5259 Dorchester Road
Niagara Falls
Traffic Impact Study

Paradigm Transportation Solutions Limited

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230334

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Project Summary

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5259 Dorchester Road, Niagara Falls Traffic Impact Study

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Executive Summary

Paradigm Transportation Solutions Limited (Paradigm) was retained to conduct this Transportation Impact Study and Parking Study for a proposed large-scale residential development located at 5259 Dorchester Road, on the west side of Dorchester Road and north of Highway 420, in the City of Niagara Falls.

This study's purpose is to determine the net impacts of the development traffic on the surrounding road network and document the adequacy of the proposed parking supply. It will also identify any improvements, if needed, to support the development of the subject site.

Conclusions

This study evaluated the impacts associated with the construction of large-scale residential development located on the west side of Dorchester Road and north of Highway 420 at 5259 Dorchester Road in the City of Niagara Falls. The property owner proposes developing the lands as a large-scale residential development. While the site plan is preliminary, the development proposes 1,782 residential units spread across eight rental residential units ranging from five to twenty storeys. Combined, buildings one to three are proposed to have a total of 1,822 m^2 (19,613 sq. ft) of ground-floor retail space. Vehicle access is proposed through an access to Dawson Street. The opening year is anticipated to be 2030.

Transportation Impact Study

The subject site is estimated to generate 474 AM peak-hour trips, 635 PM peak-hour trips, and 708 Saturday peak-hour trips. To remain conservative, no reductions in alternative modes of transportation have been applied.

The existing traffic conditions analysis shows that localized congestion occurs at the intersection of Dorchester Road and Morrison Street in the PM and Saturday peak hours, with northbound, eastbound, and westbound left-turn movements operating at LOS F.

Southbound left-turn operations at the QEW Fort Erie Bound Off-Ramp at Highway 420 currently experience delays due to east-west traffic along Highway 420 during the PM peak hour. Queues are expected to form for this movement; however, queue lengths are not expected to impact highway operations.

Localized congestion is forecasted to continue at Dorchester Road and Morrison Street in all horizon years. In the PM peak hour and Saturday Peak Hour, left turns on the northbound, eastbound, and westbound approaches are forecast to operate with delays in the LOS F range.

QEW off-ramps are also forecast to experience congestion during the PM peak hour. Queues are expected to form for these ramps; however, queue lengths are not expected to impact highway operations.

According to the total traffic conditions analysis, similar levels of operation are generally expected under Total conditions, with only minor increases in delay resulting from site-generated traffic volumes. However, certain highly congested left-turn movements are forecasted to experience significant increases in delay due to the lack of capacity.

In all horizon years, the site driveway is forecast to operate at a LOS D with up to 33 seconds of delay in the respective peak hours.

Overall, the study finds that the intersections will experience localized congestion due to background traffic growth in the area. Intersections are forecast to operate with acceptable service levels, spare capacity is available, and off-site mitigation measures are not required to facilitate the development proposal.

The City of Niagara should continue to monitor and adjust signal timings to improve operations as traffic volumes increase and travel patterns change.

Parking Study

The parking requirement for the development under the City of Niagara Falls Zoning By-Law is 2,568 spaces. The development proposes 2,352 parking spaces, slightly under minimum parking supply outlined by the by-law.

Based on parking demand information collected at comparable sites, secondary source data from ITE and vehicle ownership rates observed within the City of Niagara Falls, apartment demand is reflective by a peak parking rate ranging between 0.74 and 1.23 spaces per unit. Considering the rates noted above, the peak residential parking demand is estimated to align with the proposed 2,352 residential spaces (1.32 spaces per unit). Overall, the proposed total parking supply of 2,352 spaces is sufficient for the development.

Recommendations

Based on the findings of this study, the following is recommended:

- The City continues to monitor operations at the intersection of Dorchester Road and Morrison Street and adjust signal timings to improve operations in the future as traffic volumes increase and travel patterns change.
- The City accept the proposed residential parking supply of 1.32 spaces per unit.

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1 Introduction

1.1 Overview

Paradigm Transportation Solutions Limited (Paradigm) was retained to conduct this Transportation Impact Study (TIS) for a proposed residential development at 5259 Dorchester Road in Niagara Falls. **Figure 1.1** illustrates the location of the subject site.

This study determines the impacts of the additional traffic generated by the subject site on the surrounding road network and the remedial measures necessary to accommodate future traffic satisfactorily. The scope of this study includes:

- Determine and assess the current study area traffic conditions;
- Forecast the additional traffic generated by the proposed development;
- Analyze the impacts of the additional traffic on the study area intersections for the opening year (Year 2030), five years after the opening year (Year 2035), and ten years after the opening year (Year 2040) horizons;
- Recommend any necessary remedial measures to mitigate the traffic impacts; and
- Review the proposed parking supply, and determine its adequacy compared to estimated parking demands

Appendix A contains the pre-study consultation material. The study scope was developed in consultation with the City of Niagara Falls and MTO in August 2023. The study follows the Ministry of Transportation Ontario's Traffic Impact Study Guidelines[1] and the Niagara Region's Transportation Impact Study Guidelines[2].

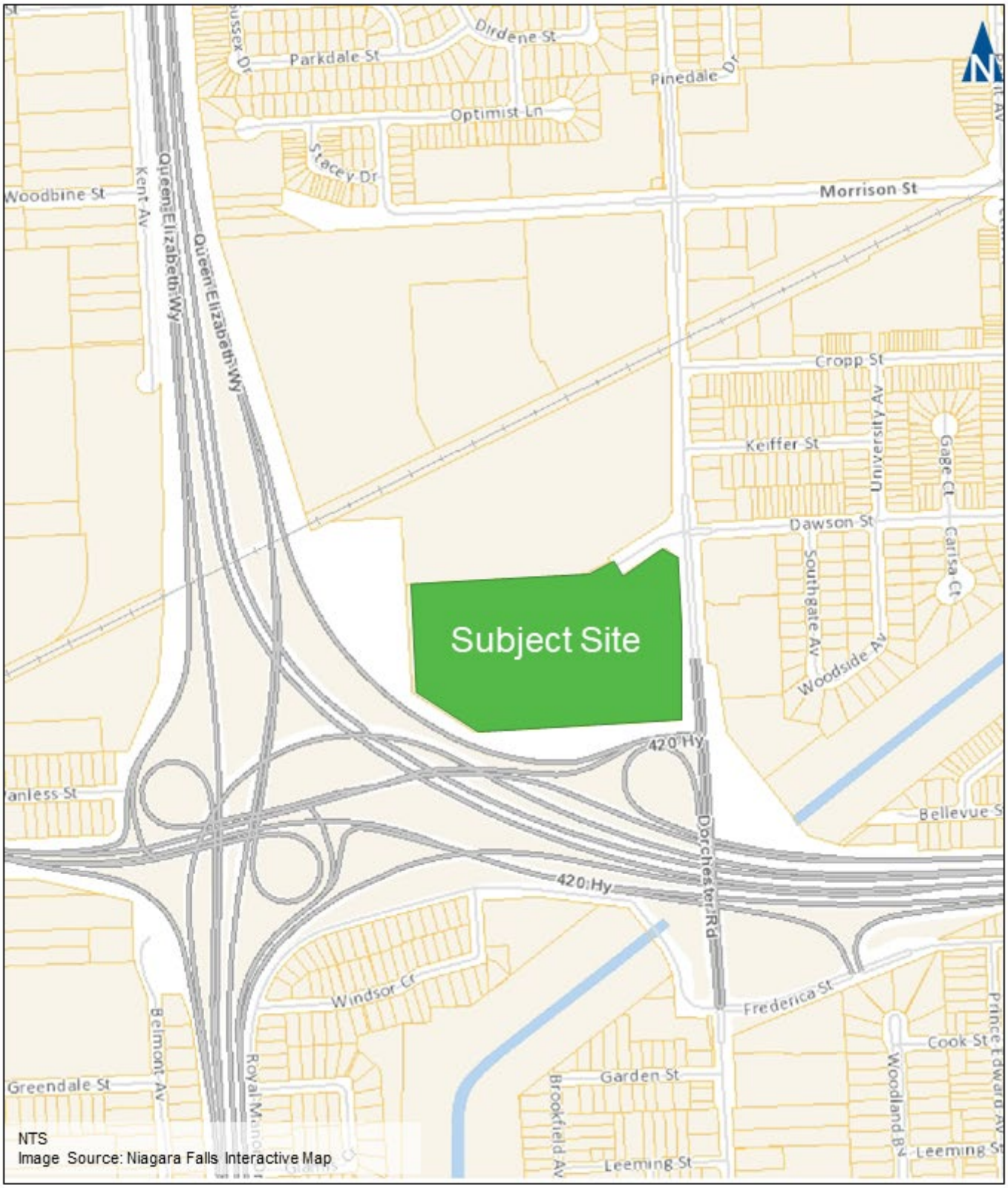
[1] Ministry of Transportation Ontario, *General Guidelines for the Preparation of Traffic Impact Studies*, 2023

[2] Niagara Region, Transportation *Impact Assessment Guidelines*, July 2023

1.2 Study Area

The study area intersections assessed in this study include:

- Dorchester Road at Morrison Street (signalized);
- Dorchester Road at Dawson Street (signalized);
- Dorchester Road at Highway 420 North Ramp (signalized);
- Dorchester Road at Frederica Street/Royal Manor Drive (signalized);
- Frederica Street at Highway 420 South Ramp (unsignalized);
- QEW Toronto Bound Off-Ramp at Highway 420 (unsignalized);
- QEW Fort Erie Bound Off-Ramp at Highway 420 (unsignalized); and
- One site driveway.



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Location of Subject Site

5259 Dorchester Road, Niagara Falls
230334

Figure 1.1

2 Existing Conditions

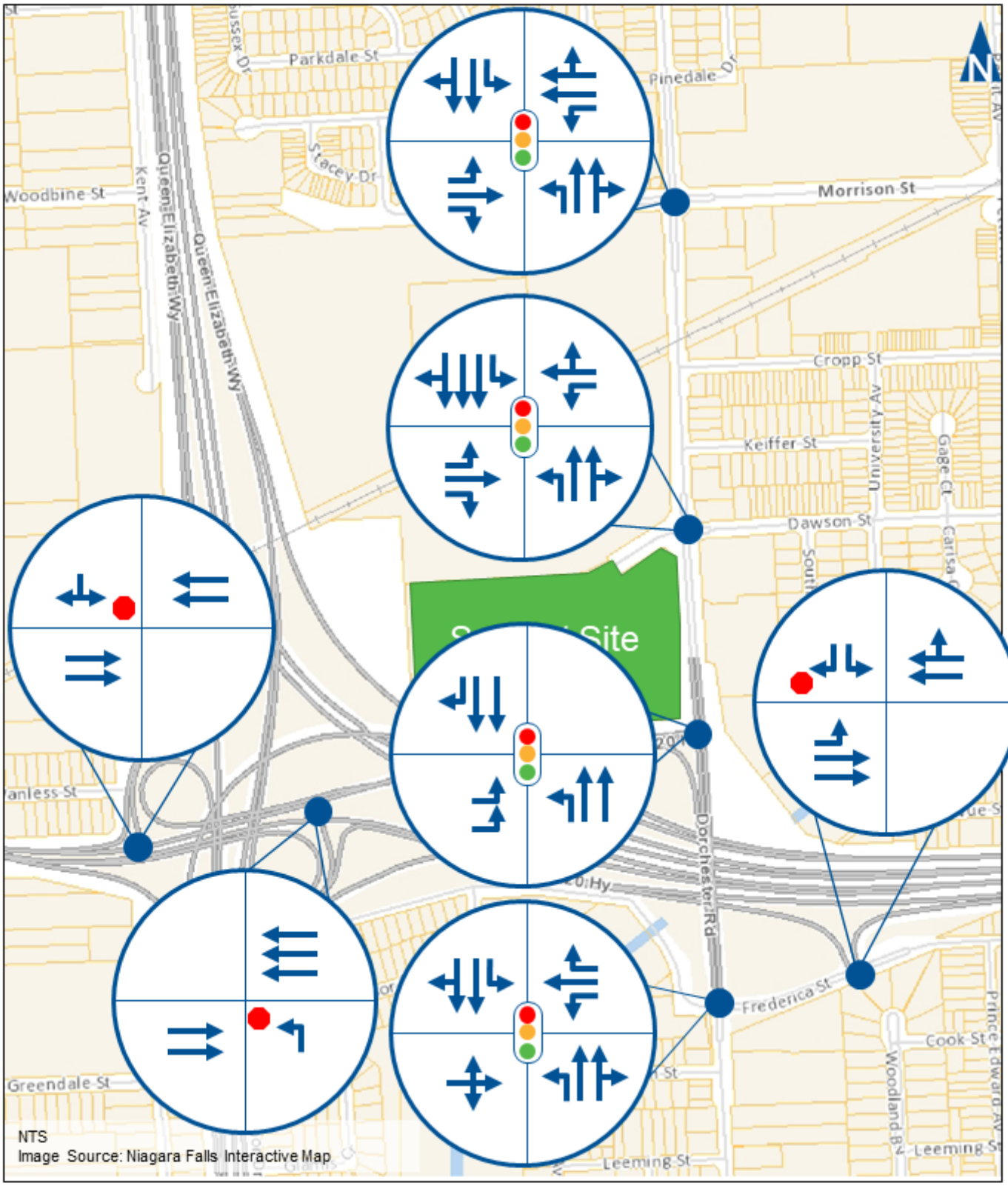
2.1 Roadway Characteristics

The City of Niagara Falls[3] roadways of interest within the study area include:

- **Highway 420** is an east-west provincial highway between Queen Elizabeth Way (QEW) and Victoria Avenue. In the study area, the highway has three lanes in each direction with a posted speed limit of 80 km/h.
- **Queen Elizabeth Way (QEW)** is a north-south provincial highway between Fort Erie and Toronto. In the study area, the highway has two lanes in each direction with a posted speed limit of 100 km/h.
- **Dorchester Road** is a north-south arterial road with a four-lane cross-section. The posted speed limit is 50 km/h. Sidewalks are on the east and west sides of the road. No cycling facilities are present in the study area.
- **Morrison Street** is an east-west local road with a four-lane cross-section. The statutory speed limit of 50 km/h is assumed. Sidewalks are on the north and south sides of the road. No cycling facilities are present in the study area.
- **Dawson Street** is an east-west local road with a two-lane cross-section. The statutory speed limit of 50 km/h is assumed. Sidewalks are on the north and south sides of the road east of Dorchester Road and the south side of the road west of Dorchester Road. No cycling facilities are present in the study area.
- **Frederica Street/Royal Manor Drive** is an east-west local road with a four-lane cross-section east of Dorchester Road and a two-lane cross-section west of Dorchester Road. The statutory speed limit of 50 km/h is assumed. A sidewalk is present on the south side of the road. No cycling facilities are present in the study area.

Figure 2.1 illustrates the existing lane configurations and traffic control at the study area intersections.

[3] City of Niagara Falls - Niagara Falls Sustainable Transportation Master Plan, October 2011



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Existing Lane Configurations & Traffic Control

5259 Dorchester Road, Niagara Falls
230334

Figure 2.1

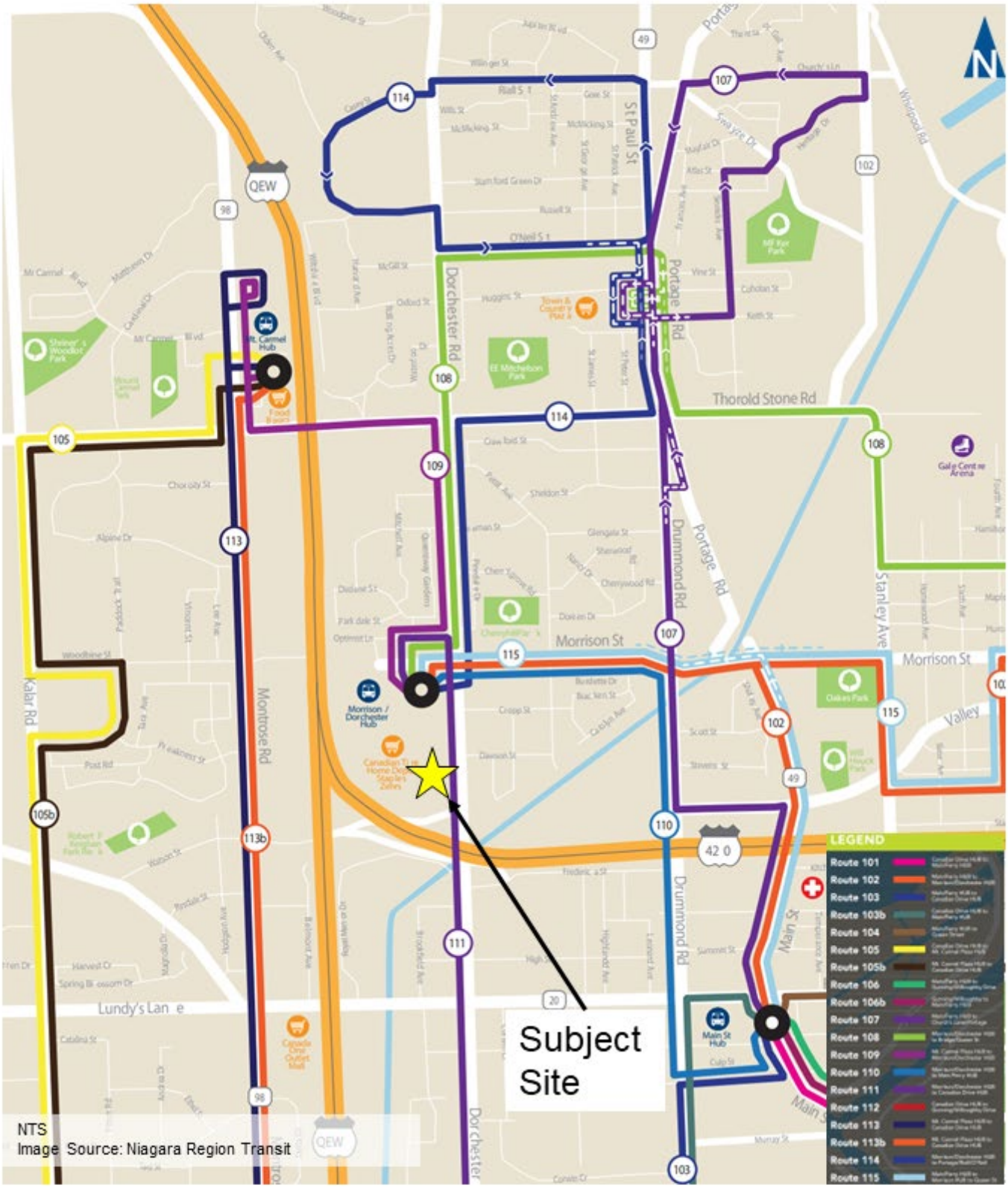
2.2 Transit Service

Niagara Region Transit (NRT) provides transit service in Niagara Falls. The following routes offer direct connections to the subject site:

- **Route 111/211** operates along Dorchester Road between the Morrison/Dorchester Hub and Niagara Square. Service is provided Monday to Saturday from approximately 6:00 AM to 11:30 PM with 30-minute headways and Sundays between 7:30 AM and 9:00 PM with 30-minute headways.

Figure 2.2 illustrates the existing public transit network within the study area. The closest bus stop is approximately 100 m (1-minute walk) east of the site at the Dorchester Road and Dawson Street intersection.

The Morrison/Dorchester Hub, located approximately 700 m (a 12-minute walk) north of the subject site, connects several other routes around Niagara Falls.



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Existing Transit Network

5259 Dorchester Road, Niagara Falls
230334

Figure 2.2

2.3 Pedestrian and Cycling Network

Pedestrian infrastructure typically consists of sidewalks or multi-use paths parallel to the roadway. Cycling infrastructure typically consists of on-street and off-street facilities. On-street facilities comprise cycling lanes, signed cycling routes, and paved shoulders. Off-street facilities are multi-use or informal trails.

The study area's pedestrian infrastructure consists of sidewalks along Dorchester Road, Morrison Street, Dawson Street, and Frederica Street/Royal Manor Drive. There are no cycling facilities within the study area.

2.4 Traffic Volumes

Turning Movement Counts (TMC) are used to quantify the movement of vehicles to assess intersection operations. Existing traffic counts at an intersection or road section form the foundation for analysis. The traffic counts are usually collected during peak periods at an intersection to complete the level of service analysis.

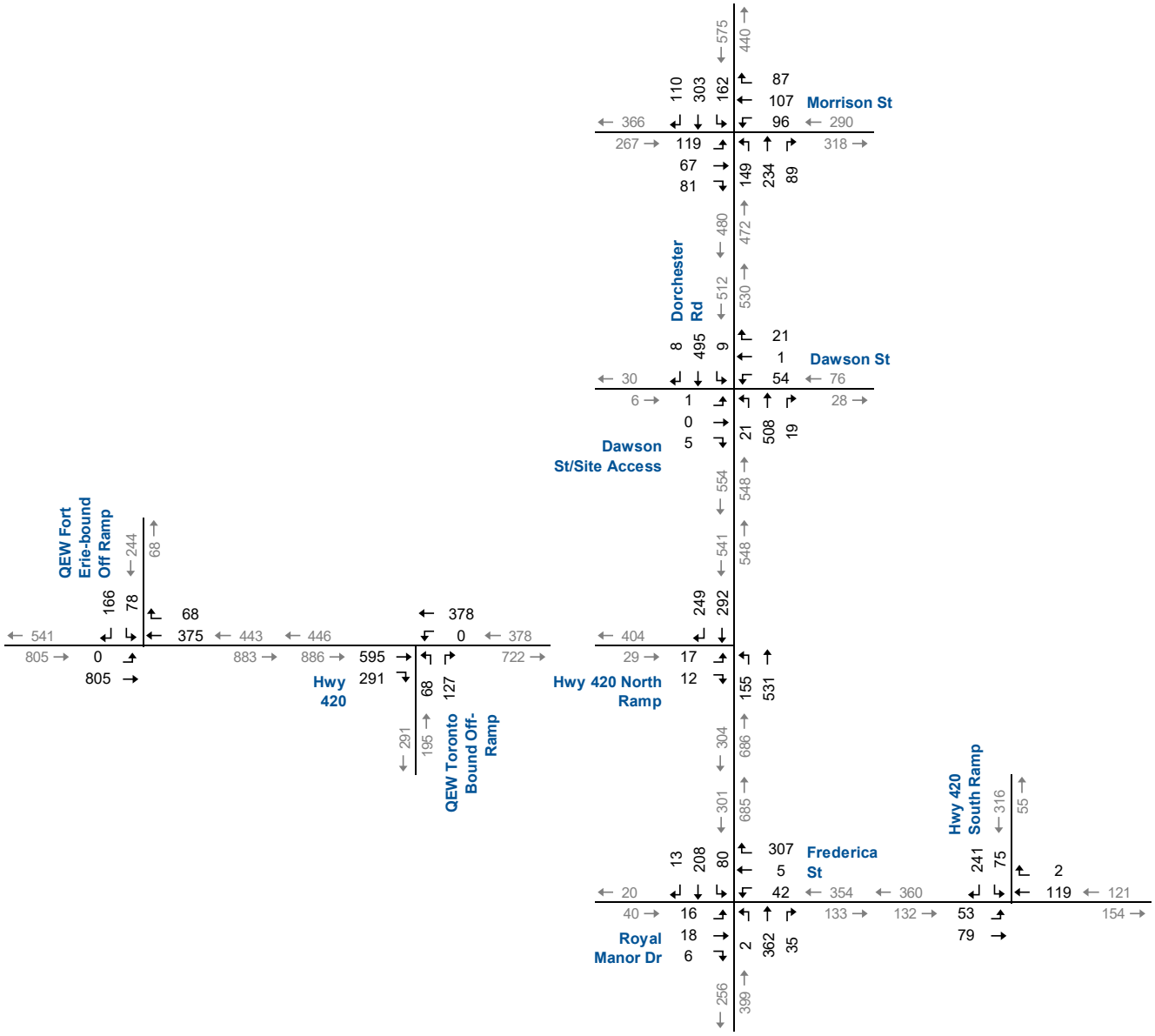
TMC data was collected primarily by Paradigm in October 2023, excluding the QEW at Highway 420 ramps, which MTO collected in November 2022. **Appendix B** contains the turning movement data.

Traffic counts are grown to a 2025 base year and future horizon years using a 1% per annum growth rate as recommended by MTO Staff.[4]

Saturday historical traffic counts were not available for QEW ramps to Highway 420. These intersections also fall within the functional area of a 400-series highway. For these reasons, the QEW ramps to Highway 420 are analyzed for the weekday peak hours only.

Figure 2.3 illustrates the base year traffic volumes.

