      | B                                                                                 |      |                                                                                   |                                                                                   |                                                                                   |      |
| Intersection Summary              |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Average Delay                     | 0.1                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |
| Intersection Capacity Utilization | 45.3%                                                                             |      |                                                                                   | ICU Level of Service                                                              | A                                                                                 |      |
| Analvsis Period (min)             | 15                                                                                |      |                                                                                   |                                                                                   |                                                                                   |      |

# HCM Unsignalized Intersection Capacity Analysis

## 4: Caron St & Francois St

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| Movement                          | EBL                                                                               | EBR  | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR  |
|-----------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations               |  |      |  |  |  |      |
| Sign Control                      | Stop                                                                              |      |                                                                                   | Stop                                                                              | Stop                                                                              |      |
| Traffic Volume (vph)              | 9                                                                                 | 3    | 1                                                                                 | 571                                                                               | 455                                                                               | 2    |
| Future Volume (vph)               | 9                                                                                 | 3    | 1                                                                                 | 571                                                                               | 455                                                                               | 2    |
| Peak Hour Factor                  | 0.90                                                                              | 0.90 | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90 |
| Hourly flow rate (vph)            | 10                                                                                | 3    | 1                                                                                 | 634                                                                               | 506                                                                               | 2    |
| Direction, Lane #                 | EB 1                                                                              | NB 1 | NB 2                                                                              | SB 1                                                                              |                                                                                   |      |
| Volume Total (vph)                | 13                                                                                | 1    | 634                                                                               | 508                                                                               |                                                                                   |      |
| Volume Left (vph)                 | 10                                                                                | 1    | 0                                                                                 | 0                                                                                 |                                                                                   |      |
| Volume Right (vph)                | 3                                                                                 | 0    | 0                                                                                 | 2                                                                                 |                                                                                   |      |
| Hadj (s)                          | 0.05                                                                              | 0.53 | 0.03                                                                              | 0.03                                                                              |                                                                                   |      |
| Departure Headway (s)             | 6.5                                                                               | 5.4  | 4.9                                                                               | 4.8                                                                               |                                                                                   |      |
| Degree Utilization, x             | 0.02                                                                              | 0.00 | 0.87                                                                              | 0.67                                                                              |                                                                                   |      |
| Capacity (veh/h)                  | 506                                                                               | 649  | 721                                                                               | 745                                                                               |                                                                                   |      |
| Control Delay (s)                 | 9.7                                                                               | 7.3  | 30.5                                                                              | 17.0                                                                              |                                                                                   |      |
| Approach Delay (s)                | 9.7                                                                               | 30.4 |                                                                                   | 17.0                                                                              |                                                                                   |      |
| Approach LOS                      | A                                                                                 | D    |                                                                                   | C                                                                                 |                                                                                   |      |
| Intersection Summary              |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Delay                             |                                                                                   |      | 24.3                                                                              |                                                                                   |                                                                                   |      |
| Level of Service                  |                                                                                   |      | C                                                                                 |                                                                                   |                                                                                   |      |
| Intersection Capacity Utilization |                                                                                   |      | 41.7%                                                                             | ICU Level of Service                                                              | A                                                                                 |      |
| Analysis Period (min)             |                                                                                   |      | 15                                                                                |                                                                                   |                                                                                   |      |

# HCM Unsignalized Intersection Capacity Analysis

## 5: Caron St & Des Cedres Ave

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|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                   |  |  |  |  |  |  |
| Movement                          | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |
| Lane Configurations               |  |                                                                                   |  |                                                                                   |  |  |
| Traffic Volume (veh/h)            | 5                                                                                 | 10                                                                                | 562                                                                               | 1                                                                                 | 5                                                                                 | 453                                                                               |
| Future Volume (Veh/h)             | 5                                                                                 | 10                                                                                | 562                                                                               | 1                                                                                 | 5                                                                                 | 453                                                                               |
| Sign Control                      | Stop                                                                              |                                                                                   | Free                                                                              |                                                                                   | Free                                                                              | Free                                                                              |
| Grade                             | 0%                                                                                |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |
| Hourly flow rate (vph)            | 6                                                                                 | 11                                                                                | 624                                                                               | 1                                                                                 | 6                                                                                 | 503                                                                               |
| Pedestrians                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Width (m)                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Walking Speed (m/s)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Percent Blockage                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Median type                       |                                                                                   |                                                                                   | TWLTL                                                                             |                                                                                   | TWLTL                                                                             |                                                                                   |
| Median storage veh)               |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   | 2                                                                                 |                                                                                   |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| pX, platoon unblocked             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC, conflicting volume            | 1140                                                                              | 624                                                                               |                                                                                   |                                                                                   | 625                                                                               |                                                                                   |
| vC1, stage 1 conf vol             | 624                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC2, stage 2 conf vol             | 515                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vCu, unblocked vol                | 1140                                                                              | 624                                                                               |                                                                                   |                                                                                   | 625                                                                               |                                                                                   |
| tC, single (s)                    | 6.4                                                                               | 6.2                                                                               |                                                                                   |                                                                                   | 4.1                                                                               |                                                                                   |
| tC, 2 stage (s)                   | 5.4                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| tF (s)                            | 3.5                                                                               | 3.3                                                                               |                                                                                   |                                                                                   | 2.2                                                                               |                                                                                   |
| p0 queue free %                   | 99                                                                                | 98                                                                                |                                                                                   |                                                                                   | 99                                                                                |                                                                                   |
| cM capacity (veh/h)               | 437                                                                               | 485                                                                               |                                                                                   |                                                                                   | 956                                                                               |                                                                                   |
| Direction, Lane #                 | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                   |                                                                                   |
| Volume Total                      | 17                                                                                | 625                                                                               | 6                                                                                 | 503                                                                               |                                                                                   |                                                                                   |
| Volume Left                       | 6                                                                                 | 0                                                                                 | 6                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |
| Volume Right                      | 11                                                                                | 1                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |
| cSH                               | 467                                                                               | 1700                                                                              | 956                                                                               | 1700                                                                              |                                                                                   |                                                                                   |
| Volume to Capacity                | 0.04                                                                              | 0.37                                                                              | 0.01                                                                              | 0.30                                                                              |                                                                                   |                                                                                   |
| Queue Length 95th (m)             | 0.8                                                                               | 0.0                                                                               | 0.1                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |
| Control Delay (s)                 | 13.0                                                                              | 0.0                                                                               | 8.8                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |
| Lane LOS                          | B                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Approach Delay (s)                | 13.0                                                                              | 0.0                                                                               | 0.1                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Approach LOS                      | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Average Delay                     |                                                                                   | 0.2                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization |                                                                                   | 41.3%                                                                             |                                                                                   | ICU Level of Service                                                              |                                                                                   | A                                                                                 |
| Analysis Period (min)             |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |

# HCM Unsignalized Intersection Capacity Analysis

## 6: Caron St & Cote St/Potvin Ave

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|                                   |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|--|--|--|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |  |  |  |  |  |  |
| Lane Configurations               |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |  |  |                                                                                     |  |  |                                                                                     |  |  |  |  |  |  |
| Sign Control                      |                                                                                   | Stop                                                                              |                                                                                   |                                                                                   | Stop                                                                              |                                                                                   |                                                                                     | Stop                                                                                |                                                                                     |                                                                                     | Stop                                                                                |                                                                                     |  |  |  |  |  |  |
| Traffic Volume (vph)              | 9                                                                                 | 0                                                                                 | 8                                                                                 | 9                                                                                 | 1                                                                                 | 6                                                                                 | 4                                                                                   | 548                                                                                 | 6                                                                                   | 5                                                                                   | 453                                                                                 | 0                                                                                   |  |  |  |  |  |  |
| Future Volume (vph)               | 9                                                                                 | 0                                                                                 | 8                                                                                 | 9                                                                                 | 1                                                                                 | 6                                                                                 | 4                                                                                   | 548                                                                                 | 6                                                                                   | 5                                                                                   | 453                                                                                 | 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                                                                                |  |  |  |  |  |  |
| Hourly flow rate (vph)            | 10                                                                                | 0                                                                                 | 9                                                                                 | 10                                                                                | 1                                                                                 | 7                                                                                 | 4                                                                                   | 609                                                                                 | 7                                                                                   | 6                                                                                   | 503                                                                                 | 0                                                                                   |  |  |  |  |  |  |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              | NB 2                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Volume Total (vph)                | 19                                                                                | 18                                                                                | 4                                                                                 | 616                                                                               | 6                                                                                 | 503                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Volume Left (vph)                 | 10                                                                                | 10                                                                                | 4                                                                                 | 0                                                                                 | 6                                                                                 | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Volume Right (vph)                | 9                                                                                 | 7                                                                                 | 0                                                                                 | 7                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Hadj (s)                          | -0.14                                                                             | -0.09                                                                             | 0.53                                                                              | 0.03                                                                              | 0.53                                                                              | 0.03                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Departure Headway (s)             | 6.3                                                                               | 6.4                                                                               | 5.6                                                                               | 5.0                                                                               | 5.6                                                                               | 5.1                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Degree Utilization, x             | 0.03                                                                              | 0.03                                                                              | 0.01                                                                              | 0.86                                                                              | 0.01                                                                              | 0.72                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Capacity (veh/h)                  | 514                                                                               | 505                                                                               | 628                                                                               | 703                                                                               | 623                                                                               | 685                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Control Delay (s)                 | 9.6                                                                               | 9.6                                                                               | 7.4                                                                               | 30.0                                                                              | 7.5                                                                               | 18.8                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Approach Delay (s)                | 9.6                                                                               | 9.6                                                                               | 29.9                                                                              |                                                                                   | 18.7                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Approach LOS                      | A                                                                                 | A                                                                                 | D                                                                                 |                                                                                   | C                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Delay                             |                                                                                   |                                                                                   | 24.4                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Level of Service                  |                                                                                   |                                                                                   | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 40.8%                                                                             | ICU Level of Service                                                              |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |

# HCM Unsignalized Intersection Capacity Analysis

## 7: Caron St & Docteur Corbeil Blvd

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| Movement                          | EBL                                                                               | EBR  | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|--|--|--|--|--|--|--|--|--|--|--|
| Lane Configurations               |  |      |  |  |  |      |  |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (veh/h)            | 38                                                                                | 61   | 92                                                                                | 520                                                                               | 387                                                                               | 43   |  |  |  |  |  |  |  |  |  |  |  |
| Future Volume (Veh/h)             | 38                                                                                | 61   | 92                                                                                | 520                                                                               | 387                                                                               | 43   |  |  |  |  |  |  |  |  |  |  |  |
| Sign Control                      | Stop                                                                              |      |                                                                                   | Free                                                                              | Free                                                                              |      |  |  |  |  |  |  |  |  |  |  |  |
| Grade                             | 0%                                                                                |      |                                                                                   | 0%                                                                                | 0%                                                                                |      |  |  |  |  |  |  |  |  |  |  |  |
| Peak Hour Factor                  | 0.90                                                                              | 0.90 | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90 |  |  |  |  |  |  |  |  |  |  |  |
| Hourly flow rate (vph)            | 42                                                                                | 68   | 102                                                                               | 578                                                                               | 430                                                                               | 48   |  |  |  |  |  |  |  |  |  |  |  |
| Pedestrians                       | 2                                                                                 |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| Lane Width (m)                    | 3.6                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| Walking Speed (m/s)               | 1.2                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| Percent Blockage                  | 0                                                                                 |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| Right turn flare (veh)            |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| Median type                       |                                                                                   |      |                                                                                   | TWLTL                                                                             | TWLTL                                                                             |      |  |  |  |  |  |  |  |  |  |  |  |
| Median storage veh)               |                                                                                   |      |                                                                                   | 2                                                                                 | 2                                                                                 |      |  |  |  |  |  |  |  |  |  |  |  |
| Upstream signal (m)               |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| pX, platoon unblocked             |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| vC, conflicting volume            | 1238                                                                              | 456  | 480                                                                               |                                                                                   |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| vC1, stage 1 conf vol             | 456                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| vC2, stage 2 conf vol             | 782                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| vCu, unblocked vol                | 1238                                                                              | 456  | 480                                                                               |                                                                                   |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| tC, single (s)                    | 6.4                                                                               | 6.2  | 4.1                                                                               |                                                                                   |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| tC, 2 stage (s)                   | 5.4                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| tF (s)                            | 3.5                                                                               | 3.3  | 2.2                                                                               |                                                                                   |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| p0 queue free %                   | 89                                                                                | 89   | 91                                                                                |                                                                                   |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| cM capacity (veh/h)               | 366                                                                               | 603  | 1081                                                                              |                                                                                   |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| Direction, Lane #                 | EB 1                                                                              | NB 1 | NB 2                                                                              | SB 1                                                                              |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| Volume Total                      | 110                                                                               | 102  | 578                                                                               | 478                                                                               |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| Volume Left                       | 42                                                                                | 102  | 0                                                                                 | 0                                                                                 |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| Volume Right                      | 68                                                                                | 0    | 0                                                                                 | 48                                                                                |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| cSH                               | 483                                                                               | 1081 | 1700                                                                              | 1700                                                                              |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| Volume to Capacity                | 0.23                                                                              | 0.09 | 0.34                                                                              | 0.28                                                                              |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| Queue Length 95th (m)             | 6.1                                                                               | 2.2  | 0.0                                                                               | 0.0                                                                               |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| Control Delay (s)                 | 14.6                                                                              | 8.7  | 0.0                                                                               | 0.0                                                                               |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| Lane LOS                          | B                                                                                 | A    |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| Approach Delay (s)                | 14.6                                                                              | 1.3  |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| Approach LOS                      | B                                                                                 |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| Intersection Summary              |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| Average Delay                     | 2.0                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |
| Intersection Capacity Utilization | 45.8%                                                                             |      |                                                                                   | ICU Level of Service                                                              |                                                                                   | A    |  |  |  |  |  |  |  |  |  |  |  |
| Analvsis Period (min)             | 15                                                                                |      |                                                                                   |                                                                                   |                                                                                   |      |  |  |  |  |  |  |  |  |  |  |  |

# HCM Unsignalized Intersection Capacity Analysis

## 8: David St & Caron St

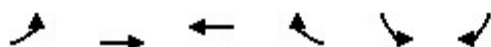
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|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--|--|
| Movement                          | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |  |  |
| Lane Configurations               |  |                                                                                   |  |                                                                                   |  |  |  |  |
| Sign Control                      | Stop                                                                              |                                                                                   | Stop                                                                              |                                                                                   | Stop                                                                              | Stop                                                                              |  |  |
| Traffic Volume (vph)              | 5                                                                                 | 265                                                                               | 315                                                                               | 2                                                                                 | 202                                                                               | 246                                                                               |  |  |
| Future Volume (vph)               | 5                                                                                 | 265                                                                               | 315                                                                               | 2                                                                                 | 202                                                                               | 246                                                                               |  |  |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |  |  |
| Hourly flow rate (vph)            | 6                                                                                 | 294                                                                               | 350                                                                               | 2                                                                                 | 224                                                                               | 273                                                                               |  |  |
| Direction, Lane #                 | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                   |                                                                                   |  |  |
| Volume Total (vph)                | 300                                                                               | 352                                                                               | 224                                                                               | 273                                                                               |                                                                                   |                                                                                   |  |  |
| Volume Left (vph)                 | 6                                                                                 | 0                                                                                 | 224                                                                               | 0                                                                                 |                                                                                   |                                                                                   |  |  |
| Volume Right (vph)                | 294                                                                               | 2                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |  |  |
| Hadj (s)                          | -0.55                                                                             | 0.03                                                                              | 0.53                                                                              | 0.03                                                                              |                                                                                   |                                                                                   |  |  |
| Departure Headway (s)             | 5.4                                                                               | 5.6                                                                               | 6.4                                                                               | 5.9                                                                               |                                                                                   |                                                                                   |  |  |
| Degree Utilization, x             | 0.45                                                                              | 0.55                                                                              | 0.40                                                                              | 0.45                                                                              |                                                                                   |                                                                                   |  |  |
| Capacity (veh/h)                  | 621                                                                               | 614                                                                               | 545                                                                               | 592                                                                               |                                                                                   |                                                                                   |  |  |
| Control Delay (s)                 | 12.8                                                                              | 15.1                                                                              | 12.4                                                                              | 12.4                                                                              |                                                                                   |                                                                                   |  |  |
| Approach Delay (s)                | 12.8                                                                              | 15.1                                                                              | 12.4                                                                              |                                                                                   |                                                                                   |                                                                                   |  |  |
| Approach LOS                      | B                                                                                 | C                                                                                 | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |  |  |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
| Delay                             |                                                                                   |                                                                                   | 13.3                                                                              |                                                                                   |                                                                                   |                                                                                   |  |  |
| Level of Service                  |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |  |  |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 57.0%                                                                             | ICU Level of Service                                                              | B                                                                                 |                                                                                   |  |  |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |  |  |

# HCM Unsignalized Intersection Capacity Analysis

## 9: Baseline Rd & Caron St

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| Movement                          | EBL  | EBT                                                                               | WBT                                                                               | WBR                  | SBL                                                                               | SBR  |
|-----------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations               |      |  |  |                      |  |      |
| Traffic Volume (veh/h)            | 34   | 28                                                                                | 58                                                                                | 134                  | 117                                                                               | 58   |
| Future Volume (Veh/h)             | 34   | 28                                                                                | 58                                                                                | 134                  | 117                                                                               | 58   |
| Sign Control                      |      | Free                                                                              | Free                                                                              |                      | Stop                                                                              |      |
| Grade                             |      | 0%                                                                                | 0%                                                                                |                      | 0%                                                                                |      |
| Peak Hour Factor                  | 0.90 | 0.90                                                                              | 0.90                                                                              | 0.90                 | 0.90                                                                              | 0.90 |
| Hourly flow rate (vph)            | 38   | 31                                                                                | 64                                                                                | 149                  | 130                                                                               | 64   |
| Pedestrians                       |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Lane Width (m)                    |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Walking Speed (m/s)               |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Percent Blockage                  |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Right turn flare (veh)            |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Median type                       |      | None                                                                              | None                                                                              |                      |                                                                                   |      |
| Median storage veh                |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Upstream signal (m)               |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| pX, platoon unblocked             |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| vC, conflicting volume            | 213  |                                                                                   |                                                                                   |                      | 246                                                                               | 138  |
| vC1, stage 1 conf vol             |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| vC2, stage 2 conf vol             |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| vCu, unblocked vol                | 213  |                                                                                   |                                                                                   |                      | 246                                                                               | 138  |
| tC, single (s)                    | 4.1  |                                                                                   |                                                                                   |                      | 6.4                                                                               | 6.2  |
| tC, 2 stage (s)                   |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| tF (s)                            | 2.2  |                                                                                   |                                                                                   |                      | 3.5                                                                               | 3.3  |
| p0 queue free %                   | 97   |                                                                                   |                                                                                   |                      | 82                                                                                | 93   |
| cM capacity (veh/h)               | 1357 |                                                                                   |                                                                                   |                      | 722                                                                               | 910  |
| Direction, Lane #                 | EB 1 | WB 1                                                                              | SB 1                                                                              |                      |                                                                                   |      |
| Volume Total                      | 69   | 213                                                                               | 194                                                                               |                      |                                                                                   |      |
| Volume Left                       | 38   | 0                                                                                 | 130                                                                               |                      |                                                                                   |      |
| Volume Right                      | 0    | 149                                                                               | 64                                                                                |                      |                                                                                   |      |
| cSH                               | 1357 | 1700                                                                              | 775                                                                               |                      |                                                                                   |      |
| Volume to Capacity                | 0.03 | 0.13                                                                              | 0.25                                                                              |                      |                                                                                   |      |
| Queue Length 95th (m)             | 0.6  | 0.0                                                                               | 6.9                                                                               |                      |                                                                                   |      |
| Control Delay (s)                 | 4.4  | 0.0                                                                               | 11.2                                                                              |                      |                                                                                   |      |
| Lane LOS                          | A    |                                                                                   | B                                                                                 |                      |                                                                                   |      |
| Approach Delay (s)                | 4.4  | 0.0                                                                               | 11.2                                                                              |                      |                                                                                   |      |
| Approach LOS                      |      |                                                                                   | B                                                                                 |                      |                                                                                   |      |
| Intersection Summary              |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Average Delay                     |      |                                                                                   | 5.2                                                                               |                      |                                                                                   |      |
| Intersection Capacity Utilization |      |                                                                                   | 36.0%                                                                             | ICU Level of Service |                                                                                   | A    |
| Analvsis Period (min)             |      |                                                                                   | 15                                                                                |                      |                                                                                   |      |

# HCM Unsignalized Intersection Capacity Analysis

## 10: Street B & David St

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|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                   |  |  |  |  |  |  |
| Movement                          | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBR                                                                               |
| Lane Configurations               |  |                                                                                   |                                                                                   |  |  |  |
| Traffic Volume (veh/h)            | 130                                                                               | 74                                                                                | 25                                                                                | 174                                                                               | 96                                                                                | 32                                                                                |
| Future Volume (Veh/h)             | 130                                                                               | 74                                                                                | 25                                                                                | 174                                                                               | 96                                                                                | 32                                                                                |
| Sign Control                      | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              | Stop                                                                              |                                                                                   |
| Grade                             | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                | 0%                                                                                |                                                                                   |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |
| Hourly flow rate (vph)            | 144                                                                               | 82                                                                                | 28                                                                                | 193                                                                               | 107                                                                               | 36                                                                                |
| Pedestrians                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Width (m)                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Walking Speed (m/s)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Percent Blockage                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Median type                       | None                                                                              |                                                                                   |                                                                                   | None                                                                              |                                                                                   |                                                                                   |
| Median storage (veh)              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| pX, platoon unblocked             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC, conflicting volume            |                                                                                   |                                                                                   | 226                                                                               |                                                                                   | 434                                                                               | 185                                                                               |
| vC1, stage 1 conf vol             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC2, stage 2 conf vol             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vCu, unblocked vol                |                                                                                   |                                                                                   | 226                                                                               |                                                                                   | 434                                                                               | 185                                                                               |
| tC, single (s)                    |                                                                                   |                                                                                   | 4.1                                                                               |                                                                                   | 6.4                                                                               | 6.2                                                                               |
| tC, 2 stage (s)                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| tF (s)                            |                                                                                   |                                                                                   | 2.2                                                                               |                                                                                   | 3.5                                                                               | 3.3                                                                               |
| p0 queue free %                   |                                                                                   |                                                                                   | 98                                                                                |                                                                                   | 81                                                                                | 96                                                                                |
| cM capacity (veh/h)               |                                                                                   |                                                                                   | 1342                                                                              |                                                                                   | 567                                                                               | 857                                                                               |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Volume Total                      | 226                                                                               | 221                                                                               | 143                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Volume Left                       | 0                                                                                 | 28                                                                                | 107                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Volume Right                      | 82                                                                                | 0                                                                                 | 36                                                                                |                                                                                   |                                                                                   |                                                                                   |
| cSH                               | 1700                                                                              | 1342                                                                              | 620                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Volume to Capacity                | 0.13                                                                              | 0.02                                                                              | 0.23                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Queue Length 95th (m)             | 0.0                                                                               | 0.4                                                                               | 6.2                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Control Delay (s)                 | 0.0                                                                               | 1.1                                                                               | 12.5                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Lane LOS                          |                                                                                   | A                                                                                 | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Approach Delay (s)                | 0.0                                                                               | 1.1                                                                               | 12.5                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Approach LOS                      |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Average Delay                     |                                                                                   |                                                                                   | 3.5                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 40.8%                                                                             | ICU Level of Service                                                              | A                                                                                 |                                                                                   |
| Analvsis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |

# HCM Unsignalized Intersection Capacity Analysis

## 11: Street A & David St

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|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                   |  |  |  |  |  |  |
| Movement                          | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBR                                                                               |
| Lane Configurations               |  |                                                                                   |                                                                                   |  |  |  |
| Traffic Volume (veh/h)            | 39                                                                                | 123                                                                               | 25                                                                                | 40                                                                                | 159                                                                               | 32                                                                                |
| Future Volume (Veh/h)             | 39                                                                                | 123                                                                               | 25                                                                                | 40                                                                                | 159                                                                               | 32                                                                                |
| Sign Control                      | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              | Stop                                                                              |                                                                                   |
| Grade                             | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                | 0%                                                                                |                                                                                   |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |
| Hourly flow rate (vph)            | 43                                                                                | 137                                                                               | 28                                                                                | 44                                                                                | 177                                                                               | 36                                                                                |
| Pedestrians                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Width (m)                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Walking Speed (m/s)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Percent Blockage                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Median type                       | None                                                                              |                                                                                   |                                                                                   | None                                                                              |                                                                                   |                                                                                   |
| Median storage (veh)              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| pX, platoon unblocked             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC, conflicting volume            |                                                                                   |                                                                                   | 180                                                                               |                                                                                   | 212                                                                               | 112                                                                               |
| vC1, stage 1 conf vol             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC2, stage 2 conf vol             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vCu, unblocked vol                |                                                                                   |                                                                                   | 180                                                                               |                                                                                   | 212                                                                               | 112                                                                               |
| tC, single (s)                    |                                                                                   |                                                                                   | 4.1                                                                               |                                                                                   | 6.4                                                                               | 6.2                                                                               |
| tC, 2 stage (s)                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| tF (s)                            |                                                                                   |                                                                                   | 2.2                                                                               |                                                                                   | 3.5                                                                               | 3.3                                                                               |
| p0 queue free %                   |                                                                                   |                                                                                   | 98                                                                                |                                                                                   | 77                                                                                | 96                                                                                |
| cM capacity (veh/h)               |                                                                                   |                                                                                   | 1396                                                                              |                                                                                   | 761                                                                               | 942                                                                               |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Volume Total                      | 180                                                                               | 72                                                                                | 213                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Volume Left                       | 0                                                                                 | 28                                                                                | 177                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Volume Right                      | 137                                                                               | 0                                                                                 | 36                                                                                |                                                                                   |                                                                                   |                                                                                   |
| cSH                               | 1700                                                                              | 1396                                                                              | 787                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Volume to Capacity                | 0.11                                                                              | 0.02                                                                              | 0.27                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Queue Length 95th (m)             | 0.0                                                                               | 0.4                                                                               | 7.7                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Control Delay (s)                 | 0.0                                                                               | 3.1                                                                               | 11.3                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Lane LOS                          |                                                                                   | A                                                                                 | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Approach Delay (s)                | 0.0                                                                               | 3.1                                                                               | 11.3                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Approach LOS                      |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Average Delay                     |                                                                                   |                                                                                   | 5.6                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 35.2%                                                                             | ICU Level of Service                                                              |                                                                                   | A                                                                                 |
| Analvsis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |

# HCM Unsignalized Intersection Capacity Analysis

Build Out

## 12: Street B/Street B & Street A

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|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Sign Control                      |                                                                                   | Stop                                                                              |                                                                                   |                                                                                   | Stop                                                                              |                                                                                   |                                                                                    | Stop                                                                                |                                                                                     |                                                                                     | Stop                                                                                |                                                                                     |
| Traffic Volume (vph)              | 25                                                                                | 81                                                                                | 30                                                                                | 25                                                                                | 89                                                                                | 32                                                                                | 32                                                                                 | 64                                                                                  | 32                                                                                  | 25                                                                                  | 49                                                                                  | 32                                                                                  |
| Future Volume (vph)               | 25                                                                                | 81                                                                                | 30                                                                                | 25                                                                                | 89                                                                                | 32                                                                                | 32                                                                                 | 64                                                                                  | 32                                                                                  | 25                                                                                  | 49                                                                                  | 32                                                                                  |
| 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                                                                                |
| Hourly flow rate (vph)            | 28                                                                                | 90                                                                                | 33                                                                                | 28                                                                                | 99                                                                                | 36                                                                                | 36                                                                                 | 71                                                                                  | 36                                                                                  | 28                                                                                  | 54                                                                                  | 36                                                                                  |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Total (vph)                | 151                                                                               | 163                                                                               | 143                                                                               | 118                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Left (vph)                 | 28                                                                                | 28                                                                                | 36                                                                                | 28                                                                                |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Right (vph)                | 33                                                                                | 36                                                                                | 36                                                                                | 36                                                                                |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Hadj (s)                          | -0.06                                                                             | -0.06                                                                             | -0.07                                                                             | -0.10                                                                             |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Departure Headway (s)             | 4.7                                                                               | 4.7                                                                               | 4.8                                                                               | 4.7                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Degree Utilization, x             | 0.20                                                                              | 0.21                                                                              | 0.19                                                                              | 0.16                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Capacity (veh/h)                  | 713                                                                               | 719                                                                               | 706                                                                               | 698                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Control Delay (s)                 | 8.8                                                                               | 8.9                                                                               | 8.9                                                                               | 8.6                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay (s)                | 8.8                                                                               | 8.9                                                                               | 8.9                                                                               | 8.6                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                      | A                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Delay                             |                                                                                   |                                                                                   |                                                                                   | 8.8                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Level of Service                  |                                                                                   |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   |                                                                                   | 28.0%                                                                             | ICU Level of Service                                                              |                                                                                   |                                                                                    |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM Unsignalized Intersection Capacity Analysis