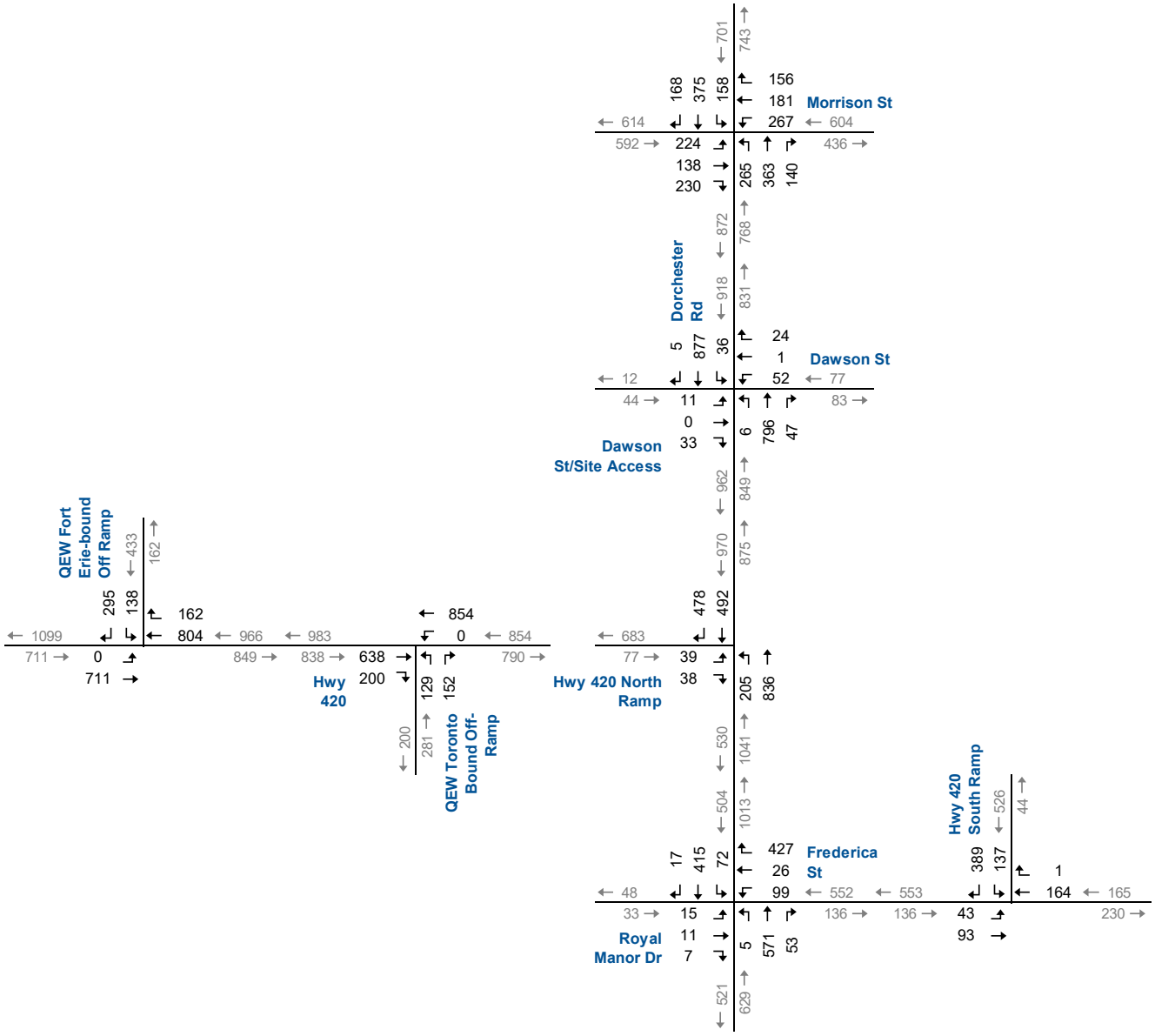
[4] Appendix A – Terms of Reference



Base Year Traffic Volumes AM Peak Hour

5259 Dorchester Road, Niagara Falls
230334

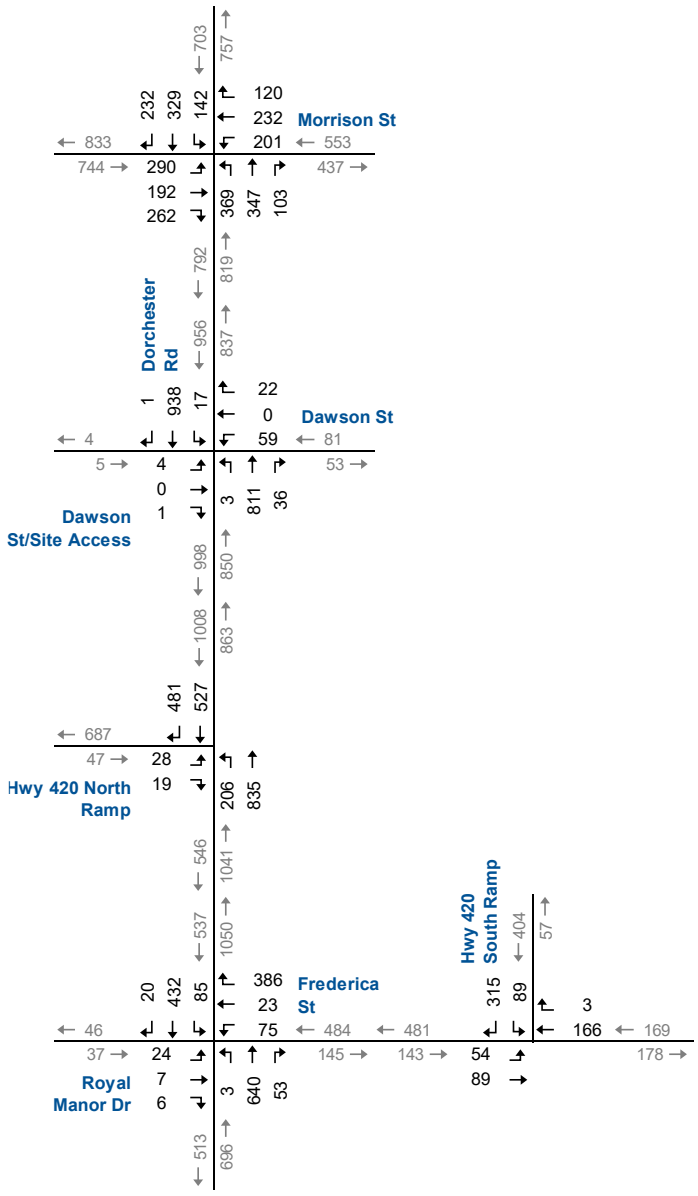
Figure 2.3A



Base Year Traffic Volumes PM Peak Hour

5259 Dorchester Road, Niagara Falls
230334

Figure 2.3B



Base Year Traffic Volumes Saturday Peak Hour

5259 Dorchester Road, Niagara Falls
230334

Figure 2.3C

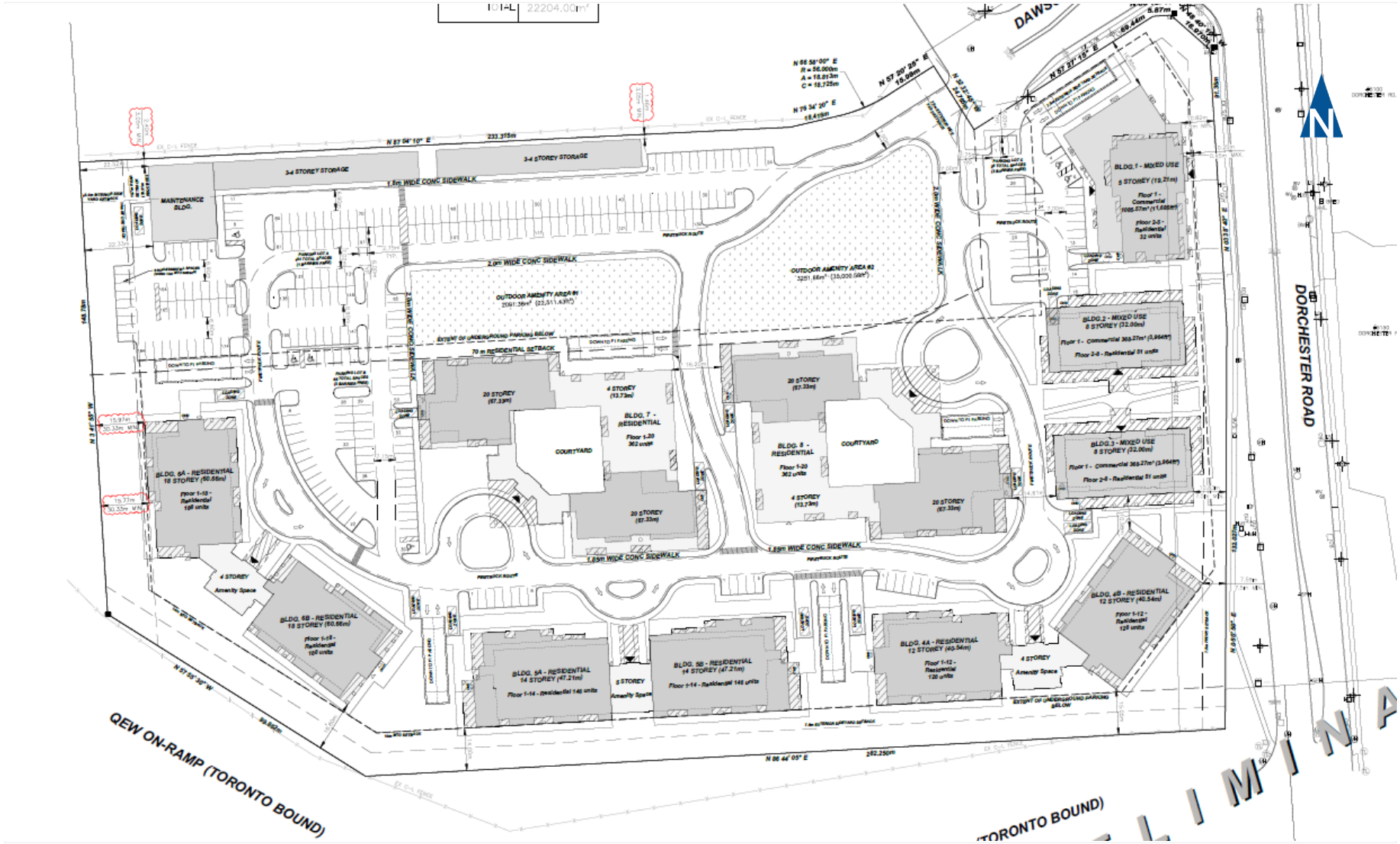
3 Development Concept

3.1 Description

The subject site is located on the west side of Dorchester Road and north of Highway 420 at 5259 Dorchester Road in the City of Niagara Falls. The property owner proposes developing the lands as a large-scale residential development. While the site plan is preliminary, the development proposes 1,782 residential units spread across eight rental units ranging from five to twenty storeys. Combined, buildings one to three are proposed to have a total of 1,822 m^2 (19,613 sq. ft) of ground-floor retail space.

Vehicle access is proposed through an access to Dawson Street. The opening year is anticipated to be 2030.

Figure 3.1 illustrates the site concept plan.



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Site Concept Plan

5259 Dorchester Road, Niagara Falls
23033

Figure 3.1

3.2 Trip Generation

The ITE Trip Generation[5] methods are used to estimate the site trip generation. The following land use codes were referenced:

- LUC 222 Multifamily Housing (High-Rise);
- LUC 221 Multifamily Housing (Mid-Rise); and
- LUC 821 Retail Plaza (<40,000 sq. ft.).

Table 3.1 summarizes the estimated trip generation. The site's trip generation is estimated to be approximately 474 AM peak-hour trips, 645 PM peak-hour trips, and 708 Saturday peak-hour trips. To remain conservative, no reductions in alternative modes of transportation have been applied.

Table 3.2 summarizes the estimated trip distribution for the subject site. The trip distribution is based on traffic count data and the Transportation Tomorrow Survey[6] (TTS) data for the zone containing the subject site. **Appendix C** includes the TTS data.

Figure 3.2 illustrates site-generated peak-hour traffic volumes.

[5] Trip Generation Manual 10th Edition + Supplement Institute of Transportation Engineers Washington DC 2020.

[6] Transportation Tomorrow Survey 2016, University of Toronto Data Management Group.

TABEL 3.1: TRIP GENERATION

ITE Land Use Code / Number of Units	AM Peak Hour				PM Peak Hour				Saturday Peak Hour			
	Rate	In	Out	Sum	Rate	In	Out	Sum	Rate	In	Out	Sum
Multifamily Housing (High-Rise) (222) - 1,648 Units	Eqn.	99	282	**381**	Eqn.	280	172	**452**	Eqn.	299	226	**525**
Multifamily Housing (Mid-Rise) (221) - 134 Units	Eqn.	11	36	**47**	Eqn.	32	21	**53**	Eqn.	26	28	**54**
Retail Plaza (822) - 19,613 sq.ft GFA	2.36	28	18	**46**	6.59	65	65	**130**	6.57	66	63	**129**
Total	--	**138**	**336**	**474**	--	**377**	**258**	**635**	--	**391**	**317**	**708**

Equations

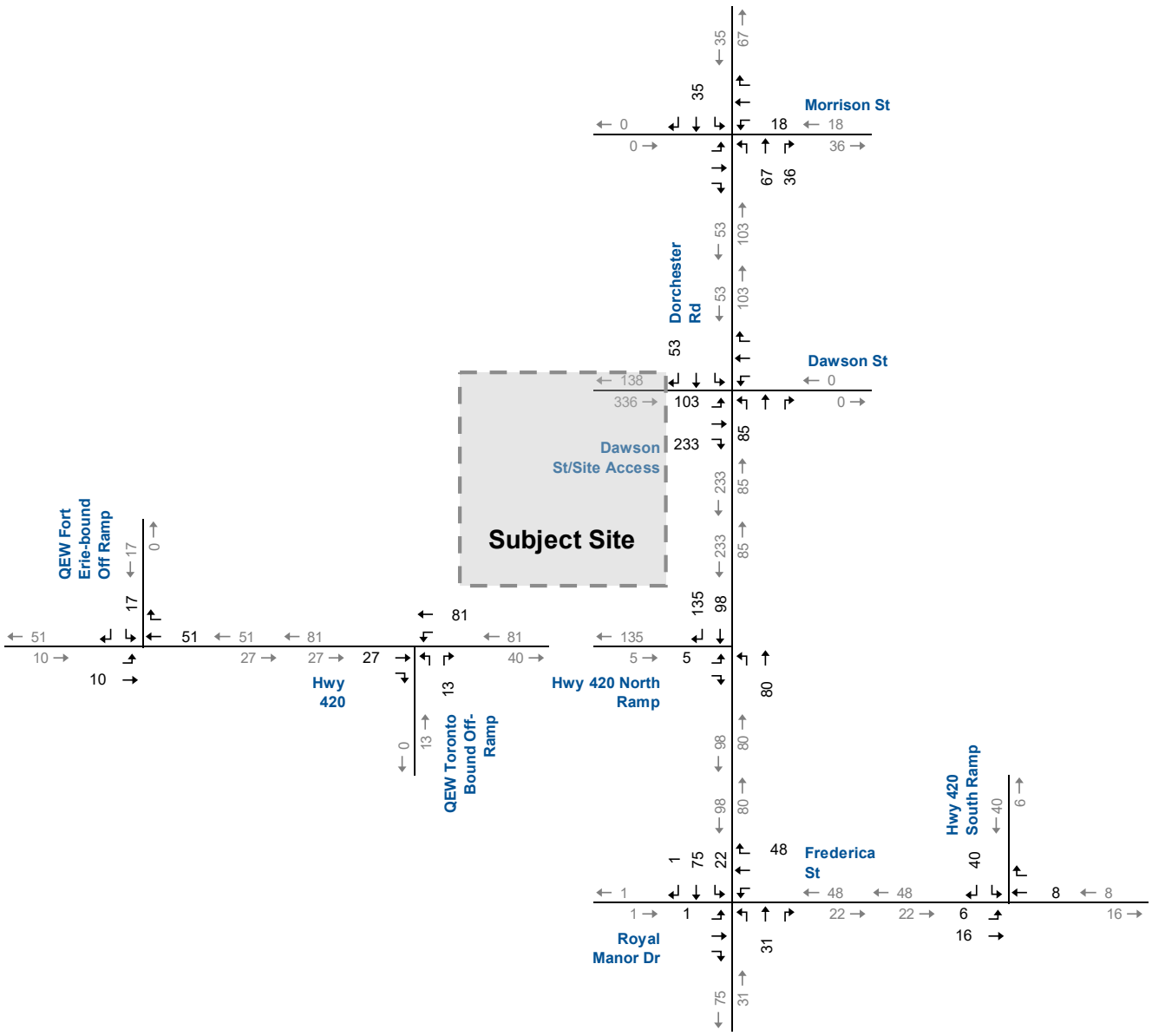
LUC 222 Eqn. per Unit AM: T = 0.22(X) + 18.85 | PM: T = 0.26(X) + 23.12 | Sat: T = 0.30(X) + 30.34

LUC 221 Rate per Unit AM: T = 0.44(X) - 11.61 | PM: T = 0.39(X) + 0.34 | Sat: Ln(T) = 1.00 Ln(X) - 0.91

LUC 822 Rate per 1,000 sq.ft GFA AM: 2.36 | PM: 6.59 | Sat: 6.57

TABLE 3.2: TRIP DISTRIBUTION

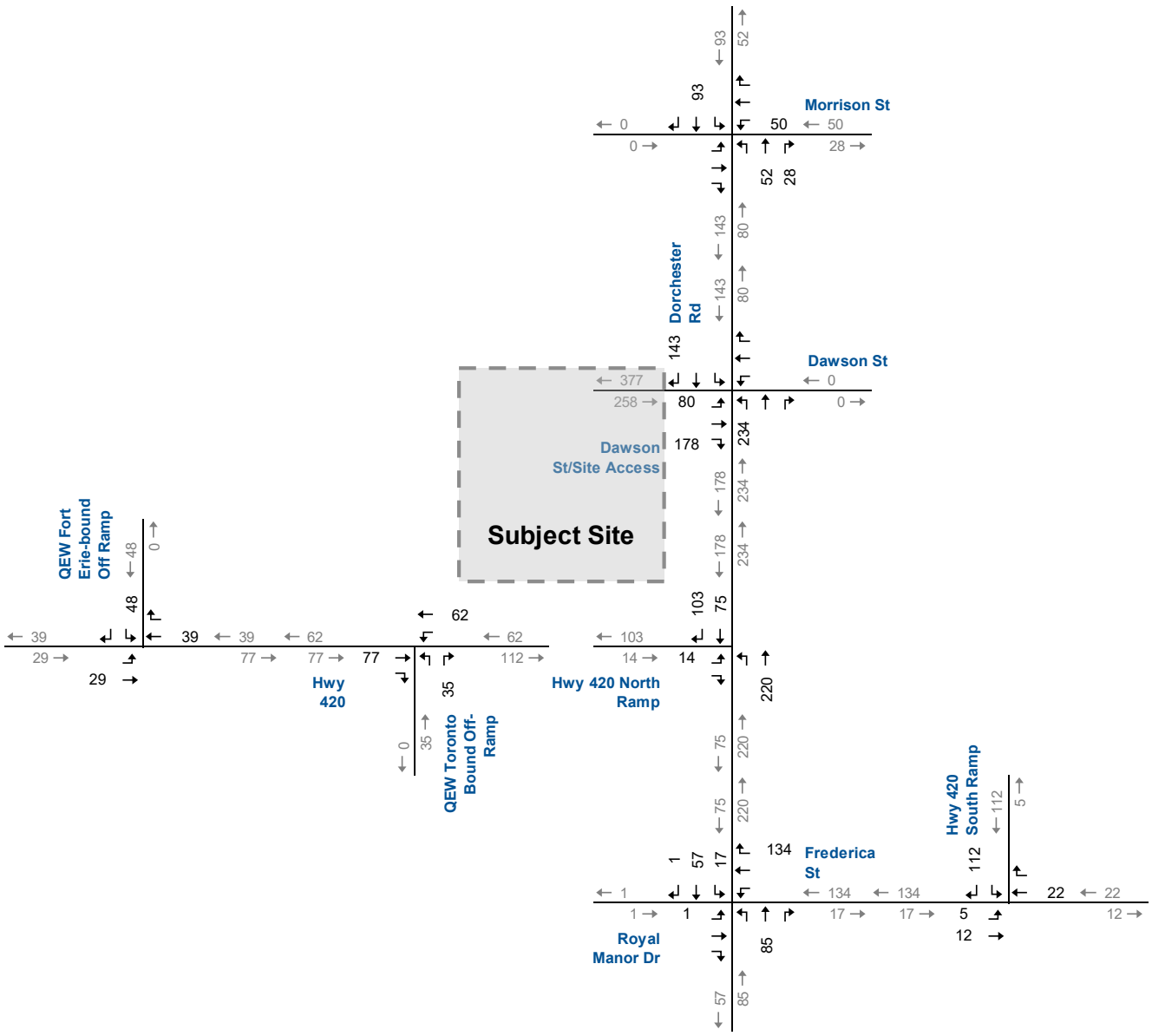
Origin/Destination	In	Out
North via Dorchester Road	25%	20%
South via Dorchester Road	23%	22%
East via Morrison Street	13%	11%
East via Frederica Street	6%	5%
West via Frederica Street	0%	0%
Hwy 420 North Ramp	4%	15%
Hwy 420 South Ramp	8%	2%
QEW North/Hwy 420 North Ramp	0%	16%
QEW South/Hwy 420 North Ramp	0%	9%
QEW North/Hwy 420 South Ramp	13%	0%
QEW South/Hwy 420 South Ramp	9%	0%
Total	**100%**	**100%**



Site Generated Traffic Volumes
AM Peak Hour

5259 Dorchester Road, Niagara Falls
230334

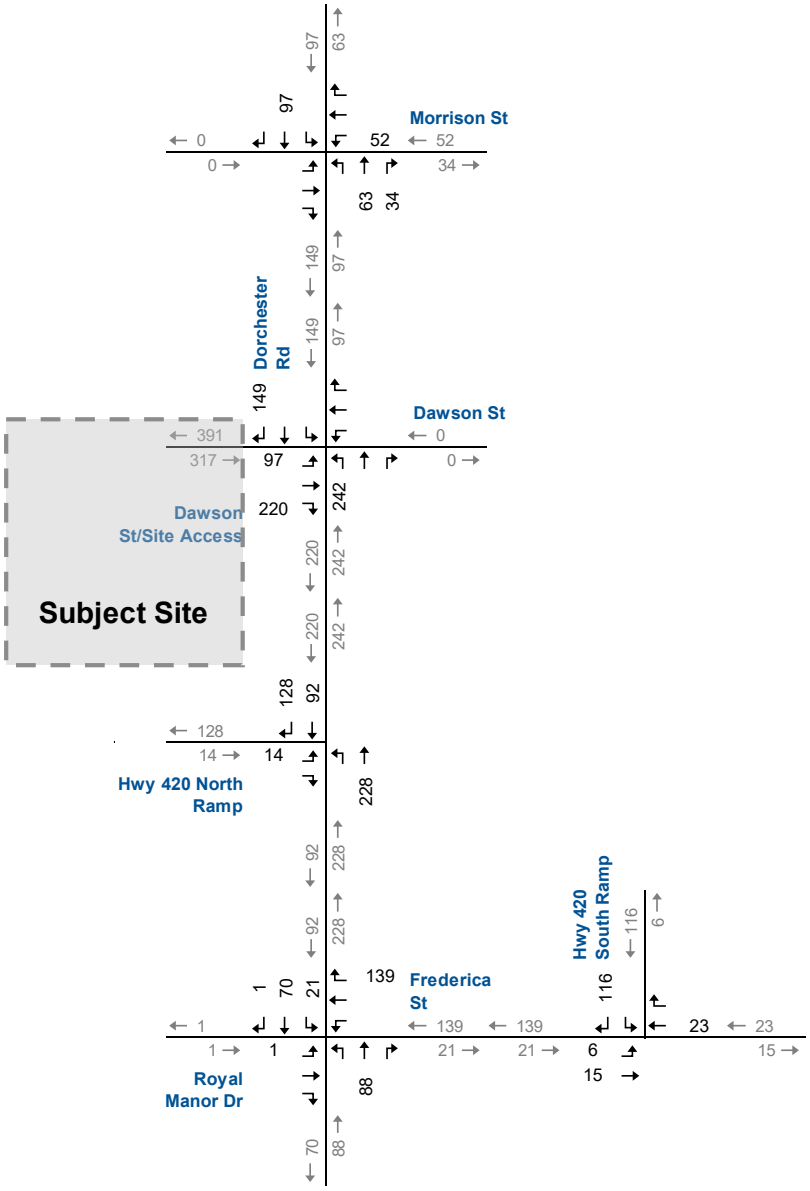
Figure 3.2A



Site Generated Traffic Volumes
PM Peak Hour

5259 Dorchester Road, Niagara Falls
230334

Figure 3.2B



Site Generated Traffic Volumes
Saturday Peak Hour

5259 Dorchester Road, Niagara Falls
230334

Figure 3.2C

4 Future Forecasts

4.1 Future Traffic Growth

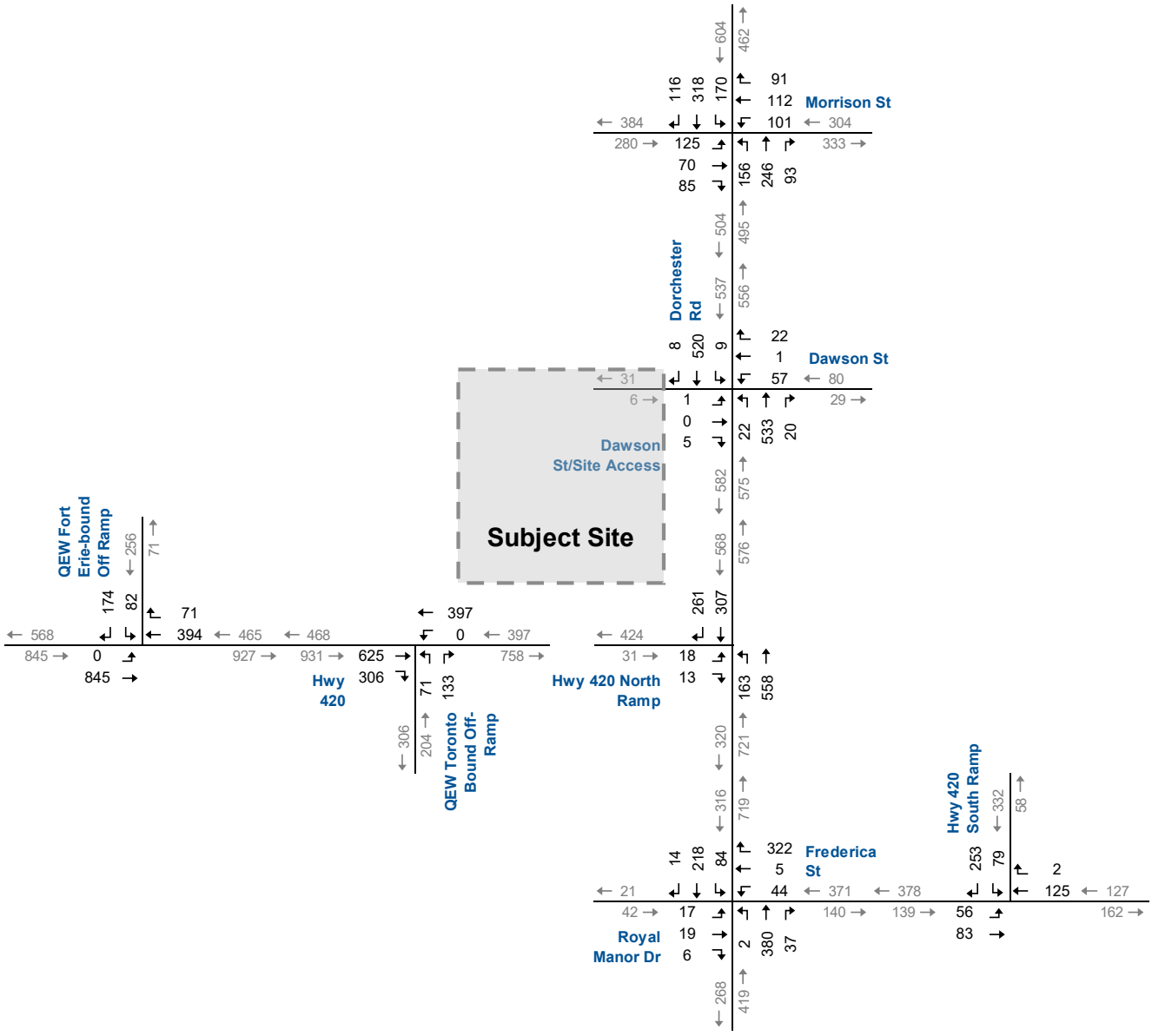
Traffic growth on area roadways is a function of the expected land development, economic activity, and demographic changes. A frequently used procedure estimates an annual percentage increase and applies that increase to the study area traffic volumes. An alternative approach is to identify estimated traffic generated by specific planned significant developments that would be expected to affect the project study area roadways. Both methods were utilized for this assessment.