## 13: Caron St

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| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                     |  |                                                                                     |  |  |                                                                                     |
| Traffic Volume (veh/h)            | 32                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 32                                                                                | 0                                                                                   | 232                                                                                 | 0                                                                                   | 25                                                                                  | 224                                                                                 | 25                                                                                  |
| Future Volume (Veh/h)             | 32                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 32                                                                                | 0                                                                                   | 232                                                                                 | 0                                                                                   | 25                                                                                  | 224                                                                                 | 25                                                                                  |
| Sign Control                      |                                                                                   | Stop                                                                              |                                                                                   |                                                                                   | Stop                                                                              |                                                                                   |                                                                                     | Free                                                                                |                                                                                     |                                                                                     | Free                                                                                |                                                                                     |
| Grade                             |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |                                                                                   |                                                                                     | 0%                                                                                  |                                                                                     |                                                                                     | 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                                                                                |
| Hourly flow rate (vph)            | 36                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 36                                                                                | 0                                                                                   | 258                                                                                 | 0                                                                                   | 28                                                                                  | 249                                                                                 | 28                                                                                  |
| Pedestrians                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Width (m)                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Walking Speed (m/s)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Percent Blockage                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Median type                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     | TWLT                                                                                |                                                                                     |                                                                                     | TWLT                                                                                |                                                                                     |
| Median storage veh)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     | 2                                                                                   |                                                                                     |                                                                                     | 2                                                                                   |                                                                                     |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| pX, platoon unblocked             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| vC, conflicting volume            | 613                                                                               | 577                                                                               | 263                                                                               | 563                                                                               | 591                                                                               | 258                                                                               | 277                                                                                 |                                                                                     |                                                                                     | 258                                                                                 |                                                                                     |                                                                                     |
| vC1, stage 1 conf vol             | 319                                                                               | 319                                                                               |                                                                                   | 258                                                                               | 258                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| vC2, stage 2 conf vol             | 294                                                                               | 258                                                                               |                                                                                   | 305                                                                               | 333                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| vCu, unblocked vol                | 613                                                                               | 577                                                                               | 263                                                                               | 563                                                                               | 591                                                                               | 258                                                                               | 277                                                                                 |                                                                                     |                                                                                     | 258                                                                                 |                                                                                     |                                                                                     |
| tC, single (s)                    | 7.1                                                                               | 6.5                                                                               | 6.2                                                                               | 7.1                                                                               | 6.5                                                                               | 6.2                                                                               | 4.1                                                                                 |                                                                                     |                                                                                     | 4.1                                                                                 |                                                                                     |                                                                                     |
| tC, 2 stage (s)                   | 6.1                                                                               | 5.5                                                                               |                                                                                   | 6.1                                                                               | 5.5                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| tF (s)                            | 3.5                                                                               | 4.0                                                                               | 3.3                                                                               | 3.5                                                                               | 4.0                                                                               | 3.3                                                                               | 2.2                                                                                 |                                                                                     |                                                                                     | 2.2                                                                                 |                                                                                     |                                                                                     |
| p0 queue free %                   | 94                                                                                | 100                                                                               | 100                                                                               | 100                                                                               | 100                                                                               | 95                                                                                | 100                                                                                 |                                                                                     |                                                                                     | 98                                                                                  |                                                                                     |                                                                                     |
| cM capacity (veh/h)               | 556                                                                               | 560                                                                               | 776                                                                               | 605                                                                               | 561                                                                               | 781                                                                               | 1286                                                                                |                                                                                     |                                                                                     | 1307                                                                                |                                                                                     |                                                                                     |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Total                      | 36                                                                                | 36                                                                                | 258                                                                               | 28                                                                                | 277                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Left                       | 36                                                                                | 0                                                                                 | 0                                                                                 | 28                                                                                | 0                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Right                      | 0                                                                                 | 36                                                                                | 0                                                                                 | 0                                                                                 | 28                                                                                |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| cSH                               | 556                                                                               | 781                                                                               | 1286                                                                              | 1307                                                                              | 1700                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume to Capacity                | 0.06                                                                              | 0.05                                                                              | 0.00                                                                              | 0.02                                                                              | 0.16                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Queue Length 95th (m)             | 1.4                                                                               | 1.0                                                                               | 0.0                                                                               | 0.5                                                                               | 0.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Control Delay (s)                 | 11.9                                                                              | 9.8                                                                               | 0.0                                                                               | 7.8                                                                               | 0.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane LOS                          | B                                                                                 | A                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay (s)                | 11.9                                                                              | 9.8                                                                               | 0.0                                                                               | 0.7                                                                               |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                      | B                                                                                 | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Average Delay                     |                                                                                   |                                                                                   | 1.6                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 37.1%                                                                             |                                                                                   |                                                                                   | ICU Level of Service                                                              |                                                                                     |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM Unsignalized Intersection Capacity Analysis

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## 14: Caron St

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| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |  |  |                                                                                     |
| Traffic Volume (veh/h)            | 32                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 32                                                                                | 0                                                                                  | 168                                                                                 | 0                                                                                   | 25                                                                                  | 175                                                                                 | 25                                                                                  |
| Future Volume (Veh/h)             | 32                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 32                                                                                | 0                                                                                  | 168                                                                                 | 0                                                                                   | 25                                                                                  | 175                                                                                 | 25                                                                                  |
| Sign Control                      |                                                                                   | Stop                                                                              |                                                                                   |                                                                                   | Stop                                                                              |                                                                                   |                                                                                    | Free                                                                                |                                                                                     |                                                                                     | Free                                                                                |                                                                                     |
| Grade                             |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |                                                                                   |                                                                                    | 0%                                                                                  |                                                                                     |                                                                                     | 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                                                                                |
| Hourly flow rate (vph)            | 36                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 36                                                                                | 0                                                                                  | 187                                                                                 | 0                                                                                   | 28                                                                                  | 194                                                                                 | 28                                                                                  |
| Pedestrians                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Width (m)                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Walking Speed (m/s)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Percent Blockage                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Median type                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | None                                                                                |                                                                                     |                                                                                     | TWLT                                                                                |                                                                                     |
| Median storage veh)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     | 2                                                                                   |                                                                                     |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| pX, platoon unblocked             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| vC, conflicting volume            | 487                                                                               | 451                                                                               | 208                                                                               | 437                                                                               | 465                                                                               | 187                                                                               | 222                                                                                |                                                                                     |                                                                                     | 187                                                                                 |                                                                                     |                                                                                     |
| vC1, stage 1 conf vol             | 264                                                                               | 264                                                                               |                                                                                   | 187                                                                               | 187                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| vC2, stage 2 conf vol             | 223                                                                               | 187                                                                               |                                                                                   | 250                                                                               | 278                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| vCu, unblocked vol                | 487                                                                               | 451                                                                               | 208                                                                               | 437                                                                               | 465                                                                               | 187                                                                               | 222                                                                                |                                                                                     |                                                                                     | 187                                                                                 |                                                                                     |                                                                                     |
| tC, single (s)                    | 7.1                                                                               | 6.5                                                                               | 6.2                                                                               | 7.1                                                                               | 6.5                                                                               | 6.2                                                                               | 4.1                                                                                |                                                                                     |                                                                                     | 4.1                                                                                 |                                                                                     |                                                                                     |
| tC, 2 stage (s)                   | 6.1                                                                               | 5.5                                                                               |                                                                                   | 6.1                                                                               | 5.5                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| tF (s)                            | 3.5                                                                               | 4.0                                                                               | 3.3                                                                               | 3.5                                                                               | 4.0                                                                               | 3.3                                                                               | 2.2                                                                                |                                                                                     |                                                                                     | 2.2                                                                                 |                                                                                     |                                                                                     |
| p0 queue free %                   | 94                                                                                | 100                                                                               | 100                                                                               | 100                                                                               | 100                                                                               | 96                                                                                | 100                                                                                |                                                                                     |                                                                                     | 98                                                                                  |                                                                                     |                                                                                     |
| cM capacity (veh/h)               | 621                                                                               | 612                                                                               | 832                                                                               | 670                                                                               | 611                                                                               | 855                                                                               | 1347                                                                               |                                                                                     |                                                                                     | 1387                                                                                |                                                                                     |                                                                                     |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Total                      | 36                                                                                | 36                                                                                | 187                                                                               | 28                                                                                | 222                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Left                       | 36                                                                                | 0                                                                                 | 0                                                                                 | 28                                                                                | 0                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Right                      | 0                                                                                 | 36                                                                                | 0                                                                                 | 0                                                                                 | 28                                                                                |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| cSH                               | 621                                                                               | 855                                                                               | 1347                                                                              | 1387                                                                              | 1700                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume to Capacity                | 0.06                                                                              | 0.04                                                                              | 0.00                                                                              | 0.02                                                                              | 0.13                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Queue Length 95th (m)             | 1.3                                                                               | 0.9                                                                               | 0.0                                                                               | 0.4                                                                               | 0.0                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Control Delay (s)                 | 11.2                                                                              | 9.4                                                                               | 0.0                                                                               | 7.6                                                                               | 0.0                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane LOS                          | B                                                                                 | A                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay (s)                | 11.2                                                                              | 9.4                                                                               | 0.0                                                                               | 0.9                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                      | B                                                                                 | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Average Delay                     |                                                                                   |                                                                                   | 1.9                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 37.1%                                                                             |                                                                                   |                                                                                   | ICU Level of Service                                                              |                                                                                    |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM Unsignalized Intersection Capacity Analysis

## 15: Caron St & Street A

Build Out  
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|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--|--|
|                                   |  |  |  |  |  |  |  |  |
| Movement                          | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |  |  |
| Lane Configurations               |  |                                                                                   |  |                                                                                   |  |  |  |  |
| Sign Control                      | Stop                                                                              |                                                                                   | Stop                                                                              |                                                                                   | Stop                                                                              | Stop                                                                              |  |  |
| Traffic Volume (vph)              | 96                                                                                | 64                                                                                | 253                                                                               | 74                                                                                | 49                                                                                | 202                                                                               |  |  |
| Future Volume (vph)               | 96                                                                                | 64                                                                                | 253                                                                               | 74                                                                                | 49                                                                                | 202                                                                               |  |  |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |  |  |
| Hourly flow rate (vph)            | 107                                                                               | 71                                                                                | 281                                                                               | 82                                                                                | 54                                                                                | 224                                                                               |  |  |
| Direction, Lane #                 | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                   |                                                                                   |  |  |
| Volume Total (vph)                | 178                                                                               | 363                                                                               | 36                                                                                | 242                                                                               |                                                                                   |                                                                                   |  |  |
| Volume Left (vph)                 | 107                                                                               | 0                                                                                 | 36                                                                                | 18                                                                                |                                                                                   |                                                                                   |  |  |
| Volume Right (vph)                | 71                                                                                | 82                                                                                | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |  |  |
| Hadj (s)                          | -0.09                                                                             | -0.10                                                                             | 0.53                                                                              | 0.07                                                                              |                                                                                   |                                                                                   |  |  |
| Departure Headway (s)             | 5.3                                                                               | 4.8                                                                               | 5.9                                                                               | 5.4                                                                               |                                                                                   |                                                                                   |  |  |
| Degree Utilization, x             | 0.26                                                                              | 0.48                                                                              | 0.06                                                                              | 0.37                                                                              |                                                                                   |                                                                                   |  |  |
| Capacity (veh/h)                  | 612                                                                               | 728                                                                               | 583                                                                               | 637                                                                               |                                                                                   |                                                                                   |  |  |
| Control Delay (s)                 | 10.3                                                                              | 12.2                                                                              | 8.1                                                                               | 10.3                                                                              |                                                                                   |                                                                                   |  |  |
| Approach Delay (s)                | 10.3                                                                              | 12.2                                                                              | 10.0                                                                              |                                                                                   |                                                                                   |                                                                                   |  |  |
| Approach LOS                      | B                                                                                 | B                                                                                 | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |  |  |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
| Delay                             |                                                                                   |                                                                                   | 11.0                                                                              |                                                                                   |                                                                                   |                                                                                   |  |  |
| Level of Service                  |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |  |  |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 44.3%                                                                             | ICU Level of Service                                                              | A                                                                                 |                                                                                   |  |  |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |  |  |

# Lanes, Volumes, Timings

## 1: Rue Caron/Rue Industrielle & HWY 17

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|                        |  |  |  |  |  |  |   |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Lane Group             | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | SBL                                                                                 | SBT                                                                                 |
| Lane Configurations    |  |  |  |  |  |  |  |  |  |  |
| Traffic Volume (vph)   | 8                                                                                 | 466                                                                               | 364                                                                               | 21                                                                                | 953                                                                               | 3                                                                                 | 591                                                                                 | 8                                                                                   | 1                                                                                   | 6                                                                                   |
| Future Volume (vph)    | 8                                                                                 | 466                                                                               | 364                                                                               | 21                                                                                | 953                                                                               | 3                                                                                 | 591                                                                                 | 8                                                                                   | 1                                                                                   | 6                                                                                   |
| Lane Group Flow (vph)  | 9                                                                                 | 518                                                                               | 404                                                                               | 23                                                                                | 1059                                                                              | 3                                                                                 | 657                                                                                 | 43                                                                                  | 1                                                                                   | 16                                                                                  |
| Turn Type              | pm+pt                                                                             | NA                                                                                | Perm                                                                              | pm+pt                                                                             | NA                                                                                | Perm                                                                              | Prot                                                                                | NA                                                                                  | pm+pt                                                                               | NA                                                                                  |
| Protected Phases       | 7                                                                                 | 4                                                                                 |                                                                                   | 3                                                                                 | 8                                                                                 |                                                                                   | 5                                                                                   | 2                                                                                   | 1                                                                                   | 6                                                                                   |
| Permitted Phases       | 4                                                                                 |                                                                                   | 4                                                                                 | 8                                                                                 |                                                                                   | 8                                                                                 |                                                                                     |                                                                                     | 6                                                                                   |                                                                                     |
| Detector Phase         | 7                                                                                 | 4                                                                                 | 4                                                                                 | 3                                                                                 | 8                                                                                 | 8                                                                                 | 5                                                                                   | 2                                                                                   | 1                                                                                   | 6                                                                                   |
| Switch Phase           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Minimum Initial (s)    | 5.0                                                                               | 10.0                                                                              | 10.0                                                                              | 5.0                                                                               | 10.0                                                                              | 10.0                                                                              | 5.0                                                                                 | 10.0                                                                                | 5.0                                                                                 | 10.0                                                                                |
| Minimum Split (s)      | 11.9                                                                              | 32.9                                                                              | 32.9                                                                              | 11.9                                                                              | 32.9                                                                              | 32.9                                                                              | 10.9                                                                                | 33.3                                                                                | 10.9                                                                                | 33.3                                                                                |
| Total Split (s)        | 12.0                                                                              | 52.0                                                                              | 52.0                                                                              | 12.0                                                                              | 52.0                                                                              | 52.0                                                                              | 22.0                                                                                | 45.1                                                                                | 10.9                                                                                | 34.0                                                                                |
| Total Split (%)        | 10.0%                                                                             | 43.3%                                                                             | 43.3%                                                                             | 10.0%                                                                             | 43.3%                                                                             | 43.3%                                                                             | 18.3%                                                                               | 37.6%                                                                               | 9.1%                                                                                | 28.3%                                                                               |
| Yellow Time (s)        | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               | 4.2                                                                               | 3.3                                                                                 | 3.3                                                                                 | 3.3                                                                                 | 3.3                                                                                 |
| All-Red Time (s)       | 2.7                                                                               | 2.7                                                                               | 2.7                                                                               | 2.7                                                                               | 2.7                                                                               | 2.7                                                                               | 2.6                                                                                 | 3.0                                                                                 | 2.6                                                                                 | 3.0                                                                                 |
| Lost Time Adjust (s)   | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Lost Time (s)    | 6.9                                                                               | 6.9                                                                               | 6.9                                                                               | 6.9                                                                               | 6.9                                                                               | 6.9                                                                               | 5.9                                                                                 | 6.3                                                                                 | 5.9                                                                                 | 6.3                                                                                 |
| Lead/Lag               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                              | Lag                                                                               | Lag                                                                               | Lead                                                                                | Lag                                                                                 | Lead                                                                                | Lag                                                                                 |
| Lead-Lag Optimize?     | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                               | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 | Yes                                                                                 |
| Recall Mode            | None                                                                              | Max                                                                               | Max                                                                               | None                                                                              | Max                                                                               | Max                                                                               | None                                                                                | None                                                                                | None                                                                                | None                                                                                |
| Act Effct Green (s)    | 47.9                                                                              | 46.2                                                                              | 46.2                                                                              | 49.1                                                                              | 48.2                                                                              | 48.2                                                                              | 16.5                                                                                | 19.7                                                                                | 8.6                                                                                 | 10.3                                                                                |
| Actuated g/C Ratio     | 0.56                                                                              | 0.54                                                                              | 0.54                                                                              | 0.58                                                                              | 0.57                                                                              | 0.57                                                                              | 0.19                                                                                | 0.23                                                                                | 0.10                                                                                | 0.12                                                                                |
| v/c Ratio              | 0.05                                                                              | 0.54                                                                              | 0.41                                                                              | 0.06                                                                              | 1.06                                                                              | 0.00                                                                              | 1.04                                                                                | 0.11                                                                                | 0.01                                                                                | 0.08                                                                                |
| Control Delay          | 10.2                                                                              | 18.6                                                                              | 3.2                                                                               | 9.7                                                                               | 68.0                                                                              | 0.0                                                                               | 84.7                                                                                | 13.9                                                                                | 26.0                                                                                | 29.0                                                                                |
| Queue Delay            | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                               | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 | 0.0                                                                                 |
| Total Delay            | 10.2                                                                              | 18.6                                                                              | 3.2                                                                               | 9.7                                                                               | 68.0                                                                              | 0.0                                                                               | 84.7                                                                                | 13.9                                                                                | 26.0                                                                                | 29.0                                                                                |
| LOS                    | B                                                                                 | B                                                                                 | A                                                                                 | A                                                                                 | E                                                                                 | A                                                                                 | F                                                                                   | B                                                                                   | C                                                                                   | C                                                                                   |
| Approach Delay         |                                                                                   | 11.8                                                                              |                                                                                   |                                                                                   | 66.6                                                                              |                                                                                   |                                                                                     | 80.3                                                                                |                                                                                     | 28.8                                                                                |
| Approach LOS           |                                                                                   | B                                                                                 |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                     | F                                                                                   |                                                                                     | C                                                                                   |
| Queue Length 50th (m)  | 0.4                                                                               | 32.7                                                                              | 0.0                                                                               | 1.1                                                                               | 118.1                                                                             | 0.0                                                                               | 42.8                                                                                | 0.9                                                                                 | 0.1                                                                                 | 0.8                                                                                 |
| Queue Length 95th (m)  | 2.7                                                                               | 106.5                                                                             | 14.9                                                                              | 5.0                                                                               | #325.1                                                                            | 0.0                                                                               | #110.4                                                                              | 9.4                                                                                 | 1.3                                                                                 | 7.1                                                                                 |
| Internal Link Dist (m) |                                                                                   | 820.6                                                                             |                                                                                   |                                                                                   | 792.2                                                                             |                                                                                   |                                                                                     | 422.2                                                                               |                                                                                     | 103.9                                                                               |
| Turn Bay Length (m)    | 90.0                                                                              |                                                                                   | 85.0                                                                              | 60.0                                                                              |                                                                                   | 56.0                                                                              | 60.0                                                                                |                                                                                     | 40.0                                                                                |                                                                                     |
| Base Capacity (vph)    | 176                                                                               | 956                                                                               | 997                                                                               | 411                                                                               | 998                                                                               | 935                                                                               | 629                                                                                 | 743                                                                                 | 172                                                                                 | 544                                                                                 |
| Starvation Cap Reductn | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Spillback Cap Reductn  | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Storage Cap Reductn    | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                   | 0                                                                                   | 0                                                                                   | 0                                                                                   |
| Reduced v/c Ratio      | 0.05                                                                              | 0.54                                                                              | 0.41                                                                              | 0.06                                                                              | 1.06                                                                              | 0.00                                                                              | 1.04                                                                                | 0.06                                                                                | 0.01                                                                                | 0.03                                                                                |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 85.3

Natural Cycle: 150

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 1.06

Intersection Signal Delay: 51.2

Intersection LOS: D

Intersection Capacity Utilization 88.4%

ICU Level of Service E

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

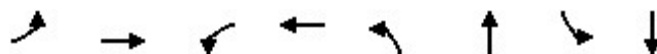
Splits and Phases: 1: Rue Caron/Rue Industrielle & HWY 17

|                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|  |  |  |  |
| 10.9 s                                                                              | 45.1 s                                                                              | 12 s                                                                                | 52 s                                                                                |
|  |  |  |  |
| 22 s                                                                                | 34 s                                                                                | 12 s                                                                                | 52 s                                                                                |

# Lanes, Volumes, Timings

## 2: Caron St/Rue Caron & Laurier St

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| Lane Group             | EBL   | EBT   | WBL   | WBT   | NBL   | NBT    | SBL   | SBT   |
|------------------------|-------|-------|-------|-------|-------|--------|-------|-------|
| Lane Configurations    |       |       |       |       |       |        |       |       |
| Traffic Volume (vph)   | 17    | 54    | 41    | 148   | 71    | 529    | 12    | 365   |
| Future Volume (vph)    | 17    | 54    | 41    | 148   | 71    | 529    | 12    | 365   |
| Lane Group Flow (vph)  | 19    | 114   | 46    | 207   | 79    | 627    | 13    | 423   |
| Turn Type              | pm+pt | NA    | pm+pt | NA    | pm+pt | NA     | pm+pt | NA    |
| Protected Phases       | 7     | 4     | 3     | 8     | 5     | 2      | 1     | 6     |
| Permitted Phases       | 4     |       | 8     |       | 2     |        | 6     |       |
| Detector Phase         | 7     | 4     | 3     | 8     | 5     | 2      | 1     | 6     |
| Switch Phase           |       |       |       |       |       |        |       |       |
| Minimum Initial (s)    | 5.0   | 10.0  | 5.0   | 10.0  | 5.0   | 10.0   | 5.0   | 10.0  |
| Minimum Split (s)      | 11.5  | 31.5  | 11.5  | 31.5  | 11.1  | 27.1   | 11.1  | 27.1  |
| Total Split (s)        | 11.6  | 31.6  | 11.6  | 31.6  | 11.2  | 35.7   | 11.1  | 35.6  |
| Total Split (%)        | 12.9% | 35.1% | 12.9% | 35.1% | 12.4% | 39.7%  | 12.3% | 39.6% |
| Yellow Time (s)        | 3.3   | 3.3   | 3.3   | 3.3   | 3.3   | 3.3    | 3.3   | 3.3   |
| All-Red Time (s)       | 3.2   | 3.2   | 3.2   | 3.2   | 2.8   | 2.8    | 2.8   | 2.8   |
| Lost Time Adjust (s)   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0   | 0.0   |
| Total Lost Time (s)    | 6.5   | 6.5   | 6.5   | 6.5   | 6.1   | 6.1    | 6.1   | 6.1   |
| Lead/Lag               | Lead  | Lag   | Lead  | Lag   | Lead  | Lag    | Lead  | Lag   |
| Lead-Lag Optimize?     | Yes   | Yes   | Yes   | Yes   | Yes   | Yes    | Yes   | Yes   |
| Recall Mode            | None  | Max   | None  | Max   | None  | None   | None  | None  |
| Act Effct Green (s)    | 28.3  | 25.6  | 29.5  | 27.7  | 34.4  | 33.5   | 30.7  | 26.8  |
| Actuated g/C Ratio     | 0.35  | 0.32  | 0.37  | 0.35  | 0.43  | 0.42   | 0.38  | 0.33  |
| v/c Ratio              | 0.05  | 0.21  | 0.10  | 0.34  | 0.27  | 0.86   | 0.07  | 0.72  |
| Control Delay          | 16.3  | 15.6  | 16.6  | 22.6  | 16.6  | 36.6   | 14.8  | 33.5  |
| Queue Delay            | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0    | 0.0   | 0.0   |
| Total Delay            | 16.3  | 15.6  | 16.6  | 22.6  | 16.6  | 36.6   | 14.8  | 33.5  |
| LOS                    | B     | B     | B     | C     | B     | D      | B     | C     |
| Approach Delay         |       | 15.7  |       | 21.5  |       | 34.4   |       | 33.0  |
| Approach LOS           |       | B     |       | C     |       | C      |       | C     |
| Queue Length 50th (m)  | 1.6   | 7.1   | 4.0   | 18.3  | 7.0   | 81.7   | 1.1   | 58.8  |
| Queue Length 95th (m)  | 5.5   | 19.4  | 10.3  | 42.9  | 14.3  | #171.9 | 4.0   | 89.8  |
| Internal Link Dist (m) |       | 919.9 |       | 690.6 |       | 145.4  |       | 422.2 |
| Turn Bay Length (m)    | 35.0  |       | 60.0  |       | 55.0  |        | 50.0  |       |
| Base Capacity (vph)    | 422   | 556   | 461   | 601   | 291   | 733    | 184   | 659   |
| Starvation Cap Reductn | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0     |
| Spillback Cap Reductn  | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0     |
| Storage Cap Reductn    | 0     | 0     | 0     | 0     | 0     | 0      | 0     | 0     |
| Reduced v/c Ratio      | 0.05  | 0.21  | 0.10  | 0.34  | 0.27  | 0.86   | 0.07  | 0.64  |

### Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 80.2

Natural Cycle: 95

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 30.2

Intersection LOS: C

Intersection Capacity Utilization 66.3%

ICU Level of Service C

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 2: Caron St/Rue Caron & Laurier St

|        |        |        |        |
|--------|--------|--------|--------|
|        |        |        |        |
| Ø1     | Ø2     | Ø3     | Ø4     |
| 11.1 s | 35.7 s | 11.6 s | 31.6 s |
|        |        |        |        |
| Ø5     | Ø6     | Ø7     | Ø8     |
| 11.2 s | 35.6 s | 11.6 s | 31.6 s |

06/07/2010

06/07/2010

# HCM Unsignalized Intersection Capacity Analysis

## 3: Caron St & Hélène St

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| Movement                          | EBL                                                                               | EBR  | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR  |
|-----------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations               |  |      |  |  |  |      |
| Traffic Volume (veh/h)            | 0                                                                                 | 8    | 7                                                                                 | 566                                                                               | 688                                                                               | 3    |
| Future Volume (Veh/h)             | 0                                                                                 | 8    | 7                                                                                 | 566                                                                               | 688                                                                               | 3    |
| Sign Control                      | Stop                                                                              |      |                                                                                   | Free                                                                              | Free                                                                              |      |
| Grade                             | 0%                                                                                |      |                                                                                   | 0%                                                                                | 0%                                                                                |      |
| Peak Hour Factor                  | 0.90                                                                              | 0.90 | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90 |
| Hourly flow rate (vph)            | 0                                                                                 | 9    | 8                                                                                 | 629                                                                               | 764                                                                               | 3    |
| Pedestrians                       |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Lane Width (m)                    |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Walking Speed (m/s)               |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Percent Blockage                  |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Right turn flare (veh)            |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Median type                       |                                                                                   |      |                                                                                   | TWLTL                                                                             | TWLTL                                                                             |      |
| Median storage veh)               |                                                                                   |      |                                                                                   | 2                                                                                 | 2                                                                                 |      |
| Upstream signal (m)               |                                                                                   |      |                                                                                   |                                                                                   | 169                                                                               |      |
| pX, platoon unblocked             | 0.66                                                                              | 0.66 | 0.66                                                                              |                                                                                   |                                                                                   |      |
| vC, conflicting volume            | 1410                                                                              | 766  | 767                                                                               |                                                                                   |                                                                                   |      |
| vC1, stage 1 conf vol             | 766                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |
| vC2, stage 2 conf vol             | 645                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |
| vCu, unblocked vol                | 1364                                                                              | 388  | 390                                                                               |                                                                                   |                                                                                   |      |
| tC, single (s)                    | 6.4                                                                               | 6.2  | 4.1                                                                               |                                                                                   |                                                                                   |      |
| tC, 2 stage (s)                   | 5.4                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |
| tF (s)                            | 3.5                                                                               | 3.3  | 2.2                                                                               |                                                                                   |                                                                                   |      |
| p0 queue free %                   | 100                                                                               | 98   | 99                                                                                |                                                                                   |                                                                                   |      |
| cM capacity (veh/h)               | 348                                                                               | 436  | 772                                                                               |                                                                                   |                                                                                   |      |
| Direction, Lane #                 | EB 1                                                                              | NB 1 | NB 2                                                                              | SB 1                                                                              |                                                                                   |      |
| Volume Total                      | 9                                                                                 | 8    | 629                                                                               | 767                                                                               |                                                                                   |      |
| Volume Left                       | 0                                                                                 | 8    | 0                                                                                 | 0                                                                                 |                                                                                   |      |
| Volume Right                      | 9                                                                                 | 0    | 0                                                                                 | 3                                                                                 |                                                                                   |      |
| cSH                               | 436                                                                               | 772  | 1700                                                                              | 1700                                                                              |                                                                                   |      |
| Volume to Capacity                | 0.02                                                                              | 0.01 | 0.37                                                                              | 0.45                                                                              |                                                                                   |      |
| Queue Length 95th (m)             | 0.4                                                                               | 0.2  | 0.0                                                                               | 0.0                                                                               |                                                                                   |      |
| Control Delay (s)                 | 13.4                                                                              | 9.7  | 0.0                                                                               | 0.0                                                                               |                                                                                   |      |
| Lane LOS                          | B                                                                                 | A    |                                                                                   |                                                                                   |                                                                                   |      |
| Approach Delay (s)                | 13.4                                                                              | 0.1  |                                                                                   | 0.0                                                                               |                                                                                   |      |
| Approach LOS                      | B                                                                                 |      |                                                                                   |                                                                                   |                                                                                   |      |
| Intersection Summary              |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Average Delay                     |                                                                                   |      | 0.1                                                                               |                                                                                   |                                                                                   |      |
| Intersection Capacity Utilization |                                                                                   |      | 48.4%                                                                             | ICU Level of Service                                                              |                                                                                   | A    |
| Analvsis Period (min)             |                                                                                   |      | 15                                                                                |                                                                                   |                                                                                   |      |