Three horizon years have been assessed: opening year (2030), five years after opening year (2035), and ten years after opening year (2040). The likely future traffic volumes near the subject site are estimated to consist of:

- Increased non-site traffic (generalized background traffic growth). A growth rate of 1.0% per annum was applied to the base year traffic for all intersections[7];
- Traffic generated by the subject site.

Figures 4.1 – 4.3 illustrate the forecast background traffic volumes. **Figures 4.4 - 4.6** illustrate the forecast total traffic volumes, which include the addition of the subject site traffic.

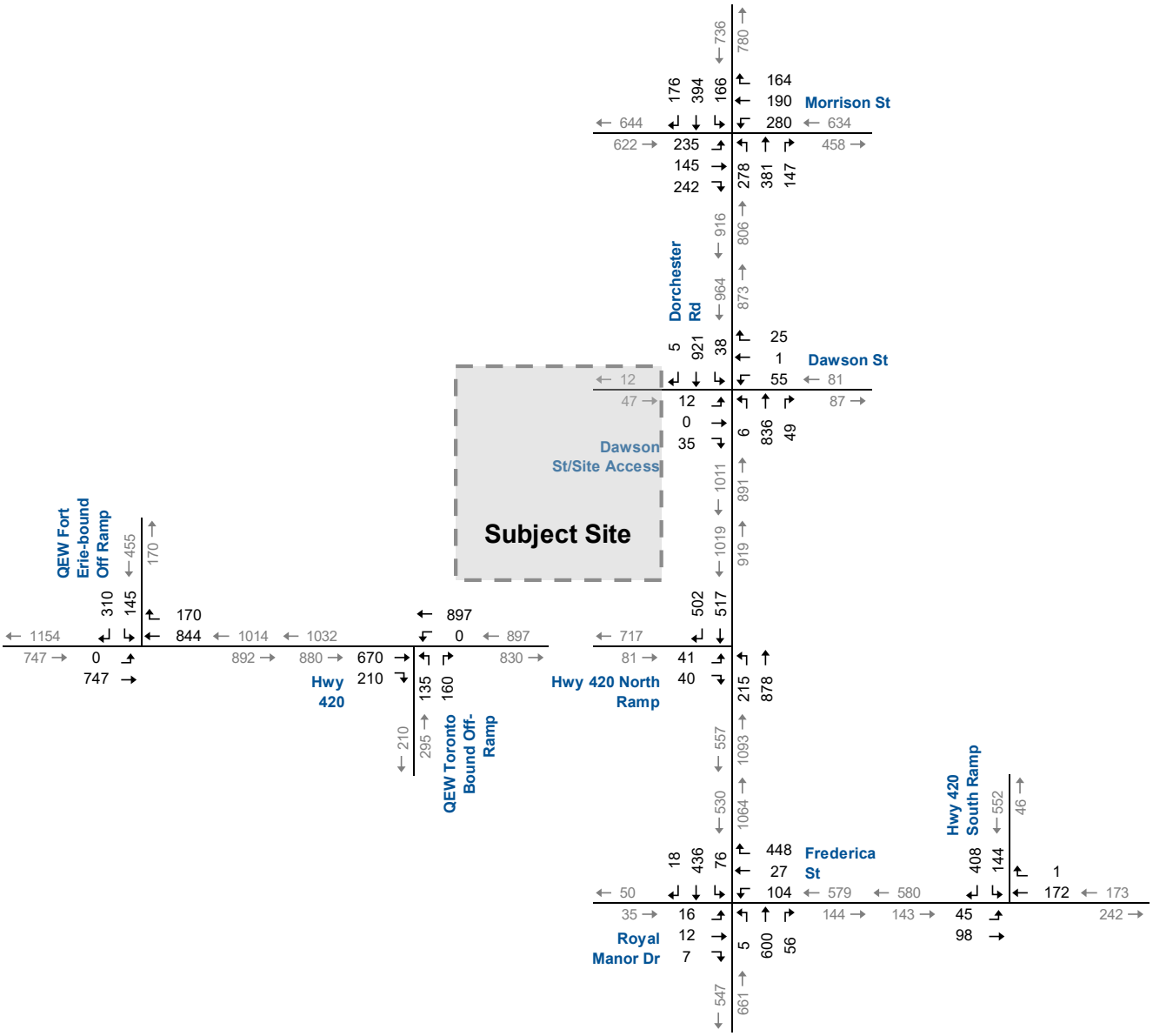
[7] Growth rate identified by MTO Staff (Appendix A)



Background Traffic Volumes
Opening Year
AM Peak Hour

5259 Dorchester Road, Niagara Falls
230334

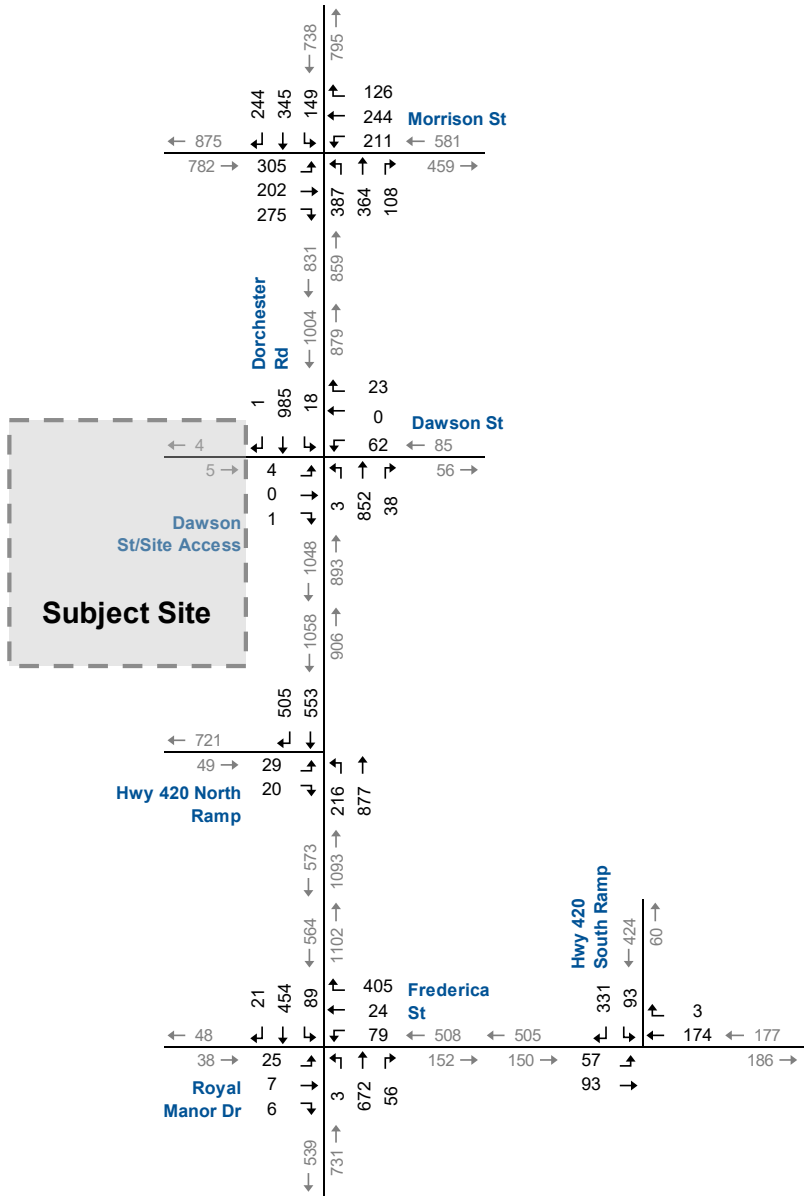
Figure 4.1A



Background Traffic Volumes
Opening Year
PM Peak Hour

5259 Dorchester Road, Niagara Falls
230334

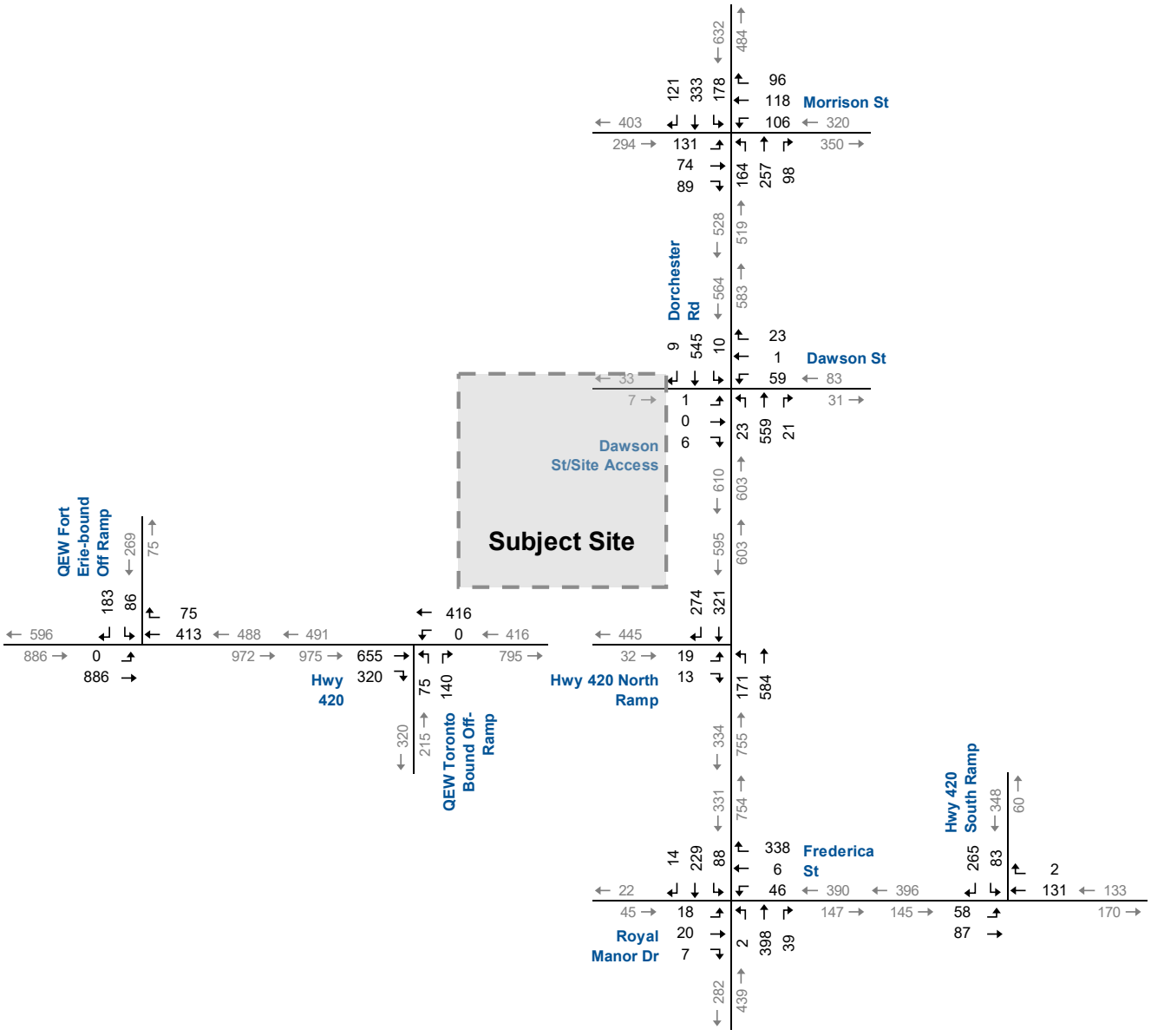
Figure 4.1B



Background Traffic Volumes
Opening Year
Saturday Peak Hour

5259 Dorchester Road, Niagara Falls
230334

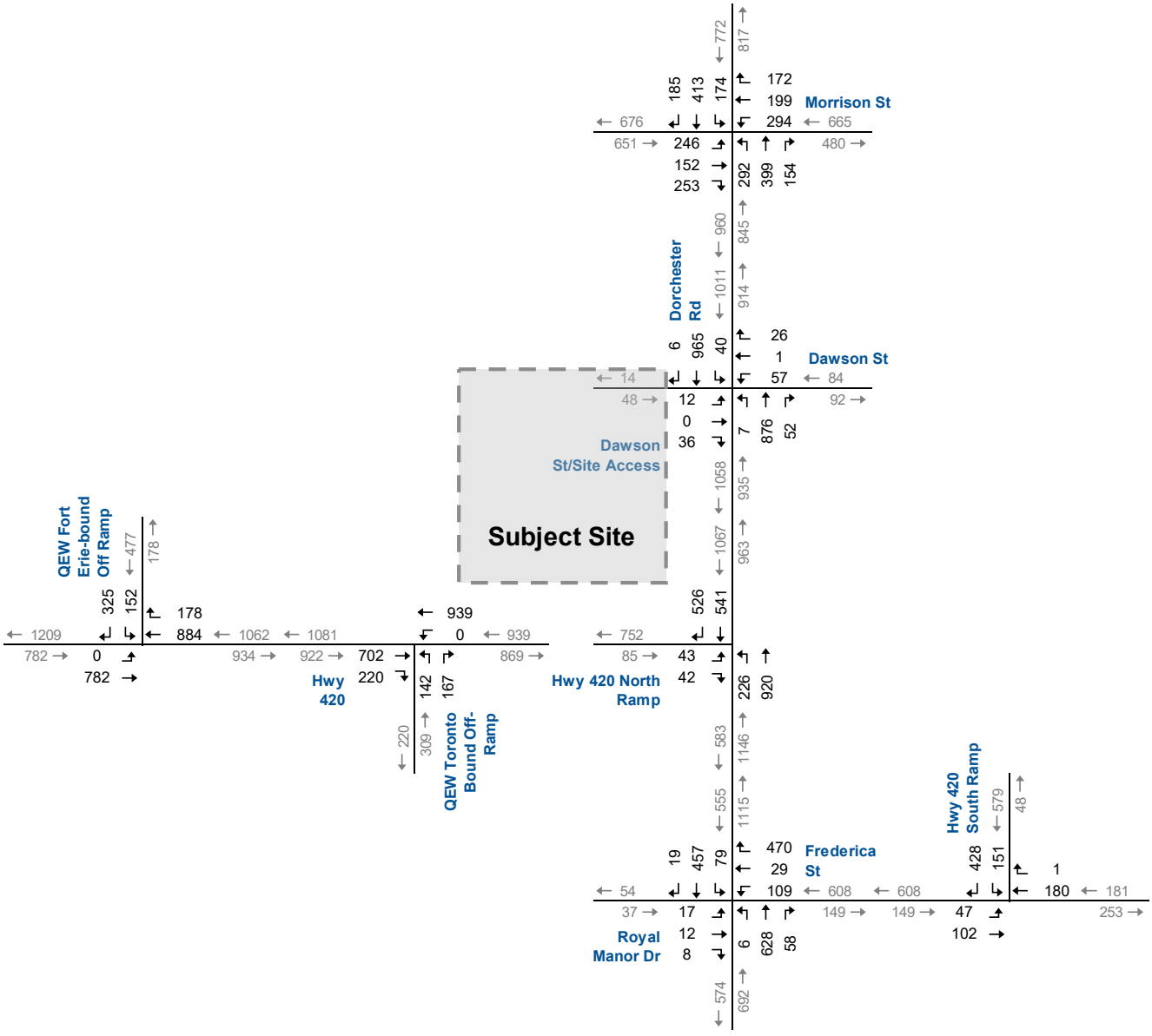
Figure 4.1C



Background Traffic Volumes
Five Year Horizon
AM Peak Hour

5259 Dorchester Road, Niagara Falls
230334

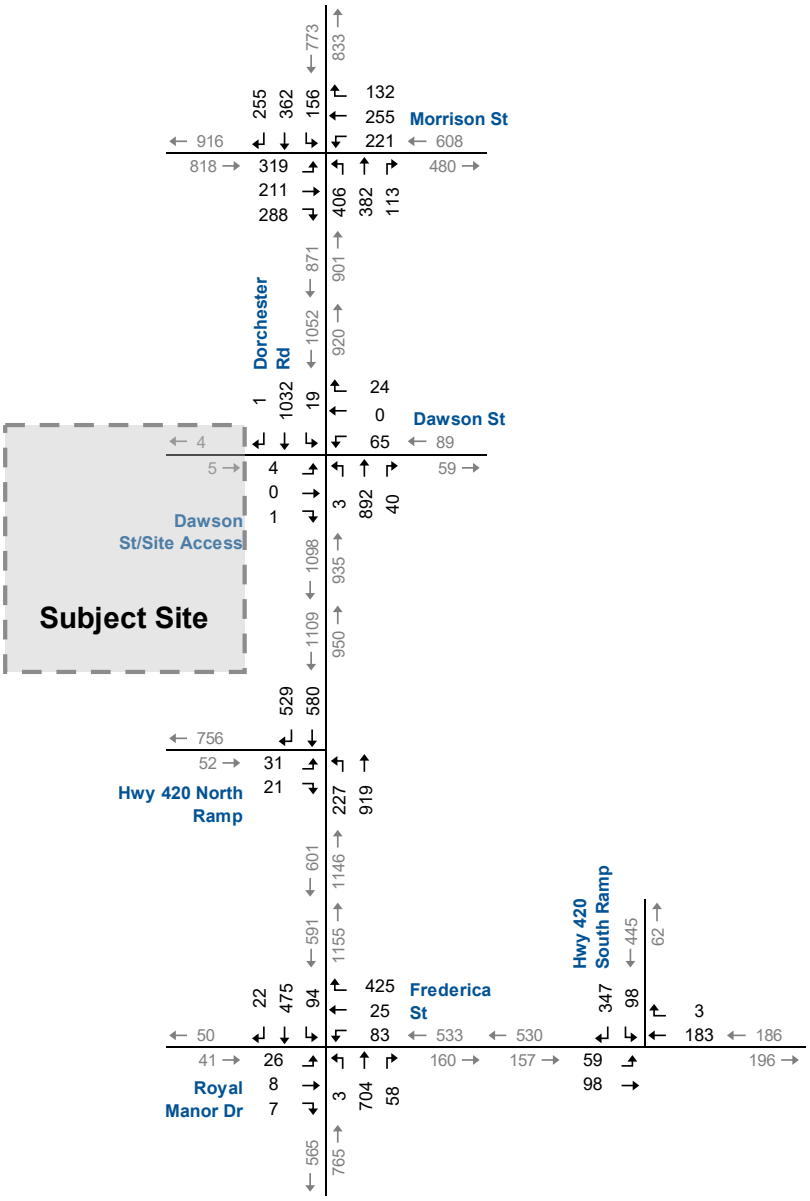
Figure 4.2A



Background Traffic Volumes
Five Year Horizon
PM Peak Hour

5259 Dorchester Road, Niagara Falls
230334

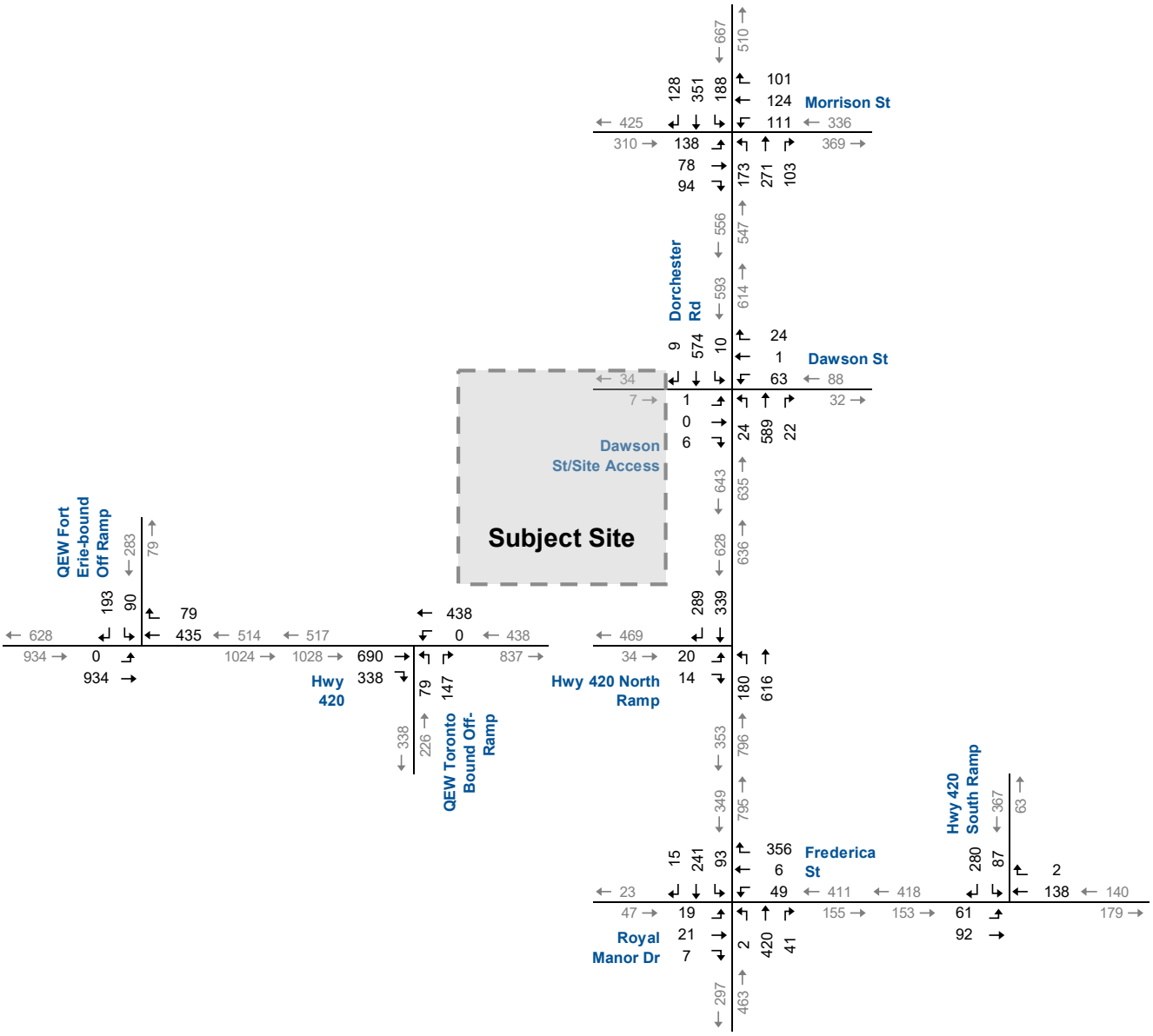
Figure 4.2B



Background Traffic Volumes
Five Year Horizon
Saturday Peak Hour

5259 Dorchester Road, Niagara Falls
230334

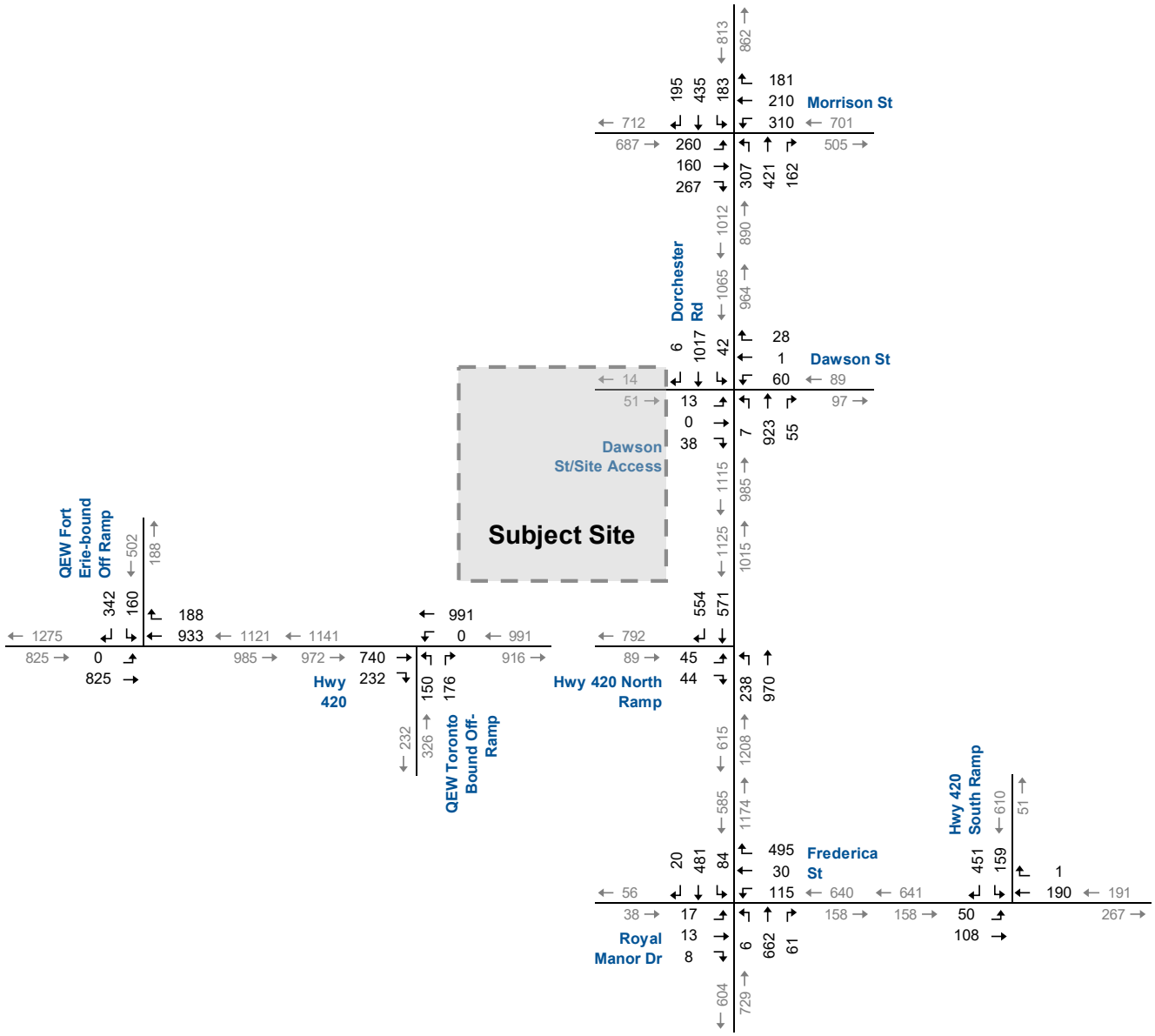
Figure 4.2C



Background Traffic Volumes
Ten Year Horizon
AM Peak Hour

5259 Dorchester Road, Niagara Falls
230334

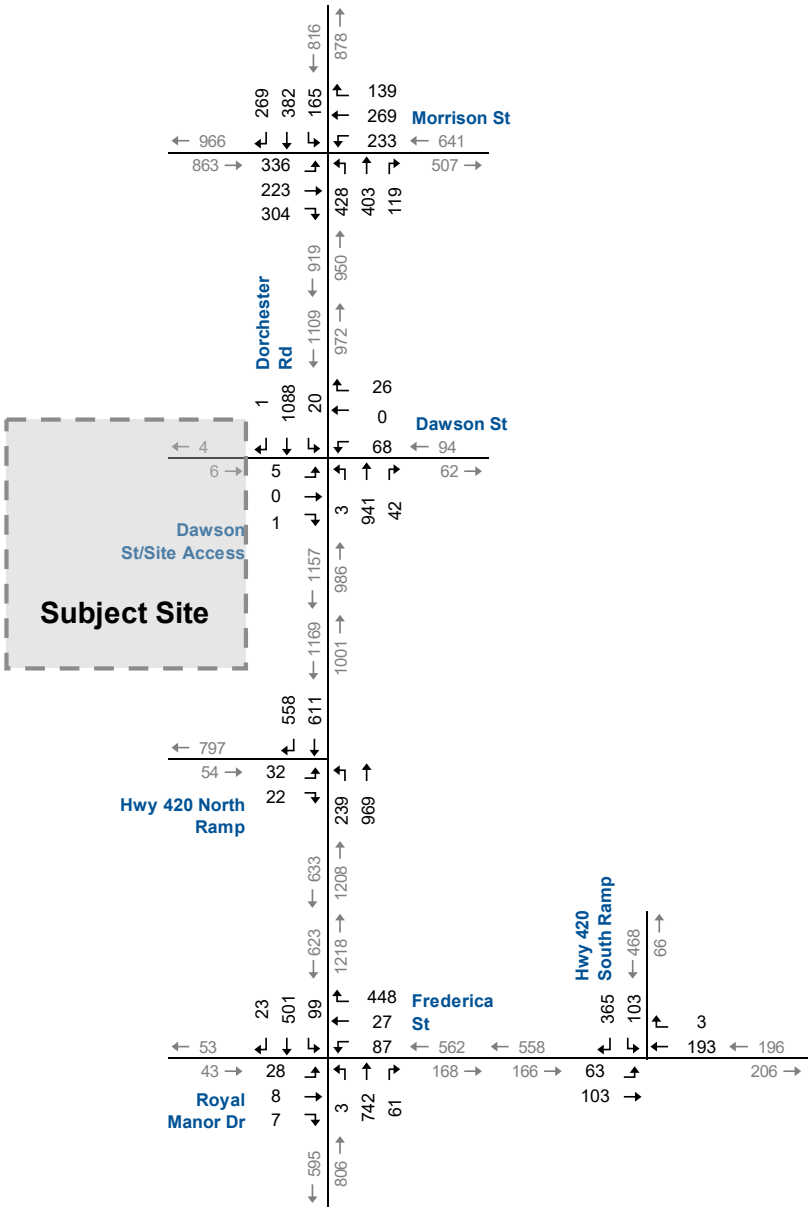
Figure 4.3A



Background Traffic Volumes
Ten Year Horizon
PM Peak Hour

5259 Dorchester Road, Niagara Falls
230334

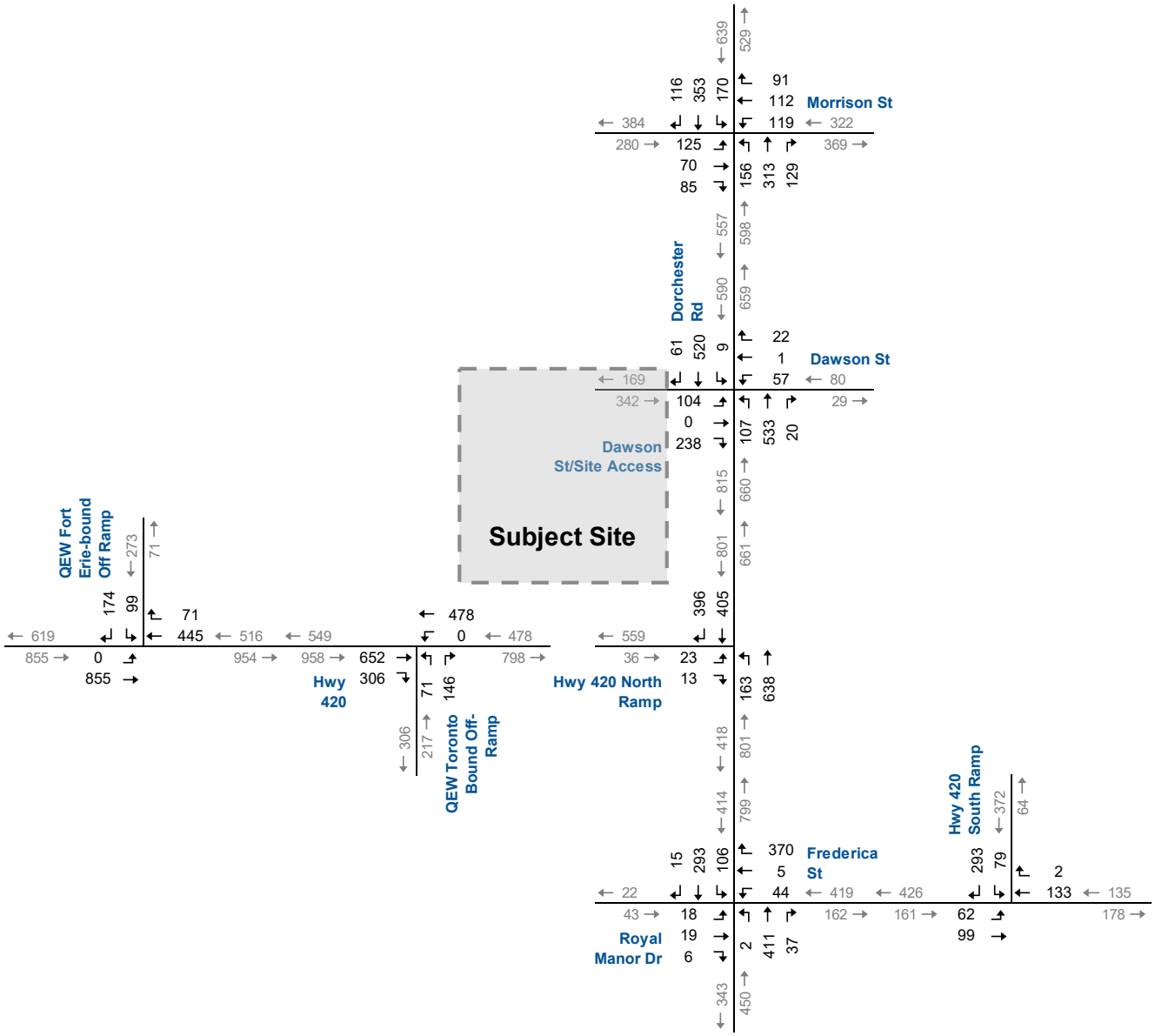
Figure 4.3B



Background Traffic Volumes
Ten Year Horizon
Saturday Peak Hour

5259 Dorchester Road, Niagara Falls
230334

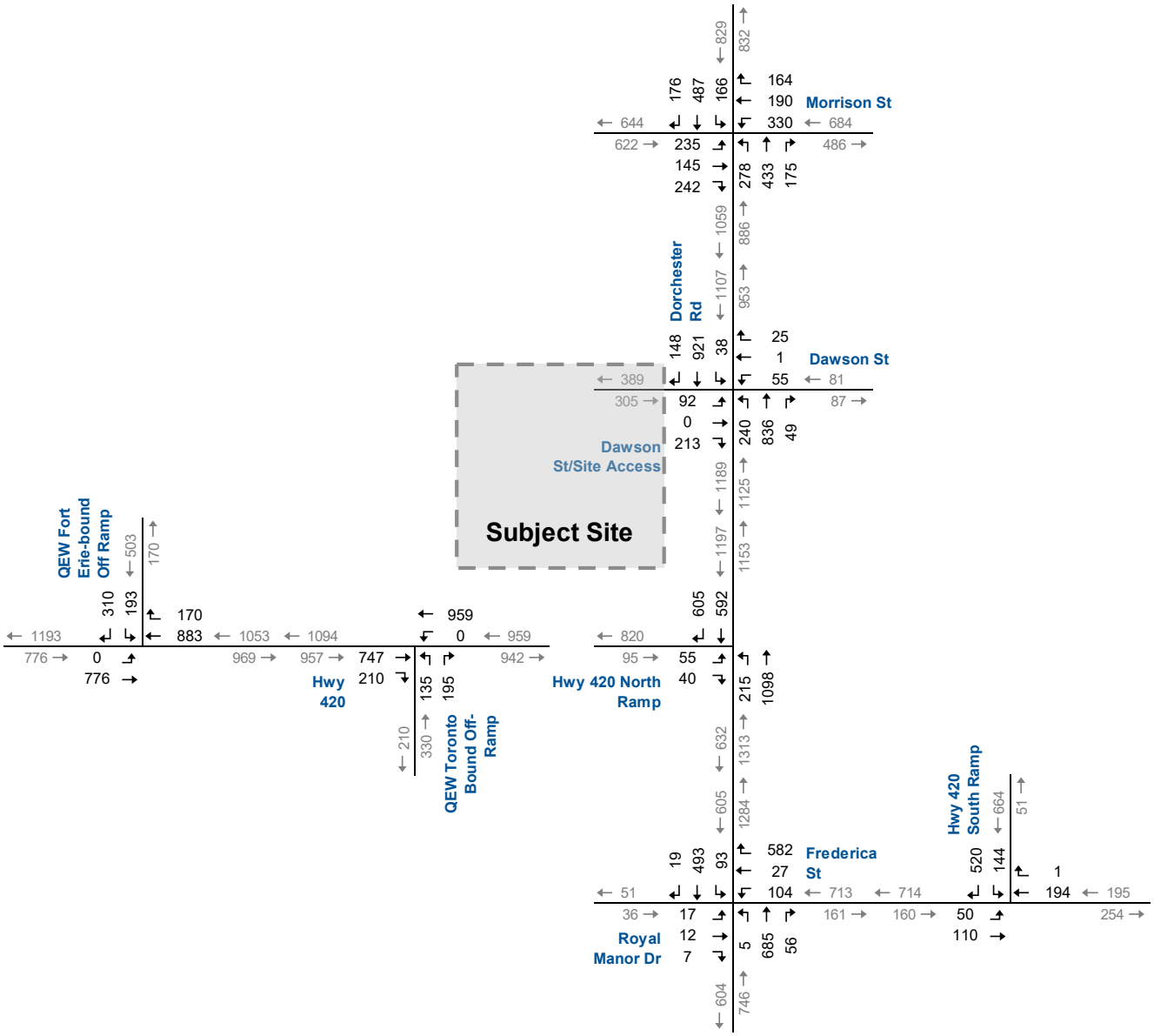
Figure 4.3C



Total Traffic Volumes Opening Year AM Peak Hour

5259 Dorchester Road, Niagara Falls
230334

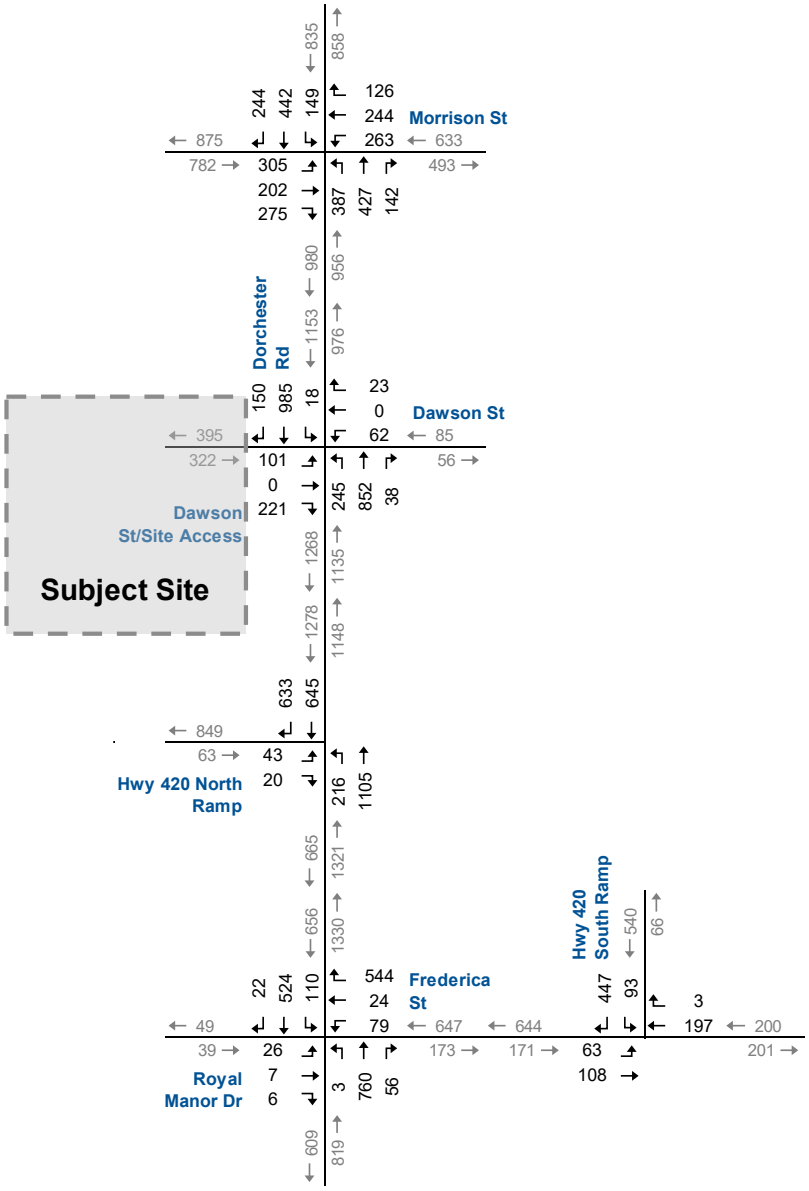
Figure 4.4A



Total Traffic Volumes Opening Year PM Peak Hour

5259 Dorchester Road, Niagara Falls
230334

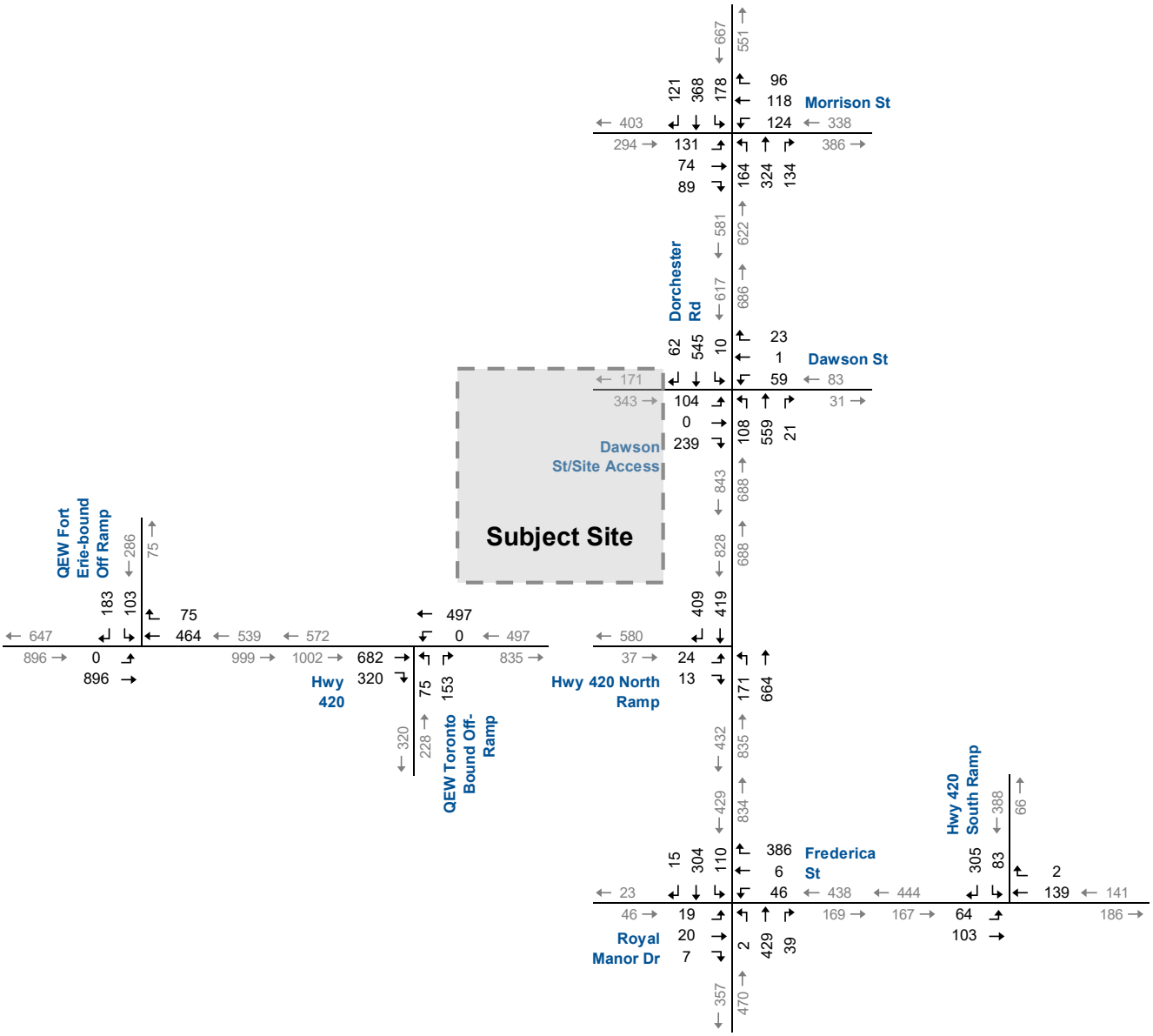
Figure 4.4B



Total Traffic Volumes
Opening Year
Saturday Peak Hour

5259 Dorchester Road, Niagara Falls
230334

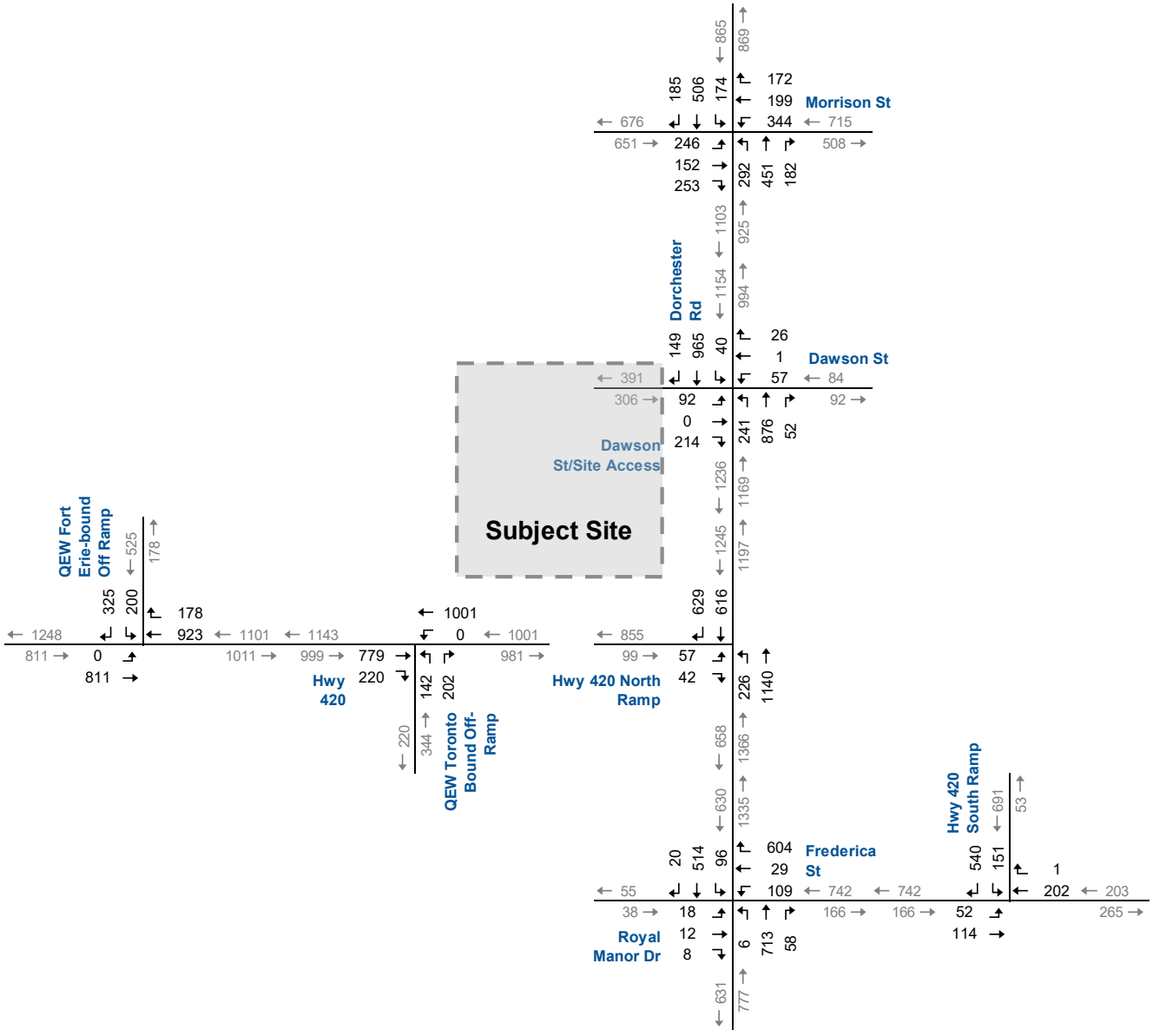
Figure 4.4C



Total Traffic Volumes
Five Year Horizon
AM Peak Hour

5259 Dorchester Road, Niagara Falls
230334

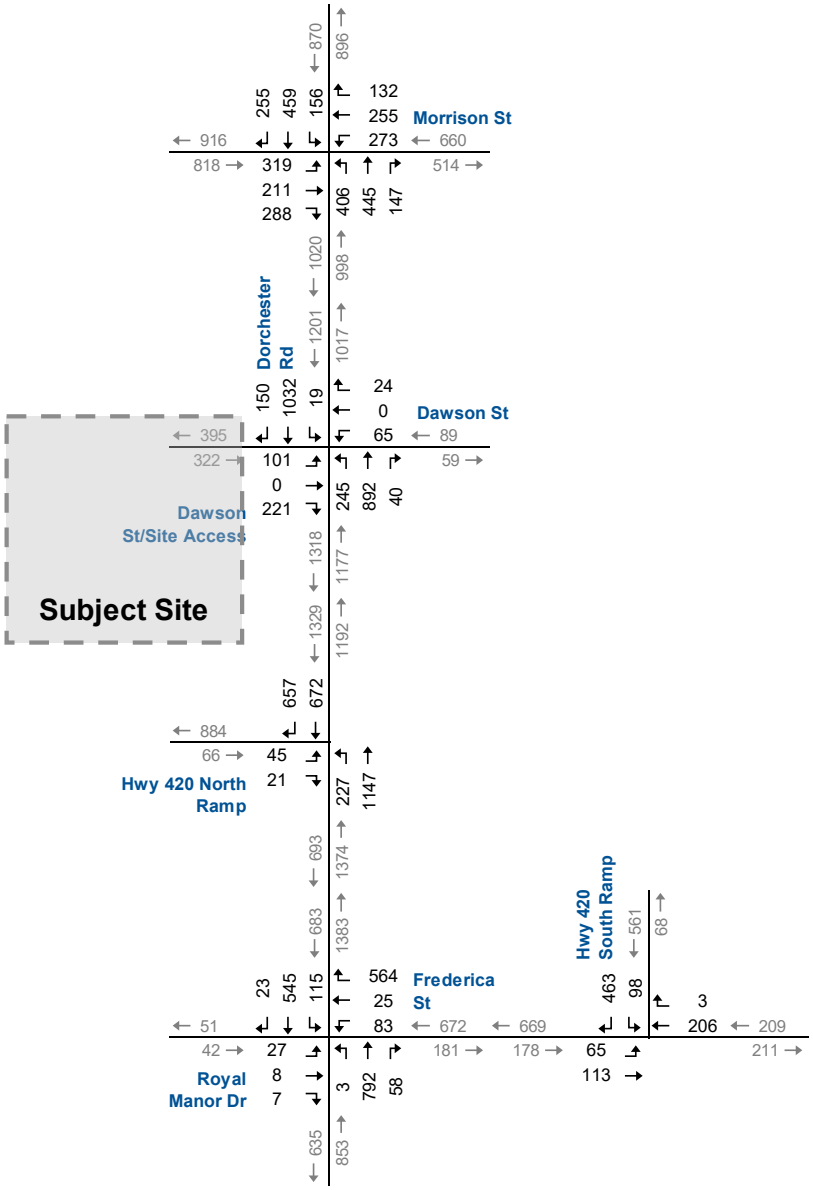
Figure 4.5A



Total Traffic Volumes
Five Year Horizon
PM Peak Hour

5259 Dorchester Road, Niagara Falls
230334

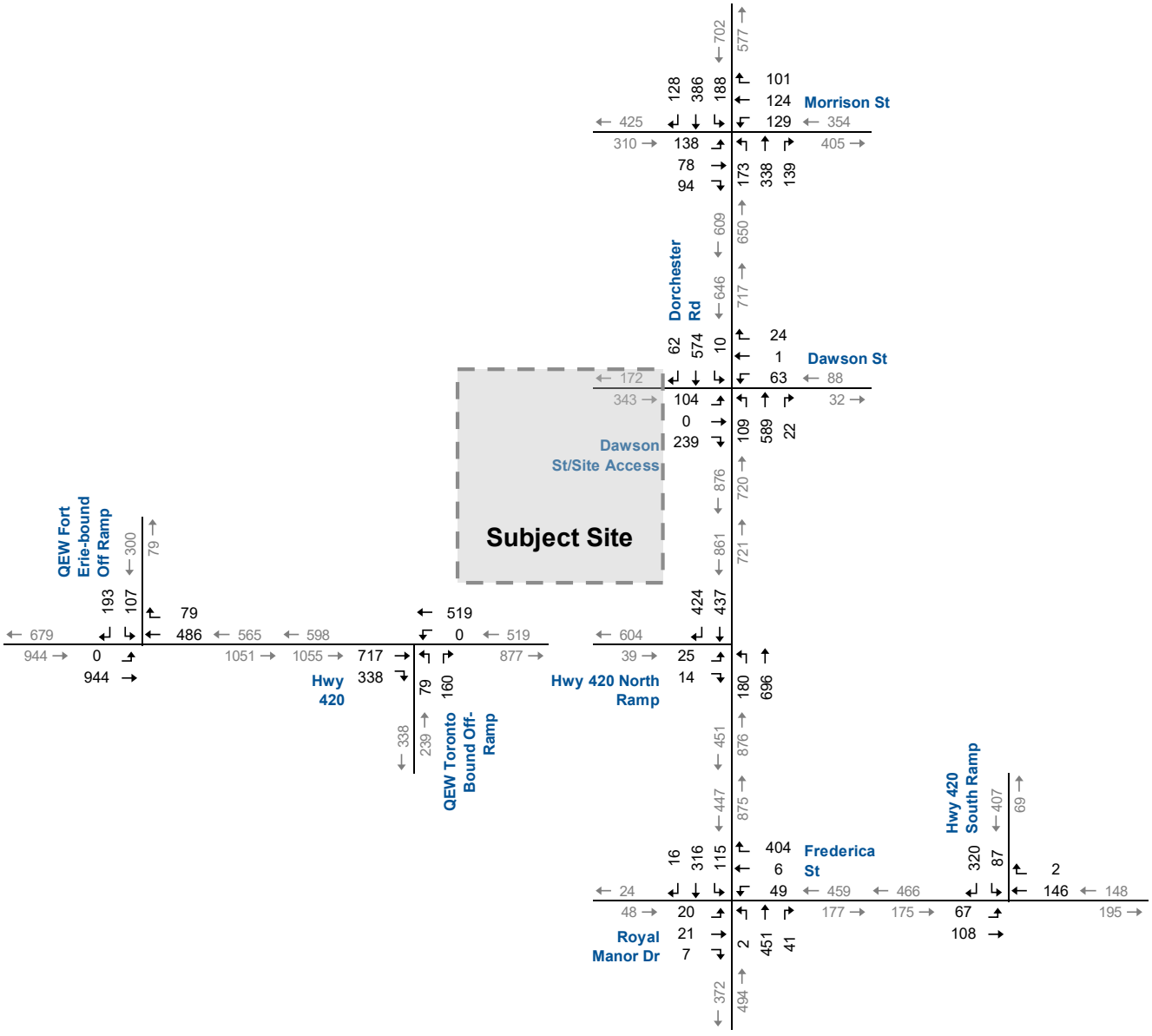
Figure 4.5B



Total Traffic Volumes
Five Year Horizon
Saturday Peak Hour

5259 Dorchester Road, Niagara Falls
230334

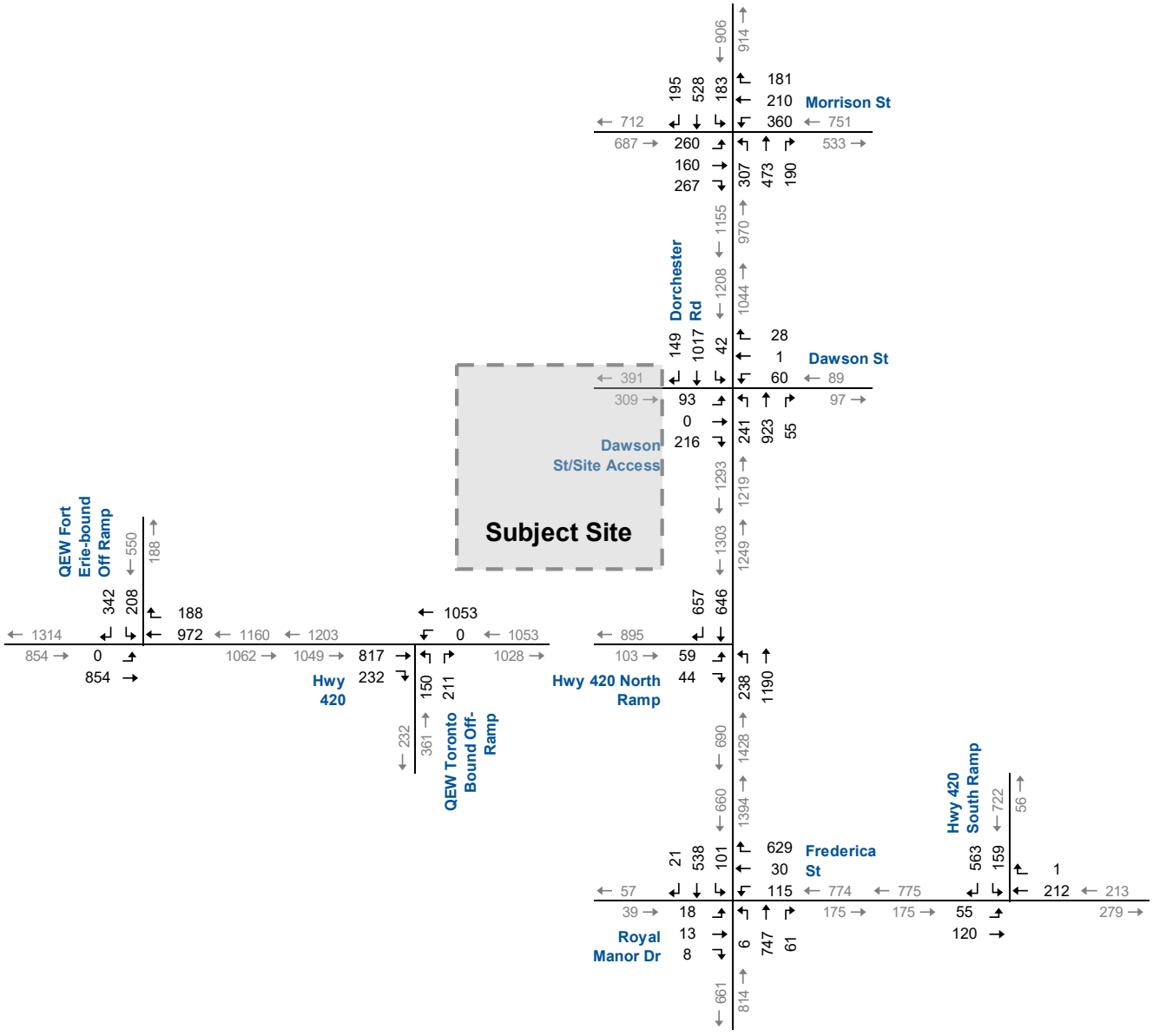
Figure 4.5C



Total Traffic Volumes
Ten Year Horizon
AM Peak Hour

5259 Dorchester Road, Niagara Falls
230334

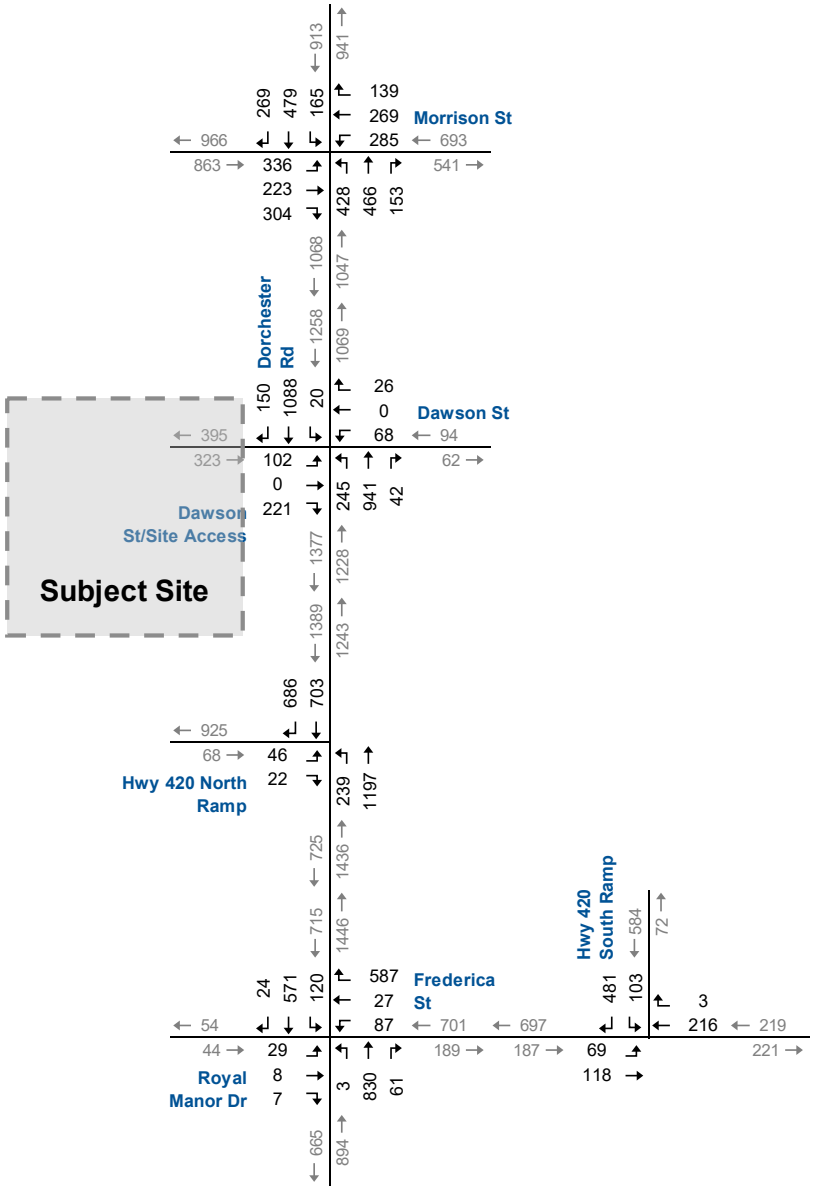
Figure 4.6A



Total Traffic Volumes
Ten Year Horizon
PM Peak Hour

5259 Dorchester Road, Niagara Falls
230334

Figure 4.6B



Total Traffic Volumes
Ten Year Horizon
Saturday Peak Hour

5259 Dorchester Road, Niagara Falls
230334

Figure 4.6C

5 Operational Assessment

5.1 Level of Service Criteria

Level of service (LOS) denotes the different operating conditions that occur on a given roadway segment under various traffic volume loads. It is a qualitative measure that indexes the operational qualities of a roadway segment or an intersection, with designations ranging from A to F, with LOS A representing the best operating conditions and LOS F representing the worst operating conditions.

For signalized intersections, the analysis considered the operation of each lane or lane group entering the intersection and the level of service for the overall conditions at the intersection. At signalized intersections, intersections with movements operating with a v/c ratio of 0.84 or less are classified as within capacity, a v/c ratio of 0.85-1.00 as approaching capacity and a v/c ratio over 1.00 as exceeding capacity.

For unsignalized intersections, the analysis assumes that traffic on the mainline is not affected by the traffic on the side streets. The level of service is only determined for left turns from the main street and all movements from the minor street. At unsignalized intersections, an overall LOS between A-C is classified as tolerable delays; an overall LOS D-E is classified as increased delays and an overall LOS F is classified as significant delays.

The MTO's Traffic Impact Study Guidelines[8] Identifies the following thresholds for critical movements:

- Movements with a volume-to-capacity ratio greater than 0.85 at signalized intersections; and
- A volume-to-capacity ratio greater than 0.75 for ramp terminal approaches.

[8] Ministry of Transportation Ontario, General Guidelines for the Preparation of Traffic Impact Studies, March 2023

Under Niagara Region's TIS Guidelines[9], the following criteria indicate critical conditions and signify that mitigation measures may need to be considered:

- At signalized intersections,
  - Movements increased to v/c 0.85 or above; and
  - Movements increased to a LOS "E' or worse.
- At unsignalized intersections,
  - LOS, based on average delay per vehicle, on individual movements is expected to operate at a LOS "D" or worse.
- At all intersections,
  - An exclusive turning movement in which the 95th percentile queue will exceed the available storage space.
  - Exclusive left- and right-turn lanes that are inaccessible due to the length of queues in the adjacent through lanes.

The evaluation criteria for analyzing intersections are based on the Highway Capacity Manual (HCM)[10] 2000.

5.2 Intersection Capacity Analysis

Intersection capacity analyses were conducted at all intersections in the study area. Analyses were performed for the Base Conditions as well as the Opening (2030), Five Years after Opening (2035), and Ten Years after Opening (2040) Background and Total Conditions. Signal timings for future horizons have been adjusted to improve traffic operations.

Tables 5.1 – 5.3 summarize the capacity analyses for the study area intersections for all horizon years. The capacity analysis results and adjusted signal timings for the Background and Total conditions are included in **Appendix D** and **Appendix E**, respectively. The following sub-sections outline the operations of the study area intersections.

[9] Niagara Region, *Transportation Impact Assessment Guidelines,* July 2023.
[10] Transportation Research Board, Highway Capacity Manual, Washington, D.C. 2003.

5.2.1 Dorchester Road at Morrison Street

2025 Base Year Operations	Exceeding Capacity	
2030 Background Operations (Opening)	Exceeding Capacity	
2030 Total Operations (Opening)	Exceeding Capacity	
2035 Background Operations (5-year After)	Exceeding Capacity	
2035 Total Operations (5-year After)	Exceeding Capacity	
2040 Background Operations (10-year After)	Exceeding Capacity	
2040 Total Operations (10-year After)	Exceeding Capacity	

At the intersection of Dorchester Road and Morrison Street, the northbound, eastbound, and westbound left-turn movements currently operate at LOS E or F during the weekday PM and Saturday peak hours, with a v/c greater than 1.00.

Under the background opening year and five-year horizon scenarios, signal timing adjustments reduce the delay for the eastbound and westbound left-turn movements during the weekday PM peak hour. However, during the Saturday peak hour, northbound and eastbound left-turn delays are forecast to continue to be in the LOS E-F range.

By the background ten-year horizon, the northbound and eastbound left-turn delays are forecast to degrade to LOS F with v/c ratios greater than 1.00.

Outside of the localized left-turn congestion, the remaining movements at the intersection are forecast to operate with acceptable delays in the background scenarios.

In terms of development traffic implications, similar levels of operation are generally expected under Total conditions, with only minor increases in delay resulting from site-generated traffic volumes. However, certain highly congested left-turn movements are forecasted to experience significant delays exceeding 45 seconds due to the lack of capacity.

5.2.2 Dorchester Road at Dawson Street/Site Access

2025 Base Year Operations	Within Capacity	
2030 Background Operations (Opening)	Within Capacity	
2030 Total Operations (Opening)	Within Capacity	
2035 Background Operations (5-year After)	Within Capacity	
2035 Total Operations (5-year After)	Within Capacity	
2040 Background Operations (10-year After)	Within Capacity	
2040 Total Operations (10-year After)	Within Capacity	

The Dorchester Road and Dawson Street intersection currently operates with delays in the LOS D range or better during peak hours.

Similar levels of operation are expected under the background and total conditions with site-generated traffic volumes.

With the addition of site traffic, the Site Access is forecast to operate without issues with delays in the LOS D range or better.

5.2.3 Dorchester Road at Highway 420 North Ramp

2025 Base Year Operations	Within Capacity	
2030 Background Operations (Opening)	Within Capacity	
2030 Total Operations (Opening)	Within Capacity	
2035 Background Operations (5-year After)	Within Capacity	
2035 Total Operations (5-year After)	Within Capacity	
2040 Background Operations (10-year After)	Within Capacity	