# HCM Unsignalized Intersection Capacity Analysis

## 4: Caron St & Francois St

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| Movement                          | EBL                                                                               | EBR  | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR  |
|-----------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations               |  |      |  |  |  |      |
| Sign Control                      | Stop                                                                              |      |                                                                                   | Stop                                                                              | Stop                                                                              |      |
| Traffic Volume (vph)              | 7                                                                                 | 3    | 6                                                                                 | 566                                                                               | 692                                                                               | 4    |
| Future Volume (vph)               | 7                                                                                 | 3    | 6                                                                                 | 566                                                                               | 692                                                                               | 4    |
| Peak Hour Factor                  | 0.90                                                                              | 0.90 | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90 |
| Hourly flow rate (vph)            | 8                                                                                 | 3    | 7                                                                                 | 629                                                                               | 769                                                                               | 4    |
| Direction, Lane #                 | EB 1                                                                              | NB 1 | NB 2                                                                              | SB 1                                                                              |                                                                                   |      |
| Volume Total (vph)                | 11                                                                                | 7    | 629                                                                               | 773                                                                               |                                                                                   |      |
| Volume Left (vph)                 | 8                                                                                 | 7    | 0                                                                                 | 0                                                                                 |                                                                                   |      |
| Volume Right (vph)                | 3                                                                                 | 0    | 0                                                                                 | 4                                                                                 |                                                                                   |      |
| Hadj (s)                          | 0.02                                                                              | 0.53 | 0.03                                                                              | 0.03                                                                              |                                                                                   |      |
| Departure Headway (s)             | 6.8                                                                               | 5.6  | 5.1                                                                               | 4.8                                                                               |                                                                                   |      |
| Degree Utilization, x             | 0.02                                                                              | 0.01 | 0.89                                                                              | 1.03                                                                              |                                                                                   |      |
| Capacity (veh/h)                  | 508                                                                               | 636  | 705                                                                               | 747                                                                               |                                                                                   |      |
| Control Delay (s)                 | 10.0                                                                              | 7.4  | 33.0                                                                              | 61.6                                                                              |                                                                                   |      |
| Approach Delay (s)                | 10.0                                                                              | 32.8 |                                                                                   | 61.6                                                                              |                                                                                   |      |
| Approach LOS                      | A                                                                                 | D    |                                                                                   | F                                                                                 |                                                                                   |      |
| Intersection Summary              |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Delay                             |                                                                                   |      | 48.3                                                                              |                                                                                   |                                                                                   |      |
| Level of Service                  |                                                                                   |      | E                                                                                 |                                                                                   |                                                                                   |      |
| Intersection Capacity Utilization |                                                                                   |      | 48.7%                                                                             | ICU Level of Service                                                              | A                                                                                 |      |
| Analysis Period (min)             |                                                                                   |      | 15                                                                                |                                                                                   |                                                                                   |      |

# HCM Unsignalized Intersection Capacity Analysis

## 5: Caron St & Des Cedres Ave

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|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                   |  |  |  |  |  |  |
| Movement                          | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |
| Lane Configurations               |  |                                                                                   |  |                                                                                   |  |  |
| Traffic Volume (veh/h)            | 1                                                                                 | 10                                                                                | 499                                                                               | 7                                                                                 | 26                                                                                | 669                                                                               |
| Future Volume (Veh/h)             | 1                                                                                 | 10                                                                                | 499                                                                               | 7                                                                                 | 26                                                                                | 669                                                                               |
| Sign Control                      | Stop                                                                              |                                                                                   | Free                                                                              |                                                                                   | Free                                                                              | Free                                                                              |
| Grade                             | 0%                                                                                |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |
| Hourly flow rate (vph)            | 1                                                                                 | 11                                                                                | 554                                                                               | 8                                                                                 | 29                                                                                | 743                                                                               |
| Pedestrians                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Width (m)                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Walking Speed (m/s)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Percent Blockage                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Median type                       |                                                                                   |                                                                                   | TWLTL                                                                             |                                                                                   | TWLTL                                                                             |                                                                                   |
| Median storage veh)               |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   | 2                                                                                 |                                                                                   |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| pX, platoon unblocked             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC, conflicting volume            | 1359                                                                              | 558                                                                               |                                                                                   |                                                                                   | 562                                                                               |                                                                                   |
| vC1, stage 1 conf vol             | 558                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC2, stage 2 conf vol             | 801                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vCu, unblocked vol                | 1359                                                                              | 558                                                                               |                                                                                   |                                                                                   | 562                                                                               |                                                                                   |
| tC, single (s)                    | 6.4                                                                               | 6.2                                                                               |                                                                                   |                                                                                   | 4.1                                                                               |                                                                                   |
| tC, 2 stage (s)                   | 5.4                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| tF (s)                            | 3.5                                                                               | 3.3                                                                               |                                                                                   |                                                                                   | 2.2                                                                               |                                                                                   |
| p0 queue free %                   | 100                                                                               | 98                                                                                |                                                                                   |                                                                                   | 97                                                                                |                                                                                   |
| cM capacity (veh/h)               | 365                                                                               | 529                                                                               |                                                                                   |                                                                                   | 1009                                                                              |                                                                                   |
| Direction, Lane #                 | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                   |                                                                                   |
| Volume Total                      | 12                                                                                | 562                                                                               | 29                                                                                | 743                                                                               |                                                                                   |                                                                                   |
| Volume Left                       | 1                                                                                 | 0                                                                                 | 29                                                                                | 0                                                                                 |                                                                                   |                                                                                   |
| Volume Right                      | 11                                                                                | 8                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |
| cSH                               | 510                                                                               | 1700                                                                              | 1009                                                                              | 1700                                                                              |                                                                                   |                                                                                   |
| Volume to Capacity                | 0.02                                                                              | 0.33                                                                              | 0.03                                                                              | 0.44                                                                              |                                                                                   |                                                                                   |
| Queue Length 95th (m)             | 0.5                                                                               | 0.0                                                                               | 0.6                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |
| Control Delay (s)                 | 12.2                                                                              | 0.0                                                                               | 8.7                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |
| Lane LOS                          | B                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Approach Delay (s)                | 12.2                                                                              | 0.0                                                                               | 0.3                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Approach LOS                      | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Average Delay                     |                                                                                   |                                                                                   | 0.3                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 47.2%                                                                             | ICU Level of Service                                                              |                                                                                   | A                                                                                 |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |

# HCM Unsignalized Intersection Capacity Analysis

## 6: Caron St & Cote St/Potvin Ave

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|                                   |  |  |  |  |  |  |   |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|--|--|--|--|--|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |  |  |  |  |  |  |
| Lane Configurations               |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |  |  |                                                                                     |  |  |                                                                                     |  |  |  |  |  |  |
| Sign Control                      |                                                                                   | Stop                                                                              |                                                                                   |                                                                                   | Stop                                                                              |                                                                                   |                                                                                     | Stop                                                                                |                                                                                     |                                                                                     | Stop                                                                                |                                                                                     |  |  |  |  |  |  |
| Traffic Volume (vph)              | 17                                                                                | 1                                                                                 | 10                                                                                | 9                                                                                 | 1                                                                                 | 4                                                                                 | 12                                                                                  | 485                                                                                 | 13                                                                                  | 16                                                                                  | 637                                                                                 | 17                                                                                  |  |  |  |  |  |  |
| Future Volume (vph)               | 17                                                                                | 1                                                                                 | 10                                                                                | 9                                                                                 | 1                                                                                 | 4                                                                                 | 12                                                                                  | 485                                                                                 | 13                                                                                  | 16                                                                                  | 637                                                                                 | 17                                                                                  |  |  |  |  |  |  |
| 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                                                                                |  |  |  |  |  |  |
| Hourly flow rate (vph)            | 19                                                                                | 1                                                                                 | 11                                                                                | 10                                                                                | 1                                                                                 | 4                                                                                 | 13                                                                                  | 539                                                                                 | 14                                                                                  | 18                                                                                  | 708                                                                                 | 19                                                                                  |  |  |  |  |  |  |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              | NB 2                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Volume Total (vph)                | 31                                                                                | 15                                                                                | 13                                                                                | 553                                                                               | 18                                                                                | 727                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Volume Left (vph)                 | 19                                                                                | 10                                                                                | 13                                                                                | 0                                                                                 | 18                                                                                | 0                                                                                 |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Volume Right (vph)                | 11                                                                                | 4                                                                                 | 0                                                                                 | 14                                                                                | 0                                                                                 | 19                                                                                |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Hadj (s)                          | -0.06                                                                             | 0.01                                                                              | 0.53                                                                              | 0.02                                                                              | 0.53                                                                              | 0.02                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Departure Headway (s)             | 6.7                                                                               | 6.8                                                                               | 5.8                                                                               | 5.2                                                                               | 5.7                                                                               | 5.2                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Degree Utilization, x             | 0.06                                                                              | 0.03                                                                              | 0.02                                                                              | 0.80                                                                              | 0.03                                                                              | 1.04                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Capacity (veh/h)                  | 509                                                                               | 491                                                                               | 615                                                                               | 678                                                                               | 615                                                                               | 696                                                                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Control Delay (s)                 | 10.1                                                                              | 10.0                                                                              | 7.7                                                                               | 24.9                                                                              | 7.6                                                                               | 66.1                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Approach Delay (s)                | 10.1                                                                              | 10.0                                                                              | 24.5                                                                              |                                                                                   | 64.6                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Approach LOS                      | B                                                                                 | B                                                                                 | C                                                                                 |                                                                                   | F                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Delay                             |                                                                                   |                                                                                   | 46.1                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Level of Service                  |                                                                                   |                                                                                   | E                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 46.5%                                                                             | ICU Level of Service                                                              |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |  |  |  |  |  |  |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |  |  |  |

# HCM Unsignalized Intersection Capacity Analysis

## 7: Caron St & Docteur Corbeil Blvd

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| Movement                          | EBL                                                                               | EBR  | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR  |
|-----------------------------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations               |  |      |  |  |  |      |
| Traffic Volume (veh/h)            | 61                                                                                | 95   | 77                                                                                | 449                                                                               | 547                                                                               | 60   |
| Future Volume (Veh/h)             | 61                                                                                | 95   | 77                                                                                | 449                                                                               | 547                                                                               | 60   |
| Sign Control                      | Stop                                                                              |      |                                                                                   | Free                                                                              | Free                                                                              |      |
| Grade                             | 0%                                                                                |      |                                                                                   | 0%                                                                                | 0%                                                                                |      |
| Peak Hour Factor                  | 0.90                                                                              | 0.90 | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90 |
| Hourly flow rate (vph)            | 68                                                                                | 106  | 86                                                                                | 499                                                                               | 608                                                                               | 67   |
| Pedestrians                       | 2                                                                                 |      |                                                                                   |                                                                                   |                                                                                   |      |
| Lane Width (m)                    | 3.6                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |
| Walking Speed (m/s)               | 1.2                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |
| Percent Blockage                  | 0                                                                                 |      |                                                                                   |                                                                                   |                                                                                   |      |
| Right turn flare (veh)            |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Median type                       |                                                                                   |      |                                                                                   | TWLTL                                                                             | TWLTL                                                                             |      |
| Median storage (veh)              |                                                                                   |      |                                                                                   | 2                                                                                 | 2                                                                                 |      |
| Upstream signal (m)               |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| pX, platoon unblocked             |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| vC, conflicting volume            | 1314                                                                              | 644  | 677                                                                               |                                                                                   |                                                                                   |      |
| vC1, stage 1 conf vol             | 644                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |
| vC2, stage 2 conf vol             | 671                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |
| vCu, unblocked vol                | 1314                                                                              | 644  | 677                                                                               |                                                                                   |                                                                                   |      |
| tC, single (s)                    | 6.4                                                                               | 6.2  | 4.1                                                                               |                                                                                   |                                                                                   |      |
| tC, 2 stage (s)                   | 5.4                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |
| tF (s)                            | 3.5                                                                               | 3.3  | 2.2                                                                               |                                                                                   |                                                                                   |      |
| p0 queue free %                   | 82                                                                                | 78   | 91                                                                                |                                                                                   |                                                                                   |      |
| cM capacity (veh/h)               | 369                                                                               | 472  | 913                                                                               |                                                                                   |                                                                                   |      |
| Direction, Lane #                 | EB 1                                                                              | NB 1 | NB 2                                                                              | SB 1                                                                              |                                                                                   |      |
| Volume Total                      | 174                                                                               | 86   | 499                                                                               | 675                                                                               |                                                                                   |      |
| Volume Left                       | 68                                                                                | 86   | 0                                                                                 | 0                                                                                 |                                                                                   |      |
| Volume Right                      | 106                                                                               | 0    | 0                                                                                 | 67                                                                                |                                                                                   |      |
| cSH                               | 426                                                                               | 913  | 1700                                                                              | 1700                                                                              |                                                                                   |      |
| Volume to Capacity                | 0.41                                                                              | 0.09 | 0.29                                                                              | 0.40                                                                              |                                                                                   |      |
| Queue Length 95th (m)             | 13.7                                                                              | 2.2  | 0.0                                                                               | 0.0                                                                               |                                                                                   |      |
| Control Delay (s)                 | 19.2                                                                              | 9.4  | 0.0                                                                               | 0.0                                                                               |                                                                                   |      |
| Lane LOS                          | C                                                                                 | A    |                                                                                   |                                                                                   |                                                                                   |      |
| Approach Delay (s)                | 19.2                                                                              | 1.4  | 0.0                                                                               |                                                                                   |                                                                                   |      |
| Approach LOS                      | C                                                                                 |      |                                                                                   |                                                                                   |                                                                                   |      |
| Intersection Summary              |                                                                                   |      |                                                                                   |                                                                                   |                                                                                   |      |
| Average Delay                     | 2.9                                                                               |      |                                                                                   |                                                                                   |                                                                                   |      |
| Intersection Capacity Utilization | 58.5%                                                                             |      |                                                                                   | ICU Level of Service                                                              | B                                                                                 |      |
| Analvsis Period (min)             | 15                                                                                |      |                                                                                   |                                                                                   |                                                                                   |      |

# HCM Unsignalized Intersection Capacity Analysis

## 8: David St & Caron St

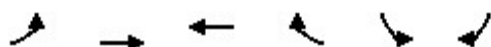
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|                                   |  |  |  |  |  |  |  |  |
| Movement                          | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |  |  |
| Lane Configurations               |  |                                                                                   |  |                                                                                   |  |  |  |  |
| Sign Control                      | Stop                                                                              |                                                                                   | Stop                                                                              |                                                                                   | Stop                                                                              | Stop                                                                              |  |  |
| Traffic Volume (vph)              | 5                                                                                 | 231                                                                               | 307                                                                               | 5                                                                                 | 272                                                                               | 341                                                                               |  |  |
| Future Volume (vph)               | 5                                                                                 | 231                                                                               | 307                                                                               | 5                                                                                 | 272                                                                               | 341                                                                               |  |  |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |  |  |
| Hourly flow rate (vph)            | 6                                                                                 | 257                                                                               | 341                                                                               | 6                                                                                 | 302                                                                               | 379                                                                               |  |  |
| Direction, Lane #                 | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                   |                                                                                   |  |  |
| Volume Total (vph)                | 263                                                                               | 347                                                                               | 302                                                                               | 379                                                                               |                                                                                   |                                                                                   |  |  |
| Volume Left (vph)                 | 6                                                                                 | 0                                                                                 | 302                                                                               | 0                                                                                 |                                                                                   |                                                                                   |  |  |
| Volume Right (vph)                | 257                                                                               | 6                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |  |  |
| Hadj (s)                          | -0.55                                                                             | 0.02                                                                              | 0.53                                                                              | 0.03                                                                              |                                                                                   |                                                                                   |  |  |
| Departure Headway (s)             | 5.6                                                                               | 5.6                                                                               | 6.3                                                                               | 5.8                                                                               |                                                                                   |                                                                                   |  |  |
| Degree Utilization, x             | 0.41                                                                              | 0.54                                                                              | 0.53                                                                              | 0.61                                                                              |                                                                                   |                                                                                   |  |  |
| Capacity (veh/h)                  | 596                                                                               | 609                                                                               | 559                                                                               | 610                                                                               |                                                                                   |                                                                                   |  |  |
| Control Delay (s)                 | 12.5                                                                              | 15.2                                                                              | 15.0                                                                              | 16.2                                                                              |                                                                                   |                                                                                   |  |  |
| Approach Delay (s)                | 12.5                                                                              | 15.2                                                                              | 15.7                                                                              |                                                                                   |                                                                                   |                                                                                   |  |  |
| Approach LOS                      | B                                                                                 | C                                                                                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |  |  |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
| Delay                             |                                                                                   |                                                                                   | 14.9                                                                              |                                                                                   |                                                                                   |                                                                                   |  |  |
| Level of Service                  |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |  |  |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 58.7%                                                                             | ICU Level of Service                                                              | B                                                                                 |                                                                                   |  |  |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |  |  |

# HCM Unsignalized Intersection Capacity Analysis

## 9: Baseline Rd & Caron St

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| Movement                          | EBL  | EBT                                                                               | WBT                                                                               | WBR                  | SBL                                                                               | SBR  |
|-----------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations               |      |  |  |                      |  |      |
| Traffic Volume (veh/h)            | 74   | 102                                                                               | 41                                                                                | 144                  | 154                                                                               | 45   |
| Future Volume (Veh/h)             | 74   | 102                                                                               | 41                                                                                | 144                  | 154                                                                               | 45   |
| Sign Control                      |      | Free                                                                              | Free                                                                              |                      | Stop                                                                              |      |
| Grade                             |      | 0%                                                                                | 0%                                                                                |                      | 0%                                                                                |      |
| Peak Hour Factor                  | 0.90 | 0.90                                                                              | 0.90                                                                              | 0.90                 | 0.90                                                                              | 0.90 |
| Hourly flow rate (vph)            | 82   | 113                                                                               | 46                                                                                | 160                  | 171                                                                               | 50   |
| Pedestrians                       |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Lane Width (m)                    |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Walking Speed (m/s)               |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Percent Blockage                  |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Right turn flare (veh)            |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Median type                       |      | None                                                                              | None                                                                              |                      |                                                                                   |      |
| Median storage veh                |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Upstream signal (m)               |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| pX, platoon unblocked             |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| vC, conflicting volume            | 206  |                                                                                   |                                                                                   |                      | 403                                                                               | 126  |
| vC1, stage 1 conf vol             |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| vC2, stage 2 conf vol             |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| vCu, unblocked vol                | 206  |                                                                                   |                                                                                   |                      | 403                                                                               | 126  |
| tC, single (s)                    | 4.1  |                                                                                   |                                                                                   |                      | 6.4                                                                               | 6.2  |
| tC, 2 stage (s)                   |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| tF (s)                            | 2.2  |                                                                                   |                                                                                   |                      | 3.5                                                                               | 3.3  |
| p0 queue free %                   | 94   |                                                                                   |                                                                                   |                      | 70                                                                                | 95   |
| cM capacity (veh/h)               | 1365 |                                                                                   |                                                                                   |                      | 567                                                                               | 924  |
| Direction, Lane #                 | EB 1 | WB 1                                                                              | SB 1                                                                              |                      |                                                                                   |      |
| Volume Total                      | 195  | 206                                                                               | 221                                                                               |                      |                                                                                   |      |
| Volume Left                       | 82   | 0                                                                                 | 171                                                                               |                      |                                                                                   |      |
| Volume Right                      | 0    | 160                                                                               | 50                                                                                |                      |                                                                                   |      |
| cSH                               | 1365 | 1700                                                                              | 621                                                                               |                      |                                                                                   |      |
| Volume to Capacity                | 0.06 | 0.12                                                                              | 0.36                                                                              |                      |                                                                                   |      |
| Queue Length 95th (m)             | 1.3  | 0.0                                                                               | 11.2                                                                              |                      |                                                                                   |      |
| Control Delay (s)                 | 3.6  | 0.0                                                                               | 14.0                                                                              |                      |                                                                                   |      |
| Lane LOS                          | A    |                                                                                   | B                                                                                 |                      |                                                                                   |      |
| Approach Delay (s)                | 3.6  | 0.0                                                                               | 14.0                                                                              |                      |                                                                                   |      |
| Approach LOS                      |      |                                                                                   | B                                                                                 |                      |                                                                                   |      |
| Intersection Summary              |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Average Delay                     |      |                                                                                   | 6.1                                                                               |                      |                                                                                   |      |
| Intersection Capacity Utilization |      |                                                                                   | 43.5%                                                                             | ICU Level of Service |                                                                                   | A    |
| Analvsis Period (min)             |      |                                                                                   | 15                                                                                |                      |                                                                                   |      |

# HCM Unsignalized Intersection Capacity Analysis

## 10: Street B & David St

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|                                   |  |  |  |  |  |  |
| Movement                          | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBR                                                                               |
| Lane Configurations               |  |                                                                                   |                                                                                   |  |  |                                                                                   |
| Traffic Volume (veh/h)            | 179                                                                               | 99                                                                                | 33                                                                                | 153                                                                               | 83                                                                                | 27                                                                                |
| Future Volume (Veh/h)             | 179                                                                               | 99                                                                                | 33                                                                                | 153                                                                               | 83                                                                                | 27                                                                                |
| Sign Control                      | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              | Stop                                                                              |                                                                                   |
| Grade                             | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                | 0%                                                                                |                                                                                   |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |
| Hourly flow rate (vph)            | 199                                                                               | 110                                                                               | 37                                                                                | 170                                                                               | 92                                                                                | 30                                                                                |
| Pedestrians                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Width (m)                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Walking Speed (m/s)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Percent Blockage                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Median type                       | None                                                                              |                                                                                   |                                                                                   | None                                                                              |                                                                                   |                                                                                   |
| Median storage (veh)              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| pX, platoon unblocked             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC, conflicting volume            |                                                                                   |                                                                                   | 309                                                                               |                                                                                   | 498                                                                               | 254                                                                               |
| vC1, stage 1 conf vol             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC2, stage 2 conf vol             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vCu, unblocked vol                |                                                                                   |                                                                                   | 309                                                                               |                                                                                   | 498                                                                               | 254                                                                               |
| tC, single (s)                    |                                                                                   |                                                                                   | 4.1                                                                               |                                                                                   | 6.4                                                                               | 6.2                                                                               |
| tC, 2 stage (s)                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| tF (s)                            |                                                                                   |                                                                                   | 2.2                                                                               |                                                                                   | 3.5                                                                               | 3.3                                                                               |
| p0 queue free %                   |                                                                                   |                                                                                   | 97                                                                                |                                                                                   | 82                                                                                | 96                                                                                |
| cM capacity (veh/h)               |                                                                                   |                                                                                   | 1252                                                                              |                                                                                   | 516                                                                               | 785                                                                               |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Volume Total                      | 309                                                                               | 207                                                                               | 122                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Volume Left                       | 0                                                                                 | 37                                                                                | 92                                                                                |                                                                                   |                                                                                   |                                                                                   |
| Volume Right                      | 110                                                                               | 0                                                                                 | 30                                                                                |                                                                                   |                                                                                   |                                                                                   |
| cSH                               | 1700                                                                              | 1252                                                                              | 563                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Volume to Capacity                | 0.18                                                                              | 0.03                                                                              | 0.22                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Queue Length 95th (m)             | 0.0                                                                               | 0.6                                                                               | 5.7                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Control Delay (s)                 | 0.0                                                                               | 1.6                                                                               | 13.1                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Lane LOS                          |                                                                                   | A                                                                                 | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Approach Delay (s)                | 0.0                                                                               | 1.6                                                                               | 13.1                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Approach LOS                      |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Average Delay                     |                                                                                   |                                                                                   | 3.0                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 43.3%                                                                             | ICU Level of Service                                                              | A                                                                                 |                                                                                   |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |

# HCM Unsignalized Intersection Capacity Analysis

## 11: Street A & David St

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|                                   |  |  |  |  |  |  |  |  |  |
| Movement                          | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBR                                                                               |  |  |  |
| Lane Configurations               |  |                                                                                   |                                                                                   |  |  |  |  |  |  |
| Traffic Volume (veh/h)            | 42                                                                                | 164                                                                               | 33                                                                                | 48                                                                                | 138                                                                               | 28                                                                                |  |  |  |
| Future Volume (Veh/h)             | 42                                                                                | 164                                                                               | 33                                                                                | 48                                                                                | 138                                                                               | 28                                                                                |  |  |  |
| Sign Control                      | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              | Stop                                                                              |                                                                                   |  |  |  |
| Grade                             | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                | 0%                                                                                |                                                                                   |  |  |  |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |  |  |  |
| Hourly flow rate (vph)            | 47                                                                                | 182                                                                               | 37                                                                                | 53                                                                                | 153                                                                               | 31                                                                                |  |  |  |
| Pedestrians                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Lane Width (m)                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Walking Speed (m/s)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Percent Blockage                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Median type                       | None                                                                              |                                                                                   |                                                                                   | None                                                                              |                                                                                   |                                                                                   |  |  |  |
| Median storage (veh)              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| pX, platoon unblocked             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| vC, conflicting volume            |                                                                                   |                                                                                   | 229                                                                               |                                                                                   | 265                                                                               | 138                                                                               |  |  |  |
| vC1, stage 1 conf vol             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| vC2, stage 2 conf vol             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| vCu, unblocked vol                |                                                                                   |                                                                                   | 229                                                                               |                                                                                   | 265                                                                               | 138                                                                               |  |  |  |
| tC, single (s)                    |                                                                                   |                                                                                   | 4.1                                                                               |                                                                                   | 6.4                                                                               | 6.2                                                                               |  |  |  |
| tC, 2 stage (s)                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| tF (s)                            |                                                                                   |                                                                                   | 2.2                                                                               |                                                                                   | 3.5                                                                               | 3.3                                                                               |  |  |  |
| p0 queue free %                   |                                                                                   |                                                                                   | 97                                                                                |                                                                                   | 78                                                                                | 97                                                                                |  |  |  |
| cM capacity (veh/h)               |                                                                                   |                                                                                   | 1339                                                                              |                                                                                   | 704                                                                               | 910                                                                               |  |  |  |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Volume Total                      | 229                                                                               | 90                                                                                | 184                                                                               |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Volume Left                       | 0                                                                                 | 37                                                                                | 153                                                                               |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Volume Right                      | 182                                                                               | 0                                                                                 | 31                                                                                |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| cSH                               | 1700                                                                              | 1339                                                                              | 732                                                                               |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Volume to Capacity                | 0.13                                                                              | 0.03                                                                              | 0.25                                                                              |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Queue Length 95th (m)             | 0.0                                                                               | 0.6                                                                               | 7.0                                                                               |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Control Delay (s)                 | 0.0                                                                               | 3.3                                                                               | 11.6                                                                              |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Lane LOS                          |                                                                                   | A                                                                                 | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Approach Delay (s)                | 0.0                                                                               | 3.3                                                                               | 11.6                                                                              |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Approach LOS                      |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Average Delay                     | 4.8                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 37.5%                                                                             | ICU Level of Service                                                              |                                                                                   | A                                                                                 |  |  |  |
| Analysis Period (min)             | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |

# HCM Unsignalized Intersection Capacity Analysis

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## 12: Street B/Street B & Street A

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|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Sign Control                      |                                                                                   | Stop                                                                              |                                                                                   |                                                                                   | Stop                                                                              |                                                                                   |                                                                                    | Stop                                                                                |                                                                                     |                                                                                     | Stop                                                                                |                                                                                     |
| Traffic Volume (vph)              | 33                                                                                | 94                                                                                | 33                                                                                | 33                                                                                | 88                                                                                | 28                                                                                | 28                                                                                 | 55                                                                                  | 28                                                                                  | 33                                                                                  | 66                                                                                  | 28                                                                                  |
| Future Volume (vph)               | 33                                                                                | 94                                                                                | 33                                                                                | 33                                                                                | 88                                                                                | 28                                                                                | 28                                                                                 | 55                                                                                  | 28                                                                                  | 33                                                                                  | 66                                                                                  | 28                                                                                  |
| 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                                                                                |
| Hourly flow rate (vph)            | 37                                                                                | 104                                                                               | 37                                                                                | 37                                                                                | 98                                                                                | 31                                                                                | 31                                                                                 | 61                                                                                  | 31                                                                                  | 37                                                                                  | 73                                                                                  | 31                                                                                  |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Total (vph)                | 178                                                                               | 166                                                                               | 123                                                                               | 141                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Left (vph)                 | 37                                                                                | 37                                                                                | 31                                                                                | 37                                                                                |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Right (vph)                | 37                                                                                | 31                                                                                | 31                                                                                | 31                                                                                |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Hadj (s)                          | -0.05                                                                             | -0.03                                                                             | -0.07                                                                             | -0.05                                                                             |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Departure Headway (s)             | 4.7                                                                               | 4.8                                                                               | 4.9                                                                               | 4.9                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Degree Utilization, x             | 0.23                                                                              | 0.22                                                                              | 0.17                                                                              | 0.19                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Capacity (veh/h)                  | 708                                                                               | 705                                                                               | 680                                                                               | 681                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Control Delay (s)                 | 9.2                                                                               | 9.1                                                                               | 8.8                                                                               | 9.0                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay (s)                | 9.2                                                                               | 9.1                                                                               | 8.8                                                                               | 9.0                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                      | A                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Delay                             |                                                                                   |                                                                                   |                                                                                   | 9.0                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Level of Service                  |                                                                                   |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   |                                                                                   | 28.7%                                                                             | ICU Level of Service                                                              |                                                                                   |                                                                                    |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM Unsignalized Intersection Capacity Analysis

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| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |  |  |  |
| Traffic Volume (veh/h)            | 28                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 28                                                                                | 0                                                                                  | 272                                                                                 | 0                                                                                   | 33                                                                                  | 265                                                                                 | 33                                                                                  |
| Future Volume (Veh/h)             | 28                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 28                                                                                | 0                                                                                  | 272                                                                                 | 0                                                                                   | 33                                                                                  | 265                                                                                 | 33                                                                                  |
| Sign Control                      |                                                                                   | Stop                                                                              |                                                                                   |                                                                                   | Stop                                                                              |                                                                                   |                                                                                    | Free                                                                                |                                                                                     |                                                                                     | Free                                                                                |                                                                                     |
| Grade                             |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |                                                                                   |                                                                                    | 0%                                                                                  |                                                                                     |                                                                                     | 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                                                                                |
| Hourly flow rate (vph)            | 31                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 31                                                                                | 0                                                                                  | 302                                                                                 | 0                                                                                   | 37                                                                                  | 294                                                                                 | 37                                                                                  |
| Pedestrians                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Width (m)                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Walking Speed (m/s)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Percent Blockage                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Median type                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | TWLT                                                                                |                                                                                     |                                                                                     | TWLT                                                                                |                                                                                     |
| Median storage veh)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 2                                                                                   |                                                                                     |                                                                                     | 2                                                                                   |                                                                                     |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| pX, platoon unblocked             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| vC, conflicting volume            | 720                                                                               | 688                                                                               | 312                                                                               | 670                                                                               | 707                                                                               | 302                                                                               | 331                                                                                |                                                                                     |                                                                                     | 302                                                                                 |                                                                                     |                                                                                     |
| vC1, stage 1 conf vol             | 386                                                                               | 386                                                                               |                                                                                   | 302                                                                               | 302                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| vC2, stage 2 conf vol             | 333                                                                               | 302                                                                               |                                                                                   | 368                                                                               | 405                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| vCu, unblocked vol                | 720                                                                               | 688                                                                               | 312                                                                               | 670                                                                               | 707                                                                               | 302                                                                               | 331                                                                                |                                                                                     |                                                                                     | 302                                                                                 |                                                                                     |                                                                                     |
| tC, single (s)                    | 7.1                                                                               | 6.5                                                                               | 6.2                                                                               | 7.1                                                                               | 6.5                                                                               | 6.2                                                                               | 4.1                                                                                |                                                                                     |                                                                                     | 4.1                                                                                 |                                                                                     |                                                                                     |
| tC, 2 stage (s)                   | 6.1                                                                               | 5.5                                                                               |                                                                                   | 6.1                                                                               | 5.5                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| tF (s)                            | 3.5                                                                               | 4.0                                                                               | 3.3                                                                               | 3.5                                                                               | 4.0                                                                               | 3.3                                                                               | 2.2                                                                                |                                                                                     |                                                                                     | 2.2                                                                                 |                                                                                     |                                                                                     |
| p0 queue free %                   | 94                                                                                | 100                                                                               | 100                                                                               | 100                                                                               | 100                                                                               | 96                                                                                | 100                                                                                |                                                                                     |                                                                                     | 97                                                                                  |                                                                                     |                                                                                     |
| cM capacity (veh/h)               | 506                                                                               | 512                                                                               | 728                                                                               | 550                                                                               | 513                                                                               | 738                                                                               | 1228                                                                               |                                                                                     |                                                                                     | 1259                                                                                |                                                                                     |                                                                                     |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Total                      | 31                                                                                | 31                                                                                | 302                                                                               | 37                                                                                | 331                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Left                       | 31                                                                                | 0                                                                                 | 0                                                                                 | 37                                                                                | 0                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Right                      | 0                                                                                 | 31                                                                                | 0                                                                                 | 0                                                                                 | 37                                                                                |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| cSH                               | 506                                                                               | 738                                                                               | 1228                                                                              | 1259                                                                              | 1700                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume to Capacity                | 0.06                                                                              | 0.04                                                                              | 0.00                                                                              | 0.03                                                                              | 0.19                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Queue Length 95th (m)             | 1.4                                                                               | 0.9                                                                               | 0.0                                                                               | 0.6                                                                               | 0.0                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Control Delay (s)                 | 12.6                                                                              | 10.1                                                                              | 0.0                                                                               | 7.9                                                                               | 0.0                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane LOS                          | B                                                                                 | B                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay (s)                | 12.6                                                                              | 10.1                                                                              | 0.0                                                                               | 0.8                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                      | B                                                                                 | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Average Delay                     |                                                                                   |                                                                                   | 1.4                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 43.9%                                                                             |                                                                                   |                                                                                   | ICU Level of Service                                                              |                                                                                    |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM Unsignalized Intersection Capacity Analysis

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|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                     |  |                                                                                     |  |  |                                                                                     |
| Traffic Volume (veh/h)            | 28                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 28                                                                                | 0                                                                                   | 218                                                                                 | 0                                                                                   | 33                                                                                  | 199                                                                                 | 33                                                                                  |
| Future Volume (Veh/h)             | 28                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 28                                                                                | 0                                                                                   | 218                                                                                 | 0                                                                                   | 33                                                                                  | 199                                                                                 | 33                                                                                  |
| Sign Control                      |                                                                                   | Stop                                                                              |                                                                                   |                                                                                   | Stop                                                                              |                                                                                   |                                                                                     | Free                                                                                |                                                                                     |                                                                                     | Free                                                                                |                                                                                     |
| Grade                             |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |                                                                                   |                                                                                     | 0%                                                                                  |                                                                                     |                                                                                     | 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                                                                                |
| Hourly flow rate (vph)            | 31                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 31                                                                                | 0                                                                                   | 242                                                                                 | 0                                                                                   | 37                                                                                  | 221                                                                                 | 37                                                                                  |
| Pedestrians                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Width (m)                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Walking Speed (m/s)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Percent Blockage                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Median type                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     | None                                                                                |                                                                                     |                                                                                     | TWLT                                                                                | TL                                                                                  |
| Median storage veh)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     | 2                                                                                   |                                                                                     |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| pX, platoon unblocked             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| vC, conflicting volume            | 586                                                                               | 556                                                                               | 240                                                                               | 537                                                                               | 574                                                                               | 242                                                                               | 258                                                                                 |                                                                                     |                                                                                     | 242                                                                                 |                                                                                     |                                                                                     |
| vC1, stage 1 conf vol             | 314                                                                               | 314                                                                               |                                                                                   | 242                                                                               | 242                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| vC2, stage 2 conf vol             | 273                                                                               | 242                                                                               |                                                                                   | 295                                                                               | 332                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| vCu, unblocked vol                | 586                                                                               | 556                                                                               | 240                                                                               | 537                                                                               | 574                                                                               | 242                                                                               | 258                                                                                 |                                                                                     |                                                                                     | 242                                                                                 |                                                                                     |                                                                                     |
| tC, single (s)                    | 7.1                                                                               | 6.5                                                                               | 6.2                                                                               | 7.1                                                                               | 6.5                                                                               | 6.2                                                                               | 4.1                                                                                 |                                                                                     |                                                                                     | 4.1                                                                                 |                                                                                     |                                                                                     |
| tC, 2 stage (s)                   | 6.1                                                                               | 5.5                                                                               |                                                                                   | 6.1                                                                               | 5.5                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| tF (s)                            | 3.5                                                                               | 4.0                                                                               | 3.3                                                                               | 3.5                                                                               | 4.0                                                                               | 3.3                                                                               | 2.2                                                                                 |                                                                                     |                                                                                     | 2.2                                                                                 |                                                                                     |                                                                                     |
| p0 queue free %                   | 95                                                                                | 100                                                                               | 100                                                                               | 100                                                                               | 100                                                                               | 96                                                                                | 100                                                                                 |                                                                                     |                                                                                     | 97                                                                                  |                                                                                     |                                                                                     |
| cM capacity (veh/h)               | 567                                                                               | 563                                                                               | 799                                                                               | 615                                                                               | 564                                                                               | 797                                                                               | 1307                                                                                |                                                                                     |                                                                                     | 1324                                                                                |                                                                                     |                                                                                     |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Total                      | 31                                                                                | 31                                                                                | 242                                                                               | 37                                                                                | 258                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Left                       | 31                                                                                | 0                                                                                 | 0                                                                                 | 37                                                                                | 0                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Right                      | 0                                                                                 | 31                                                                                | 0                                                                                 | 0                                                                                 | 37                                                                                |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| cSH                               | 567                                                                               | 797                                                                               | 1307                                                                              | 1324                                                                              | 1700                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume to Capacity                | 0.05                                                                              | 0.04                                                                              | 0.00                                                                              | 0.03                                                                              | 0.15                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Queue Length 95th (m)             | 1.2                                                                               | 0.8                                                                               | 0.0                                                                               | 0.6                                                                               | 0.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Control Delay (s)                 | 11.7                                                                              | 9.7                                                                               | 0.0                                                                               | 7.8                                                                               | 0.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane LOS                          | B                                                                                 | A                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay (s)                | 11.7                                                                              | 9.7                                                                               | 0.0                                                                               | 1.0                                                                               |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                      | B                                                                                 | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Average Delay                     |                                                                                   |                                                                                   | 1.6                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 43.6%                                                                             |                                                                                   |                                                                                   | ICU Level of Service                                                              |                                                                                     |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM Unsignalized Intersection Capacity Analysis

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| Movement                          | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |  |  |
| Lane Configurations               |  |                                                                                   |  |                                                                                   |  |  |  |  |
| Sign Control                      | Stop                                                                              |                                                                                   | Stop                                                                              |                                                                                   | Stop                                                                              | Stop                                                                              |  |  |
| Traffic Volume (vph)              | 83                                                                                | 55                                                                                | 257                                                                               | 98                                                                                | 66                                                                                | 280                                                                               |  |  |
| Future Volume (vph)               | 83                                                                                | 55                                                                                | 257                                                                               | 98                                                                                | 66                                                                                | 280                                                                               |  |  |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |  |  |
| Hourly flow rate (vph)            | 92                                                                                | 61                                                                                | 286                                                                               | 109                                                                               | 73                                                                                | 311                                                                               |  |  |
| Direction, Lane #                 | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                   |                                                                                   |  |  |
| Volume Total (vph)                | 153                                                                               | 395                                                                               | 49                                                                                | 335                                                                               |                                                                                   |                                                                                   |  |  |
| Volume Left (vph)                 | 92                                                                                | 0                                                                                 | 49                                                                                | 24                                                                                |                                                                                   |                                                                                   |  |  |
| Volume Right (vph)                | 61                                                                                | 109                                                                               | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |  |  |
| Hadj (s)                          | -0.08                                                                             | -0.13                                                                             | 0.53                                                                              | 0.07                                                                              |                                                                                   |                                                                                   |  |  |
| Departure Headway (s)             | 5.6                                                                               | 4.8                                                                               | 5.9                                                                               | 5.4                                                                               |                                                                                   |                                                                                   |  |  |
| Degree Utilization, x             | 0.24                                                                              | 0.53                                                                              | 0.08                                                                              | 0.50                                                                              |                                                                                   |                                                                                   |  |  |
| Capacity (veh/h)                  | 573                                                                               | 725                                                                               | 591                                                                               | 647                                                                               |                                                                                   |                                                                                   |  |  |
| Control Delay (s)                 | 10.4                                                                              | 13.1                                                                              | 8.2                                                                               | 12.6                                                                              |                                                                                   |                                                                                   |  |  |
| Approach Delay (s)                | 10.4                                                                              | 13.1                                                                              | 12.0                                                                              |                                                                                   |                                                                                   |                                                                                   |  |  |
| Approach LOS                      | B                                                                                 | B                                                                                 | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |  |  |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
| Delay                             |                                                                                   |                                                                                   | 12.2                                                                              |                                                                                   |                                                                                   |                                                                                   |  |  |
| Level of Service                  |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |  |  |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 52.9%                                                                             | ICU Level of Service                                                              | A                                                                                 |                                                                                   |  |  |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |  |  |



## **Appendix H**

# Projected Full Build-out Traffic Operations with Improvements



| Direction                                     | Mov. | Storage Length (m) | AM Peak Hour |           |     |           | PM Peak Hour |           |     |           |
|-----------------------------------------------|------|--------------------|--------------|-----------|-----|-----------|--------------|-----------|-----|-----------|
|                                               |      |                    | v/c          | Delay (s) | LOS | Queue (m) | v/c          | Delay (s) | LOS | Queue (m) |
| Caron Street at HWY 17 (Signalized)           |      |                    |              |           |     |           |              |           |     |           |
| EB                                            | L    | 90                 | 0.04         | 14        | B   | 3         | 0.08         | 18        | B   | 11        |
|                                               | T    | -                  | 0.65         | 27        | C   | 132       | 0.42         | 28        | C   | 72        |
|                                               | R    | 85                 | 0.45         | 4         | A   | 17        | 0.60         | 6         | A   | 24        |
| WB                                            | L    | 60                 | 0.07         | 14        | B   | 6         | 0.08         | 18        | B   | 10        |
|                                               | T    | -                  | 0.67         | 22        | C   | 122       | 0.12         | 24        | C   | 20        |
|                                               | R    | 56                 | 0.00         | 0         | A   | 0         | 0.04         | 0         | A   | 0         |
| NB                                            | L    | 80                 | 0.71         | 35        | C   | 85        | 0.74         | 46        | D   | 61        |
|                                               | T/R  | -                  | 0.08         | 11        | B   | 8         | 0.24         | 22        | C   | 31        |
| SB                                            | L    | 40                 | 0.01         | 23        | C   | 1         | 0.14         | 21        | C   | 10        |
|                                               | T/R  | -                  | 0.08         | 29        | C   | 7         | 0.66         | 50        | D   | 55        |
| Overall                                       |      |                    | 0.71         | 23        | C   | -         | 0.74         | 26        | C   | -         |
| Caron Street at Laurier Street (Signalized)   |      |                    |              |           |     |           |              |           |     |           |
| EB                                            | L    | 35                 | 0.05         | 24        | C   | 8         | 0.09         | 27        | C   | 13        |
|                                               | T/R  | -                  | 0.21         | 24        | C   | 30        | 0.56         | 38        | D   | 80        |
| WB                                            | L    | 60                 | 0.10         | 23        | C   | 15        | 0.11         | 27        | C   | 12        |
|                                               | T/R  | -                  | 0.35         | 29        | C   | 61        | 0.25         | 33        | C   | 37        |
| NB                                            | L    | 55                 | 0.24         | 14        | B   | 13        | 0.43         | 19        | B   | 15        |
|                                               | T/R  | -                  | 0.80         | 30        | C   | 145       | 0.68         | 27        | C   | 122       |
| SB                                            | L    | 50                 | 0.06         | 13        | B   | 4         | 0.13         | 13        | B   | 8         |
|                                               | T/R  | -                  | 0.67         | 30        | C   | 86        | 0.88         | 42        | D   | 167       |
| Overall                                       |      |                    | 0.80         | 28        | C   | -         | 0.88         | 34        | C   | -         |
| Caron Street at Hélène Street (Unsignalized)  |      |                    |              |           |     |           |              |           |     |           |
| EB                                            | L/R  | -                  | 0.01         | 11        | B   | 0.2       | 0.02         | 13        | B   | 1         |
| NB                                            | L    | 15                 | 0.01         | 9         | A   | 0.1       | 0.01         | 10        | A   | 0         |
|                                               | T    | -                  | 0.42         | 0         | A   | 0         | 0.37         | 0         | A   | 0         |
| SB                                            | T/R  | -                  | 0.30         | 0         | A   | 0         | 0.45         | 0         | A   | 0         |
| Overall                                       |      |                    | 0.42         | 0.1       | A   | -         | 0.45         | 0.1       | A   | -         |
| Caron Street at Françoise Street (Signalized) |      |                    |              |           |     |           |              |           |     |           |
| EB                                            | L/R  | -                  | 0.05         | 17        | B   | 5         | 0.09         | 35        | D   | 6         |
| NB                                            | L    | 15                 | 0.00         | 2         | A   | 0.4       | 0.01         | 1         | A   | 1         |
|                                               | T    | -                  | 0.38         | 2         | A   | 43        | 0.37         | 1         | A   | 29        |
| SB                                            | T/R  | -                  | 0.31         | 2         | A   | 31        | 0.45         | 2         | A   | 42        |
| Overall                                       |      |                    | 0.38         | 2         | A   | -         | 0.45         | 2         | A   | -         |

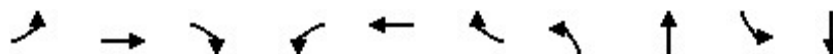
| Direction                                                | Mov.  | Storage Length (m) | AM Peak Hour |           |     |           | PM Peak Hour |           |     |           |
|----------------------------------------------------------|-------|--------------------|--------------|-----------|-----|-----------|--------------|-----------|-----|-----------|
|                                                          |       |                    | v/c          | Delay (s) | LOS | Queue (m) | v/c          | Delay (s) | LOS | Queue (m) |
| Caron Street at Des Cèdres Avenue (Unsignalized)         |       |                    |              |           |     |           |              |           |     |           |
| WB                                                       | L/R   | -                  | 0.04         | 13        | B   | 1         | 0.02         | 12        | B   | 1         |
| NB                                                       | T/R   | -                  | 0.37         | 0         | A   | 0         | 0.33         | 0         | A   | 0         |
| SB                                                       | L     | 15                 | 0.01         | 9         | A   | 0.1       | 0.03         | 9         | A   | 1         |
|                                                          | T     | -                  | 0.30         | 0         | A   | 0         | 0.44         | 0         | A   | 0         |
| Overall                                                  |       |                    | 0.37         | 0.2       | A   | -         | 0.44         | 0.3       | A   | -         |
| Caron Street at Cote Street/Potvin Avenue (Signalized)   |       |                    |              |           |     |           |              |           |     |           |
| EB                                                       | L/T/R | -                  | 0.08         | 6         | A   | 3         | 0.21         | 31        | C   | 10        |
| WB                                                       | L/T/R | -                  | 0.08         | 25        | C   | 7         | 0.11         | 33        | C   | 7         |
| NB                                                       | L     | 15                 | 0.01         | 2         | A   | 1         | 0.02         | 2         | A   | 1         |
|                                                          | T/R   | -                  | 0.37         | 2         | A   | 47        | 0.34         | 2         | A   | 29        |
| SB                                                       | L     | 15                 | 0.01         | 2         | A   | 1         | 0.02         | 2         | A   | 2         |
|                                                          | T/R   | -                  | 0.30         | 2         | A   | 35        | 0.45         | 3         | A   | 45        |
| Overall                                                  |       |                    | 0.37         | 2         | A   | -         | 0.45         | 3         | A   | -         |
| Caron Street at Docteur Corbeil Boulevard (Unsignalized) |       |                    |              |           |     |           |              |           |     |           |
| EB                                                       | L/R   | -                  | 0.23         | 15        | B   | 6         | 0.41         | 19        | C   | 14        |
| NB                                                       | L     | 15                 | 0.09         | 9         | A   | 2         | 0.09         | 9         | A   | 2         |
|                                                          | T     | -                  | 0.34         | 0         | A   | 0         | 0.29         | 0         | A   | 0         |
| SB                                                       | T/R   | -                  | 0.28         | 0         | A   | 0         | 0.40         | 0         | A   | 0         |
| Overall                                                  |       |                    | 0.34         | 2         | A   | -         | 0.41         | 3         | A   | -         |
| Caron Street at David Street (Unsignalized)              |       |                    |              |           |     |           |              |           |     |           |
| WB                                                       | L/R   | -                  | 0.45         | 13        | B   | -         | 0.41         | 13        | B   | -         |
| NB                                                       | T/R   | -                  | 0.55         | 15        | C   | -         | 0.54         | 15        | C   | -         |
| SB                                                       | L     | 40                 | 0.40         | 12        | B   | -         | 0.53         | 15        | B   | -         |
|                                                          | T     | -                  | 0.45         | 12        | B   | -         | 0.61         | 16        | C   | -         |
| Overall                                                  |       |                    | 0.55         | 13        | B   | -         | 0.61         | 15        | B   | -         |
| Caron Street at Baseline Road (Unsignalized)             |       |                    |              |           |     |           |              |           |     |           |
| EB                                                       | L/T   | -                  | 0.03         | 4         | A   | 1         | 0.06         | 4         | A   | 1         |
| WB                                                       | T/R   | -                  | 0.13         | 0         | A   | 0         | 0.12         | 0         | A   | 0         |
| SB                                                       | L/R   | -                  | 0.25         | 11        | B   | 7         | 0.36         | 14        | B   | 11        |
| Overall                                                  |       |                    | 0.25         | 5         | A   | -         | 0.36         | 6         | A   | -         |
| Caron Street at Street A (Unsignalized)                  |       |                    |              |           |     |           |              |           |     |           |
| WB                                                       | L     | -                  | 0.26         | 10        | B   | -         | 0.24         | 10        | B   | -         |
|                                                          | R     | -                  | 0.26         | 10        | B   | -         | 0.24         | 10        | B   | -         |
| NB                                                       | T/R   | -                  | 0.48         | 12        | B   | -         | 0.53         | 13        | B   | -         |
| SB                                                       | L/T   | 25                 | 0.34         | 10        | A   | -         | 0.46         | 12        | B   | -         |

| Direction                                     | Mov.  | Storage Length (m) | AM Peak Hour |           |     |           | PM Peak Hour |           |     |           |
|-----------------------------------------------|-------|--------------------|--------------|-----------|-----|-----------|--------------|-----------|-----|-----------|
|                                               |       |                    | v/c          | Delay (s) | LOS | Queue (m) | v/c          | Delay (s) | LOS | Queue (m) |
| Overall                                       |       |                    | 0.48         | 11        | B   | -         | 0.53         | 12        | B   | -         |
| Street B at David Street (Unsignalized)       |       |                    |              |           |     |           |              |           |     |           |
| EB                                            | T/R   | -                  | 0.13         | 0         | A   | 0         | 0.18         | 0         | A   | 0         |
| WB                                            | L/T   | -                  | 0.02         | 1         | A   | 1         | 0.03         | 2         | A   | 1         |
| NB                                            | L/R   | -                  | 0.23         | 13        | B   | 6         | 0.22         | 13        | B   | 6         |
| Overall                                       |       |                    | 0.23         | 4         | A   | -         | 0.22         | 3         | A   | -         |
| Street B at Street A (Unsignalized)           |       |                    |              |           |     |           |              |           |     |           |
| EB                                            | L/T/R | -                  | 0.20         | 9         | A   | -         | 0.23         | 9         | A   | -         |
| WB                                            | L/T/R | -                  | 0.21         | 9         | A   | -         | 0.22         | 9         | A   | -         |
| NB                                            | L/T/R |                    | 0.19         | 9         | A   | -         | 0.17         | 9         | A   | -         |
| SB                                            | L/T/R | -                  | 0.16         | 9         | A   | -         | 0.19         | 9         | A   | -         |
| Overall                                       |       |                    | 0.21         | 9         | A   | -         | 0.23         | 9         | A   | -         |
| Street A at David Street (Unsignalized)       |       |                    |              |           |     |           |              |           |     |           |
| EB                                            | T/R   | -                  | 0.11         | 0         | A   | 0         | 0.13         | 0         | A   | 0         |
| WB                                            | L/T   | -                  | 0.02         | 3         | A   | 1         | 0.03         | 3         | A   | 1         |
| NB                                            | L/R   | -                  | 0.27         | 11        | B   | 8         | 0.25         | 12        | B   | 7         |
| Overall                                       |       |                    | 0.27         | 6         | A   | -         | 0.25         | 5         | A   | -         |
| Caron Street North at Street C (Unsignalized) |       |                    |              |           |     |           |              |           |     |           |
| EB                                            | L/T/R | -                  | 0.06         | 12        | B   | 1         | 0.06         | 13        | B   | 1         |
| WB                                            | L/T/R | -                  | 0.05         | 10        | A   | 1         | 0.04         | 10        | B   | 1         |
| NB                                            | L/T/R | -                  | 0.00         | 0         | A   | 0         | 0.00         | 0         | A   | 0         |
| SB                                            | L     | 25                 | 0.02         | 8         | A   | 1         | 0.03         | 8         | A   | 1         |
|                                               | T/R   | -                  | 0.16         | 0         | A   | 0         | 0.19         | 0         | A   | 0         |
| Overall                                       |       |                    | 0.16         | 2         | A   | -         | 0.19         | 1         | A   | -         |
| Caron Street South at Street C (Unsignalized) |       |                    |              |           |     |           |              |           |     |           |
| EB                                            | L/T/R | -                  | 0.06         | 11        | B   | 1         | 0.05         | 12        | B   | 1         |
| WB                                            | L/T/R | -                  | 0.04         | 9         | A   | 1         | 0.04         | 10        | A   | 1         |
| NB                                            | L/T/R | -                  | 0.00         | 0         | A   | 0         | 0.00         | 0         | A   | 0         |
| SB                                            | L     | 25                 | 0.02         | 8         | A   | 0         | 0.03         | 8         | A   | 1         |
|                                               | T/R   | -                  | 0.13         | 0         | A   | 0         | 0.15         | 0         | A   | 0         |
| Overall                                       |       |                    | 0.13         | 2         | A   | -         | 0.15         | 2         | A   | -         |