2040 Total Operations (10-year After)	Within Capacity	

The intersection of Dorchester Road and the Highway 420 north ramp currently operates with delays in the LOS D range or better during peak hours. Similar levels of operation are expected under background conditions.

Regarding development traffic implications, similar levels of operation are expected under the total conditions with site-generated traffic volumes.

5.2.4 Dorchester Road at Frederica Street

2025 Base Year Operations	Approaching Capacity	
2030 Background Operations (Opening)	Approaching Capacity	
2030 Total Operations (Opening)	Approaching Capacity	
2035 Background Operations (5-year After)	Approaching Capacity	
2035 Total Operations (5-year After)	Approaching Capacity	
2040 Background Operations (10-year After)	Approaching Capacity	
2040 Total Operations (10-year After)	Approaching Capacity	

At the Dorchester Road and Frederica Street intersection, delays are in the LOS D range or better during the AM, PM and Saturday peak hours. However, the westbound right turn movement operates with a v/c ratio of 0.88 during the weekday PM peak hour.

Under the background opening year and five-year horizon scenarios, the westbound right-turn is forecast to degrade to LOS D with a v/c ratio exceeding 0.90 during the weekday PM peak hour.

By the background ten-year horizon, the westbound right-turn delay is forecast to degrade to the LOS D-E range with v/c ratios greater than 0.90 during the weekday PM and Saturday peak hours.

Outside of the localized westbound right-turn congestion, the remaining movements at the intersection are forecast to operate with acceptable delays in the background scenarios.

In terms of development traffic implications, similar levels of operation are generally expected under the Total conditions with only minor increases in delay resulting from site-generated traffic volumes. The exceptions are the westbound right-turn and southbound left-turn, which are forecast to operate with delays in the LOS E-F range and v/c high v/c ratios during the weekday PM and Saturday peak hours for the opening, five, and ten-year horizons.

5.2.5 Frederica Street at Highway 420 South Ramp

2025 Base Year Operations	Within Capacity	
2030 Background Operations (Opening)	Within Capacity	
2030 Total Operations (Opening)	Within Capacity	
2035 Background Operations (5-year After)	Within Capacity	
2035 Total Operations (5-year After)	Within Capacity	
2040 Background Operations (10-year After)	Within Capacity	
2040 Total Operations (10-year After)	Within Capacity	

The intersection of Frederica Street and the Highway 420 north ramp currently operates with delays in the LOS D range of better during the peak hours. Similar levels of operation are expected under the background and conditions.

Regarding development traffic implications, similar levels of operation are expected under the total conditions with site-generated traffic volumes.

5.2.6 QEW Toronto Bound Off-Ramp at Highway 420

2025 Base Year Operations	Within Capacity	
2030 Background Operations (Opening)	Within Capacity	
2030 Total Operations (Opening)	Within Capacity	
2035 Background Operations (5-year After)	Within Capacity	
2035 Total Operations (5-year After)	Within Capacity	
2040 Background Operations (10-year After)	Within Capacity	
2040 Total Operations (10-year After)	Approaching Capacity	

The QEW Toronto-bound off-ramp at Highway 420 north ramp currently operates with delays in the LOS E range or better during peak hours.

Background traffic growth is forecast to result in the northbound approach degrading to LOS F by the opening-year horizon, with v/c ratios below 0.75 during the weekday PM peak hour.

Under the background five- and ten-year horizons, the northbound approach is forecast to operate with delays in the LOS F range and v/c ratio greater than 0.75 during the weekday PM peak hour.

With the addition of site traffic, the northbound approach is forecast to operate with delays in the LOS F range and v/c ratio greater than 0.80 during the weekday PM peak hour under the total five-year horizon. The v/c ratio will increase by the ten-year horizon to exceed 1.00 during the weekday PM peak hour.

In terms of development traffic implications, similar levels of operation are generally expected under the total conditions, with only minor increases in delay resulting from site-generated traffic volumes. The exception is the northbound approach, which is forecast to have delays exceeding 45 seconds due to the lack of capacity.

5.2.7 QEW Fort Erie Bound Off-Ramp at Highway 420

2025 Base Year Operations	Approaching Capacity	
2030 Background Operations (Opening) 2030 Total Operations (Opening)	Approaching Capacity Approaching Capacity	
2035 Background Operations (5-year After) 2035 Total Operations (5-year After)	Exceeding Capacity Exceeding Capacity	
2040 Background Operations (10-year After) 2040 Total Operations (10-year After)	Exceeding Capacity Exceeding Capacity	

At the QEW Toronto-bound off-ramp and the Highway 420 north ramp, the southbound left turn currently operates with delays in the LOS F range and a v/c ratio greater than 0.85 during the weekday PM peak hour.

Under the background scenarios, the southbound approach is forecast to degrade with background traffic growth. By the opening year horizon, the southbound left-turn delays are forecast to be in the LOS F range and have a v/c ratio greater than 1.00 during the weekday PM peak hour.

Regarding development traffic implications, similar levels of operation are expected under the total conditions with site-generated traffic volumes. Significant delays are forecast for the southbound left-turn movement during the weekday PM peak hour due to the lack of capacity from background traffic growth.

TABLE 5.1: AM PEAK HOUR OPERATIONS – 2024-2037 (1/4)

Analysis Period	Intersection	Scenario	MOE	Direction / Movement / Approach																	
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	1 - Dorchester Road & Morrison Street	Base	LOS	C	C	C	C	C	C	>	C	A	B	>	B	B	B	>	B	B
			Delay	24	26	25	25	24	28	>	26	10	14	>	13	10	16	>	15	18
			V/C	0.56	0.31	0.10		0.43	0.39	>		0.43	0.33	>		0.42	0.46	>		
			Q	27	21	11		22	17	>		20	24	>		21	33	>		
		Background Opening	LOS	C	C	C	C	C	C	>	C	B	B	>	B	B	B	>	B	B
			Delay	25	26	25	25	24	28	>	27	10	15	>	13	10	17	>	15	18
			V/C	0.59	0.32	0.10		0.44	0.40	>		0.46	0.35	>		0.45	0.48	>		
			Q	28	21	11		23	18	>		21	26	>		23	36	>		
		Background 5 Year	LOS	C	C	C	C	C	C	>	C	B	B	>	B	B	B	>	B	B
			Delay	27	26	25	26	24	28	>	27	11	15	>	14	11	17	>	15	19
			V/C	0.62	0.33	0.10		0.47	0.42	>		0.50	0.37	>		0.48	0.51	>		
			Q	30	22	11		24	19	>		22	27	>		24	38	>		
		Background 10 Year	LOS	C	C	C	C	C	C	>	C	B	B	>	B	B	B	>	B	B
			Delay	28	27	25	27	25	28	>	27	11	15	>	14	11	18	>	16	19
			V/C	0.66	0.35	0.11		0.49	0.44	>		0.54	0.39	>		0.52	0.54	>		
			Q	31	24	12		25	19	>		24	29	>		26	41	>		
		Total Opening	LOS	C	C	C	C	C	C	>	C	B	B	>	B	B	B	>	B	B
			Delay	25	26	25	25	25	28	>	27	10	16	>	15	11	17	>	16	19
			V/C	0.59	0.32	0.10		0.52	0.40	>		0.48	0.47	>		0.51	0.53	>		
			Q	28	21	11		27	18	>		21	35	>		23	40	>		
		Total 5 Year	LOS	C	C	C	C	C	C	>	C	B	B	>	B	B	B	>	B	B
			Delay	27	26	25	26	26	28	>	27	11	16	>	15	12	18	>	16	19
			V/C	0.62	0.33	0.10		0.55	0.42	>		0.52	0.49	>		0.54	0.55	>		
			Q	30	22	11		28	19	>		22	37	>		24	43	>		
		Total 10 Year	LOS	C	C	C	C	C	C	>	C	B	B	>	B	B	B	>	B	B
			Delay	28	27	25	27	26	28	>	27	12	17	>	16	12	18	>	17	20
			V/C	0.66	0.35	0.11		0.57	0.44	>		0.57	0.51	>		0.59	0.58	>		
			Q	31	24	12		29	19	>		24	39	>		26	46	>		
AM Peak Hour	2 - Dorchester Road & Dawson Street	Base	LOS	C		C	C	D	C	>	D	A	A	>	A	A	A	>	A	A
			Delay	33		33	33	40	33	>	38	3	5	>	5	3	4	>	4	7
			V/C	0.01		0.01		0.54	0.03	>		0.05	0.33	>		0.02	0.22	>		
			Q	2		0		21	7	>		3	35	>		2	21	>		
		Background Opening	LOS	C		C	C	D	C	>	D	A	A	>	A	A	A	>	A	A
			Delay	33		33	33	41	33	>	39	3	5	>	5	3	4	>	4	7
			V/C	0.01		0.01		0.55	0.03	>		0.05	0.34	>		0.02	0.23	>		
			Q	2		0		22	7	>		3	38	>		2	22	>		
		Background 5 Year	LOS	C		C	C	D	C	>	D	A	A	>	A	A	A	>	A	A
			Delay	33		33	33	41	33	>	39	3	5	>	5	3	5	>	5	7
			V/C	0.01		0.01		0.57	0.03	>		0.06	0.36	>		0.03	0.24	>		
			Q	2		0		22	7	>		3	40	>		2	24	>		
		Background 10 Year	LOS	C		C	C	D	C	>	D	A	A	>	A	A	A	>	A	A
			Delay	33		33	33	41	33	>	39	3	5	>	5	3	5	>	5	7
			V/C	0.01		0.01		0.57	0.03	>		0.06	0.38	>		0.03	0.26	>		
			Q	2		0		23	7	>		3	44	>		2	25	>		
		Total Opening	LOS	D		D	D	C	C	>	C	A	A	>	A	A	A	>	A	B
			Delay	39		36	37	33	31	>	32	5	7	>	7	7	9	>	9	15
			V/C	0.59		0.43		0.32	0.03	>		0.28	0.37	>		0.03	0.30	>		
			Q	34		26		20	6	>		19	61	>		3	39	>		
		Total 5 Year	LOS	D		D	D	C	C	>	C	A	A	>	A	A	A	>	A	B
			Delay	38		36	36	33	31	>	33	5	8	>	7	7	9	>	9	15
			V/C	0.59		0.43		0.34	0.03	>		0.29	0.39	>		0.03	0.32	>		
			Q	34		33		21	7	>		19	65	>		3	41	>		
		Total 10 Year	LOS	D		D	D	C	C	>	C	A	A	>	A	A	A	>	A	B
			Delay	37		38	38	33	30	>	32	5	8	>	8	7	10	>	10	15
			V/C	0.56		0.53		0.34	0.03	>		0.30	0.42	>		0.03	0.33	>		
			Q	34		48		22	7	>		19	70	>		3	43	>		