# Lanes, Volumes, Timings

## 1: Rue Caron/Rue Industrielle & HWY 17

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| Lane Group             | EBL   | EBT    | EBR   | WBL   | WBT    | WBR   | NBL   | NBT   | SBL   | SBT   |
|------------------------|-------|--------|-------|-------|--------|-------|-------|-------|-------|-------|
| Lane Configurations    |       |        |       |       |        |       |       |       |       |       |
| Traffic Volume (vph)   | 8     | 466    | 364   | 21    | 953    | 3     | 591   | 8     | 1     | 6     |
| Future Volume (vph)    | 8     | 466    | 364   | 21    | 953    | 3     | 591   | 8     | 1     | 6     |
| Lane Group Flow (vph)  | 9     | 518    | 404   | 23    | 1059   | 3     | 657   | 43    | 1     | 16    |
| Turn Type              | pm+pt | NA     | Perm  | pm+pt | NA     | Perm  | Prot  | NA    | pm+pt | NA    |
| Protected Phases       | 7     | 4      |       | 3     | 8      |       | 5     | 2     | 1     | 6     |
| Permitted Phases       | 4     |        | 4     | 8     |        | 8     |       |       | 6     |       |
| Detector Phase         | 7     | 4      | 4     | 3     | 8      | 8     | 5     | 2     | 1     | 6     |
| Switch Phase           |       |        |       |       |        |       |       |       |       |       |
| Minimum Initial (s)    | 5.0   | 10.0   | 10.0  | 5.0   | 10.0   | 10.0  | 5.0   | 10.0  | 5.0   | 10.0  |
| Minimum Split (s)      | 11.9  | 32.9   | 32.9  | 11.9  | 32.9   | 32.9  | 10.9  | 33.3  | 10.9  | 33.3  |
| Total Split (s)        | 11.9  | 44.0   | 44.0  | 11.9  | 44.0   | 44.0  | 30.0  | 53.2  | 10.9  | 34.1  |
| Total Split (%)        | 9.9%  | 36.7%  | 36.7% | 9.9%  | 36.7%  | 36.7% | 25.0% | 44.3% | 9.1%  | 28.4% |
| Yellow Time (s)        | 4.2   | 4.2    | 4.2   | 4.2   | 4.2    | 4.2   | 3.3   | 3.3   | 3.3   | 3.3   |
| All-Red Time (s)       | 2.7   | 2.7    | 2.7   | 2.7   | 2.7    | 2.7   | 2.6   | 3.0   | 2.6   | 3.0   |
| Lost Time Adjust (s)   | 0.0   | 0.0    | 0.0   | 0.0   | 0.0    | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)    | 6.9   | 6.9    | 6.9   | 6.9   | 6.9    | 6.9   | 5.9   | 6.3   | 5.9   | 6.3   |
| Lead/Lag               | Lead  | Lag    | Lag   | Lead  | Lag    | Lag   | Lead  | Lag   | Lead  | Lag   |
| Lead-Lag Optimize?     | Yes   | Yes    | Yes   | Yes   | Yes    | Yes   | Yes   | Yes   | Yes   | Yes   |
| Recall Mode            | None  | Max    | Max   | None  | Max    | Max   | None  | None  | None  | None  |
| Act Effct Green (s)    | 39.8  | 38.1   | 38.1  | 40.9  | 40.1   | 40.1  | 24.2  | 27.4  | 8.6   | 10.3  |
| Actuated g/C Ratio     | 0.47  | 0.45   | 0.45  | 0.48  | 0.47   | 0.47  | 0.29  | 0.32  | 0.10  | 0.12  |
| v/c Ratio              | 0.04  | 0.65   | 0.45  | 0.07  | 0.67   | 0.00  | 0.71  | 0.08  | 0.01  | 0.08  |
| Control Delay          | 13.9  | 26.7   | 4.2   | 13.7  | 22.1   | 0.0   | 34.7  | 10.9  | 23.0  | 29.0  |
| Queue Delay            | 0.0   | 0.0    | 0.0   | 0.0   | 0.0    | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Delay            | 13.9  | 26.7   | 4.2   | 13.7  | 22.1   | 0.0   | 34.7  | 10.9  | 23.0  | 29.0  |
| LOS                    | B     | C      | A     | B     | C      | A     | C     | B     | C     | C     |
| Approach Delay         |       | 16.8   |       |       | 21.9   |       |       | 33.2  |       | 28.6  |
| Approach LOS           |       | B      |       |       | C      |       |       | C     |       | C     |
| Queue Length 50th (m)  | 0.5   | 44.1   | 0.0   | 1.4   | 49.0   | 0.0   | 36.2  | 0.8   | 0.1   | 0.8   |
| Queue Length 95th (m)  | 3.2   | #132.1 | 17.2  | 6.0   | #122.3 | 0.0   | #85.2 | 8.4   | 1.1   | 7.1   |
| Internal Link Dist (m) |       | 820.6  |       |       | 792.2  |       |       | 422.2 |       | 103.9 |
| Turn Bay Length (m)    | 90.0  |        | 85.0  | 60.0  |        | 56.0  | 60.0  |       | 40.0  |       |
| Base Capacity (vph)    | 212   | 792    | 896   | 307   | 1584   | 814   | 949   | 897   | 173   | 550   |
| Starvation Cap Reductn | 0     | 0      | 0     | 0     | 0      | 0     | 0     | 0     | 0     | 0     |
| Spillback Cap Reductn  | 0     | 0      | 0     | 0     | 0      | 0     | 0     | 0     | 0     | 0     |
| Storage Cap Reductn    | 0     | 0      | 0     | 0     | 0      | 0     | 0     | 0     | 0     | 0     |
| Reduced v/c Ratio      | 0.04  | 0.65   | 0.45  | 0.07  | 0.67   | 0.00  | 0.69  | 0.05  | 0.01  | 0.03  |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 84.8

Natural Cycle: 120

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.71

Intersection Signal Delay: 23.1

Intersection LOS: C

Intersection Capacity Utilization 63.3%

ICU Level of Service B

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

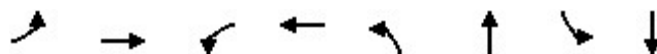
Splits and Phases: 1: Rue Caron/Rue Industrielle & HWY 17



# Lanes, Volumes, Timings

## 2: Caron St/Rue Caron & Laurier St

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| Lane Group             | EBL   | EBT   | WBL   | WBT   | NBL   | NBT   | SBL   | SBT   |
|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Configurations    |       |       |       |       |       |       |       |       |
| Traffic Volume (vph)   | 17    | 54    | 41    | 148   | 71    | 529   | 12    | 365   |
| Future Volume (vph)    | 17    | 54    | 41    | 148   | 71    | 529   | 12    | 365   |
| Lane Group Flow (vph)  | 19    | 114   | 46    | 207   | 79    | 627   | 13    | 423   |
| Turn Type              | pm+pt | NA    | pm+pt | NA    | pm+pt | NA    | pm+pt | NA    |
| Protected Phases       | 7     | 4     | 3     | 8     | 5     | 2     | 1     | 6     |
| Permitted Phases       | 4     |       | 8     |       | 2     |       | 6     |       |
| Detector Phase         | 7     | 4     | 3     | 8     | 5     | 2     | 1     | 6     |
| Switch Phase           |       |       |       |       |       |       |       |       |
| Minimum Initial (s)    | 5.0   | 10.0  | 5.0   | 10.0  | 5.0   | 10.0  | 5.0   | 10.0  |
| Minimum Split (s)      | 11.5  | 31.5  | 11.5  | 31.5  | 11.1  | 27.1  | 11.1  | 27.1  |
| Total Split (s)        | 11.6  | 31.8  | 11.8  | 32.0  | 12.3  | 65.2  | 11.2  | 64.1  |
| Total Split (%)        | 9.7%  | 26.5% | 9.8%  | 26.7% | 10.3% | 54.3% | 9.3%  | 53.4% |
| Yellow Time (s)        | 3.3   | 3.3   | 3.3   | 3.3   | 3.3   | 3.3   | 3.3   | 3.3   |
| All-Red Time (s)       | 3.2   | 3.2   | 3.2   | 3.2   | 2.8   | 2.8   | 2.8   | 2.8   |
| Lost Time Adjust (s)   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)    | 6.5   | 6.5   | 6.5   | 6.5   | 6.1   | 6.1   | 6.1   | 6.1   |
| Lead/Lag               | Lead  | Lag   | Lead  | Lag   | Lead  | Lag   | Lead  | Lag   |
| Lead-Lag Optimize?     | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   |
| Recall Mode            | None  | Max   | None  | Max   | None  | None  | None  | None  |
| Act Effct Green (s)    | 29.7  | 27.1  | 31.2  | 29.5  | 39.8  | 38.9  | 35.1  | 31.2  |
| Actuated g/C Ratio     | 0.34  | 0.31  | 0.36  | 0.34  | 0.46  | 0.45  | 0.40  | 0.36  |
| v/c Ratio              | 0.05  | 0.21  | 0.10  | 0.35  | 0.24  | 0.80  | 0.06  | 0.67  |
| Control Delay          | 23.7  | 23.9  | 23.4  | 29.3  | 14.3  | 29.7  | 12.7  | 29.8  |
| Queue Delay            | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Delay            | 23.7  | 23.9  | 23.4  | 29.3  | 14.3  | 29.7  | 12.7  | 29.8  |
| LOS                    | C     | C     | C     | C     | B     | C     | B     | C     |
| Approach Delay         |       | 23.9  |       | 28.3  |       | 28.0  |       | 29.3  |
| Approach LOS           |       | C     |       | C     |       | C     |       | C     |
| Queue Length 50th (m)  | 1.7   | 9.3   | 4.1   | 19.4  | 7.0   | 82.5  | 1.1   | 60.4  |
| Queue Length 95th (m)  | 8.0   | 29.8  | 15.2  | 61.1  | 13.3  | 145.4 | 3.6   | 86.2  |
| Internal Link Dist (m) |       | 919.9 |       | 690.6 |       | 145.4 |       | 422.2 |
| Turn Bay Length (m)    | 35.0  |       | 60.0  |       | 55.0  |       | 50.0  |       |
| Base Capacity (vph)    | 402   | 531   | 447   | 584   | 325   | 1254  | 210   | 1240  |
| Starvation Cap Reductn | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| Spillback Cap Reductn  | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| Storage Cap Reductn    | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| Reduced v/c Ratio      | 0.05  | 0.21  | 0.10  | 0.35  | 0.24  | 0.50  | 0.06  | 0.34  |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 87.2

Natural Cycle: 95

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 28.0

Intersection LOS: C

Intersection Capacity Utilization 66.3%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 2: Caron St/Rue Caron & Laurier St

|        |        |        |        |
|--------|--------|--------|--------|
|        |        |        |        |
| Ø1     | Ø2     | Ø3     | Ø4     |
| 11.2 s | 65.2 s | 11.8 s | 31.8 s |
|        |        |        |        |
| Ø5     | Ø6     | Ø7     | Ø8     |
| 12.3 s | 64.1 s | 11.6 s | 32 s   |

# Lanes, Volumes, Timings

## 4: Caron St & Francois St

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| Lane Group             | EBL   | NBL   | NBT   | SBT   |
|------------------------|-------|-------|-------|-------|
| Lane Configurations    |       |       |       |       |
| Traffic Volume (vph)   | 9     | 1     | 571   | 455   |
| Future Volume (vph)    | 9     | 1     | 571   | 455   |
| Lane Group Flow (vph)  | 13    | 1     | 634   | 508   |
| Turn Type              | Prot  | Perm  | NA    | NA    |
| Protected Phases       | 7     |       | 2     | 6     |
| Permitted Phases       |       | 2     |       |       |
| Detector Phase         | 7     | 2     | 2     | 6     |
| Switch Phase           |       |       |       |       |
| Minimum Initial (s)    | 5.0   | 10.0  | 10.0  | 10.0  |
| Minimum Split (s)      | 11.5  | 27.1  | 27.1  | 27.1  |
| Total Split (s)        | 13.0  | 77.0  | 77.0  | 77.0  |
| Total Split (%)        | 14.4% | 85.6% | 85.6% | 85.6% |
| Yellow Time (s)        | 3.3   | 3.3   | 3.3   | 3.3   |
| All-Red Time (s)       | 3.2   | 2.8   | 2.8   | 2.8   |
| Lost Time Adjust (s)   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)    | 6.5   | 6.1   | 6.1   | 6.1   |
| Lead/Lag               |       |       |       |       |
| Lead-Lag Optimize?     |       |       |       |       |
| Recall Mode            | None  | Min   | Min   | Min   |
| Act Effct Green (s)    | 6.2   | 35.3  | 35.3  | 35.3  |
| Actuated g/C Ratio     | 0.16  | 0.94  | 0.94  | 0.94  |
| v/c Ratio              | 0.05  | 0.00  | 0.38  | 0.31  |
| Control Delay          | 17.2  | 2.0   | 2.4   | 2.0   |
| Queue Delay            | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Delay            | 17.2  | 2.0   | 2.4   | 2.0   |
| LOS                    | B     | A     | A     | A     |
| Approach Delay         | 17.2  |       | 2.4   | 2.0   |
| Approach LOS           | B     |       | A     | A     |
| Queue Length 50th (m)  | 0.4   | 0.0   | 0.0   | 0.0   |
| Queue Length 95th (m)  | 4.8   | 0.4   | 42.7  | 30.8  |
| Internal Link Dist (m) | 329.4 |       | 111.2 | 224.8 |
| Turn Bay Length (m)    |       | 15.0  |       |       |
| Base Capacity (vph)    | 305   | 842   | 1765  | 1763  |
| Starvation Cap Reductn | 0     | 0     | 0     | 0     |
| Spillback Cap Reductn  | 0     | 0     | 0     | 0     |
| Storage Cap Reductn    | 0     | 0     | 0     | 0     |
| Reduced v/c Ratio      | 0.04  | 0.00  | 0.36  | 0.29  |

### Intersection Summary

Cycle Length: 90  
 Actuated Cycle Length: 37.7  
 Natural Cycle: 40  
 Control Type: Semi Act-Uncoord  
 Maximum v/c Ratio: 0.38  
 Intersection Signal Delay: 2.4  
 Intersection LOS: A  
 Intersection Capacity Utilization 46.4%  
 ICU Level of Service A  
 Analysis Period (min) 15

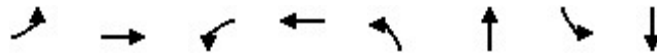
Splits and Phases: 4: Caron St & Francois St



# Lanes, Volumes, Timings

## 6: Caron St & Cote St/Potvin Ave

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| Lane Group             | EBL   | EBT   | WBL   | WBT   | NBL   | NBT   | SBL   | SBT   |
|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Configurations    |       |       |       |       |       |       |       |       |
| Traffic Volume (vph)   | 9     | 0     | 9     | 1     | 4     | 548   | 5     | 453   |
| Future Volume (vph)    | 9     | 0     | 9     | 1     | 4     | 548   | 5     | 453   |
| Lane Group Flow (vph)  | 0     | 19    | 0     | 18    | 4     | 616   | 6     | 503   |
| Turn Type              | Perm  | NA    | Perm  | NA    | Perm  | NA    | Perm  | NA    |
| Protected Phases       |       | 4     |       | 8     |       | 2     |       | 6     |
| Permitted Phases       | 4     |       | 8     |       | 2     |       | 6     |       |
| Detector Phase         | 4     | 4     | 8     | 8     | 2     | 2     | 6     | 6     |
| Switch Phase           |       |       |       |       |       |       |       |       |
| Minimum Initial (s)    | 10.0  | 10.0  | 10.0  | 10.0  | 10.0  | 10.0  | 10.0  | 10.0  |
| Minimum Split (s)      | 31.5  | 31.5  | 31.5  | 31.5  | 27.1  | 27.1  | 27.1  | 27.1  |
| Total Split (s)        | 32.0  | 32.0  | 32.0  | 32.0  | 58.0  | 58.0  | 58.0  | 58.0  |
| Total Split (%)        | 35.6% | 35.6% | 35.6% | 35.6% | 64.4% | 64.4% | 64.4% | 64.4% |
| Yellow Time (s)        | 3.3   | 3.3   | 3.3   | 3.3   | 3.3   | 3.3   | 3.3   | 3.3   |
| All-Red Time (s)       | 3.2   | 3.2   | 3.2   | 3.2   | 2.8   | 2.8   | 2.8   | 2.8   |
| Lost Time Adjust (s)   |       | 0.0   |       | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)    |       | 6.5   |       | 6.5   | 6.1   | 6.1   | 6.1   | 6.1   |
| Lead/Lag               |       |       |       |       |       |       |       |       |
| Lead-Lag Optimize?     |       |       |       |       |       |       |       |       |
| Recall Mode            | None  | None  | None  | None  | Max   | Max   | Max   | Max   |
| Act Effct Green (s)    |       | 10.0  |       | 10.0  | 71.0  | 71.0  | 71.0  | 71.0  |
| Actuated g/C Ratio     |       | 0.13  |       | 0.13  | 0.95  | 0.95  | 0.95  | 0.95  |
| v/c Ratio              |       | 0.08  |       | 0.08  | 0.01  | 0.37  | 0.01  | 0.30  |
| Control Delay          |       | 5.8   |       | 24.9  | 1.8   | 2.2   | 1.8   | 1.9   |
| Queue Delay            |       | 0.0   |       | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Delay            |       | 5.8   |       | 24.9  | 1.8   | 2.2   | 1.8   | 1.9   |
| LOS                    |       | A     |       | C     | A     | A     | A     | A     |
| Approach Delay         |       | 5.8   |       | 24.9  |       | 2.2   |       | 1.9   |
| Approach LOS           |       | A     |       | C     |       | A     |       | A     |
| Queue Length 50th (m)  |       | 0.0   |       | 1.2   | 0.0   | 0.0   | 0.0   | 0.0   |
| Queue Length 95th (m)  |       | 2.8   |       | 6.9   | 0.8   | 46.9  | 1.0   | 35.0  |
| Internal Link Dist (m) |       | 61.3  |       | 102.4 |       | 500.1 |       | 270.2 |
| Turn Bay Length (m)    |       |       |       |       | 30.0  |       | 40.0  |       |
| Base Capacity (vph)    |       | 587   |       | 573   | 799   | 1666  | 705   | 1669  |
| Starvation Cap Reductn |       | 0     |       | 0     | 0     | 0     | 0     | 0     |
| Spillback Cap Reductn  |       | 0     |       | 0     | 0     | 0     | 0     | 0     |
| Storage Cap Reductn    |       | 0     |       | 0     | 0     | 0     | 0     | 0     |
| Reduced v/c Ratio      |       | 0.03  |       | 0.03  | 0.01  | 0.37  | 0.01  | 0.30  |

### Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 75.1

Natural Cycle: 65

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.37

Intersection Signal Delay: 2.4

Intersection LOS: A

Intersection Capacity Utilization 49.7%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 6: Caron St & Cote St/Potvin Ave



# HCM Unsignalized Intersection Capacity Analysis

## 3: Caron St & Hélène St

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|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                   |  |  |  |  |  |  |
| Movement                          | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations               |  |                                                                                   |  |  |  |                                                                                   |
| Traffic Volume (veh/h)            | 0                                                                                 | 5                                                                                 | 6                                                                                 | 635                                                                               | 452                                                                               | 3                                                                                 |
| Future Volume (Veh/h)             | 0                                                                                 | 5                                                                                 | 6                                                                                 | 635                                                                               | 452                                                                               | 3                                                                                 |
| Sign Control                      | Stop                                                                              |                                                                                   |                                                                                   | Free                                                                              | Free                                                                              |                                                                                   |
| Grade                             | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                | 0%                                                                                |                                                                                   |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |
| Hourly flow rate (vph)            | 0                                                                                 | 6                                                                                 | 7                                                                                 | 706                                                                               | 502                                                                               | 3                                                                                 |
| Pedestrians                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Width (m)                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Walking Speed (m/s)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Percent Blockage                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Median type                       |                                                                                   |                                                                                   |                                                                                   | TWLTL                                                                             | TWLTL                                                                             |                                                                                   |
| Median storage veh                |                                                                                   |                                                                                   |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   | 249                                                                               | 169                                                                               |                                                                                   |
| pX, platoon unblocked             | 0.87                                                                              | 0.80                                                                              | 0.80                                                                              |                                                                                   |                                                                                   |                                                                                   |
| vC, conflicting volume            | 1224                                                                              | 504                                                                               | 505                                                                               |                                                                                   |                                                                                   |                                                                                   |
| vC1, stage 1 conf vol             | 504                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC2, stage 2 conf vol             | 720                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vCu, unblocked vol                | 824                                                                               | 261                                                                               | 263                                                                               |                                                                                   |                                                                                   |                                                                                   |
| tC, single (s)                    | 6.4                                                                               | 6.2                                                                               | 4.1                                                                               |                                                                                   |                                                                                   |                                                                                   |
| tC, 2 stage (s)                   | 5.4                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| tF (s)                            | 3.5                                                                               | 3.3                                                                               | 2.2                                                                               |                                                                                   |                                                                                   |                                                                                   |
| p0 queue free %                   | 100                                                                               | 99                                                                                | 99                                                                                |                                                                                   |                                                                                   |                                                                                   |
| cM capacity (veh/h)               | 434                                                                               | 625                                                                               | 1047                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Direction, Lane #                 | EB 1                                                                              | NB 1                                                                              | NB 2                                                                              | SB 1                                                                              |                                                                                   |                                                                                   |
| Volume Total                      | 6                                                                                 | 7                                                                                 | 706                                                                               | 505                                                                               |                                                                                   |                                                                                   |
| Volume Left                       | 0                                                                                 | 7                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |
| Volume Right                      | 6                                                                                 | 0                                                                                 | 0                                                                                 | 3                                                                                 |                                                                                   |                                                                                   |
| cSH                               | 625                                                                               | 1047                                                                              | 1700                                                                              | 1700                                                                              |                                                                                   |                                                                                   |
| Volume to Capacity                | 0.01                                                                              | 0.01                                                                              | 0.42                                                                              | 0.30                                                                              |                                                                                   |                                                                                   |
| Queue Length 95th (m)             | 0.2                                                                               | 0.1                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |
| Control Delay (s)                 | 10.8                                                                              | 8.5                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |
| Lane LOS                          | B                                                                                 | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Approach Delay (s)                | 10.8                                                                              | 0.1                                                                               |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   |
| Approach LOS                      | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Average Delay                     |                                                                                   |                                                                                   | 0.1                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 45.3%                                                                             | ICU Level of Service                                                              |                                                                                   | A                                                                                 |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |

# HCM Unsignalized Intersection Capacity Analysis

## 5: Caron St & Des Cedres Ave

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|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                   |  |  |  |  |  |  |
| Movement                          | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |
| Lane Configurations               |  |                                                                                   |  |                                                                                   |  |  |
| Traffic Volume (veh/h)            | 5                                                                                 | 10                                                                                | 562                                                                               | 1                                                                                 | 5                                                                                 | 453                                                                               |
| Future Volume (Veh/h)             | 5                                                                                 | 10                                                                                | 562                                                                               | 1                                                                                 | 5                                                                                 | 453                                                                               |
| Sign Control                      | Stop                                                                              |                                                                                   | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              |
| Grade                             | 0%                                                                                |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |
| Hourly flow rate (vph)            | 6                                                                                 | 11                                                                                | 624                                                                               | 1                                                                                 | 6                                                                                 | 503                                                                               |
| Pedestrians                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Width (m)                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Walking Speed (m/s)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Percent Blockage                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Median type                       |                                                                                   |                                                                                   | TWLT                                                                              |                                                                                   | TWLT                                                                              |                                                                                   |
| Median storage veh                |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   | 2                                                                                 |                                                                                   |
| Upstream signal (m)               |                                                                                   |                                                                                   | 294                                                                               |                                                                                   | 135                                                                               |                                                                                   |
| pX, platoon unblocked             | 0.92                                                                              | 0.94                                                                              |                                                                                   |                                                                                   | 0.94                                                                              |                                                                                   |
| vC, conflicting volume            | 1140                                                                              | 624                                                                               |                                                                                   |                                                                                   | 625                                                                               |                                                                                   |
| vC1, stage 1 conf vol             | 624                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC2, stage 2 conf vol             | 515                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vCu, unblocked vol                | 961                                                                               | 568                                                                               |                                                                                   |                                                                                   | 568                                                                               |                                                                                   |
| tC, single (s)                    | 6.4                                                                               | 6.2                                                                               |                                                                                   |                                                                                   | 4.1                                                                               |                                                                                   |
| tC, 2 stage (s)                   | 5.4                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| tF (s)                            | 3.5                                                                               | 3.3                                                                               |                                                                                   |                                                                                   | 2.2                                                                               |                                                                                   |
| p0 queue free %                   | 99                                                                                | 98                                                                                |                                                                                   |                                                                                   | 99                                                                                |                                                                                   |
| cM capacity (veh/h)               | 451                                                                               | 491                                                                               |                                                                                   |                                                                                   | 943                                                                               |                                                                                   |
| Direction, Lane #                 | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                   |                                                                                   |
| Volume Total                      | 17                                                                                | 625                                                                               | 6                                                                                 | 503                                                                               |                                                                                   |                                                                                   |
| Volume Left                       | 6                                                                                 | 0                                                                                 | 6                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |
| Volume Right                      | 11                                                                                | 1                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |
| cSH                               | 476                                                                               | 1700                                                                              | 943                                                                               | 1700                                                                              |                                                                                   |                                                                                   |
| Volume to Capacity                | 0.04                                                                              | 0.37                                                                              | 0.01                                                                              | 0.30                                                                              |                                                                                   |                                                                                   |
| Queue Length 95th (m)             | 0.8                                                                               | 0.0                                                                               | 0.1                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |
| Control Delay (s)                 | 12.8                                                                              | 0.0                                                                               | 8.8                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |
| Lane LOS                          | B                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Approach Delay (s)                | 12.8                                                                              | 0.0                                                                               | 0.1                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Approach LOS                      | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Average Delay                     |                                                                                   | 0.2                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization |                                                                                   | 41.3%                                                                             |                                                                                   | ICU Level of Service                                                              |                                                                                   | A                                                                                 |
| Analysis Period (min)             |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |

# HCM Unsignalized Intersection Capacity Analysis

## 7: Caron St & Docteur Corbeil Blvd

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|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--|--|--|
|                                   |  |  |  |  |  |  |  |  |  |
| Movement                          | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |  |  |  |
| Lane Configurations               |  |                                                                                   |  |  |  |                                                                                   |  |  |  |
| Traffic Volume (veh/h)            | 38                                                                                | 61                                                                                | 92                                                                                | 520                                                                               | 387                                                                               | 43                                                                                |  |  |  |
| Future Volume (Veh/h)             | 38                                                                                | 61                                                                                | 92                                                                                | 520                                                                               | 387                                                                               | 43                                                                                |  |  |  |
| Sign Control                      | Stop                                                                              |                                                                                   |                                                                                   | Free                                                                              | Free                                                                              |                                                                                   |  |  |  |
| Grade                             | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                | 0%                                                                                |                                                                                   |  |  |  |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |  |  |  |
| Hourly flow rate (vph)            | 42                                                                                | 68                                                                                | 102                                                                               | 578                                                                               | 430                                                                               | 48                                                                                |  |  |  |
| Pedestrians                       | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Lane Width (m)                    | 3.6                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Walking Speed (m/s)               | 1.2                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Percent Blockage                  | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Median type                       |                                                                                   |                                                                                   |                                                                                   | TWLTL                                                                             | TWLTL                                                                             |                                                                                   |  |  |  |
| Median storage (veh)              |                                                                                   |                                                                                   |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   |  |  |  |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| pX, platoon unblocked             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| vC, conflicting volume            | 1238                                                                              | 456                                                                               | 480                                                                               |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| vC1, stage 1 conf vol             | 456                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| vC2, stage 2 conf vol             | 782                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| vCu, unblocked vol                | 1238                                                                              | 456                                                                               | 480                                                                               |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| tC, single (s)                    | 6.4                                                                               | 6.2                                                                               | 4.1                                                                               |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| tC, 2 stage (s)                   | 5.4                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| tF (s)                            | 3.5                                                                               | 3.3                                                                               | 2.2                                                                               |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| p0 queue free %                   | 89                                                                                | 89                                                                                | 91                                                                                |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| cM capacity (veh/h)               | 366                                                                               | 603                                                                               | 1081                                                                              |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Direction, Lane #                 | EB 1                                                                              | NB 1                                                                              | NB 2                                                                              | SB 1                                                                              |                                                                                   |                                                                                   |  |  |  |
| Volume Total                      | 110                                                                               | 102                                                                               | 578                                                                               | 478                                                                               |                                                                                   |                                                                                   |  |  |  |
| Volume Left                       | 42                                                                                | 102                                                                               | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |  |  |  |
| Volume Right                      | 68                                                                                | 0                                                                                 | 0                                                                                 | 48                                                                                |                                                                                   |                                                                                   |  |  |  |
| cSH                               | 483                                                                               | 1081                                                                              | 1700                                                                              | 1700                                                                              |                                                                                   |                                                                                   |  |  |  |
| Volume to Capacity                | 0.23                                                                              | 0.09                                                                              | 0.34                                                                              | 0.28                                                                              |                                                                                   |                                                                                   |  |  |  |
| Queue Length 95th (m)             | 6.1                                                                               | 2.2                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |  |  |  |
| Control Delay (s)                 | 14.6                                                                              | 8.7                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |  |  |  |
| Lane LOS                          | B                                                                                 | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Approach Delay (s)                | 14.6                                                                              | 1.3                                                                               |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   |  |  |  |
| Approach LOS                      | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Average Delay                     | 2.0                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |
| Intersection Capacity Utilization | 45.8%                                                                             |                                                                                   |                                                                                   | ICU Level of Service                                                              | A                                                                                 |                                                                                   |  |  |  |
| Analysis Period (min)             | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |  |