TABLE 5.1: AM PEAK HOUR OPERATIONS – 2024-2037 (2/4)

Analysis Period	Intersection	Scenario	MOE	Direction / Movement / Approach																
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Overall
AM Peak Hour	3 - Dorchester Road & Highway 420 North Ramp	Base	LOS	D			D					A	A		A		A	A	A	A
			Delay	37			37					3	2		2		2	3	2	3
			V/C	0.36								0.28	0.26				0.14	0.26		
			Q	4								16	19				10	6		
		Background Opening	LOS	D			D					A	A		A		A	A	A	A
			Delay	37			37					3	2		3		2	3	2	3
			V/C	0.38								0.31	0.27				0.15	0.28		
			Q	4								17	20				11	6		
		Background 5 Year	LOS	D			D					A	A		A		A	A	A	A
			Delay	38			38					4	2		3		2	3	2	3
			V/C	0.40								0.32	0.29				0.16	0.29		
			Q	4								19	21				11	6		
		Background 10 Year	LOS	D			D					A	A		A		A	A	A	A
			Delay	38			38					4	2		3		2	3	2	3
			V/C	0.42								0.35	0.30				0.16	0.31		
			Q	4								21	23				12	7		
		Total Opening	LOS	D			D					A	A		A		A	A	A	A
			Delay	40			40					4	2		3		2	4	3	3
			V/C	0.49								0.34	0.31				0.20	0.42		
			Q	5								19	24				14	7		
		Total 5 Year	LOS	D			D					A	A		A		A	A	A	A
			Delay	40			40					4	2		3		2	4	3	3
			V/C	0.51								0.36	0.32				0.20	0.43		
			Q	5								21	25				15	8		
		Total 10 Year	LOS	C			C					A	A		A		A	A	A	A
			Delay	33			33					5	3		3		3	5	4	4
			V/C	0.27								0.40	0.35				0.22	0.45		
			Q	5								23	27				15	8		
AM Peak Hour	4 - Dorchester Road & Frederica Street	Base	LOS	<	C	>	C	C	C	C	C	A	A	>	A	A	A	>	A	B
			Delay	<	22	>	22	23	21	23	23	3	4	>	4	5	4	>	4	11
			V/C	<	0.21	>		0.28	0.02	0.33		0.00	0.27	>		0.19	0.15	>		
			Q	<	11	>		13	3	19		1	23	>		13	13	>		
		Background Opening	LOS	<	C	>	C	C	C	C	C	A	A	>	A	A	A	>	A	B
			Delay	<	22	>	22	23	21	24	24	4	5	>	5	5	4	>	4	11
			V/C	<	0.22	>		0.28	0.02	0.39		0.00	0.29	>		0.21	0.16	>		
			Q	<	12	>		13	3	22		1	26	>		15	14	>		
		Background 5 Year	LOS	<	C	>	C	C	C	C	C	A	A	>	A	A	A	>	A	B
			Delay	<	22	>	22	22	21	26	25	4	5	>	5	6	5	>	5	12
			V/C	<	0.20	>		0.26	0.02	0.54		0.00	0.31	>		0.23	0.17	>		
			Q	<	12	>		13	3	29		1	33	>		19	18	>		
		Background 10 Year	LOS	<	C	>	C	C	C	C	C	A	A	>	A	A	A	>	A	B
			Delay	<	21	>	21	22	20	31	30	5	6	>	6	7	5	>	6	14
			V/C	<	0.19	>		0.25	0.02	0.68		0.00	0.34	>		0.26	0.19	>		
			Q	<	12	>		14	3	39		1	37	>		21	20	>		
		Total Opening	LOS	<	C	>	C	C	B	C	C	A	A	>	A	A	A	>	A	B
			Delay	<	21	>	21	21	20	33	32	5	6	>	6	7	6	>	6	15
			V/C	<	0.17	>		0.22	0.02	0.71		0.00	0.33	>		0.29	0.22	>		
			Q	<	11	>		12	3	42		1	36	>		23	24	>		
		Total 5 Year	LOS	<	C	>	C	C	B	D	D	A	A	>	A	A	A	>	A	B
			Delay	<	20	>	20	20	19	37	35	5	8	>	8	9	7	>	7	17
			V/C	<	0.16	>		0.20	0.02	0.78		0.00	0.36	>		0.32	0.24	>		
			Q	<	12	>		13	3	53		1	37	>		25	25	>		
		Total 10 Year	LOS	<	B	>	B	B	B	D	D	A	A	>	A	B	A	>	A	B
			Delay	<	19	>	19	20	18	42	39	6	9	>	9	11	8	>	9	19
			V/C	<	0.15	>		0.19	0.02	0.84		0.00	0.39	>		0.36	0.26	>		
			Q	<	12	>		14	3	77		1	40	>		27	26	>		

TABLE 5.1: AM PEAK HOUR OPERATIONS – 2024-2037 (3/4)

Analysis Period	Intersection	Scenario	MOE	Direction / Movement / Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	5 - Frederica Street & Highway 420 South Ramp	Base	LOS	A	A		A		A	>	A					B		B	B	
			Delay	8	0		3		0	>	0					12		10	11	
			V/C	0.04	0.03				0.06	>						0.14		0.29		
			Q	1	0				0	>						4		10		
		Background Opening	LOS	A	A		A		A	>	A					B		B	B	
			Delay	8	0		3		0	>	0					12		10	11	
			V/C	0.05	0.03				0.06	>						0.16		0.31		
			Q	1	0				0	>						4		11		
		Background 5 Year	LOS	A	A		A		A	>	A					B		B	B	
			Delay	8	0		3		0	>	0					12		11	11	
			V/C	0.05	0.03				0.06	>						0.17		0.33		
			Q	1	0				0	>						5		11		
		Background 10 Year	LOS	A	A		A		A	>	A					B		B	B	
			Delay	8	0		3		0	>	0					13		11	11	
			V/C	0.05	0.03				0.06	>						0.18		0.35		
			Q	1	0				0	>						5		13		
		Total Opening	LOS	A	A		A		A	>	A					B		B	B	
			Delay	8	0		3		0	>	0					13		11	11	
			V/C	0.05	0.03				0.06	>						0.16		0.36		
			Q	1	0				0	>						5		13		
		Total 5 Year	LOS	A	A		A		A	>	A					B		B	B	
			Delay	8	0		3		0	>	0					13		11	11	
			V/C	0.06	0.04				0.06	>						0.18		0.38		
			Q	1	0				0	>						5		14		
		Total 10 Year	LOS	A	A		A		A	>	A					B		B	B	
			Delay	8	0		3		0	>	0					13		11	12	
			V/C	0.06	0.04				0.07	>						0.19		0.40		
			Q	2	0				0	>						6		16		
AM Peak Hour	6 - QEW Toronto Bound Off-Ramp & Highway 420	Base	LOS		A		A		A		A	C			C					
			Delay		0		0		0		0	19			19					
			V/C		0.19				0.08			0.23								
			Q		0				0			7								
		Background Opening	LOS		A		A		A		A	C			C					
			Delay		0		0		0		0	21			21					
			V/C		0.20				0.08			0.25								
			Q		0				0			8								
		Background 5 Year	LOS		A		A		A		A	C			C					
			Delay		0		0		0		0	22			22					
			V/C		0.21				0.09			0.28								
			Q		0				0			9								
		Background 10 Year	LOS		A		A		A		A	C			C					
			Delay		0		0		0		0	25			25					
			V/C		0.22				0.09			0.32								
			Q		0				0			11								
		Total Opening	LOS		A		A		A		A	C			C					
			Delay		0		0		0		0	23			23					
			V/C		0.21				0.10			0.28								
			Q		0				0			9								
		Total 5 Year	LOS		A		A		A		A	C			C					
			Delay		0		0		0		0	25			25					
			V/C		0.22				0.11			0.31								
			Q		0				0			10								
		Total 10 Year	LOS		A		A		A		A	D			D					
			Delay		0		0		0		0	27			27					
			V/C		0.23				0.11			0.35								
			Q		0				0			12								

TABLE 5.1: AM PEAK HOUR OPERATIONS – 2024-2037 (4/4)

Analysis Period	Intersection	Scenario	MOE	Direction / Movement / Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
AM Peak Hour	7 - QEW Fort Erie Bound Off-Ramp & Highway 420	Base	LOS		A		A		A		A					C		B	B	
			Delay		0		0		0		0					22		11	15	
			V/C		0.26				0.12							0.29		0.23		
			Q		0				0							9		7		
		Background Opening	LOS		A		A		A		A					C		B	C	
			Delay		0		0		0		0					24		11	15	
			V/C		0.27				0.13							0.32		0.25		
			Q		0				0							11		8		
		Background 5 Year	LOS		A		A		A		A					D		B	C	
			Delay		0		0		0		0					26		12	16	
			V/C		0.28				0.13							0.35		0.27		
			Q		0				0							12		9		
		Background 10 Year	LOS		A		A		A		A					D		B	C	
			Delay		0		0		0		0					29		12	17	
			V/C		0.30				0.14							0.40		0.29		
			Q		0				0							15		9		
		Total Opening	LOS		A		A		A		A					D		B	C	
			Delay		0		0		0		0					29		12	18	
			V/C		0.27				0.14							0.42		0.26		
			Q		0				0							16		8		
		Total 5 Year	LOS		A		A		A		A					D		B	C	
			Delay		0		0		0		0					30		12	19	
			V/C		0.28				0.14							0.44		0.26		
			Q		0				0							17		9		
		Total 10 Year	LOS		A		A		A		A					E		B	C	
			Delay		0		0		0		0					38		12	21	
			V/C		0.30				0.16							0.52		0.30		
			Q		0				0							22		10		

MOE - Measure of Effectiveness
LOS - Level of Service
Delay - Average Delay per Vehicle in Seconds
Q - 95th Percentile Queue Length
Ex. - Existing Available Storage
Avail. - Available Storage
TCS - Traffic Control Signal
TWSC - Two-Way Stop Control
AWSC - All-Way Stop Control
RBT - Roundabout
< - Shared Left-turn
> - Shared Right-turn

TABLE 5.2: PM PEAK HOUR OPERATIONS – 2024-2037 (1/4)

Analysis Period	Intersection	Scenario	MOE	Direction / Movement / Approach																	
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	1 - Dorchester Road & Morrison Street	Base	LOS	F	C	C	E	F	C	>	D	C	B	>	B	B	B	>	B	C
			Delay	101	30	27	56	82	29	>	53	25	17	>	20	11	18	>	17	34
			V/C	1.06	0.56	0.24		1.01	0.56	>		0.81	0.49	>		0.45	0.55	>		
			Q	71	37	20		77	27	>		58	44	>		23	48	>		
		Background Opening	LOS	D	D	C	D	D	D	>	D	C	C	>	C	B	C	>	C	C
			Delay	51	36	31	40	50	36	>	42	31	23	>	26	15	28	>	25	32
			V/C	0.88	0.60	0.25		0.89	0.61	>		0.85	0.57	>		0.50	0.68	>		
			Q	57	44	22		76	33	>		72	60	>		31	68	>		
		Background 5 Year	LOS	E	D	C	D	E	D	>	D	D	C	>	C	B	C	>	C	D
			Delay	65	37	31	45	64	37	>	49	39	24	>	29	16	31	>	27	37
			V/C	0.95	0.61	0.26		0.95	0.64	>		0.90	0.59	>		0.54	0.73	>		
			Q	67	46	23		86	35	>		91	64	>		33	78	>		
		Background 10 Year	LOS	F	D	C	D	E	D	>	E	E	C	>	D	B	C	>	C	D
			Delay	82	37	31	52	79	38	>	56	61	25	>	38	18	33	>	30	43
			V/C	1.01	0.62	0.28		1.00	0.66	>		0.99	0.64	>		0.59	0.78	>		
			Q	78	49	24		97	36	>		97	70	>		35	90	>		
		Total Opening	LOS	D	D	C	D	F	D	>	E	D	C	>	C	B	C	>	C	D
			Delay	51	36	31	40	90	36	>	62	48	25	>	32	16	34	>	30	40
			V/C	0.88	0.60	0.25		1.05	0.61	>		0.93	0.66	>		0.54	0.82	>		
			Q	57	44	22		110	33	>		84	72	>		31	96	>		
		Total 5 Year	LOS	E	D	C	D	F	D	>	E	E	C	>	D	B	D	>	C	D
			Delay	66	37	32	46	113	37	>	73	61	26	>	37	18	38	>	34	46
			V/C	0.95	0.61	0.26		1.11	0.64	>		0.98	0.69	>		0.58	0.87	>		
			Q	67	46	23		125	35	>		95	77	>		33	106	>		
		Total 10 Year	LOS	E	D	C	D	F	D	>	E	F	C	>	D	C	E	>	D	D
			Delay	67	44	35	49	98	38	>	67	92	30	>	50	23	58	>	51	54
			V/C	0.95	0.69	0.28		1.08	0.63	>		1.07	0.73	>		0.67	0.97	>		
			Q	74	53	26		103	38	>		112	84	>		38	122	>		
PM Peak Hour	2 - Dorchester Road & Dawson Street	Base	LOS	C		C	C	D	C	>	D	A	A	>	A	A	A	>	A	A
			Delay	35		34	34	39	34	>	38	3	7	>	7	2	4	>	4	7
			V/C	0.11		0.03		0.50	0.03	>		0.02	0.49	>		0.10	0.34	>		
			Q	6		0		19	7	>		1	59	>		3	34	>		
		Background Opening	LOS	C		C	C	D	C	>	D	A	A	>	A	A	A	>	A	A
			Delay	35		34	34	40	34	>	38	4	7	>	7	3	5	>	4	8
			V/C	0.11		0.04		0.52	0.03	>		0.02	0.52	>		0.11	0.36	>		
			Q	7		0		20	7	>		1	64	>		4	37	>		
		Background 5 Year	LOS	C		C	C	D	C	>	D	A	A	>	A	A	A	>	A	A
			Delay	34		34	34	40	34	>	38	4	7	>	7	3	5	>	5	8
			V/C	0.11		0.04		0.53	0.03	>		0.02	0.54	>		0.12	0.38	>		
			Q	7		0		21	8	>		1	69	>		4	39	>		
		Background 10 Year	LOS	C		C	C	D	C	>	D	A	A	>	A	A	A	>	A	A
			Delay	34		33	34	40	33	>	38	4	8	>	8	3	5	>	5	8
			V/C	0.12		0.04		0.54	0.04	>		0.02	0.58	>		0.14	0.40	>		
			Q	7		0		21	8	>		1	77	>		4	43	>		
		Total Opening	LOS	D		C	D	C	C	>	C	B	A	>	B	A	A	>	A	B
			Delay	39		34	36	34	31	>	33	17	9	>	11	5	10	>	10	14
			V/C	0.58		0.38		0.34	0.03	>		0.78	0.55	>		0.12	0.49	>		
			Q	30		27		20	7	>		43	78	>		5	55	>		
		Total 5 Year	LOS	D		C	D	C	C	>	C	C	A	>	B	A	A	>	A	B
			Delay	39		35	36	34	31	>	33	21	10	>	12	5	10	>	10	15
			V/C	0.58		0.42		0.35	0.03	>		0.82	0.58	>		0.13	0.52	>		
			Q	30		29		20	7	>		48	86	>		5	60	>		
		Total 10 Year	LOS	D		D	D	C	C	>	C	C	B	>	B	A	B	>	B	B
			Delay	38		36	36	34	31	>	33	28	11	>	14	6	11	>	10	15
			V/C	0.57		0.48		0.36	0.03	>		0.86	0.61	>		0.15	0.54	>		
			Q	30		32		21	7	>		53	97	>		6	66	>		

TABLE 5.2: PM PEAK HOUR OPERATIONS – 2024-2037 (2/4)

Analysis Period	Intersection	Scenario	MOE	Direction / Movement / Approach																	
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	3 - Dorchester Road & Highway 420 North Ramp	Base	LOS	C			C					A	A		A		A	A	A	A
			Delay	32			32					6	3		4		3	5	4	4
			V/C	0.33								0.44	0.39				0.23	0.47		
			Q	6								27	32				17	8		
		Background Opening	LOS	C			C					A	A		A		A	A	A	A
			Delay	33			33					6	3		4		3	5	4	5
			V/C	0.35								0.48	0.41				0.25	0.50		
			Q	7								31	34				18	8		
		Background 5 Year	LOS	C			C					A	A		A		A	A	A	A
			Delay	30			30					8	4		5		3	6	5	5
			V/C	0.25								0.53	0.45				0.27	0.52		
			Q	7								35	37				19	9		
		Background 10 Year	LOS	C			C					A	A		A		A	A	A	A
			Delay	30			30					10	4		5		3	7	5	6
			V/C	0.26								0.58	0.47				0.28	0.55		
			Q	7								45	40				20	9		
		Total Opening	LOS	C			C					A	A		A		A	A	A	A
			Delay	30			30					9	5		6		3	8	6	6
			V/C	0.30								0.54	0.54				0.29	0.60		
			Q	8								36	49				21	9		
		Total 5 Year	LOS	C			C					A	A		A		A	A	A	A
			Delay	30			30					10	5		6		3	8	6	6
			V/C	0.31								0.58	0.56				0.30	0.62		
			Q	8								45	52				22	9		
		Total 10 Year	LOS	C			C					B	A		A		A	A	A	A
			Delay	30			30					12	5		6		4	9	6	7
			V/C	0.32								0.63	0.58				0.32	0.65		
			Q	9								58	57				24	10		
PM Peak Hour	4 - Dorchester Road & Frederica Street	Base	LOS	<	B	>	B	B	B	D	D	A	B	>	B	B	B	>	B	C
			Delay	<	15	>	15	17	15	42	37	9	14	>	14	13	12	>	12	21
			V/C	<	0.07	>		0.30	0.06	0.89		0.01	0.54	>		0.30	0.37	>		
			Q	<	8	>		22	7	98		2	58	>		19	37	>		
		Background Opening	LOS	<	B	>	B	B	B	D	D	B	B	>	B	B	B	>	B	C
			Delay	<	15	>	15	17	15	46	39	10	16	>	16	17	14	>	14	23
			V/C	<	0.07	>		0.29	0.05	0.91		0.02	0.59	>		0.36	0.41	>		
			Q	<	8	>		23	7	111		2	62	>		21	39	>		
		Background 5 Year	LOS	<	B	>	B	B	B	D	D	B	B	>	B	C	B	>	B	C
			Delay	<	14	>	14	16	14	50	42	11	19	>	19	20	15	>	16	25
			V/C	<	0.07	>		0.29	0.05	0.94		0.02	0.64	>		0.42	0.44	>		
			Q	<	9	>		24	8	122		3	66	>		23	42	>		
		Background 10 Year	LOS	<	B	>	B	B	B	E	D	B	C	>	C	C	B	>	B	C
			Delay	<	14	>	14	16	14	60	50	12	21	>	21	25	17	>	18	29
			V/C	<	0.07	>		0.29	0.05	0.98		0.02	0.70	>		0.50	0.48	>		
			Q	<	9	>		25	8	136		3	71	>		27	44	>		
		Total Opening	LOS	<	B	>	B	B	B	F	F	B	C	>	C	D	C	>	C	D
			Delay	<	12	>	12	14	12	103	86	16	30	>	30	49	22	>	27	48
			V/C	<	0.06	>		0.23	0.04	1.13		0.02	0.80	>		0.71	0.55	>		
			Q	<	8	>		22	7	193		3	89	>		43	55	>		
		Total 5 Year	LOS	<	B	>	B	B	B	F	F	B	C	>	C	E	C	>	C	D
			Delay	<	12	>	12	14	12	121	101	16	32	>	31	60	23	>	29	54
			V/C	<	0.06	>		0.24	0.05	1.18		0.03	0.83	>		0.79	0.57	>		
			Q	<	8	>		23	8	204		3	97	>		46	58	>		
		Total 10 Year	LOS	<	B	>	B	B	B	F	F	B	C	>	C	F	C	>	C	E
			Delay	<	12	>	12	14	12	145	120	16	35	>	34	85	24	>	33	63
			V/C	<	0.06	>		0.26	0.05	1.24		0.03	0.87	>		0.91	0.60	>		
			Q	<	9	>		25	8	217		3	111	>		51	61	>		

TABLE 5.2: PM PEAK HOUR OPERATIONS – 2024-2037 (3/4)

Analysis Period	Intersection	Scenario	MOE	Direction / Movement / Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	5 - Frederica Street & Highway 420 South Ramp	Base	LOS	A	A		A		A	>	A					B		A	B	
			Delay	8	0		2		0	>	0					12		0	12	
			V/C	0.03	0.03				0.07	>						0.46		0.00		
			Q	1	0				0	>						20		0		
		Background Opening	LOS	A	A		A		A	>	A					B		A	B	
			Delay	8	0		2		0	>	0					13		0	13	
			V/C	0.04	0.03				0.07	>						0.48		0.00		
			Q	1	0				0	>						22		0		
		Background 5 Year	LOS	A	A		A		A	>	A					B		A	B	
			Delay	8	0		2		0	>	0					13		0	13	
			V/C	0.04	0.03				0.08	>						0.51		0.00		
			Q	1	0				0	>						24		0		
		Background 10 Year	LOS	A	A		A		A	>	A					B		A	B	
			Delay	8	0		3		0	>	0					14		0	14	
			V/C	0.04	0.04				0.08	>						0.54		0.00		
			Q	1	0				0	>						27		0		
		Total Opening	LOS	A	A		A		A	>	A					C		A	C	
			Delay	8	0		2		0	>	0					15		0	15	
			V/C	0.04	0.04				0.08	>						0.63		0.00		
			Q	1	0				0	>						37		0		
		Total 5 Year	LOS	A	A		A		A	>	A					C		A	C	
			Delay	8	0		2		0	>	0					16		0	16	
			V/C	0.04	0.04				0.09	>						0.66		0.00		
			Q	1	0				0	>						42		0		
		Total 10 Year	LOS	A	A		A		A	>	A					C		A	C	
			Delay	8	0		3		0	>	0					17		0	17	
			V/C	0.05	0.04				0.09	>						0.69		0.00		
			Q	1	0				0	>						48		0		
PM Peak Hour	6 - QEW Toronto Bound Off-Ramp & Highway 420	Base	LOS		A		A		A		A	E			E					
			Delay		0		0		0		0	41			41					
			V/C		0.20				0.18			0.59								
			Q		0				0			27								
		Background Opening	LOS		A		A		A		A	F			F					
			Delay		0		0		0		0	50			50					
			V/C		0.21				0.19			0.67								
			Q		0				0			34								
		Background 5 Year	LOS		A		A		A		A	F			F					
			Delay		0		0		0		0	64			64					
			V/C		0.22				0.20			0.76								
			Q		0				0			41								
		Background 10 Year	LOS		A		A		A		A	F			F					
			Delay		0		0		0		0	90			90					
			V/C		0.24				0.21			0.88								
			Q		0				0			53								
		Total Opening	LOS		A		A		A		A	F			F					
			Delay		0		0		0		0	73			73					
			V/C		0.24				0.20			0.79								
			Q		0				0			43								
		Total 5 Year	LOS		A		A		A		A	F			F					
			Delay		0		0		0		0	97			97					
			V/C		0.25				0.21			0.89								
			Q		0				0			52								
		Total 10 Year	LOS		A		A		A		A	F			F					
			Delay		0		0		0		0	140			140					
			V/C		0.26				0.22			1.04								
			Q		0				0			66								

TABLE 5.2: PM PEAK HOUR OPERATIONS – 2024-2037 (4/4)

Analysis Period	Intersection	Scenario	MOE	Direction / Movement / Approach																
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
PM Peak Hour	7 - QEW Fort Erie Bound Off-Ramp & Highway 420	Base	LOS		A		A		A		A					F		C	E	
			Delay		0		0		0		0					105		19	47	
			V/C		0.23				0.26							0.92		0.57		
			Q		0				0							54		28		
		Background Opening	LOS		A		A		A		A					F		C	F	
			Delay		0		0		0		0					151		22	63	
			V/C		0.24				0.27							1.06		0.62		
			Q		0				0							66		33		
		Background 5 Year	LOS		A		A		A		A					F		C	F	
			Delay		0		0		0		0					211		24	84	
			V/C		0.25				0.28							1.22		0.67		
			Q		0				0							80		39		
		Background 10 Year	LOS		A		A		A		A					F		D	F	
			Delay		0		0		0		0					306		29	117	
			V/C		0.26				0.30							1.44		0.73		
			Q		0				0							97		48		
		Total Opening	LOS		A		A		A		A					F		C	F	
			Delay		0		0		0		0					335		23	143	
			V/C		0.25				0.28							1.54		0.64		
			Q		0				0							117		36		
		Total 5 Year	LOS		A		A		A		A					F		D	F	
			Delay		0		0		0		0					429		26	180	
			V/C		0.26				0.30							1.75		0.69		
			Q		0				0							132		42		
		Total 10 Year	LOS		A		A		A		A					F		D	F	
			Delay		0		0		0		0					567		32	234	
			V/C		0.27				0.31							2.05		0.76		
			Q		0				0							152		52		

TABLE 5.3: SAT PEAK HOUR OPERATIONS – 2024-2037 (1/3)

Analysis Period	Intersection	Scenario	MOE	Direction / Movement / Approach																	
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
Saturday Peak Hour	1 - Dorchester Road & Morrison Street	Base	LOS	F	C	C	E	C	C	>	C	F	B	>	D	B	B	>	B	D
			Delay	149	32	26	75	35	29	>	31	87	17	>	48	11	18	>	17	44
			V/C	1.20	0.63	0.25		0.76	0.57	>		1.08	0.43	>		0.37	0.47	>		
			Q	94	47	20		40	31	>		116	40	>		23	40	>		
		Background Opening	LOS	F	D	C	D	D	D	>	D	E	C	>	D	C	C	>	C	D
			Delay	84	35	31	53	37	43	>	41	70	20	>	43	21	32	>	30	42
			V/C	1.02	0.59	0.26		0.72	0.72	>		1.03	0.44	>		0.49	0.64	>		
			Q	91	59	23		49	44	>		118	48	>		28	62	>		
		Background 5 Year	LOS	F	D	C	E	D	D	>	D	F	C	>	E	C	C	>	C	D
			Delay	102	36	31	60	39	44	>	42	97	21	>	55	22	33	>	31	48
			V/C	1.08	0.61	0.27		0.75	0.75	>		1.11	0.46	>		0.52	0.68	>		
			Q	102	61	24		52	46	>		131	51	>		29	66	>		
		Background 10 Year	LOS	F	D	C	E	D	D	>	D	F	C	>	E	C	D	>	C	E
			Delay	127	36	31	70	44	45	>	45	139	22	>	75	23	36	>	33	57
			V/C	1.15	0.63	0.29		0.80	0.77	>		1.22	0.49	>		0.56	0.74	>		
			Q	112	65	25		58	50	>		148	55	>		31	72	>		
		Total Opening	LOS	F	D	C	D	E	D	>	D	F	C	>	D	C	D	>	D	D
			Delay	85	35	31	53	58	43	>	50	101	22	>	54	21	40	>	37	49
			V/C	1.03	0.59	0.26		0.90	0.73	>		1.11	0.53	>		0.52	0.83	>		
			Q	91	59	23		73	44	>		131	60	>		28	97	>		
		Total 5 Year	LOS	F	D	C	E	E	D	>	D	F	C	>	E	C	D	>	D	E
			Delay	102	36	31	60	64	44	>	52	137	23	>	69	23	44	>	40	56
			V/C	1.08	0.61	0.27		0.92	0.75	>		1.20	0.55	>		0.56	0.87	>		
			Q	102	61	24		80	46	>		144	64	>		29	104	>		
		Total 10 Year	LOS	F	D	C	E	E	D	>	E	F	C	>	F	C	D	>	D	E
			Delay	127	36	31	70	77	45	>	58	185	24	>	89	25	51	>	46	67
			V/C	1.15	0.63	0.29		0.97	0.77	>		1.32	0.59	>		0.60	0.93	>		
			Q	112	65	25		90	50	>		160	68	>		31	112	>		
Saturday Peak Hour	2 - Dorchester Road & Dawson Street	Base	LOS	C		C	C	D	C	>	D	A	A	>	A	A	A	>	A	A
			Delay	33		32	33	39	33	>	37	3	6	>	6	3	5	>	5	7
			V/C	0.04		0.00		0.52	0.02	>		0.01	0.48	>		0.05	0.36	>		
			Q	3		0		21	0	>		1	59	>		2	37	>		
		Background Opening	LOS	C		C	C	D	C	>	D	A	A	>	A	A	A	>	A	A
			Delay	32		32	32	39	32	>	37	3	6	>	6	3	5	>	5	7
			V/C	0.03		0.00		0.53	0.02	>		0.01	0.50	>		0.06	0.38	>		
			Q	3		0		22	0	>		1	64	>		2	40	>		
		Background 5 Year	LOS	C		C	C	D	C	>	D	A	A	>	A	A	A	>	A	A
			Delay	32		32	32	40	32	>	38	3	6	>	6	3	5	>	5	7
			V/C	0.03		0.00		0.55	0.02	>		0.01	0.53	>		0.06	0.40	>		
			Q	3		0		23	0	>		1	70	>		2	44	>		
		Background 10 Year	LOS	C		C	C	D	C	>	D	A	A	>	A	A	A	>	A	A
			Delay	33		33	33	42	33	>	39	3	7	>	7	3	5	>	5	8
			V/C	0.04		0.00		0.58	0.02	>		0.01	0.56	>		0.07	0.42	>		
			Q	4		0		23	0	>		1	77	>		3	47	>		
		Total Opening	LOS	D		C	D	C	C	>	C	C	A	>	B	A	B	>	A	B
			Delay	41		35	37	34	31	>	33	26	9	>	12	6	10	>	10	15
			V/C	0.62		0.41		0.37	0.02	>		0.85	0.54	>		0.06	0.52	>		
			Q	33		30		22	0	>		48	77	>		3	59	>		
		Total 5 Year	LOS	D		D	D	C	C	>	C	C	A	>	B	A	B	>	B	B
			Delay	41		35	37	34	31	>	34	32	9	>	14	6	10	>	10	16
			V/C	0.62		0.44		0.39	0.02	>		0.88	0.56	>		0.06	0.54	>		
			Q	33		31		22	0	>		52	84	>		3	64	>		
		Total 10 Year	LOS	D		D	D	C	C	>	C	D	A	>	B	A	B	>	B	B
			Delay	41		36	37	34	31	>	34	43	10	>	16	6	11	>	11	17
			V/C	0.62		0.48		0.40	0.02	>		0.93	0.60	>		0.07	0.57	>		
			Q	33		33		23	0	>		56	94	>		3	70	>		

TABLE 5.3: SAT PEAK HOUR OPERATIONS – 2024-2037 (2/3)

Analysis Period	Intersection	Scenario	MOE	Direction / Movement / Approach																	
				Eastbound				Westbound				Northbound				Southbound				Overall
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
Saturday Peak Hour	3 - Dorchester Road & Highway 420 North Ramp	Base	LOS	C			C					A	A		A		A	A	A	A
			Delay	32			32					5	3		4		3	5	4	4
			V/C	0.23								0.42	0.37				0.24	0.44		
			Q	5								25	30				17	8		
		Background Opening	LOS	C			C					A	A		A		A	A	A	A
			Delay	32			32					6	3		4		3	5	4	4
			V/C	0.24								0.46	0.39				0.25	0.47		
			Q	5								28	32				18	8		
		Background 5 Year	LOS	C			C					A	A		A		A	A	A	A
			Delay	32			32					7	3		4		3	5	4	4
			V/C	0.25								0.49	0.41				0.26	0.49		
			Q	5								33	34				19	8		
		Background 10 Year	LOS	C			C					A	A		A		A	A	A	A
			Delay	32			32					8	4		4		3	5	4	5
			V/C	0.26								0.54	0.43				0.28	0.52		
			Q	6								38	37				20	9		
		Total Opening	LOS	C			C					A	A		A		A	A	A	A
			Delay	32			32					7	4		4		3	6	5	5
			V/C	0.34								0.50	0.49				0.29	0.58		
			Q	7								33	45				22	9		
		Total 5 Year	LOS	C			C					A	A		A		A	A	A	A
			Delay	30			30					9	5		6		3	8	5	6
			V/C	0.24								0.56	0.53				0.31	0.61		
			Q	7								40	48				23	9		
		Total 10 Year	LOS	C			C					B	A		A		A	A	A	A
			Delay	30			30					11	5		6		4	8	6	6
			V/C	0.24								0.61	0.55				0.33	0.63		
			Q	7								56	51				24	9		
Saturday Peak Hour	4 - Dorchester Road & Frederica Street	Base	LOS	<	B	>	B	B	B	D	C	A	B	>	B	B	A	>	B	B
			Delay	<	16	>	16	17	16	37	33	8	12	>	12	13	10	>	10	18
			V/C	<	0.09	>		0.23	0.05	0.84		0.01	0.53	>		0.33	0.35	>		
			Q	<	9	>		16	7	71		2	62	>		22	37	>		
		Background Opening	LOS	<	B	>	B	B	B	D	C	A	B	>	B	B	B	>	B	B
			Delay	<	16	>	16	17	15	40	35	9	14	>	14	16	12	>	12	19
			V/C	<	0.08	>		0.22	0.05	0.86		0.01	0.58	>		0.39	0.38	>		
			Q	<	9	>		17	7	91		2	67	>		25	39	>		
		Background 5 Year	LOS	<	B	>	B	B	B	D	D	A	B	>	B	B	B	>	B	C
			Delay	<	15	>	15	16	15	43	38	10	16	>	16	19	13	>	14	21
			V/C	<	0.08	>		0.22	0.04	0.89		0.01	0.63	>		0.46	0.41	>		
			Q	<	9	>		18	7	101		2	71	>		28	42	>		
		Background 10 Year	LOS	<	B	>	B	B	B	D	D	B	B	>	B	C	B	>	B	C
			Delay	<	15	>	15	16	14	46	40	11	19	>	19	26	15	>	16	24
			V/C	<	0.08	>		0.22	0.05	0.92		0.01	0.69	>		0.55	0.45	>		
			Q	<	10	>		19	7	113		2	77	>		35	44	>		
		Total Opening	LOS	<	B	>	B	B	B	F	E	B	C	>	C	D	B	>	C	D
			Delay	<	14	>	14	15	14	88	76	12	23	>	23	40	17	>	21	38
			V/C	<	0.07	>		0.18	0.04	1.08		0.01	0.74	>		0.70	0.50	>		
			Q	<	9	>		17	7	153		2	79	>		43	47	>		
		Total 5 Year	LOS	<	B	>	B	B	B	F	E	B	C	>	C	E	C	>	C	D
			Delay	<	13	>	13	14	13	90	78	14	29	>	29	77	21	>	30	43
			V/C	<	0.07	>		0.18	0.04	1.09		0.01	0.82	>		0.89	0.55	>		
			Q	<	9	>		18	7	171		2	94	>		52	55	>		
		Total 10 Year	LOS	<	B	>	B	B	B	F	F	B	C	>	C	F	C	>	D	D
			Delay	<	13	>	13	14	13	111	95	14	31	>	31	113	21	>	36	51
			V/C	<	0.07	>		0.19	0.04	1.15		0.01	0.86	>		1.02	0.58	>		
			Q	<	10	>		18	7	183		2	111	>		57	58	>		

TABLE 5.3: SAT PEAK HOUR OPERATIONS – 2024-2037 (3/3)

Analysis Period	Intersection	Scenario	MOE	Direction / Movement / Approach																Overall
				Eastbound				Westbound				Northbound				Southbound				
				Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	Left	Through	Right	Approach	
Saturday Peak Hour	5 - Frederica Street & Highway 420 South Ramp	Base	LOS	A	A		A		A	>	A					B		A	B	
			Delay	8	0		3		0	>	0					11		0	11	
			V/C	0.04	0.03				0.07	>						0.36		0.00		
			Q	1	0				0	>						13		0		
		Background Opening	LOS	A	A		A		A	>	A					B		A	B	
			Delay	8	0		3		0	>	0					11		0	11	
			V/C	0.04	0.03				0.07	>						0.38		0.00		
			Q	1	0				0	>						14		0		
		Background 5 Year	LOS	A	A		A		A	>	A					B		A	B	
			Delay	8	0		3		0	>	0					12		0	12	
			V/C	0.05	0.03				0.08	>						0.40		0.00		
			Q	1	0				0	>						16		0		
		Background 10 Year	LOS	A	A		A		A	>	A					B		A	B	
			Delay	8	0		3		0	>	0					12		0	12	
			V/C	0.05	0.03				0.08	>						0.43		0.00		
			Q	1	0				0	>						17		0		
		Total Opening	LOS	A	A		A		A	>	A					B		A	B	
			Delay	8	0		3		0	>	0					13		0	13	
			V/C	0.05	0.03				0.08	>						0.52		0.00		
			Q	1	0				0	>						25		0		
		Total 5 Year	LOS	A	A		A		A	>	A					B		A	B	
			Delay	8	0		3		0	>	0					14		0	14	
			V/C	0.05	0.04				0.09	>						0.54		0.00		
			Q	1	0				0	>						27		0		
		Total 10 Year	LOS	A	A		A		A	>	A					B		A	B	
			Delay	8	0		3		0	>	0					14		0	14	
			V/C	0.06	0.04				0.09	>						0.57		0.00		
			Q	1	0				0	>						30		0		

6 Remedial Measures

The following section discusses the potential remedial measures that could be considered better to accommodate the forecast traffic volumes in the study area.

6.1 Traffic Control Improvements

No changes to the existing form of traffic control at the study area intersections are recommended.

It is assumed that the City of Niagara will continue to monitor and adjust signal timings to improve operations as traffic volumes increase and travel patterns change.

Operations at the QEW off-ramps to Highway 420 show congestion and queuing during the PM peak hours. However, given the intersections' highway-to-highway nature, remedial measures such as signalization are limited. The MTO should continue to monitor the operations at the QEW off-ramps to Highway 420.

7 Parking Supply

As with any equilibrium system, a minimum of two components are required to be in balance and reach the equilibrium point. Parking systems require a balance of parking supply and demand. Reaching an appropriate supply level is equally important as demand. The ubiquitous oversupply of cheap and accessible parking has long been identified as a significant contributor to the growth in single-occupant vehicle (SOV) travel.

The Official Plan strongly emphasizes the pedestrian environment and active transportation. The development proposal focuses on accommodating a suitable pedestrian environment, one that would encourage active transportation based on the de-emphasis on parking. Blanketly applying the Zoning By-law across the development does not reflect these goals.

7.1 Zoning Requirements

The current parking requirements for this development are governed by the City of Niagara Falls Zoning By-law 79-200. It is recognized that the actual demand for parking spaces may vary from development to development.

The minimum parking rates for the proposed development under Zoning By-law 79-200 are as follows:

- 1.40 parking spaces for each dwelling unit; and
- 1.00 space per 25 m^2 gross leasable floor area.

Table 7.1 summarizes the minimum parking standard calculations.

The development's parking requirement under the City's current Zoning By-Law is 2,568 spaces. The development is proposing 2,352 parking spaces. However, there are a number of considerations that justify a parking supply that is lower than is required under the City's standard by-law, as explained in the remainder of this Chapter.

TABLE 7.1: ZONING PARKING BY-LAW REQUIREMENTS

Land Use	Units		City of Niagara Falls By-Law		Parking
Apartment Dwelling (High-Rise)	1,648	Units	1.4	spaces/unit	2307.2
Apartment Dwelling (Mid-Rise)	134	Units	1.4	spaces/unit	187.6
Retail	1,822	m^2	1	space/25m^2 GFA	72.9
Total					**2567.7**
				Total Parking Required	**2,568**

7.2 Parking Demand Forecasts

A review of actual parking demands that are likely to be generated by the proposed development has been considered to assess, independent and separate from a review of the residential Zoning By-Law requirements.

The “real” demands established for each land use are based upon a review of parking demand technical resources and information collected by Paradigm and others at comparable land uses. The established demands consider a number of influencing factors that are in-play including market demands and the effects of interaction between uses.

A summary discussion relating to each of the major land use components is provided in the following sections.

7.2.1 Residential Vehicle Ownership

A review of vehicle ownership provided by the 2016 Transportation Tomorrow Survey (TTS) for the City of Niagara Falls suggests that approximately 35 percent of apartments surveyed do not own a vehicle. Further disposition of the survey results can conclude that the actual vehicle ownership, based on a weighted average is 0.74 vehicles per unit.

Table 7.2 summarizes the vehicle ownership characteristics.

TABLE 7.2: VEHICLE OWNERSHIP – NIAGARA FALLS (2016 TTS)

Year	Vehicles Per Household					Households	Vehicles	Ownership
	0	1	2	3	4			
2016	2599 *35%*	4124 *56%*	631 *9%*	25 *0%*	0 *0%*	7,379	5,461	0.74

With respect to parking, the vehicle ownership evaluation offers some insight into parking requirements of apartments within the City of Niagara Falls. In general, this review indicates that, despite preconceived notions, not all residents in apartment dwellings own a vehicle. This provides further justification that opportunities exist to provide reduced parking requirements associated with the proposed development given the site's location and proximity to transit, and the access to local amenities within the City of Niagara Falls can be met through active travel modes.

Applying the 2016 vehicle ownership data set, the potential parking supply for the proposed 1,782 units can be estimated. This analysis provides support that the proposed parking supply of 2,352 residential spaces would meet and exceed the residential requirements.

Table 7.3 outlines the estimated the parking demand based on the vehicle ownership rates.

TABLE 7.3: DEMAND BASED ON VEHICLE OWNERSHIP

Use	Units	Parking Rate[a]	Spaces Required
Apartment Dwelling	1,782	0.74 per unit	1,319
Total Parking Required			**1,319**

a - TTS 2016 (Niagara Falls)

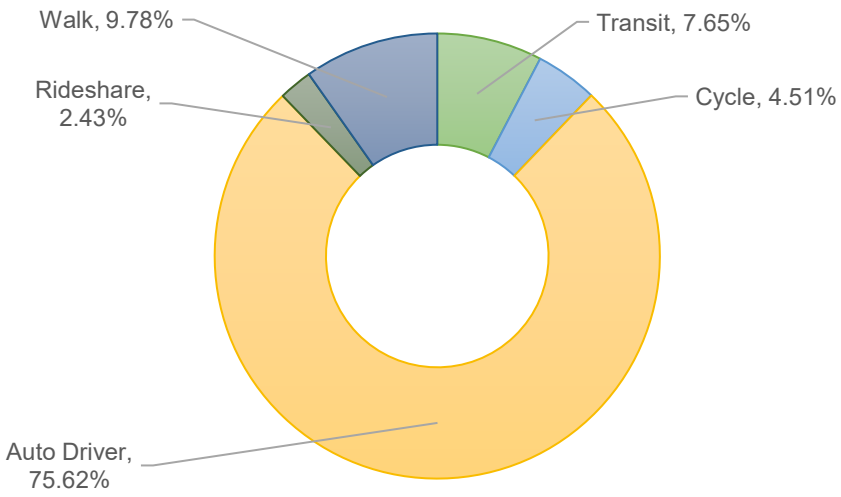
7.2.2 Travel Characteristics

A review of travel characteristics provided by the 2016 Transportation Tomorrow Survey (TTS) for residents living in the City of Niagara Falls confirms that a significant proportion of travel undertaken during the morning and afternoon peak periods is by non-auto means.

Information provided by the TTS program suggests that the proportion of people who choose to drive in the area is on average 76%. Based on this data it is reasonable to assume that only 76% of unit owners would require the use of an automobile for everyday travel whereas the remainder of the trips are fulfilled through transit and active modes.

Chart 7.4 outlines the 2016 trip characteristics within the City of Niagara Falls for apartments.

CHART 7.4: TRIPS IN STUDY AREA



The parking supply proposed will provide a parking resource that will logically be used by building residents who need a car for day-to-day use; indispensable users. Such residents would place a priority on purchasing a unit and expecting to utilize the on-site parking facilities. The proposed parking supply would accommodate parking of all units in the building (assuming one spaces is provided to any particular unit) which exceeds the base proportion of building unit occupants who need to drive on a recurring basis, approximately 76 percent during the peak periods.

Other unit purchasers who do not need to use a car on an ongoing basis would be satisfied by other methods available within the area such that they would not need to own a vehicle and furthermore not require a parking space.

7.2.3 Residential Proxy Surveys

Paradigm has reviewed two residential condominium parking proxy site surveys:

- 16 Concord Place in the Town of Grimsby
  - A 6-storey, 342-unit building with 559 parking spaces.
- 15 Towering Heights Boulevard in the City of St. Catharines
  - A 13-storey, 125-unit building with 183 parking spaces.

Parking surveys were conducted at the proxy sites between 10 PM and 1 AM to capture the maximum parking demand/occupancy. **Table 7.5** summarizes the observed parking rates. **Appendix F** provides the parking survey data for reference.

TABLE 7.5: PROXY SITE PARKING RATES

Proxy Site	Survey Date	Parking Rate
16 Concord Place, Grimsby	Friday June 3, 2022	0.94
	Saturday June 4, 2022	0.89
15 Towering Heights, St Catharines	Thursday February 28, 2019	0.90
	Saturday March 2, 2019	0.87

The parking surveys indicates a residential parking rate ranging from 0.87 spaces per unit to 0.94 spaces per unit. This data indicates the development's proposed residential parking rate of 1.22 spaces per unit is sufficient to meet the anticipated residential parking demand.

7.2.4 Residential Secondary Source (ITE)

There are numerous industry associations and institutions that are dedicated to the survey and review of parking requirements related to various land uses. These associations, such as the Institute of Transportation Engineers (ITE), collect, review and disseminate information related to parking demand, supply, and appropriate design standards. This data is useful in establishing a typical range of requirements.

The most recent parking generation manual available is the 5th edition[11] and is a comparative starting point to determine baseline assumptions.

This study includes ITE peak period parking demand rates as guidelines to benchmark how the proposed supply compares to industry standards based on collected data at various proxy sites. The following ITE Land Use Code (LUC) was reviewed:

- LUC 221 (Multifamily Housing – Mid-Rise; 2+ bedrooms; not close to rail transit; general urban) includes apartments, townhouses, and condominiums that have more than three other dwelling units and three to ten levels (floors) of residence and have more than one unit with two or more bedrooms. The weekday peak parking demand ratio is 1.23 per unit.

LUC 222 (Multifamily Housing – High-Rise; 2+ bedrooms) was not utilized in this calculation due to a low number of studies (less than five) for the parking rates. When less than five studies are included in a parking rate, it is cautioned that the small sample size may not provide generally representative rates. As such, LUC 221 for mid-rise buildings was used for the residential high-rise land uses.

Table 7.6 outlines parking rates from ITE.

The ITE parking rates forecast a residential parking demand of 2,192 parking spaces, aligning with the proposed 2,352 residential parking spaces. The residential parking requirements as prescribed in the City's Zoning by law are significantly higher requiring 2,495 parking spaces.

TABLE 7.6: ITE PARKING DEMAND

Use	Units	Parking Rate[a]	Parking Demand
LUC 221 – Residential Mid-Rise (2+ bedrooms)	1,782	1.23 per unit	2191.9
Total Residential Parking Demand			**2,192**

a - TTS 2016 (Niagara Falls)

[11] ITE Parking Generation 5th Edition, Washington DC, 2019.

7.2.5 Precedent

The City has approved similar developments with parking rates lower than 1.4 spaces per unit, such as 5528 Ferry Street (0.81 parking spaces per unit), 5613 Victoria Avenue (1.03 parking spaces per unit), and 5500 Victoria Avenue (1.00 spaces per unit).

To further support that a lower parking rate is appropriate for the subject site (5259 Dorchester Road), a comparison of the transportation context for aforementioned sites has been completed.

Analytical tools allow communities, transit agencies, developers, and employers to measure the environmental impact of neighbourhoods' transportation and land-use choices. These tools provide a data drive comparison between two separate city areas to objectively measure how well one area compares to another regarding sustainable travel choices.

Walk Score is a well-known (but proprietary) measure of walkability – it aggregates several data sources to provide a proxy measure of the quality of the pedestrian environment. It is utilized to gauge the walkability and destination density of each neighbourhood.

- 5259 Dorchester Road has a Walk Score of 50 and is considered a "Somewhat Walkable" location, meaning some errands can be accomplished on foot.
- 5528 Ferry Street has a Walk Score of 66 and is considered a "Somewhat Walkable" location, meaning some errands can be accomplished on foot.
- 5613 Victoria Avenue has a Walk Score of 74 and is considered a "Very Walkable" location, meaning most errands can be accomplished on foot.
- 5500 Victoria Avenue has a Walk Score of 78 and is considered a "Very Walkable." Consistent with the ranking for 5528 Ferry Street and 5613 Victoria Avenue.

Transit Score is a measure of transit accessibility. It aggregates information regarding transit frequency, the density of stops and routes, and the service model. It is used to gauge the transit accessibility of each neighbourhood.

- 5259 Dorchester Road has a Transit Score of 49 and is considered "Some Transit," which means a few nearby public transportation options.

- 5528 Ferry Street has a Transit Score of 48 and is considered "Some Transit," which means a few nearby public transportation options.
- 5613 Victoria Avenue has a Transit Score of 44 and is considered "Some Transit.
- 5500 Victoria Avenue has a Transit Score of 44 and is considered "Some Transit. Consistent with the ranking for 5528 Ferry Street and 5613 Victoria Avenue.

Bike Score is a measure of the area's ability to accommodate cyclists. A Bike Score is calculated for a given location by measuring bike infrastructure (lanes, trails, etc.), hills, destinations and road connectivity, and the number of bike commuters.

- 5259 Dorchester Road has a Bike Score of 37 and is considered "Somewhat Bikeable," which means some bike infrastructure.
- 5528 Ferry Street has a Bike Score of 51 and is considered "Bikeable," which means some bike infrastructure.
- 5613 Victoria Avenue has a Bike Score of 67 and is considered "Bikeable."
- 5500 Victoria Avenue has a Bike Score of 70 and is considered "Very Bikeable." Consistent with the ranking for 5528 Ferry Street and 5613 Victoria Avenue.

5259 Dorchester Road, 5528 Ferry Street, 5613 Victoria Avenue, and 5500 Victoria Avenue have comparable scores for sustainable travel options. The analytical tools identified that 5259 Dorchester Road has sustainable/alternative travel choices and that daily errands can be accomplished without a vehicle.

As a precedent of 0.81-1.03 parking spaces per unit has previously been supported by City Transportation Staff, the more conservative rate of 1.32 residential spaces per unit is considered supportable for 5259 Dorchester Road as the transportation context (i.e., sustainable/alternative travel options, proximity to shopping amenities) is comparable to the precedent sites.

7.2.6 Projected Base Parking Demand

The base parking demand ratios represent how many spaces should be supplied if the spaces are unshared.

Apartment demand is reflective by a peak parking demand ranging between 0.74 and 1.23 spaces per unit, as observed with the parking

demand information collected at comparable sites, secondary source data from ITE and vehicle ownership rates observed within the City of Niagara Falls.

Based on the rates noted above, the peak residential parking demand is estimated to align with the proposed 2,352 residential spaces (1.32 spaces per unit).