# HCM Unsignalized Intersection Capacity Analysis

## 8: David St & Caron St

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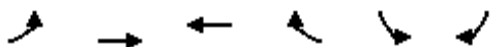
|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                   |  |  |  |  |  |  |
| Movement                          | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |
| Lane Configurations               |  |                                                                                   |  |                                                                                   |  |  |
| Sign Control                      | Stop                                                                              |                                                                                   | Stop                                                                              |                                                                                   | Stop                                                                              | Stop                                                                              |
| Traffic Volume (vph)              | 5                                                                                 | 265                                                                               | 315                                                                               | 2                                                                                 | 202                                                                               | 246                                                                               |
| Future Volume (vph)               | 5                                                                                 | 265                                                                               | 315                                                                               | 2                                                                                 | 202                                                                               | 246                                                                               |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |
| Hourly flow rate (vph)            | 6                                                                                 | 294                                                                               | 350                                                                               | 2                                                                                 | 224                                                                               | 273                                                                               |
| Direction, Lane #                 | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                   |                                                                                   |
| Volume Total (vph)                | 300                                                                               | 352                                                                               | 224                                                                               | 273                                                                               |                                                                                   |                                                                                   |
| Volume Left (vph)                 | 6                                                                                 | 0                                                                                 | 224                                                                               | 0                                                                                 |                                                                                   |                                                                                   |
| Volume Right (vph)                | 294                                                                               | 2                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |
| Hadj (s)                          | -0.55                                                                             | 0.03                                                                              | 0.53                                                                              | 0.03                                                                              |                                                                                   |                                                                                   |
| Departure Headway (s)             | 5.4                                                                               | 5.6                                                                               | 6.4                                                                               | 5.9                                                                               |                                                                                   |                                                                                   |
| Degree Utilization, x             | 0.45                                                                              | 0.55                                                                              | 0.40                                                                              | 0.45                                                                              |                                                                                   |                                                                                   |
| Capacity (veh/h)                  | 621                                                                               | 614                                                                               | 545                                                                               | 592                                                                               |                                                                                   |                                                                                   |
| Control Delay (s)                 | 12.8                                                                              | 15.1                                                                              | 12.4                                                                              | 12.4                                                                              |                                                                                   |                                                                                   |
| Approach Delay (s)                | 12.8                                                                              | 15.1                                                                              | 12.4                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Approach LOS                      | B                                                                                 | C                                                                                 | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Delay                             |                                                                                   |                                                                                   | 13.3                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Level of Service                  |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 57.0%                                                                             | ICU Level of Service                                                              |                                                                                   | B                                                                                 |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |

# HCM Unsignalized Intersection Capacity Analysis

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## 9: Baseline Rd & Caron St

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| Movement                          | EBL  | EBT                                                                               | WBT                                                                               | WBR                  | SBL                                                                               | SBR  |
|-----------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations               |      |  |  |                      |  |      |
| Traffic Volume (veh/h)            | 34   | 28                                                                                | 58                                                                                | 134                  | 117                                                                               | 58   |
| Future Volume (Veh/h)             | 34   | 28                                                                                | 58                                                                                | 134                  | 117                                                                               | 58   |
| Sign Control                      |      | Free                                                                              | Free                                                                              |                      | Stop                                                                              |      |
| Grade                             |      | 0%                                                                                | 0%                                                                                |                      | 0%                                                                                |      |
| Peak Hour Factor                  | 0.90 | 0.90                                                                              | 0.90                                                                              | 0.90                 | 0.90                                                                              | 0.90 |
| Hourly flow rate (vph)            | 38   | 31                                                                                | 64                                                                                | 149                  | 130                                                                               | 64   |
| Pedestrians                       |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Lane Width (m)                    |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Walking Speed (m/s)               |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Percent Blockage                  |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Right turn flare (veh)            |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Median type                       |      | None                                                                              | None                                                                              |                      |                                                                                   |      |
| Median storage veh                |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Upstream signal (m)               |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| pX, platoon unblocked             |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| vC, conflicting volume            | 213  |                                                                                   |                                                                                   |                      | 246                                                                               | 138  |
| vC1, stage 1 conf vol             |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| vC2, stage 2 conf vol             |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| vCu, unblocked vol                | 213  |                                                                                   |                                                                                   |                      | 246                                                                               | 138  |
| tC, single (s)                    | 4.1  |                                                                                   |                                                                                   |                      | 6.4                                                                               | 6.2  |
| tC, 2 stage (s)                   |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| tF (s)                            | 2.2  |                                                                                   |                                                                                   |                      | 3.5                                                                               | 3.3  |
| p0 queue free %                   | 97   |                                                                                   |                                                                                   |                      | 82                                                                                | 93   |
| cM capacity (veh/h)               | 1357 |                                                                                   |                                                                                   |                      | 722                                                                               | 910  |
| Direction, Lane #                 | EB 1 | WB 1                                                                              | SB 1                                                                              |                      |                                                                                   |      |
| Volume Total                      | 69   | 213                                                                               | 194                                                                               |                      |                                                                                   |      |
| Volume Left                       | 38   | 0                                                                                 | 130                                                                               |                      |                                                                                   |      |
| Volume Right                      | 0    | 149                                                                               | 64                                                                                |                      |                                                                                   |      |
| cSH                               | 1357 | 1700                                                                              | 775                                                                               |                      |                                                                                   |      |
| Volume to Capacity                | 0.03 | 0.13                                                                              | 0.25                                                                              |                      |                                                                                   |      |
| Queue Length 95th (m)             | 0.6  | 0.0                                                                               | 6.9                                                                               |                      |                                                                                   |      |
| Control Delay (s)                 | 4.4  | 0.0                                                                               | 11.2                                                                              |                      |                                                                                   |      |
| Lane LOS                          | A    |                                                                                   | B                                                                                 |                      |                                                                                   |      |
| Approach Delay (s)                | 4.4  | 0.0                                                                               | 11.2                                                                              |                      |                                                                                   |      |
| Approach LOS                      |      |                                                                                   | B                                                                                 |                      |                                                                                   |      |
| Intersection Summary              |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Average Delay                     |      |                                                                                   | 5.2                                                                               |                      |                                                                                   |      |
| Intersection Capacity Utilization |      |                                                                                   | 36.0%                                                                             | ICU Level of Service |                                                                                   | A    |
| Analysis Period (min)             |      |                                                                                   | 15                                                                                |                      |                                                                                   |      |

# HCM Unsignalized Intersection Capacity Analysis

## 10: Street B & David St

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|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                   |  |  |  |  |  |  |
| Movement                          | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBR                                                                               |
| Lane Configurations               |  |                                                                                   |                                                                                   |  |  |                                                                                   |
| Traffic Volume (veh/h)            | 130                                                                               | 74                                                                                | 25                                                                                | 174                                                                               | 96                                                                                | 32                                                                                |
| Future Volume (Veh/h)             | 130                                                                               | 74                                                                                | 25                                                                                | 174                                                                               | 96                                                                                | 32                                                                                |
| Sign Control                      | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              | Stop                                                                              |                                                                                   |
| Grade                             | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                | 0%                                                                                |                                                                                   |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |
| Hourly flow rate (vph)            | 144                                                                               | 82                                                                                | 28                                                                                | 193                                                                               | 107                                                                               | 36                                                                                |
| Pedestrians                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Width (m)                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Walking Speed (m/s)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Percent Blockage                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Median type                       | None                                                                              |                                                                                   |                                                                                   | None                                                                              |                                                                                   |                                                                                   |
| Median storage (veh)              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| pX, platoon unblocked             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC, conflicting volume            |                                                                                   |                                                                                   | 226                                                                               |                                                                                   | 434                                                                               | 185                                                                               |
| vC1, stage 1 conf vol             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC2, stage 2 conf vol             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vCu, unblocked vol                |                                                                                   |                                                                                   | 226                                                                               |                                                                                   | 434                                                                               | 185                                                                               |
| tC, single (s)                    |                                                                                   |                                                                                   | 4.1                                                                               |                                                                                   | 6.4                                                                               | 6.2                                                                               |
| tC, 2 stage (s)                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| tF (s)                            |                                                                                   |                                                                                   | 2.2                                                                               |                                                                                   | 3.5                                                                               | 3.3                                                                               |
| p0 queue free %                   |                                                                                   |                                                                                   | 98                                                                                |                                                                                   | 81                                                                                | 96                                                                                |
| cM capacity (veh/h)               |                                                                                   |                                                                                   | 1342                                                                              |                                                                                   | 567                                                                               | 857                                                                               |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Volume Total                      | 226                                                                               | 221                                                                               | 143                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Volume Left                       | 0                                                                                 | 28                                                                                | 107                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Volume Right                      | 82                                                                                | 0                                                                                 | 36                                                                                |                                                                                   |                                                                                   |                                                                                   |
| cSH                               | 1700                                                                              | 1342                                                                              | 620                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Volume to Capacity                | 0.13                                                                              | 0.02                                                                              | 0.23                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Queue Length 95th (m)             | 0.0                                                                               | 0.4                                                                               | 6.2                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Control Delay (s)                 | 0.0                                                                               | 1.1                                                                               | 12.5                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Lane LOS                          |                                                                                   | A                                                                                 | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Approach Delay (s)                | 0.0                                                                               | 1.1                                                                               | 12.5                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Approach LOS                      |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Average Delay                     |                                                                                   |                                                                                   | 3.5                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 40.8%                                                                             | ICU Level of Service                                                              |                                                                                   | A                                                                                 |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |

# HCM Unsignalized Intersection Capacity Analysis

## 11: Street A & David St

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|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Movement                          | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBR                                                                               |
| Lane Configurations               |  |                                                                                   |                                                                                   |  |  |                                                                                   |
| Traffic Volume (veh/h)            | 39                                                                                | 123                                                                               | 25                                                                                | 40                                                                                | 159                                                                               | 32                                                                                |
| Future Volume (Veh/h)             | 39                                                                                | 123                                                                               | 25                                                                                | 40                                                                                | 159                                                                               | 32                                                                                |
| Sign Control                      | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              | Stop                                                                              |                                                                                   |
| Grade                             | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                | 0%                                                                                |                                                                                   |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |
| Hourly flow rate (vph)            | 43                                                                                | 137                                                                               | 28                                                                                | 44                                                                                | 177                                                                               | 36                                                                                |
| Pedestrians                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Width (m)                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Walking Speed (m/s)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Percent Blockage                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Median type                       | None                                                                              |                                                                                   |                                                                                   | None                                                                              |                                                                                   |                                                                                   |
| Median storage (veh)              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| pX, platoon unblocked             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC, conflicting volume            |                                                                                   |                                                                                   | 180                                                                               |                                                                                   | 212                                                                               | 112                                                                               |
| vC1, stage 1 conf vol             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC2, stage 2 conf vol             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vCu, unblocked vol                |                                                                                   |                                                                                   | 180                                                                               |                                                                                   | 212                                                                               | 112                                                                               |
| tC, single (s)                    |                                                                                   |                                                                                   | 4.1                                                                               |                                                                                   | 6.4                                                                               | 6.2                                                                               |
| tC, 2 stage (s)                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| tF (s)                            |                                                                                   |                                                                                   | 2.2                                                                               |                                                                                   | 3.5                                                                               | 3.3                                                                               |
| p0 queue free %                   |                                                                                   |                                                                                   | 98                                                                                |                                                                                   | 77                                                                                | 96                                                                                |
| cM capacity (veh/h)               |                                                                                   |                                                                                   | 1396                                                                              |                                                                                   | 761                                                                               | 942                                                                               |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Volume Total                      | 180                                                                               | 72                                                                                | 213                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Volume Left                       | 0                                                                                 | 28                                                                                | 177                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Volume Right                      | 137                                                                               | 0                                                                                 | 36                                                                                |                                                                                   |                                                                                   |                                                                                   |
| cSH                               | 1700                                                                              | 1396                                                                              | 787                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Volume to Capacity                | 0.11                                                                              | 0.02                                                                              | 0.27                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Queue Length 95th (m)             | 0.0                                                                               | 0.4                                                                               | 7.7                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Control Delay (s)                 | 0.0                                                                               | 3.1                                                                               | 11.3                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Lane LOS                          |                                                                                   | A                                                                                 | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Approach Delay (s)                | 0.0                                                                               | 3.1                                                                               | 11.3                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Approach LOS                      |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Average Delay                     |                                                                                   |                                                                                   | 5.6                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 35.2%                                                                             | ICU Level of Service                                                              |                                                                                   | A                                                                                 |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |

# HCM Unsignalized Intersection Capacity Analysis

## 12: Streert B/Street B & Street A

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|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Sign Control                      |                                                                                   | Stop                                                                              |                                                                                   |                                                                                   | Stop                                                                              |                                                                                   |                                                                                    | Stop                                                                                |                                                                                     |                                                                                     | Stop                                                                                |                                                                                     |
| Traffic Volume (vph)              | 25                                                                                | 81                                                                                | 30                                                                                | 25                                                                                | 89                                                                                | 32                                                                                | 32                                                                                 | 64                                                                                  | 32                                                                                  | 25                                                                                  | 49                                                                                  | 32                                                                                  |
| Future Volume (vph)               | 25                                                                                | 81                                                                                | 30                                                                                | 25                                                                                | 89                                                                                | 32                                                                                | 32                                                                                 | 64                                                                                  | 32                                                                                  | 25                                                                                  | 49                                                                                  | 32                                                                                  |
| 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                                                                                |
| Hourly flow rate (vph)            | 28                                                                                | 90                                                                                | 33                                                                                | 28                                                                                | 99                                                                                | 36                                                                                | 36                                                                                 | 71                                                                                  | 36                                                                                  | 28                                                                                  | 54                                                                                  | 36                                                                                  |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Total (vph)                | 151                                                                               | 163                                                                               | 143                                                                               | 118                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Left (vph)                 | 28                                                                                | 28                                                                                | 36                                                                                | 28                                                                                |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Right (vph)                | 33                                                                                | 36                                                                                | 36                                                                                | 36                                                                                |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Hadj (s)                          | -0.06                                                                             | -0.06                                                                             | -0.07                                                                             | -0.10                                                                             |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Departure Headway (s)             | 4.7                                                                               | 4.7                                                                               | 4.8                                                                               | 4.7                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Degree Utilization, x             | 0.20                                                                              | 0.21                                                                              | 0.19                                                                              | 0.16                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Capacity (veh/h)                  | 713                                                                               | 719                                                                               | 706                                                                               | 698                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Control Delay (s)                 | 8.8                                                                               | 8.9                                                                               | 8.9                                                                               | 8.6                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay (s)                | 8.8                                                                               | 8.9                                                                               | 8.9                                                                               | 8.6                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                      | A                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Delay                             |                                                                                   |                                                                                   | 8.8                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Level of Service                  |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 28.0%                                                                             | ICU Level of Service                                                              | A                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM Unsignalized Intersection Capacity Analysis

## 13: Caron St

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|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |  |
| Lane Configurations               |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |  |  |                                                                                     |  |
| Traffic Volume (veh/h)            | 32                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 32                                                                                | 0                                                                                  | 232                                                                                 | 0                                                                                   | 25                                                                                  | 224                                                                                 | 25                                                                                  |  |
| Future Volume (Veh/h)             | 32                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 32                                                                                | 0                                                                                  | 232                                                                                 | 0                                                                                   | 25                                                                                  | 224                                                                                 | 25                                                                                  |  |
| Sign Control                      |                                                                                   | Stop                                                                              |                                                                                   |                                                                                   | Stop                                                                              |                                                                                   |                                                                                    | Free                                                                                |                                                                                     |                                                                                     | Free                                                                                |                                                                                     |  |
| Grade                             |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |                                                                                   |                                                                                    | 0%                                                                                  |                                                                                     |                                                                                     | 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                                                                                |  |
| Hourly flow rate (vph)            | 36                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 36                                                                                | 0                                                                                  | 258                                                                                 | 0                                                                                   | 28                                                                                  | 249                                                                                 | 28                                                                                  |  |
| Pedestrians                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
| Lane Width (m)                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
| Walking Speed (m/s)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
| Percent Blockage                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
| Median type                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | TWLTL                                                                              |                                                                                     |                                                                                     | TWLTL                                                                               |                                                                                     |                                                                                     |  |
| Median storage veh)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 2                                                                                  |                                                                                     |                                                                                     | 2                                                                                   |                                                                                     |                                                                                     |  |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
| pX, platoon unblocked             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
| vC, conflicting volume            | 613                                                                               | 577                                                                               | 263                                                                               | 563                                                                               | 591                                                                               | 258                                                                               | 277                                                                                |                                                                                     |                                                                                     |                                                                                     | 258                                                                                 |                                                                                     |  |
| vC1, stage 1 conf vol             | 319                                                                               | 319                                                                               |                                                                                   | 258                                                                               | 258                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
| vC2, stage 2 conf vol             | 294                                                                               | 258                                                                               |                                                                                   | 305                                                                               | 333                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
| vCu, unblocked vol                | 613                                                                               | 577                                                                               | 263                                                                               | 563                                                                               | 591                                                                               | 258                                                                               | 277                                                                                |                                                                                     |                                                                                     |                                                                                     | 258                                                                                 |                                                                                     |  |
| tC, single (s)                    | 7.1                                                                               | 6.5                                                                               | 6.2                                                                               | 7.1                                                                               | 6.5                                                                               | 6.2                                                                               | 4.1                                                                                |                                                                                     |                                                                                     |                                                                                     | 4.1                                                                                 |                                                                                     |  |
| tC, 2 stage (s)                   | 6.1                                                                               | 5.5                                                                               |                                                                                   | 6.1                                                                               | 5.5                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
| tF (s)                            | 3.5                                                                               | 4.0                                                                               | 3.3                                                                               | 3.5                                                                               | 4.0                                                                               | 3.3                                                                               | 2.2                                                                                |                                                                                     |                                                                                     |                                                                                     | 2.2                                                                                 |                                                                                     |  |
| p0 queue free %                   | 94                                                                                | 100                                                                               | 100                                                                               | 100                                                                               | 100                                                                               | 95                                                                                | 100                                                                                |                                                                                     |                                                                                     |                                                                                     | 98                                                                                  |                                                                                     |  |
| cM capacity (veh/h)               | 556                                                                               | 560                                                                               | 776                                                                               | 605                                                                               | 561                                                                               | 781                                                                               | 1286                                                                               |                                                                                     |                                                                                     |                                                                                     | 1307                                                                                |                                                                                     |  |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
| Volume Total                      | 36                                                                                | 36                                                                                | 258                                                                               | 28                                                                                | 277                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
| Volume Left                       | 36                                                                                | 0                                                                                 | 0                                                                                 | 28                                                                                | 0                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
| Volume Right                      | 0                                                                                 | 36                                                                                | 0                                                                                 | 0                                                                                 | 28                                                                                |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
| cSH                               | 556                                                                               | 781                                                                               | 1286                                                                              | 1307                                                                              | 1700                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
| Volume to Capacity                | 0.06                                                                              | 0.05                                                                              | 0.00                                                                              | 0.02                                                                              | 0.16                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
| Queue Length 95th (m)             | 1.4                                                                               | 1.0                                                                               | 0.0                                                                               | 0.5                                                                               | 0.0                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
| Control Delay (s)                 | 11.9                                                                              | 9.8                                                                               | 0.0                                                                               | 7.8                                                                               | 0.0                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
| Lane LOS                          | B                                                                                 | A                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
| Approach Delay (s)                | 11.9                                                                              | 9.8                                                                               | 0.0                                                                               | 0.7                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
| Approach LOS                      | B                                                                                 | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
| Average Delay                     |                                                                                   |                                                                                   |                                                                                   | 1.6                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |
| Intersection Capacity Utilization |                                                                                   |                                                                                   |                                                                                   | 37.1%                                                                             | ICU Level of Service                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |  |
| Analysis Period (min)             |                                                                                   |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |

# HCM Unsignalized Intersection Capacity Analysis

## 14: Caron St

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| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |  |  |                                                                                     |
| Traffic Volume (veh/h)            | 32                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 32                                                                                | 0                                                                                  | 168                                                                                 | 0                                                                                   | 25                                                                                  | 175                                                                                 | 25                                                                                  |
| Future Volume (Veh/h)             | 32                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 32                                                                                | 0                                                                                  | 168                                                                                 | 0                                                                                   | 25                                                                                  | 175                                                                                 | 25                                                                                  |
| Sign Control                      |                                                                                   | Stop                                                                              |                                                                                   |                                                                                   | Stop                                                                              |                                                                                   |                                                                                    | Free                                                                                |                                                                                     |                                                                                     | Free                                                                                |                                                                                     |
| Grade                             |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |                                                                                   |                                                                                    | 0%                                                                                  |                                                                                     |                                                                                     | 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                                                                                |
| Hourly flow rate (vph)            | 36                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 36                                                                                | 0                                                                                  | 187                                                                                 | 0                                                                                   | 28                                                                                  | 194                                                                                 | 28                                                                                  |
| Pedestrians                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Width (m)                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Walking Speed (m/s)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Percent Blockage                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Median type                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | TWLT                                                                                |                                                                                     |                                                                                     | TWLT                                                                                |                                                                                     |
| Median storage (veh)              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 2                                                                                   |                                                                                     |                                                                                     | 2                                                                                   |                                                                                     |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| pX, platoon unblocked             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| vC, conflicting volume            | 487                                                                               | 451                                                                               | 208                                                                               | 437                                                                               | 465                                                                               | 187                                                                               | 222                                                                                |                                                                                     |                                                                                     | 187                                                                                 |                                                                                     |                                                                                     |
| vC1, stage 1 conf vol             | 264                                                                               | 264                                                                               |                                                                                   | 187                                                                               | 187                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| vC2, stage 2 conf vol             | 223                                                                               | 187                                                                               |                                                                                   | 250                                                                               | 278                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| vCu, unblocked vol                | 487                                                                               | 451                                                                               | 208                                                                               | 437                                                                               | 465                                                                               | 187                                                                               | 222                                                                                |                                                                                     |                                                                                     | 187                                                                                 |                                                                                     |                                                                                     |
| tC, single (s)                    | 7.1                                                                               | 6.5                                                                               | 6.2                                                                               | 7.1                                                                               | 6.5                                                                               | 6.2                                                                               | 4.1                                                                                |                                                                                     |                                                                                     | 4.1                                                                                 |                                                                                     |                                                                                     |
| tC, 2 stage (s)                   | 6.1                                                                               | 5.5                                                                               |                                                                                   | 6.1                                                                               | 5.5                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| tF (s)                            | 3.5                                                                               | 4.0                                                                               | 3.3                                                                               | 3.5                                                                               | 4.0                                                                               | 3.3                                                                               | 2.2                                                                                |                                                                                     |                                                                                     | 2.2                                                                                 |                                                                                     |                                                                                     |
| p0 queue free %                   | 94                                                                                | 100                                                                               | 100                                                                               | 100                                                                               | 100                                                                               | 96                                                                                | 100                                                                                |                                                                                     |                                                                                     | 98                                                                                  |                                                                                     |                                                                                     |
| cM capacity (veh/h)               | 621                                                                               | 612                                                                               | 832                                                                               | 670                                                                               | 611                                                                               | 855                                                                               | 1347                                                                               |                                                                                     |                                                                                     | 1387                                                                                |                                                                                     |                                                                                     |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Total                      | 36                                                                                | 36                                                                                | 187                                                                               | 28                                                                                | 222                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Left                       | 36                                                                                | 0                                                                                 | 0                                                                                 | 28                                                                                | 0                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Right                      | 0                                                                                 | 36                                                                                | 0                                                                                 | 0                                                                                 | 28                                                                                |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| cSH                               | 621                                                                               | 855                                                                               | 1347                                                                              | 1387                                                                              | 1700                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume to Capacity                | 0.06                                                                              | 0.04                                                                              | 0.00                                                                              | 0.02                                                                              | 0.13                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Queue Length 95th (m)             | 1.3                                                                               | 0.9                                                                               | 0.0                                                                               | 0.4                                                                               | 0.0                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Control Delay (s)                 | 11.2                                                                              | 9.4                                                                               | 0.0                                                                               | 7.6                                                                               | 0.0                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane LOS                          | B                                                                                 | A                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay (s)                | 11.2                                                                              | 9.4                                                                               | 0.0                                                                               | 0.9                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                      | B                                                                                 | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Average Delay                     |                                                                                   |                                                                                   | 1.9                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 37.1%                                                                             |                                                                                   |                                                                                   | ICU Level of Service                                                              |                                                                                    |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM Unsignalized Intersection Capacity Analysis 15: Caron St & Street A

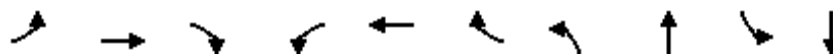
Build Out  
AM+Improvements.syn

|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                   |  |  |  |  |  |  |
| Movement                          | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |
| Lane Configurations               |  |                                                                                   |  |                                                                                   |  |  |
| Sign Control                      | Stop                                                                              |                                                                                   | Stop                                                                              |                                                                                   | Stop                                                                              | Stop                                                                              |
| Traffic Volume (vph)              | 96                                                                                | 64                                                                                | 253                                                                               | 74                                                                                | 49                                                                                | 202                                                                               |
| Future Volume (vph)               | 96                                                                                | 64                                                                                | 253                                                                               | 74                                                                                | 49                                                                                | 202                                                                               |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |
| Hourly flow rate (vph)            | 107                                                                               | 71                                                                                | 281                                                                               | 82                                                                                | 54                                                                                | 224                                                                               |
| Direction, Lane #                 | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                   |                                                                                   |
| Volume Total (vph)                | 178                                                                               | 363                                                                               | 54                                                                                | 224                                                                               |                                                                                   |                                                                                   |
| Volume Left (vph)                 | 107                                                                               | 0                                                                                 | 54                                                                                | 0                                                                                 |                                                                                   |                                                                                   |
| Volume Right (vph)                | 71                                                                                | 82                                                                                | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |
| Hadj (s)                          | -0.09                                                                             | -0.10                                                                             | 0.53                                                                              | 0.03                                                                              |                                                                                   |                                                                                   |
| Departure Headway (s)             | 5.3                                                                               | 4.8                                                                               | 5.9                                                                               | 5.4                                                                               |                                                                                   |                                                                                   |
| Degree Utilization, x             | 0.26                                                                              | 0.48                                                                              | 0.09                                                                              | 0.34                                                                              |                                                                                   |                                                                                   |
| Capacity (veh/h)                  | 615                                                                               | 730                                                                               | 584                                                                               | 641                                                                               |                                                                                   |                                                                                   |
| Control Delay (s)                 | 10.2                                                                              | 12.1                                                                              | 8.3                                                                               | 9.9                                                                               |                                                                                   |                                                                                   |
| Approach Delay (s)                | 10.2                                                                              | 12.1                                                                              | 9.6                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Approach LOS                      | B                                                                                 | B                                                                                 | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Delay                             |                                                                                   |                                                                                   | 10.8                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Level of Service                  |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 41.9%                                                                             | ICU Level of Service                                                              | A                                                                                 |                                                                                   |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |

# Lanes, Volumes, Timings

## 1: Rue Caron/Rue Industrielle & HWY 17

Build Out  
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| Lane Group             | EBL   | EBT   | EBR   | WBL   | WBT   | WBR   | NBL   | NBT   | SBL   | SBT   |
|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Configurations    |       |       |       |       |       |       |       |       |       |       |
| Traffic Volume (vph)   | 34    | 254   | 490   | 30    | 143   | 26    | 409   | 87    | 35    | 138   |
| Future Volume (vph)    | 34    | 254   | 490   | 30    | 143   | 26    | 409   | 87    | 35    | 138   |
| Lane Group Flow (vph)  | 38    | 282   | 544   | 33    | 159   | 29    | 454   | 144   | 39    | 187   |
| Turn Type              | pm+pt | NA    | Perm  | pm+pt | NA    | Perm  | Prot  | NA    | pm+pt | NA    |
| Protected Phases       | 7     | 4     |       | 3     | 8     |       | 5     | 2     | 1     | 6     |
| Permitted Phases       | 4     |       | 4     | 8     |       | 8     |       |       | 6     |       |
| Detector Phase         | 7     | 4     | 4     | 3     | 8     | 8     | 5     | 2     | 1     | 6     |
| Switch Phase           |       |       |       |       |       |       |       |       |       |       |
| Minimum Initial (s)    | 5.0   | 10.0  | 10.0  | 5.0   | 10.0  | 10.0  | 5.0   | 10.0  | 5.0   | 10.0  |
| Minimum Split (s)      | 11.9  | 32.9  | 32.9  | 11.9  | 32.9  | 32.9  | 10.9  | 33.3  | 10.9  | 33.3  |
| Total Split (s)        | 12.0  | 43.8  | 43.8  | 12.0  | 43.8  | 43.8  | 30.6  | 53.2  | 11.0  | 33.6  |
| Total Split (%)        | 10.0% | 36.5% | 36.5% | 10.0% | 36.5% | 36.5% | 25.5% | 44.3% | 9.2%  | 28.0% |
| Yellow Time (s)        | 4.2   | 4.2   | 4.2   | 4.2   | 4.2   | 4.2   | 3.3   | 3.3   | 3.3   | 3.3   |
| All-Red Time (s)       | 2.7   | 2.7   | 2.7   | 2.7   | 2.7   | 2.7   | 2.6   | 3.0   | 2.6   | 3.0   |
| Lost Time Adjust (s)   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)    | 6.9   | 6.9   | 6.9   | 6.9   | 6.9   | 6.9   | 5.9   | 6.3   | 5.9   | 6.3   |
| Lead/Lag               | Lead  | Lag   | Lag   | Lead  | Lag   | Lag   | Lead  | Lag   | Lead  | Lag   |
| Lead-Lag Optimize?     | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   |
| Recall Mode            | None  | Max   | Max   | None  | Max   | Max   | None  | None  | None  | None  |
| Act Effct Green (s)    | 40.5  | 37.8  | 37.8  | 40.5  | 37.8  | 37.8  | 18.6  | 34.6  | 21.5  | 15.9  |
| Actuated g/C Ratio     | 0.41  | 0.38  | 0.38  | 0.41  | 0.38  | 0.38  | 0.19  | 0.35  | 0.22  | 0.16  |
| v/c Ratio              | 0.08  | 0.42  | 0.60  | 0.08  | 0.12  | 0.04  | 0.74  | 0.24  | 0.14  | 0.66  |
| Control Delay          | 18.3  | 28.1  | 5.6   | 18.4  | 23.6  | 0.1   | 46.4  | 21.6  | 21.1  | 49.9  |
| Queue Delay            | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Delay            | 18.3  | 28.1  | 5.6   | 18.4  | 23.6  | 0.1   | 46.4  | 21.6  | 21.1  | 49.9  |
| LOS                    | B     | C     | A     | B     | C     | A     | D     | C     | C     | D     |
| Approach Delay         |       | 13.5  |       |       | 19.7  |       |       | 40.5  |       | 44.9  |
| Approach LOS           |       | B     |       |       | B     |       |       | D     |       | D     |
| Queue Length 50th (m)  | 3.7   | 39.7  | 0.0   | 3.2   | 10.3  | 0.0   | 41.2  | 16.9  | 4.3   | 31.6  |
| Queue Length 95th (m)  | 10.7  | 71.9  | 24.3  | 9.6   | 20.0  | 0.0   | 61.0  | 30.7  | 9.8   | 54.7  |
| Internal Link Dist (m) |       | 820.6 |       |       | 792.2 |       |       | 422.2 |       | 103.9 |
| Turn Bay Length (m)    | 90.0  |       | 85.0  | 60.0  |       | 56.0  | 60.0  |       | 40.0  |       |
| Base Capacity (vph)    | 501   | 678   | 911   | 407   | 1288  | 699   | 836   | 831   | 283   | 494   |
| Starvation Cap Reductn | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| Spillback Cap Reductn  | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| Storage Cap Reductn    | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| Reduced v/c Ratio      | 0.08  | 0.42  | 0.60  | 0.08  | 0.12  | 0.04  | 0.54  | 0.17  | 0.14  | 0.38  |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 98.3

Natural Cycle: 90

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 26.4

Intersection LOS: C

Intersection Capacity Utilization 62.6%

ICU Level of Service B

Analysis Period (min) 15

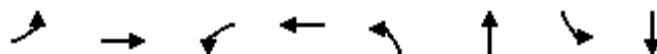
Splits and Phases: 1: Rue Caron/Rue Industrielle & HWY 17

|        |        |      |        |
|--------|--------|------|--------|
|        |        |      |        |
| Ø1     | Ø2     | Ø3   | Ø4     |
| 11 s   | 53.2 s | 12 s | 43.8 s |
|        |        |      |        |
| Ø5     | Ø6     | Ø7   | Ø8     |
| 30.6 s | 33.6 s | 12 s | 43.8 s |

# Lanes, Volumes, Timings

## 2: Caron St/Rue Caron & Laurier St

Build Out  
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| Lane Group             | EBL   | EBT   | WBL   | WBT   | NBL   | NBT   | SBL   | SBT   |
|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Configurations    |       |       |       |       |       |       |       |       |
| Traffic Volume (vph)   | 34    | 155   | 30    | 87    | 79    | 445   | 35    | 564   |
| Future Volume (vph)    | 34    | 155   | 30    | 87    | 79    | 445   | 35    | 564   |
| Lane Group Flow (vph)  | 38    | 280   | 33    | 126   | 88    | 541   | 39    | 661   |
| Turn Type              | pm+pt | NA    | pm+pt | NA    | pm+pt | NA    | pm+pt | NA    |
| Protected Phases       | 7     | 4     | 3     | 8     | 5     | 2     | 1     | 6     |
| Permitted Phases       | 4     |       | 8     |       | 2     |       | 6     |       |
| Detector Phase         | 7     | 4     | 3     | 8     | 5     | 2     | 1     | 6     |
| Switch Phase           |       |       |       |       |       |       |       |       |
| Minimum Initial (s)    | 5.0   | 10.0  | 5.0   | 10.0  | 5.0   | 10.0  | 5.0   | 10.0  |
| Minimum Split (s)      | 11.5  | 31.5  | 11.5  | 31.5  | 11.1  | 27.1  | 11.1  | 27.1  |
| Total Split (s)        | 11.8  | 34.0  | 11.8  | 34.0  | 12.0  | 62.8  | 11.4  | 62.2  |
| Total Split (%)        | 9.8%  | 28.3% | 9.8%  | 28.3% | 10.0% | 52.3% | 9.5%  | 51.8% |
| Yellow Time (s)        | 3.3   | 3.3   | 3.3   | 3.3   | 3.3   | 3.3   | 3.3   | 3.3   |
| All-Red Time (s)       | 3.2   | 3.2   | 3.2   | 3.2   | 2.8   | 2.8   | 2.8   | 2.8   |
| Lost Time Adjust (s)   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)    | 6.5   | 6.5   | 6.5   | 6.5   | 6.1   | 6.1   | 6.1   | 6.1   |
| Lead/Lag               | Lead  | Lag   | Lead  | Lag   | Lead  | Lag   | Lead  | Lag   |
| Lead-Lag Optimize?     | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   | Yes   |
| Recall Mode            | None  | Max   | None  | Max   | None  | None  | None  | None  |
| Act Effct Green (s)    | 31.7  | 29.0  | 31.7  | 29.0  | 49.0  | 46.0  | 46.8  | 42.8  |
| Actuated g/C Ratio     | 0.32  | 0.29  | 0.32  | 0.29  | 0.49  | 0.46  | 0.47  | 0.43  |
| v/c Ratio              | 0.09  | 0.56  | 0.11  | 0.25  | 0.43  | 0.68  | 0.13  | 0.88  |
| Control Delay          | 27.0  | 38.1  | 27.4  | 32.7  | 18.8  | 27.2  | 12.9  | 41.6  |
| Queue Delay            | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Delay            | 27.0  | 38.1  | 27.4  | 32.7  | 18.8  | 27.2  | 12.9  | 41.6  |
| LOS                    | C     | D     | C     | C     | B     | C     | B     | D     |
| Approach Delay         |       | 36.8  |       | 31.6  |       | 26.0  |       | 40.0  |
| Approach LOS           |       | D     |       | C     |       | C     |       | D     |
| Queue Length 50th (m)  | 4.9   | 45.5  | 4.3   | 18.2  | 8.3   | 86.6  | 3.6   | 119.0 |
| Queue Length 95th (m)  | 13.0  | 79.6  | 11.7  | 36.5  | 15.4  | 122.1 | 8.1   | 166.7 |
| Internal Link Dist (m) |       | 919.9 |       | 690.6 |       | 145.4 |       | 422.2 |
| Turn Bay Length (m)    | 35.0  |       | 60.0  |       | 55.0  |       | 50.0  |       |
| Base Capacity (vph)    | 404   | 497   | 293   | 500   | 204   | 1040  | 293   | 1033  |
| Starvation Cap Reductn | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| Spillback Cap Reductn  | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| Storage Cap Reductn    | 0     | 0     | 0     | 0     | 0     | 0     | 0     | 0     |
| Reduced v/c Ratio      | 0.09  | 0.56  | 0.11  | 0.25  | 0.43  | 0.52  | 0.13  | 0.64  |

### Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 100.2

Natural Cycle: 95

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 33.8

Intersection LOS: C

Intersection Capacity Utilization 78.0%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 2: Caron St/Rue Caron & Laurier St

|        |        |        |      |
|--------|--------|--------|------|
|        |        |        |      |
| 11.4 s | 62.8 s | 11.8 s | 34 s |
|        |        |        |      |
| 12 s   | 62.2 s | 11.8 s | 34 s |

# Lanes, Volumes, Timings

## 4: Caron St & Francois St

Build Out  
PM+Improvements.syn



| Lane Group             | EBL   | NBL   | NBT   | SBT   |
|------------------------|-------|-------|-------|-------|
| Lane Configurations    |       |       |       |       |
| Traffic Volume (vph)   | 7     | 6     | 566   | 692   |
| Future Volume (vph)    | 7     | 6     | 566   | 692   |
| Lane Group Flow (vph)  | 11    | 7     | 629   | 773   |
| Turn Type              | Prot  | Perm  | NA    | NA    |
| Protected Phases       | 4     |       | 2     | 6     |
| Permitted Phases       |       | 2     |       |       |
| Detector Phase         | 4     | 2     | 2     | 6     |
| Switch Phase           |       |       |       |       |
| Minimum Initial (s)    | 5.0   | 5.0   | 5.0   | 5.0   |
| Minimum Split (s)      | 22.5  | 22.5  | 22.5  | 22.5  |
| Total Split (s)        | 22.6  | 67.4  | 67.4  | 67.4  |
| Total Split (%)        | 25.1% | 74.9% | 74.9% | 74.9% |
| Yellow Time (s)        | 3.5   | 3.5   | 3.5   | 3.5   |
| All-Red Time (s)       | 1.0   | 1.0   | 1.0   | 1.0   |
| Lost Time Adjust (s)   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Lost Time (s)    | 4.5   | 4.5   | 4.5   | 4.5   |
| Lead/Lag               |       |       |       |       |
| Lead-Lag Optimize?     |       |       |       |       |
| Recall Mode            | None  | Max   | Max   | Max   |
| Act Effct Green (s)    | 6.1   | 81.9  | 81.9  | 81.9  |
| Actuated g/C Ratio     | 0.07  | 0.97  | 0.97  | 0.97  |
| v/c Ratio              | 0.09  | 0.01  | 0.37  | 0.45  |
| Control Delay          | 35.1  | 0.8   | 1.3   | 1.7   |
| Queue Delay            | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Delay            | 35.1  | 0.8   | 1.3   | 1.7   |
| LOS                    | D     | A     | A     | A     |
| Approach Delay         | 35.1  |       | 1.3   | 1.7   |
| Approach LOS           | D     |       | A     | A     |
| Queue Length 50th (m)  | 1.1   | 0.0   | 0.0   | 0.0   |
| Queue Length 95th (m)  | 6.1   | 0.7   | 29.3  | 41.8  |
| Internal Link Dist (m) | 329.4 |       | 111.2 | 224.8 |
| Turn Bay Length (m)    |       | 15.0  |       |       |
| Base Capacity (vph)    | 353   | 608   | 1704  | 1702  |
| Starvation Cap Reductn | 0     | 0     | 0     | 0     |
| Spillback Cap Reductn  | 0     | 0     | 0     | 0     |
| Storage Cap Reductn    | 0     | 0     | 0     | 0     |
| Reduced v/c Ratio      | 0.03  | 0.01  | 0.37  | 0.45  |

### Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 84.8

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.45

Intersection Signal Delay: 1.8

Intersection LOS: A

Intersection Capacity Utilization 50.4%

ICU Level of Service A

Analysis Period (min) 15

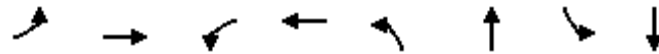
Splits and Phases: 4: Caron St & Francois St



# Lanes, Volumes, Timings

## 6: Caron St & Cote St/Potvin Ave

Build Out  
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| Lane Group             | EBL   | EBT   | WBL   | WBT   | NBL   | NBT   | SBL   | SBT   |
|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Lane Configurations    |       |       |       |       |       |       |       |       |
| Traffic Volume (vph)   | 17    | 1     | 9     | 1     | 12    | 485   | 16    | 637   |
| Future Volume (vph)    | 17    | 1     | 9     | 1     | 12    | 485   | 16    | 637   |
| Lane Group Flow (vph)  | 0     | 31    | 0     | 15    | 13    | 553   | 18    | 727   |
| Turn Type              | Perm  | NA    | Perm  | NA    | Perm  | NA    | Perm  | NA    |
| Protected Phases       |       | 4     |       | 8     |       | 2     |       | 6     |
| Permitted Phases       | 4     |       | 8     |       | 2     |       | 6     |       |
| Detector Phase         | 4     | 4     | 8     | 8     | 2     | 2     | 6     | 6     |
| Switch Phase           |       |       |       |       |       |       |       |       |
| Minimum Initial (s)    | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   | 5.0   |
| Minimum Split (s)      | 22.5  | 22.5  | 22.5  | 22.5  | 22.5  | 22.5  | 22.5  | 22.5  |
| Total Split (s)        | 23.0  | 23.0  | 23.0  | 23.0  | 67.0  | 67.0  | 67.0  | 67.0  |
| Total Split (%)        | 25.6% | 25.6% | 25.6% | 25.6% | 74.4% | 74.4% | 74.4% | 74.4% |
| 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   |
| Total Lost Time (s)    |       | 4.5   |       | 4.5   | 4.5   | 4.5   | 4.5   | 4.5   |
| Lead/Lag               |       |       |       |       |       |       |       |       |
| Lead-Lag Optimize?     |       |       |       |       |       |       |       |       |
| Recall Mode            | None  | None  | None  | None  | Max   | Max   | Max   | Max   |
| Act Effct Green (s)    |       | 6.9   |       | 6.8   | 79.2  | 79.2  | 79.2  | 79.2  |
| Actuated g/C Ratio     |       | 0.08  |       | 0.08  | 0.92  | 0.92  | 0.92  | 0.92  |
| v/c Ratio              |       | 0.21  |       | 0.11  | 0.02  | 0.34  | 0.02  | 0.45  |
| Control Delay          |       | 31.2  |       | 33.4  | 1.6   | 2.0   | 1.6   | 2.6   |
| Queue Delay            |       | 0.0   |       | 0.0   | 0.0   | 0.0   | 0.0   | 0.0   |
| Total Delay            |       | 31.2  |       | 33.4  | 1.6   | 2.0   | 1.6   | 2.6   |
| LOS                    |       | C     |       | C     | A     | A     | A     | A     |
| Approach Delay         |       | 31.3  |       | 33.4  |       | 2.0   |       | 2.6   |
| Approach LOS           |       | C     |       | C     |       | A     |       | A     |
| Queue Length 50th (m)  |       | 2.7   |       | 1.5   | 0.0   | 0.0   | 0.0   | 0.0   |
| Queue Length 95th (m)  |       | 10.3  |       | 6.8   | 1.2   | 29.1  | 1.5   | 44.9  |
| Internal Link Dist (m) |       | 61.3  |       | 102.4 |       | 500.1 |       | 270.2 |
| Turn Bay Length (m)    |       |       |       |       | 30.0  |       | 40.0  |       |
| Base Capacity (vph)    |       | 372   |       | 370   | 603   | 1623  | 736   | 1623  |
| Starvation Cap Reductn |       | 0     |       | 0     | 0     | 0     | 0     | 0     |
| Spillback Cap Reductn  |       | 0     |       | 0     | 0     | 0     | 0     | 0     |
| Storage Cap Reductn    |       | 0     |       | 0     | 0     | 0     | 0     | 0     |
| Reduced v/c Ratio      |       | 0.08  |       | 0.04  | 0.02  | 0.34  | 0.02  | 0.45  |

### Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 85.8

Natural Cycle: 60

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.45

Intersection Signal Delay: 3.3

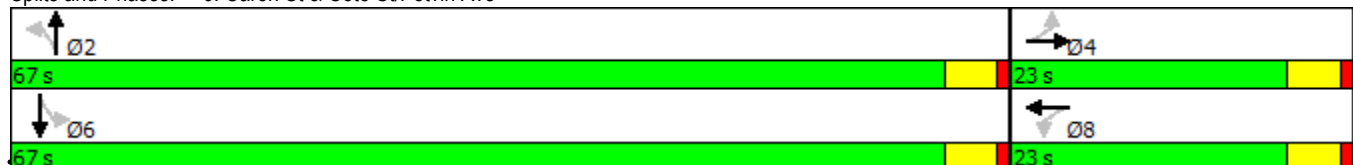
Intersection LOS: A

Intersection Capacity Utilization 48.1%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 6: Caron St & Cote St/Potvin Ave



# HCM Unsignalized Intersection Capacity Analysis

## 3: Caron St & Hélène St

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|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                   |  |  |  |  |  |  |
| Movement                          | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |
| Lane Configurations               |  |                                                                                   |  |  |  |                                                                                   |
| Traffic Volume (veh/h)            | 0                                                                                 | 8                                                                                 | 7                                                                                 | 566                                                                               | 688                                                                               | 3                                                                                 |
| Future Volume (Veh/h)             | 0                                                                                 | 8                                                                                 | 7                                                                                 | 566                                                                               | 688                                                                               | 3                                                                                 |
| Sign Control                      | Stop                                                                              |                                                                                   |                                                                                   | Free                                                                              | Free                                                                              |                                                                                   |
| Grade                             | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                | 0%                                                                                |                                                                                   |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |
| Hourly flow rate (vph)            | 0                                                                                 | 9                                                                                 | 8                                                                                 | 629                                                                               | 764                                                                               | 3                                                                                 |
| Pedestrians                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Width (m)                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Walking Speed (m/s)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Percent Blockage                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Median type                       |                                                                                   |                                                                                   |                                                                                   | TWLTL                                                                             | TWLTL                                                                             |                                                                                   |
| Median storage veh)               |                                                                                   |                                                                                   |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   | 249                                                                               | 169                                                                               |                                                                                   |
| pX, platoon unblocked             | 0.66                                                                              | 0.64                                                                              | 0.64                                                                              |                                                                                   |                                                                                   |                                                                                   |
| vC, conflicting volume            | 1410                                                                              | 766                                                                               | 767                                                                               |                                                                                   |                                                                                   |                                                                                   |
| vC1, stage 1 conf vol             | 766                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC2, stage 2 conf vol             | 645                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vCu, unblocked vol                | 1271                                                                              | 360                                                                               | 362                                                                               |                                                                                   |                                                                                   |                                                                                   |
| tC, single (s)                    | 6.4                                                                               | 6.2                                                                               | 4.1                                                                               |                                                                                   |                                                                                   |                                                                                   |
| tC, 2 stage (s)                   | 5.4                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| tF (s)                            | 3.5                                                                               | 3.3                                                                               | 2.2                                                                               |                                                                                   |                                                                                   |                                                                                   |
| p0 queue free %                   | 100                                                                               | 98                                                                                | 99                                                                                |                                                                                   |                                                                                   |                                                                                   |
| cM capacity (veh/h)               | 353                                                                               | 441                                                                               | 771                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Direction, Lane #                 | EB 1                                                                              | NB 1                                                                              | NB 2                                                                              | SB 1                                                                              |                                                                                   |                                                                                   |
| Volume Total                      | 9                                                                                 | 8                                                                                 | 629                                                                               | 767                                                                               |                                                                                   |                                                                                   |
| Volume Left                       | 0                                                                                 | 8                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |
| Volume Right                      | 9                                                                                 | 0                                                                                 | 0                                                                                 | 3                                                                                 |                                                                                   |                                                                                   |
| cSH                               | 441                                                                               | 771                                                                               | 1700                                                                              | 1700                                                                              |                                                                                   |                                                                                   |
| Volume to Capacity                | 0.02                                                                              | 0.01                                                                              | 0.37                                                                              | 0.45                                                                              |                                                                                   |                                                                                   |
| Queue Length 95th (m)             | 0.4                                                                               | 0.2                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |
| Control Delay (s)                 | 13.3                                                                              | 9.7                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |
| Lane LOS                          | B                                                                                 | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Approach Delay (s)                | 13.3                                                                              | 0.1                                                                               |                                                                                   | 0.0                                                                               |                                                                                   |                                                                                   |
| Approach LOS                      | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Average Delay                     |                                                                                   |                                                                                   | 0.1                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 48.4%                                                                             | ICU Level of Service                                                              |                                                                                   | A                                                                                 |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |

# HCM Unsignalized Intersection Capacity Analysis

## 5: Caron St & Des Cedres Ave

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|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                   |  |  |  |  |  |  |
| Movement                          | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |
| Lane Configurations               |  |                                                                                   |  |                                                                                   |  |  |
| Traffic Volume (veh/h)            | 1                                                                                 | 10                                                                                | 499                                                                               | 7                                                                                 | 26                                                                                | 669                                                                               |
| Future Volume (Veh/h)             | 1                                                                                 | 10                                                                                | 499                                                                               | 7                                                                                 | 26                                                                                | 669                                                                               |
| Sign Control                      | Stop                                                                              |                                                                                   | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              |
| Grade                             | 0%                                                                                |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |
| Hourly flow rate (vph)            | 1                                                                                 | 11                                                                                | 554                                                                               | 8                                                                                 | 29                                                                                | 743                                                                               |
| Pedestrians                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Width (m)                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Walking Speed (m/s)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Percent Blockage                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Median type                       |                                                                                   |                                                                                   | TWLTL                                                                             |                                                                                   | TWLTL                                                                             |                                                                                   |
| Median storage veh)               |                                                                                   |                                                                                   | 2                                                                                 |                                                                                   | 2                                                                                 |                                                                                   |
| Upstream signal (m)               |                                                                                   |                                                                                   | 294                                                                               |                                                                                   | 135                                                                               |                                                                                   |
| pX, platoon unblocked             | 0.90                                                                              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC, conflicting volume            | 1359                                                                              | 558                                                                               |                                                                                   |                                                                                   | 562                                                                               |                                                                                   |
| vC1, stage 1 conf vol             | 558                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC2, stage 2 conf vol             | 801                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vCu, unblocked vol                | 1343                                                                              | 558                                                                               |                                                                                   |                                                                                   | 562                                                                               |                                                                                   |
| tC, single (s)                    | 6.4                                                                               | 6.2                                                                               |                                                                                   |                                                                                   | 4.1                                                                               |                                                                                   |
| tC, 2 stage (s)                   | 5.4                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| tF (s)                            | 3.5                                                                               | 3.3                                                                               |                                                                                   |                                                                                   | 2.2                                                                               |                                                                                   |
| p0 queue free %                   | 100                                                                               | 98                                                                                |                                                                                   |                                                                                   | 97                                                                                |                                                                                   |
| cM capacity (veh/h)               | 356                                                                               | 529                                                                               |                                                                                   |                                                                                   | 1009                                                                              |                                                                                   |
| Direction, Lane #                 | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                   |                                                                                   |
| Volume Total                      | 12                                                                                | 562                                                                               | 29                                                                                | 743                                                                               |                                                                                   |                                                                                   |
| Volume Left                       | 1                                                                                 | 0                                                                                 | 29                                                                                | 0                                                                                 |                                                                                   |                                                                                   |
| Volume Right                      | 11                                                                                | 8                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |
| cSH                               | 509                                                                               | 1700                                                                              | 1009                                                                              | 1700                                                                              |                                                                                   |                                                                                   |
| Volume to Capacity                | 0.02                                                                              | 0.33                                                                              | 0.03                                                                              | 0.44                                                                              |                                                                                   |                                                                                   |
| Queue Length 95th (m)             | 0.5                                                                               | 0.0                                                                               | 0.6                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |
| Control Delay (s)                 | 12.2                                                                              | 0.0                                                                               | 8.7                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |
| Lane LOS                          | B                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Approach Delay (s)                | 12.2                                                                              | 0.0                                                                               | 0.3                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Approach LOS                      | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Average Delay                     |                                                                                   |                                                                                   | 0.3                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 47.2%                                                                             | ICU Level of Service                                                              |                                                                                   | A                                                                                 |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |

# HCM Unsignalized Intersection Capacity Analysis

## 7: Caron St & Docteur Corbeil Blvd

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|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--|--|
|                                   |  |  |  |  |  |  |  |  |
| Movement                          | EBL                                                                               | EBR                                                                               | NBL                                                                               | NBT                                                                               | SBT                                                                               | SBR                                                                               |  |  |
| Lane Configurations               |  |                                                                                   |  |  |  |                                                                                   |  |  |
| Traffic Volume (veh/h)            | 61                                                                                | 95                                                                                | 77                                                                                | 449                                                                               | 547                                                                               | 60                                                                                |  |  |
| Future Volume (Veh/h)             | 61                                                                                | 95                                                                                | 77                                                                                | 449                                                                               | 547                                                                               | 60                                                                                |  |  |
| Sign Control                      | Stop                                                                              |                                                                                   |                                                                                   | Free                                                                              | Free                                                                              |                                                                                   |  |  |
| Grade                             | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                | 0%                                                                                |                                                                                   |  |  |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |  |  |
| Hourly flow rate (vph)            | 68                                                                                | 106                                                                               | 86                                                                                | 499                                                                               | 608                                                                               | 67                                                                                |  |  |
| Pedestrians                       | 2                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
| Lane Width (m)                    | 3.6                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
| Walking Speed (m/s)               | 1.2                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
| Percent Blockage                  | 0                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
| Median type                       |                                                                                   |                                                                                   |                                                                                   | TWLTL                                                                             | TWLTL                                                                             |                                                                                   |  |  |
| Median storage (veh)              |                                                                                   |                                                                                   |                                                                                   | 2                                                                                 | 2                                                                                 |                                                                                   |  |  |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
| pX, platoon unblocked             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
| vC, conflicting volume            | 1314                                                                              | 644                                                                               | 677                                                                               |                                                                                   |                                                                                   |                                                                                   |  |  |
| vC1, stage 1 conf vol             | 644                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
| vC2, stage 2 conf vol             | 671                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
| vCu, unblocked vol                | 1314                                                                              | 644                                                                               | 677                                                                               |                                                                                   |                                                                                   |                                                                                   |  |  |
| tC, single (s)                    | 6.4                                                                               | 6.2                                                                               | 4.1                                                                               |                                                                                   |                                                                                   |                                                                                   |  |  |
| tC, 2 stage (s)                   | 5.4                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
| tF (s)                            | 3.5                                                                               | 3.3                                                                               | 2.2                                                                               |                                                                                   |                                                                                   |                                                                                   |  |  |
| p0 queue free %                   | 82                                                                                | 78                                                                                | 91                                                                                |                                                                                   |                                                                                   |                                                                                   |  |  |
| cM capacity (veh/h)               | 369                                                                               | 472                                                                               | 913                                                                               |                                                                                   |                                                                                   |                                                                                   |  |  |
| Direction, Lane #                 | EB 1                                                                              | NB 1                                                                              | NB 2                                                                              | SB 1                                                                              |                                                                                   |                                                                                   |  |  |
| Volume Total                      | 174                                                                               | 86                                                                                | 499                                                                               | 675                                                                               |                                                                                   |                                                                                   |  |  |
| Volume Left                       | 68                                                                                | 86                                                                                | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |  |  |
| Volume Right                      | 106                                                                               | 0                                                                                 | 0                                                                                 | 67                                                                                |                                                                                   |                                                                                   |  |  |
| cSH                               | 426                                                                               | 913                                                                               | 1700                                                                              | 1700                                                                              |                                                                                   |                                                                                   |  |  |
| Volume to Capacity                | 0.41                                                                              | 0.09                                                                              | 0.29                                                                              | 0.40                                                                              |                                                                                   |                                                                                   |  |  |
| Queue Length 95th (m)             | 13.7                                                                              | 2.2                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |  |  |
| Control Delay (s)                 | 19.2                                                                              | 9.4                                                                               | 0.0                                                                               | 0.0                                                                               |                                                                                   |                                                                                   |  |  |
| Lane LOS                          | C                                                                                 | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
| Approach Delay (s)                | 19.2                                                                              | 1.4                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
| Approach LOS                      | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
| Average Delay                     | 2.9                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |
| Intersection Capacity Utilization | 58.5%                                                                             |                                                                                   |                                                                                   | ICU Level of Service                                                              | B                                                                                 |                                                                                   |  |  |
| Analysis Period (min)             | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |  |  |

# HCM Unsignalized Intersection Capacity Analysis

## 8: David St & Caron St

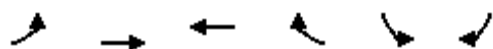
Build Out  
PM+Improvements.syn

|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                   |  |  |  |  |  |  |
| Movement                          | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |
| Lane Configurations               |  |                                                                                   |  |                                                                                   |  |  |
| Sign Control                      | Stop                                                                              |                                                                                   | Stop                                                                              |                                                                                   | Stop                                                                              | Stop                                                                              |
| Traffic Volume (vph)              | 5                                                                                 | 231                                                                               | 307                                                                               | 5                                                                                 | 272                                                                               | 341                                                                               |
| Future Volume (vph)               | 5                                                                                 | 231                                                                               | 307                                                                               | 5                                                                                 | 272                                                                               | 341                                                                               |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |
| Hourly flow rate (vph)            | 6                                                                                 | 257                                                                               | 341                                                                               | 6                                                                                 | 302                                                                               | 379                                                                               |
| Direction, Lane #                 | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                   |                                                                                   |
| Volume Total (vph)                | 263                                                                               | 347                                                                               | 302                                                                               | 379                                                                               |                                                                                   |                                                                                   |
| Volume Left (vph)                 | 6                                                                                 | 0                                                                                 | 302                                                                               | 0                                                                                 |                                                                                   |                                                                                   |
| Volume Right (vph)                | 257                                                                               | 6                                                                                 | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |
| Hadj (s)                          | -0.55                                                                             | 0.02                                                                              | 0.53                                                                              | 0.03                                                                              |                                                                                   |                                                                                   |
| Departure Headway (s)             | 5.6                                                                               | 5.6                                                                               | 6.3                                                                               | 5.8                                                                               |                                                                                   |                                                                                   |
| Degree Utilization, x             | 0.41                                                                              | 0.54                                                                              | 0.53                                                                              | 0.61                                                                              |                                                                                   |                                                                                   |
| Capacity (veh/h)                  | 596                                                                               | 609                                                                               | 559                                                                               | 610                                                                               |                                                                                   |                                                                                   |
| Control Delay (s)                 | 12.5                                                                              | 15.2                                                                              | 15.0                                                                              | 16.2                                                                              |                                                                                   |                                                                                   |
| Approach Delay (s)                | 12.5                                                                              | 15.2                                                                              | 15.7                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Approach LOS                      | B                                                                                 | C                                                                                 | C                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Delay                             |                                                                                   |                                                                                   | 14.9                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Level of Service                  |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 58.7%                                                                             | ICU Level of Service                                                              |                                                                                   | B                                                                                 |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |

# HCM Unsignalized Intersection Capacity Analysis

## 9: Baseline Rd & Caron St

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| Movement                          | EBL  | EBT                                                                               | WBT                                                                               | WBR                  | SBL                                                                               | SBR  |
|-----------------------------------|------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|----------------------|-----------------------------------------------------------------------------------|------|
| Lane Configurations               |      |  |  |                      |  |      |
| Traffic Volume (veh/h)            | 74   | 102                                                                               | 41                                                                                | 144                  | 154                                                                               | 45   |
| Future Volume (Veh/h)             | 74   | 102                                                                               | 41                                                                                | 144                  | 154                                                                               | 45   |
| Sign Control                      |      | Free                                                                              | Free                                                                              |                      | Stop                                                                              |      |
| Grade                             |      | 0%                                                                                | 0%                                                                                |                      | 0%                                                                                |      |
| Peak Hour Factor                  | 0.90 | 0.90                                                                              | 0.90                                                                              | 0.90                 | 0.90                                                                              | 0.90 |
| Hourly flow rate (vph)            | 82   | 113                                                                               | 46                                                                                | 160                  | 171                                                                               | 50   |
| Pedestrians                       |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Lane Width (m)                    |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Walking Speed (m/s)               |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Percent Blockage                  |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Right turn flare (veh)            |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Median type                       |      | None                                                                              | None                                                                              |                      |                                                                                   |      |
| Median storage (veh)              |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Upstream signal (m)               |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| pX, platoon unblocked             |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| vC, conflicting volume            | 206  |                                                                                   |                                                                                   |                      | 403                                                                               | 126  |
| vC1, stage 1 conf vol             |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| vC2, stage 2 conf vol             |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| vCu, unblocked vol                | 206  |                                                                                   |                                                                                   |                      | 403                                                                               | 126  |
| tC, single (s)                    | 4.1  |                                                                                   |                                                                                   |                      | 6.4                                                                               | 6.2  |
| tC, 2 stage (s)                   |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| tF (s)                            | 2.2  |                                                                                   |                                                                                   |                      | 3.5                                                                               | 3.3  |
| p0 queue free %                   | 94   |                                                                                   |                                                                                   |                      | 70                                                                                | 95   |
| cM capacity (veh/h)               | 1365 |                                                                                   |                                                                                   |                      | 567                                                                               | 924  |
| Direction, Lane #                 | EB 1 | WB 1                                                                              | SB 1                                                                              |                      |                                                                                   |      |
| Volume Total                      | 195  | 206                                                                               | 221                                                                               |                      |                                                                                   |      |
| Volume Left                       | 82   | 0                                                                                 | 171                                                                               |                      |                                                                                   |      |
| Volume Right                      | 0    | 160                                                                               | 50                                                                                |                      |                                                                                   |      |
| cSH                               | 1365 | 1700                                                                              | 621                                                                               |                      |                                                                                   |      |
| Volume to Capacity                | 0.06 | 0.12                                                                              | 0.36                                                                              |                      |                                                                                   |      |
| Queue Length 95th (m)             | 1.3  | 0.0                                                                               | 11.2                                                                              |                      |                                                                                   |      |
| Control Delay (s)                 | 3.6  | 0.0                                                                               | 14.0                                                                              |                      |                                                                                   |      |
| Lane LOS                          | A    |                                                                                   | B                                                                                 |                      |                                                                                   |      |
| Approach Delay (s)                | 3.6  | 0.0                                                                               | 14.0                                                                              |                      |                                                                                   |      |
| Approach LOS                      |      |                                                                                   | B                                                                                 |                      |                                                                                   |      |
| Intersection Summary              |      |                                                                                   |                                                                                   |                      |                                                                                   |      |
| Average Delay                     |      |                                                                                   | 6.1                                                                               |                      |                                                                                   |      |
| Intersection Capacity Utilization |      |                                                                                   | 43.5%                                                                             | ICU Level of Service |                                                                                   | A    |
| Analysis Period (min)             |      |                                                                                   | 15                                                                                |                      |                                                                                   |      |

# HCM Unsignalized Intersection Capacity Analysis

## 10: Street B & David St

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|                                   |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Movement                          | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBR                                                                               |
| Lane Configurations               |  |                                                                                   |                                                                                   |  |  |                                                                                   |
| Traffic Volume (veh/h)            | 179                                                                               | 99                                                                                | 33                                                                                | 153                                                                               | 83                                                                                | 27                                                                                |
| Future Volume (Veh/h)             | 179                                                                               | 99                                                                                | 33                                                                                | 153                                                                               | 83                                                                                | 27                                                                                |
| Sign Control                      | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              | Stop                                                                              |                                                                                   |
| Grade                             | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                | 0%                                                                                |                                                                                   |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |
| Hourly flow rate (vph)            | 199                                                                               | 110                                                                               | 37                                                                                | 170                                                                               | 92                                                                                | 30                                                                                |
| Pedestrians                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Width (m)                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Walking Speed (m/s)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Percent Blockage                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Median type                       | None                                                                              |                                                                                   |                                                                                   | None                                                                              |                                                                                   |                                                                                   |
| Median storage (veh)              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| pX, platoon unblocked             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC, conflicting volume            |                                                                                   |                                                                                   | 309                                                                               |                                                                                   | 498                                                                               | 254                                                                               |
| vC1, stage 1 conf vol             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC2, stage 2 conf vol             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vCu, unblocked vol                |                                                                                   |                                                                                   | 309                                                                               |                                                                                   | 498                                                                               | 254                                                                               |
| tC, single (s)                    |                                                                                   |                                                                                   | 4.1                                                                               |                                                                                   | 6.4                                                                               | 6.2                                                                               |
| tC, 2 stage (s)                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| tF (s)                            |                                                                                   |                                                                                   | 2.2                                                                               |                                                                                   | 3.5                                                                               | 3.3                                                                               |
| p0 queue free %                   |                                                                                   |                                                                                   | 97                                                                                |                                                                                   | 82                                                                                | 96                                                                                |
| cM capacity (veh/h)               |                                                                                   |                                                                                   | 1252                                                                              |                                                                                   | 516                                                                               | 785                                                                               |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Volume Total                      | 309                                                                               | 207                                                                               | 122                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Volume Left                       | 0                                                                                 | 37                                                                                | 92                                                                                |                                                                                   |                                                                                   |                                                                                   |
| Volume Right                      | 110                                                                               | 0                                                                                 | 30                                                                                |                                                                                   |                                                                                   |                                                                                   |
| cSH                               | 1700                                                                              | 1252                                                                              | 563                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Volume to Capacity                | 0.18                                                                              | 0.03                                                                              | 0.22                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Queue Length 95th (m)             | 0.0                                                                               | 0.6                                                                               | 5.7                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Control Delay (s)                 | 0.0                                                                               | 1.6                                                                               | 13.1                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Lane LOS                          |                                                                                   | A                                                                                 | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Approach Delay (s)                | 0.0                                                                               | 1.6                                                                               | 13.1                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Approach LOS                      |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Average Delay                     |                                                                                   |                                                                                   | 3.0                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 43.3%                                                                             | ICU Level of Service                                                              | A                                                                                 |                                                                                   |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |

# HCM Unsignalized Intersection Capacity Analysis

## 11: Street A & David St

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|                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                   |  |  |  |  |  |  |
| Movement                          | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | NBL                                                                               | NBR                                                                               |
| Lane Configurations               |  |                                                                                   |                                                                                   |  |  |                                                                                   |
| Traffic Volume (veh/h)            | 42                                                                                | 164                                                                               | 33                                                                                | 48                                                                                | 138                                                                               | 28                                                                                |
| Future Volume (Veh/h)             | 42                                                                                | 164                                                                               | 33                                                                                | 48                                                                                | 138                                                                               | 28                                                                                |
| Sign Control                      | Free                                                                              |                                                                                   |                                                                                   | Free                                                                              | Stop                                                                              |                                                                                   |
| Grade                             | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                | 0%                                                                                |                                                                                   |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |
| Hourly flow rate (vph)            | 47                                                                                | 182                                                                               | 37                                                                                | 53                                                                                | 153                                                                               | 31                                                                                |
| Pedestrians                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Lane Width (m)                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Walking Speed (m/s)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Percent Blockage                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Median type                       | None                                                                              |                                                                                   |                                                                                   | None                                                                              |                                                                                   |                                                                                   |
| Median storage (veh)              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| pX, platoon unblocked             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC, conflicting volume            |                                                                                   |                                                                                   | 229                                                                               |                                                                                   | 265                                                                               | 138                                                                               |
| vC1, stage 1 conf vol             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vC2, stage 2 conf vol             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| vCu, unblocked vol                |                                                                                   |                                                                                   | 229                                                                               |                                                                                   | 265                                                                               | 138                                                                               |
| tC, single (s)                    |                                                                                   |                                                                                   | 4.1                                                                               |                                                                                   | 6.4                                                                               | 6.2                                                                               |
| tC, 2 stage (s)                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| tF (s)                            |                                                                                   |                                                                                   | 2.2                                                                               |                                                                                   | 3.5                                                                               | 3.3                                                                               |
| p0 queue free %                   |                                                                                   |                                                                                   | 97                                                                                |                                                                                   | 78                                                                                | 97                                                                                |
| cM capacity (veh/h)               |                                                                                   |                                                                                   | 1339                                                                              |                                                                                   | 704                                                                               | 910                                                                               |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Volume Total                      | 229                                                                               | 90                                                                                | 184                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Volume Left                       | 0                                                                                 | 37                                                                                | 153                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Volume Right                      | 182                                                                               | 0                                                                                 | 31                                                                                |                                                                                   |                                                                                   |                                                                                   |
| cSH                               | 1700                                                                              | 1339                                                                              | 732                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Volume to Capacity                | 0.13                                                                              | 0.03                                                                              | 0.25                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Queue Length 95th (m)             | 0.0                                                                               | 0.6                                                                               | 7.0                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Control Delay (s)                 | 0.0                                                                               | 3.3                                                                               | 11.6                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Lane LOS                          |                                                                                   | A                                                                                 | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Approach Delay (s)                | 0.0                                                                               | 3.3                                                                               | 11.6                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Approach LOS                      |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Average Delay                     |                                                                                   |                                                                                   | 4.8                                                                               |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 37.5%                                                                             | ICU Level of Service                                                              |                                                                                   | A                                                                                 |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |

# HCM Unsignalized Intersection Capacity Analysis

## 12: Streert B/Street B & Street A

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|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |                                                                                     |  |                                                                                     |
| Sign Control                      |                                                                                   | Stop                                                                              |                                                                                   |                                                                                   | Stop                                                                              |                                                                                   |                                                                                    | Stop                                                                                |                                                                                     |                                                                                     | Stop                                                                                |                                                                                     |
| Traffic Volume (vph)              | 33                                                                                | 94                                                                                | 33                                                                                | 33                                                                                | 88                                                                                | 28                                                                                | 28                                                                                 | 55                                                                                  | 28                                                                                  | 33                                                                                  | 66                                                                                  | 28                                                                                  |
| Future Volume (vph)               | 33                                                                                | 94                                                                                | 33                                                                                | 33                                                                                | 88                                                                                | 28                                                                                | 28                                                                                 | 55                                                                                  | 28                                                                                  | 33                                                                                  | 66                                                                                  | 28                                                                                  |
| 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                                                                                |
| Hourly flow rate (vph)            | 37                                                                                | 104                                                                               | 37                                                                                | 37                                                                                | 98                                                                                | 31                                                                                | 31                                                                                 | 61                                                                                  | 31                                                                                  | 37                                                                                  | 73                                                                                  | 31                                                                                  |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Total (vph)                | 178                                                                               | 166                                                                               | 123                                                                               | 141                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Left (vph)                 | 37                                                                                | 37                                                                                | 31                                                                                | 37                                                                                |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Right (vph)                | 37                                                                                | 31                                                                                | 31                                                                                | 31                                                                                |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Hadj (s)                          | -0.05                                                                             | -0.03                                                                             | -0.07                                                                             | -0.05                                                                             |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Departure Headway (s)             | 4.7                                                                               | 4.8                                                                               | 4.9                                                                               | 4.9                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Degree Utilization, x             | 0.23                                                                              | 0.22                                                                              | 0.17                                                                              | 0.19                                                                              |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Capacity (veh/h)                  | 708                                                                               | 705                                                                               | 680                                                                               | 681                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Control Delay (s)                 | 9.2                                                                               | 9.1                                                                               | 8.8                                                                               | 9.0                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay (s)                | 9.2                                                                               | 9.1                                                                               | 8.8                                                                               | 9.0                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                      | A                                                                                 | A                                                                                 | A                                                                                 | A                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Delay                             |                                                                                   |                                                                                   |                                                                                   | 9.0                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Level of Service                  |                                                                                   |                                                                                   |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   |                                                                                   | 28.7%                                                                             | ICU Level of Service                                                              |                                                                                   |                                                                                    |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM Unsignalized Intersection Capacity Analysis

## 13: Caron St

Build Out

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|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                 | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                     |  |                                                                                     |  |  |  |
| Traffic Volume (veh/h)            | 28                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 28                                                                                | 0                                                                                   | 272                                                                                 | 0                                                                                   | 33                                                                                  | 265                                                                                 | 33                                                                                  |
| Future Volume (Veh/h)             | 28                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 28                                                                                | 0                                                                                   | 272                                                                                 | 0                                                                                   | 33                                                                                  | 265                                                                                 | 33                                                                                  |
| Sign Control                      |                                                                                   | Stop                                                                              |                                                                                   |                                                                                   | Stop                                                                              |                                                                                   |                                                                                     | Free                                                                                |                                                                                     |                                                                                     | Free                                                                                |                                                                                     |
| Grade                             |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |                                                                                   |                                                                                     | 0%                                                                                  |                                                                                     |                                                                                     | 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                                                                                |
| Hourly flow rate (vph)            | 31                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 31                                                                                | 0                                                                                   | 302                                                                                 | 0                                                                                   | 37                                                                                  | 294                                                                                 | 37                                                                                  |
| Pedestrians                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Width (m)                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Walking Speed (m/s)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Percent Blockage                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Median type                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     | TWLT                                                                                |                                                                                     |                                                                                     | TWLT                                                                                |                                                                                     |
| Median storage (veh)              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     | 2                                                                                   |                                                                                     |                                                                                     | 2                                                                                   |                                                                                     |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| pX, platoon unblocked             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| vC, conflicting volume            | 720                                                                               | 688                                                                               | 312                                                                               | 670                                                                               | 707                                                                               | 302                                                                               | 331                                                                                 |                                                                                     |                                                                                     | 302                                                                                 |                                                                                     |                                                                                     |
| vC1, stage 1 conf vol             | 386                                                                               | 386                                                                               |                                                                                   | 302                                                                               | 302                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| vC2, stage 2 conf vol             | 333                                                                               | 302                                                                               |                                                                                   | 368                                                                               | 405                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| vCu, unblocked vol                | 720                                                                               | 688                                                                               | 312                                                                               | 670                                                                               | 707                                                                               | 302                                                                               | 331                                                                                 |                                                                                     |                                                                                     | 302                                                                                 |                                                                                     |                                                                                     |
| tC, single (s)                    | 7.1                                                                               | 6.5                                                                               | 6.2                                                                               | 7.1                                                                               | 6.5                                                                               | 6.2                                                                               | 4.1                                                                                 |                                                                                     |                                                                                     | 4.1                                                                                 |                                                                                     |                                                                                     |
| tC, 2 stage (s)                   | 6.1                                                                               | 5.5                                                                               |                                                                                   | 6.1                                                                               | 5.5                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| tF (s)                            | 3.5                                                                               | 4.0                                                                               | 3.3                                                                               | 3.5                                                                               | 4.0                                                                               | 3.3                                                                               | 2.2                                                                                 |                                                                                     |                                                                                     | 2.2                                                                                 |                                                                                     |                                                                                     |
| p0 queue free %                   | 94                                                                                | 100                                                                               | 100                                                                               | 100                                                                               | 100                                                                               | 96                                                                                | 100                                                                                 |                                                                                     |                                                                                     | 97                                                                                  |                                                                                     |                                                                                     |
| cM capacity (veh/h)               | 506                                                                               | 512                                                                               | 728                                                                               | 550                                                                               | 513                                                                               | 738                                                                               | 1228                                                                                |                                                                                     |                                                                                     | 1259                                                                                |                                                                                     |                                                                                     |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Total                      | 31                                                                                | 31                                                                                | 302                                                                               | 37                                                                                | 331                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Left                       | 31                                                                                | 0                                                                                 | 0                                                                                 | 37                                                                                | 0                                                                                 |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Right                      | 0                                                                                 | 31                                                                                | 0                                                                                 | 0                                                                                 | 37                                                                                |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| cSH                               | 506                                                                               | 738                                                                               | 1228                                                                              | 1259                                                                              | 1700                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume to Capacity                | 0.06                                                                              | 0.04                                                                              | 0.00                                                                              | 0.03                                                                              | 0.19                                                                              |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Queue Length 95th (m)             | 1.4                                                                               | 0.9                                                                               | 0.0                                                                               | 0.6                                                                               | 0.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Control Delay (s)                 | 12.6                                                                              | 10.1                                                                              | 0.0                                                                               | 7.9                                                                               | 0.0                                                                               |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane LOS                          | B                                                                                 | B                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay (s)                | 12.6                                                                              | 10.1                                                                              | 0.0                                                                               | 0.8                                                                               |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                      | B                                                                                 | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Average Delay                     |                                                                                   |                                                                                   | 1.4                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 43.9%                                                                             |                                                                                   |                                                                                   | ICU Level of Service                                                              |                                                                                     |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM Unsignalized Intersection Capacity Analysis

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|                                   |  |  |  |  |  |  |  |  |  |  |  |  |
| Movement                          | EBL                                                                               | EBT                                                                               | EBR                                                                               | WBL                                                                               | WBT                                                                               | WBR                                                                               | NBL                                                                                | NBT                                                                                 | NBR                                                                                 | SBL                                                                                 | SBT                                                                                 | SBR                                                                                 |
| Lane Configurations               |                                                                                   |  |                                                                                   |                                                                                   |  |                                                                                   |                                                                                    |  |                                                                                     |  |  |  |
| Traffic Volume (veh/h)            | 28                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 28                                                                                | 0                                                                                  | 218                                                                                 | 0                                                                                   | 33                                                                                  | 199                                                                                 | 33                                                                                  |
| Future Volume (Veh/h)             | 28                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 28                                                                                | 0                                                                                  | 218                                                                                 | 0                                                                                   | 33                                                                                  | 199                                                                                 | 33                                                                                  |
| Sign Control                      |                                                                                   | Stop                                                                              |                                                                                   |                                                                                   | Stop                                                                              |                                                                                   |                                                                                    | Free                                                                                |                                                                                     |                                                                                     | Free                                                                                |                                                                                     |
| Grade                             |                                                                                   | 0%                                                                                |                                                                                   |                                                                                   | 0%                                                                                |                                                                                   |                                                                                    | 0%                                                                                  |                                                                                     |                                                                                     | 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                                                                                |
| Hourly flow rate (vph)            | 31                                                                                | 0                                                                                 | 0                                                                                 | 0                                                                                 | 0                                                                                 | 31                                                                                | 0                                                                                  | 242                                                                                 | 0                                                                                   | 37                                                                                  | 221                                                                                 | 37                                                                                  |
| Pedestrians                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane Width (m)                    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Walking Speed (m/s)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Percent Blockage                  |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Right turn flare (veh)            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Median type                       |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | TWLTL                                                                               |                                                                                     |                                                                                     | TWLTL                                                                               |                                                                                     |
| Median storage veh)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 2                                                                                   |                                                                                     |                                                                                     | 2                                                                                   |                                                                                     |
| Upstream signal (m)               |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| pX, platoon unblocked             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| vC, conflicting volume            | 586                                                                               | 556                                                                               | 240                                                                               | 537                                                                               | 574                                                                               | 242                                                                               | 258                                                                                |                                                                                     |                                                                                     | 242                                                                                 |                                                                                     |                                                                                     |
| vC1, stage 1 conf vol             | 314                                                                               | 314                                                                               |                                                                                   | 242                                                                               | 242                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| vC2, stage 2 conf vol             | 273                                                                               | 242                                                                               |                                                                                   | 295                                                                               | 332                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| vCu, unblocked vol                | 586                                                                               | 556                                                                               | 240                                                                               | 537                                                                               | 574                                                                               | 242                                                                               | 258                                                                                |                                                                                     |                                                                                     | 242                                                                                 |                                                                                     |                                                                                     |
| tC, single (s)                    | 7.1                                                                               | 6.5                                                                               | 6.2                                                                               | 7.1                                                                               | 6.5                                                                               | 6.2                                                                               | 4.1                                                                                |                                                                                     |                                                                                     | 4.1                                                                                 |                                                                                     |                                                                                     |
| tC, 2 stage (s)                   | 6.1                                                                               | 5.5                                                                               |                                                                                   | 6.1                                                                               | 5.5                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| tF (s)                            | 3.5                                                                               | 4.0                                                                               | 3.3                                                                               | 3.5                                                                               | 4.0                                                                               | 3.3                                                                               | 2.2                                                                                |                                                                                     |                                                                                     | 2.2                                                                                 |                                                                                     |                                                                                     |
| p0 queue free %                   | 95                                                                                | 100                                                                               | 100                                                                               | 100                                                                               | 100                                                                               | 96                                                                                | 100                                                                                |                                                                                     |                                                                                     | 97                                                                                  |                                                                                     |                                                                                     |
| cM capacity (veh/h)               | 567                                                                               | 563                                                                               | 799                                                                               | 615                                                                               | 564                                                                               | 797                                                                               | 1307                                                                               |                                                                                     |                                                                                     | 1324                                                                                |                                                                                     |                                                                                     |
| Direction, Lane #                 | EB 1                                                                              | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Total                      | 31                                                                                | 31                                                                                | 242                                                                               | 37                                                                                | 258                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Left                       | 31                                                                                | 0                                                                                 | 0                                                                                 | 37                                                                                | 0                                                                                 |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume Right                      | 0                                                                                 | 31                                                                                | 0                                                                                 | 0                                                                                 | 37                                                                                |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| cSH                               | 567                                                                               | 797                                                                               | 1307                                                                              | 1324                                                                              | 1700                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Volume to Capacity                | 0.05                                                                              | 0.04                                                                              | 0.00                                                                              | 0.03                                                                              | 0.15                                                                              |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Queue Length 95th (m)             | 1.2                                                                               | 0.8                                                                               | 0.0                                                                               | 0.6                                                                               | 0.0                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Control Delay (s)                 | 11.7                                                                              | 9.7                                                                               | 0.0                                                                               | 7.8                                                                               | 0.0                                                                               |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Lane LOS                          | B                                                                                 | A                                                                                 |                                                                                   | A                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach Delay (s)                | 11.7                                                                              | 9.7                                                                               | 0.0                                                                               | 1.0                                                                               |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Approach LOS                      | B                                                                                 | A                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Average Delay                     |                                                                                   |                                                                                   | 1.6                                                                               |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 43.6%                                                                             |                                                                                   |                                                                                   | ICU Level of Service                                                              |                                                                                    |                                                                                     |                                                                                     | A                                                                                   |                                                                                     |                                                                                     |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |

# HCM Unsignalized Intersection Capacity Analysis15: Caron St & Street A

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|                                   |  |  |  |  |  |  |
| Movement                          | WBL                                                                               | WBR                                                                               | NBT                                                                               | NBR                                                                               | SBL                                                                               | SBT                                                                               |
| Lane Configurations               |  |                                                                                   |  |                                                                                   |  |  |
| Sign Control                      | Stop                                                                              |                                                                                   | Stop                                                                              |                                                                                   | Stop                                                                              | Stop                                                                              |
| Traffic Volume (vph)              | 83                                                                                | 55                                                                                | 257                                                                               | 98                                                                                | 66                                                                                | 280                                                                               |
| Future Volume (vph)               | 83                                                                                | 55                                                                                | 257                                                                               | 98                                                                                | 66                                                                                | 280                                                                               |
| Peak Hour Factor                  | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              | 0.90                                                                              |
| Hourly flow rate (vph)            | 92                                                                                | 61                                                                                | 286                                                                               | 109                                                                               | 73                                                                                | 311                                                                               |
| Direction, Lane #                 | WB 1                                                                              | NB 1                                                                              | SB 1                                                                              | SB 2                                                                              |                                                                                   |                                                                                   |
| Volume Total (vph)                | 153                                                                               | 395                                                                               | 73                                                                                | 311                                                                               |                                                                                   |                                                                                   |
| Volume Left (vph)                 | 92                                                                                | 0                                                                                 | 73                                                                                | 0                                                                                 |                                                                                   |                                                                                   |
| Volume Right (vph)                | 61                                                                                | 109                                                                               | 0                                                                                 | 0                                                                                 |                                                                                   |                                                                                   |
| Hadj (s)                          | -0.08                                                                             | -0.13                                                                             | 0.53                                                                              | 0.03                                                                              |                                                                                   |                                                                                   |
| Departure Headway (s)             | 5.6                                                                               | 4.8                                                                               | 5.9                                                                               | 5.4                                                                               |                                                                                   |                                                                                   |
| Degree Utilization, x             | 0.24                                                                              | 0.53                                                                              | 0.12                                                                              | 0.46                                                                              |                                                                                   |                                                                                   |
| Capacity (veh/h)                  | 577                                                                               | 727                                                                               | 591                                                                               | 651                                                                               |                                                                                   |                                                                                   |
| Control Delay (s)                 | 10.4                                                                              | 13.0                                                                              | 8.5                                                                               | 11.7                                                                              |                                                                                   |                                                                                   |
| Approach Delay (s)                | 10.4                                                                              | 13.0                                                                              | 11.1                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Approach LOS                      | B                                                                                 | B                                                                                 | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Intersection Summary              |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |
| Delay                             |                                                                                   |                                                                                   | 11.8                                                                              |                                                                                   |                                                                                   |                                                                                   |
| Level of Service                  |                                                                                   |                                                                                   | B                                                                                 |                                                                                   |                                                                                   |                                                                                   |
| Intersection Capacity Utilization |                                                                                   |                                                                                   | 42.8%                                                                             | ICU Level of Service                                                              | A                                                                                 |                                                                                   |
| Analysis Period (min)             |                                                                                   |                                                                                   | 15                                                                                |                                                                                   |                                                                                   |                                                                                   |

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