7.3 Other Jurisdictions (Updated Standards)

Parking standards are increasingly seen as an instrument of planning policy, and parking ratios are now looked at as having a main role in determining car use. Parking ratios have existed in most cities since at least the 1950's and have often been amended incrementally by various means over time. Consequently, it is not surprising to find that municipalities are often unable to trace the justification or reasoning behind some of the older parking ratios found in their current Zoning By-laws.

Given that parking standards reflect an "average" condition, they will rarely prescribe the number of parking spaces to match the parking demands of any individual development project exactly. The empirical challenge is to develop some understanding of the range over which parking demand for a given use may vary, and the policy question is where in that range should the parking standard or ratio be set. Other municipalities are recognizing the advantages of parking ratios in support of broader Official Plan objectives.

The Town of Oakville recently developed a new zoning by-law for lands located north of Dundas Street. The parking rates as contained within this by-law for multiple dwelling units stipulates a maximum parking rate of 1.25 parking spaces per unit would be accepted with no prescribed minimum parking requirement. In contrast to generic minimum parking requirements, North Oakville provides maximum limits to restrict the total number of spaces that can be constructed rather than establish a minimum number.

The City of Welland has recently undertaken a comprehensive review of the zoning by-law to ensure land and growth is managed properly, and the zoning regulations are up to date. As part of this work, updated parking requirements were developed which requires multiple dwellings provide a parking rate of 1.00 parking space per unit.

City of Hamilton has a staggered approach for parking requirements depending on the area of the city[12]. In downtown or dense urban areas

[12] City of Hamilton, Zoning By-Law 05-200 – Section 5 Parking, April 2024

(Parking Rate Area 1), there is generally no minimum resident parking required. Instead, only visitor parking is required. In a more comparable development area (Parking Rate Area 3) to the subject site, for multiple dwellings the minimum parking is 0.85 spaces per unit for residents plus 0.25 visitor spaces per unit.

Attitudes towards automobile ownership and the role it plays in an urban lifestyle are changing in the eyes of both consumers and policy makers, and lower parking regulations reflect this. As parking regulations are an attempt to provide supply to meet demand, regulations which require lower supply for future buildings are an indication that future demand is likely to be lower with the rise of sustainable travel modes (transit, cycling, and walking).

Parking regulations as stipulated in the City of Niagara Falls By-law for residential zones are on average 35% higher than neighbouring municipalities that have adopted new standards based on broader Official Plan objectives that recognizes the correlation between supportive land uses, lower automobile ownership, and promotion of sustainable travel modes.

The subject site is situated in a transit and cycling accessible location with sufficient pedestrian facilities and is positioned to be able to support lower parking rate.

Table 7.7 summarizes the parking standard calculations for other jurisdictions. The proposed residential supply of 2,352 spaces is adequate for the Town of Oakville, City of Welland and, City of Hamilton with new parking rates adopted.

Overall, this comparison outlines the new parking rate standards being accepted by municipalities through a comprehensive review of research and best practices and the rates as stipulated in antiquated Zoning By-law provides for an oversupply of parking.

TABLE 7.7: OTHER JURSIDICTIONS RESIDENTIAL PARKING BY-LAWS

Municipality	Land Use	Number of Units	Parking Rate	Minimum Parking Required
Town of Oakville (North Oakville)	Multiple Residential	1,782	0.00 spaces per unit or maximum of 1.25 space per unit	1425.6*
	Visitor	1,782	0.20 spaces per unit	356.4
			Total	**1782.0**
City of Welland	Multiple Residential	1,782	1.00 space per unit	**1782.0**
City of Hamilton	Multiple Residential	1,782	0.85 spaces per unit (PRA 3)	1514.7
	Visitor	1,782	0.25 spaces per unit	445.5
			Total	**1960.2**

*0.80 parking space per unit assumed

7.4 Policy Framework

Traditionally, transportation networks focused on increasing the capacity of the road network to accommodate more vehicles. However, as outlined in Niagara Region's Transportation Master Plan (TMP), the transportation system needs to look at a "balanced needs" approach that encourages alternative modes of transportation.

The City of Niagara Falls OP identifies, an integrated and multi-modal transportation system will be achieved by prioritizing decision-making to shift more trips away from the private car and to more sustainable transportation options, such as walking, biking, transit and car sharing.

The intent is to reprioritize mobility in a way that balances the transportation system. A more sustainable city requires an integrated transportation system that supports a compact urban form. Bringing jobs, housing services and amenities closer together encourages non automobile modes of travel, providing more choice to Niagara Falls residents.

7.4.1 Climate Change

Municipalities have been identified by the Government of Canada as being key partners in the fight against climate change, as they influence 50% of Canada's greenhouse gas emissions. Land use planning is one of the most effective processes for local adaptation to climate change, as existing tools available, such as official plans, zoning by-laws, and development permits can help to minimize climate change risk to the community.

In order to achieve a sustainable community, and human and ecosystem health, climate change and air pollution must be addressed. Climate change and air pollution impacts are caused primarily by burning fossil fuels, resulting in the emission of greenhouse gases and air pollutants. These impacts can be reduced through sustainable and efficient land use and transportation policies that reduce air and greenhouse gas emissions.

In Ontario, GHG emissions from the transportation sector in 2016 were 34% higher than 1990 levels. The majority of those emissions are due to passenger vehicles on the road. In Niagara, transportation emissions at the community level in 2006 accounted for 40% of total emissions. Achieving a reduction in automobile dependence and lowering GHG emissions from the transportation sector is a way to mitigate climate change and involves promoting other forms of sustainable travel.

7.4.2 Parking and GHG Emissions

Whilst single occupant vehicle trips are commonly targeted in transport policies, they are in reality only a consequence of the spatial layout and densities of the accompanying land uses. Therefore, there is merit in targeting the underlying cause of these carbon emissions rather than solely focussing on polices to reduce private vehicle use.

In this respect, car parking is the “glue” between these facets of the land use and transport environment. In addition, car parking is a critical factor which can be targeted relatively easily by planners and their municipality plans. Parking management has an important role to play as an instrument to reduce carbon emissions[13].

The transportation sector is currently responsible for 23% of Canada’s GHG emissions[14] and offers tremendous opportunities for significant emissions reduction. To reduce emissions, municipalities need to drive a transition towards zero and low-emissions transportation modes, increase the use of cleaner fuels, increase public transit ridership, and encourage denser, mixed-use communities. Municipalities in Canada are lagging behind other countries in supporting zero emission vehicles and other sustainable transportation policies. To significantly reduce greenhouse gas emissions related to the transportation sector, a significant encouragement is needed to shift travel modes from single occupant vehicles towards public transit, auto-share and active transportation.

7.4.3 Societal Changes

A sudden, dramatic shift in travel patterns occurred early in 2020 as society adjusted to the emergence of COVID-19, its declaration as a pandemic and subsequent public health measures to stop its spread.

As a result, recent societal changes have made it easier to live without owning a car. Vehicles-for-hire and bicycles have both increased in popularity. Online shopping has reduced the need for a vehicle to bring large purchases home and in some areas have made it convenient for everyday errands to be delivered (i.e., groceries, household items). The future arrival of automated vehicles may further support a reduction in personal automobile ownership and use and these societal changes will result in a decreased need for vehicle parking with a shift to curbside management.

[13] Parking as a tool to reduce carbon emissions, McCormick Rankin Cagney Pty Ltd, 2009

[14] Reducing GHG Emissions in Canada’s Transportation Sector, Clean Energy Canada, June 2016.

As businesses have adapted and residents have embraced the convenience of the delivery of everyday items, it is expected these changes will remain for the foreseeable future, providing further incentive to residents in not requiring a vehicle.

Results from the 2016 TTS show that approximately 35% of apartment households in Niagara Falls do not own a vehicle. It its likely that these proportions have increased since 2016 and will continue to increase as a result of societal changes.

Given the expected changes in automobile ownership brought about by the changes in mobility-related technologies, it is likely that if change is parking policy framework is not revised, new residential developments will be left with an oversupply of parking, which if provided below grade will result in redundant space that will not be repurposed in the future.

7.4.4 Parking Reform

Minimum parking requirements have long been a staple of urban planning regulations based on some formulation. These regulations unfortunately have been driven by auto-centric engineering models. Over the past seven decades, the built form in Niagara Falls is evolving significantly. Recent changes in transportation technology and services, characterized by ride-hailing and automobile sharing, and the emerging technologies dominated by autonomous vehicles (AVs) suggest that automobile ownership is likely to experience declines in the future.

The City of Niagara Falls growth objective is to create and develop a transit and pedestrian friendly, sustainable, and livable City through the use of urban design criteria and guidelines. The OP embraces sustainability and creating a vision for compact complete communities served by streets made for walking, cycling and by an attractive transit system. This vision is supported by policies aimed at reducing auto-dependence and limiting the amount of land occupied by automobile parking. The transportation policies are deliberately interspersed with the land use policies to emphasize the importance of considering both areas in order to achieve the overall vision of compact complete communities.

The intent is to reprioritize mobility in a way that balances the transportation system. A more sustainable city requires an integrated transportation system that supports a compact urban form. Bringing jobs, housing services and amenities closer together encourages non automobile modes of travel, providing more choice to Niagara Falls residents.

If the city wishes to encourage active transportation and transit friendly neighbourhoods as outlined in the OP and strategic vision; the city needs to recognize that minimum parking requirements are presenting a significant barrier to these goals. Parking should not be viewed as only an amenity required to support our cities and our ability to drive; instead, it must be viewed as a significant economic investment that carries with it outcomes that shape our cities and regions. It needs to be recognized that parking carries significant costs, heavily subsidizes the choice to drive, and hampers the ability to promote sustainable developments.

8 Conclusions and Recommendations

8.1 Conclusions

This study evaluated the impacts associated with the construction of large-scale residential development located on the west side of Dorchester Road and north of Highway 420 at 5259 Dorchester Road in the City of Niagara Falls. The property owner proposes developing the lands as a large-scale residential development. While the site plan is preliminary, the development proposes 1,782 residential units spread across eight rental residential units ranging from five to twenty storeys. Combined, buildings one to three are proposed to have a total of 1,822 m2 (19,613 sq. ft) of ground-floor retail space. Vehicle access is proposed through an access to Dawson Street. The opening year is anticipated to be 2030.

Transportation Impact Study

The subject site is estimated to generate 474 AM peak-hour trips, 635 PM peak-hour trips, and 708 Saturday peak-hour trips. To remain conservative, no reductions in alternative modes of transportation have been applied.

The existing traffic conditions analysis shows that localized congestion occurs at the intersection of Dorchester Road and Morrison Street in the PM and Saturday peak hours, with northbound, eastbound, and westbound left-turn movements operating at LOS F.

Southbound left-turn operations at the QEW Fort Erie Bound Off-Ramp at Highway 420 currently experience delays due to east-west traffic along Highway 420 during the PM peak hour. Queues are expected to form for this movement; however, queue lengths are not expected to impact highway operations.

Localized congestion is forecasted to continue at Dorchester Road and Morrison Street in all horizon years. In the PM peak hour and Saturday Peak Hour, left turns on the northbound, eastbound, and westbound approaches are forecast to operate with delays in the LOS F range.

QEW off-ramps are also forecast to experience congestion during the PM peak hour. Queues are expected to form for these ramps; however, queue lengths are not expected to impact highway operations.

According to the total traffic conditions analysis, similar levels of operation are generally expected under Total conditions, with only minor increases in delay resulting from site-generated traffic volumes.

However, certain highly congested left-turn movements are forecasted to experience significant increases in delay due to the lack of capacity.

In all horizon years, the site driveway is forecast to operate at a LOS D with up to 33 seconds of delay in the respective peak hours.

Overall, the study finds that the intersections will experience localized congestion due to background traffic growth in the area. Intersections are forecast to operate with acceptable service levels, spare capacity is available, and off-site mitigation measures are not required to facilitate the development proposal.

The City of Niagara should continue to monitor and adjust signal timings to improve operations as traffic volumes increase and travel patterns change.

Parking Study

The parking requirement for the development under the City of Niagara Falls Zoning By-Law is 2,568 spaces. The development proposes 2,352 parking spaces, slightly under minimum parking supply outlined by the by-law.

Based on parking demand information collected at comparable sites, secondary source data from ITE and vehicle ownership rates observed within the City of Niagara Falls, apartment demand is reflective by a peak parking rate ranging between 0.74 and 1.23 spaces per unit. Considering the rates noted above, the peak residential parking demand is estimated to align with the proposed 2,352 residential spaces (1.32 spaces per unit). Overall, the proposed total parking supply of 2,352 spaces is sufficient for the development.

8.2 Recommendations

Based on the findings of this study, the following is recommended:

- The City continues to monitor operations at the intersection of Dorchester Road and Morrison Street and adjust signal timings to improve operations in the future as traffic volumes increase and travel patterns change.
- The City accept the proposed residential parking supply of 1.32 spaces per unit.

Appendix A

Terms of Reference

Greg Lue

From: Constantine, Neave (MTO) <Neave.Constantine@ontario.ca>
Sent: August 2, 2023 11:10 AM
To: Adam Makarewicz; John Grubich
Cc: Greg Lue
Subject: RE: 230334 - 5259 Dorchester Road Niagara Falls Traffic Impact Study - Terms of Reference
Attachments: 420 Dorchester Nov 2022.pdf; 49806 000 -420- MTO - CENTRAL - TORONTO - BURLINGTON .pdf; Dorchester and 420 ramp 72 Nov 2022.pdf

Hi Adam/John,

Re: TIS – Terms of Reference
City of Niagara Falls
5259 Dorchester Road

MTO has reviewed the revised Terms of Reference and offer the following comments:

1. The revisions are acceptable.
2. MTO does not have Saturday counts therefore you will have to count them.
3. I have attached the latest volumes. I am awaiting for some further data to be provided and clarified as the only data we have is 2020 and 2017.
4. I have provided the other latest data available and will provide the rest as I receive it.

Thanks,

Neave Constantine | Corridor Management Planner (Hamilton/ Niagara)
Highway Corridor Management Section | Central Operations | Ministry of Transportation
159 Sir William Hearst Avenue, 7th Floor |Toronto, ON M3M 0B7
Telephone: 437 688-2943 | Email: Neave.Constantine@ontario.ca

Ontario

From: Adam Makarewicz <amakarewicz@ptsl.com>
Sent: August 1, 2023 9:57 AM
To: Nunes, Paul (MTO) <Paul.Nunes@ontario.ca>; John Grubich <jgrubich@niagarafalls.ca>
Cc: Greg Lue <glue@ptsl.com>
Subject: 230334 - 5259 Dorchester Road Niagara Falls Traffic Impact Study - Terms of Reference

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Hi Paul and John,

In 2021, we were commissioned to prepare a Transportation Impact Study for a development proposal that initially consisted of 1,485 residential units and approximately 1,560 square metres of ground-floor commercial space. The plan proposed access to the site via Dawson Street. However, the owner has revised the site to include 1,611 residential units and 1,506 square metres of ground-floor commercial space while maintaining the previous vehicle access plan.

As part of the 2021 application, we previously scoped the work with the MTO, and the City as noted below. I have modified previously agreed-upon terms of reference to account for updated information and previous comments provided (noted in RED).

Can you confirm if the proposed scope of work would be acceptable?

Thanks,

Adam J. Makarewicz
Senior Project Manager, Associate

Paradigm Transportation Solutions Limited
5A-150 Pinebush Road, Cambridge ON N1R 8J8
p: 905.381.2229 x303
e: amakarewicz@ptsl.com
w: www.ptsl.com

Summer 2023 Vacation Notice: July 10-17

From: Nunes, Paul (MTO) <Paul.Nunes@ontario.ca>
Sent: Wednesday, July 28, 2021 1:04 PM
To: Greg Lue <glue@ptsl.com>
Cc: Adam Makarewicz <amakarewicz@ptsl.com>; Susan.Dunsmore@niagararegion.ca; jgrubich@niagarafalls.ca; Lagakos, Ted (MTO) <Ted.Lagakos@ontario.ca>
Subject: RE: 210387 - 5259 Dorchester Road Niagara Falls Traffic Impact Study - Terms of Reference

Hi Greg,

Re: Traffic Impact Study Terms of Reference – Request for Comments
Proposed large-scale residential development
5259 Dorchester Road, Niagara Falls, ON. (**Hwy 420**)

After review, and in accordance with the Public Transportation and Highway Improvement Act, the MTO offers the following comments:

Traffic:

The comment about the effect of CoViD-19 on traffic volumes, travel demands and patterns is correct. We have accepted in the recent past, volume up to and including 2019 for mainline and TMCs then brought to the base year of analysis through the use of agreeable growth factors.

The ministry accepts the Region Of Niagara's use of 1750 for the Synchro Sat Flow, and 092 PHF.

Please add the following intersections:

- QEW Toronto-bound offramp to Hwy. 420 (Unsignalized)
- QEW Fort Erie bound offramp to Hwy. 420 (Unsignalized)

Horizon Years are acceptable
Analysis Software is acceptable

Analysis Period.

- The density of this development, the proximity to the retail campus to the north and higher summer (tourist) volumes would necessitate weekend mid-day peak analysis period in addition to the 2 periods already mentioned.

Background Traffic,

- Growth rate needs to be determined through the use of current (2019) and historic volumes in order to justify the growth rate.

Site Traffic Estimates and Distribution are acceptable.

General:

Please note, proposal is to build residences next to an existing freeway interchange which includes high-level ramps. The freeways accommodate commercial vehicles which are allowed to use engine (Jacob) brakes. The highway noise and headlight glare is existing and the proponent needs to mitigate the best they can in their development design.

Please do not hesitate to contact me if you have any questions.

Thanks,

Paul Nunes
Planner (Niagara/Hamilton)
Highway Corridor Management Section – Central Operations

Ministry of Transportation
159 Sir William Hearst Avenue, 7th Floor
Toronto, ON M3M 0B7

E-Mail: paul.nunes@ontario.ca
Web: www.mto.gov.on.ca/english/engineering/management/corridor

---

From: Greg Lue <glue@ptsl.com>
Sent: July 13, 2021 2:23 PM
To: Nunes, Paul (MTO) <Paul.Nunes@ontario.ca>; Susan.Dunsmore@niagararegion.ca; jgrubich@niagarafalls.ca
Cc: Adam Makarewicz <amakarewicz@ptsl.com>
Subject: 210387 - 5259 Dorchester Road Niagara Falls Traffic Impact Study - Terms of Reference

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Hi all,

Paradigm Transportations Solutions Limited has been retained to conduct a Transportation Impact Analysis for a proposed development located on the west side of Dorchester Road and north of Highway 420 within the City of Niagara Falls. The preliminary site plan dated June 2021 (attached) envisions a large-scale residential development. Site stats are not outlined; however, the development is noted to be a large-scale development with roughly 1,500 residential units proposed. Vehicle access is proposed through an access to Dawson Street.

Proposed Terms of Reference

Study Area Intersections

- Dorchester Road at Dawson Street (signalized);
- Dorchester Road at Highway 420 North Ramp (signalized);
- Dorchester Road at Frederica Street/Royal Manor Drive (signalized);
- Frederica Street at Highway 420 South Ramp (unsignalized); and
- QEW Toronto-bound offramp to Hwy. 420 (Unsignalized)
- QEW Fort Erie bound offramp to Hwy. 420 (Unsignalized)
- One site driveway.

Existing Data

- We will complete updated turning movement counts at the study area intersections.
- Exception to this will be the QEW Toronto-bound offramp to Hwy. 420 (Unsignalized) and QEW Fort Erie bound offramp to Hwy. 420 (Unsignalized). Our contractors cannot undertake traffic counts at these two locations, given they are located within the functional area of a 400-series highway. We will use the latest counts from the MTO at these locations and factor them (if required) to be representative of 2023 volumes. Saturday analysis at these two location will not be completed unless MTO can supply the data.
- ~~The MTO Traffic Impact Study Guidelines indicates the requirement for the collection of new data for counts three years or older. Acknowledging this requirement and the current situation related to COVID-19, the ability to conduct up-to-date data collection is impacted. Travel demands and patterns are currently not representative of typical conditions and there is uncertainty when traffic conditions will return to pre-pandemic levels. In recognition, we would like to engage in discussion regarding acceptable alternatives.~~
- ~~Our initial approach would be to utilize most recent intersection turning movement count (TMC) data and application of a suitable growth rate to develop 2021 base year volumes. The growth rate would be based upon historical data, information contained within approved planning documents, population and/or employment forecasts, or use of a specific growth rate as directed by review agency staff.~~
- ~~In the absence of data, new TMCs may be collected and adjusted to correct for impacts due to COVID-19~~

Horizon Years

- ~~2021 Base Year~~ 2023 Base Year
- Opening Date
- 5 and 10-years from opening date

Analysis Periods

- Weekday AM peak hour
- Weekday PM peak hour
- Weekday Saturday peak hour

Analysis

- ~~Synchro 10~~ Synchro 11
- HCM 2000
- SimTraffic Queueing (five 60-min iterations)

Background Traffic

- Generalized growth rate 2% per annum
- Traffic generated by any in stream developments in the area. **City of Niagara Falls** – can you comment on this and provide any relevant studies or inputs to estimate the traffic for the site(s)?

Site Traffic Estimates

- ITE Trip Generation Data ~~10th Edition~~ 11th Edition
- No modal split reductions

Site Traffic Distribution

- Existing travel patterns/TTS data

Report

- We will document the study methodologies, findings, and conclusions in a report with appendices containing the detailed analysis results and any data collected.

Please let us know if you have any comments. Thanks !

Greg Lue, M.A.Sc., P.Eng.
Transportation Engineer

Paradigm Transportation Solutions Limited
5A-150 Pinebush Road, Cambridge ON N1R 8J8
p: 905.381.2229 x307
m: 905.981.7479
e: glue@ptsl.com
w: www.ptsl.com

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Greg Lue

From: Nunes, Paul (MTO) <Paul.Nunes@ontario.ca>
Sent: August 11, 2021 8:47 AM
To: Greg Lue
Cc: Adam Makarewicz
Subject: RE: 210387 - 5259 Dorchester Road Niagara Falls Traffic Impact Study - Terms of Reference

Hi Greg,

Re: Traffic Impact Study Terms of Reference – Request for Comments
Proposed large-scale residential development
5259 Dorchester Road, Niagara Falls, ON. (Hwy 420)

The MTO Traffic Section accepts the suggested growth rates.

Thanks,

Paul Nunes
Planner (Niagara/Hamilton)
Highway Corridor Management Section – Central Operations

Highway Corridor Management

From: Greg Lue <glue@ptsl.com>
Sent: August 10, 2021 1:45 PM
To: Nunes, Paul (MTO) <Paul.Nunes@ontario.ca>
Cc: Adam Makarewicz <amakarewicz@ptsl.com>
Subject: RE: 210387 - 5259 Dorchester Road Niagara Falls Traffic Impact Study - Terms of Reference

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Hi Paul,
Thanks for your comments on the Terms of Reference. We've acquired 2017 and 2019 traffic counts for intersections along the Dorchester corridor (Morrison St, Dawson St, and Frederica St), however, the 2017 to 2019 growth trend in the corridor is negative. With this result we would like to propose a 0% growth rate to the base year and 1% growth rate per annum to the horizon years.
Please let us know if these growth assumptions are acceptable. Thanks !

Greg Lue, M.A.Sc., P.Eng.
Transportation Engineer

paradigm

Paradigm Transportation Solutions Limited

p: 905.381.2229 x307
m: 905.981.7479

From: Nunes, Paul (MTO) <Paul.Nunes@ontario.ca>
Sent: July 28, 2021 1:04 PM
To: Greg Lue <glue@ptsl.com>
Cc: Adam Makarewicz <amakarewicz@ptsl.com>; Susan.Dunsmore@niagararegion.ca; jgrubich@niagarafalls.ca; Lagakos, Ted (MTO) <Ted.Lagakos@ontario.ca>
Subject: RE: 210387 - 5259 Dorchester Road Niagara Falls Traffic Impact Study - Terms of Reference

Hi Greg,

Re: Traffic Impact Study Terms of Reference – Request for Comments
Proposed large-scale residential development
5259 Dorchester Road, Niagara Falls, ON. (**Hwy 420**)

After review, and in accordance with the Public Transportation and Highway Improvement Act, the MTO offers the following comments:

Traffic:

The comment about the effect of CoViD-19 on traffic volumes, travel demands and patterns is correct. We have accepted in the recent past, volume up to and including 2019 for mainline and TMCs then brought to the base year of analysis through the use of agreeable growth factors.

The ministry accepts the Region Of Niagara's use of 1750 for the Synchro Sat Flow, and 092 PHF.

Please add the following intersections:

- QEW Toronto-bound offramp to Hwy. 420 (Unsignalized)
- QEW Fort Erie bound offramp to Hwy. 420 (Unsignalized)

Horizon Years are acceptable
Analysis Software is acceptable

Analysis Period.

- The density of this development, the proximity to the retail campus to the north and higher summer (tourist) volumes would necessitate weekend mid-day peak analysis period in addition to the 2 periods already mentioned.

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Paul Nunes
Planner (Niagara/Hamilton)
Highway Corridor Management Section – Central Operations

Ministry of Transportation
159 Sir William Hearst Avenue, 7th Floor
Toronto, ON M3M 0B7

E-Mail: paul.nunes@ontario.ca
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- Weekday AM peak hour
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Analysis

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- Existing travel patterns/TTS data

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- We will document the study methodologies, findings, and conclusions in a report with appendices containing the detailed analysis results and any data collected.

Please let us know if you have any comments. Thanks !

Greg Lue, M.A.Sc., P.Eng.
Transportation Engineer

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Appendix B

Existing Traffic Data

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Dorchester Road & Morrison Street
Site Code: 230334
Start Date: 10/26/2023

Turning Movement Data

Start Time	Morrison Street Eastbound						Morrison Street Westbound						Dorchester Road Northbound						Dochester Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	13	2	11	0	0	26	12	14	14	0	1	40	21	18	7	0	0	46	8	29	3	0	1	40	152
7:15 AM	16	8	6	0	0	30	13	11	7	0	0	31	23	21	6	0	0	50	18	48	11	0	0	77	188
7:30 AM	18	10	13	0	3	41	13	16	13	0	2	42	31	31	8	0	1	70	23	47	17	0	0	87	240
7:45 AM	19	13	14	0	0	46	16	21	19	0	0	56	36	42	18	0	0	96	37	52	23	0	0	112	310
Hourly Total	66	33	44	0	3	143	54	62	53	0	3	169	111	112	39	0	1	262	86	176	54	0	1	316	890
8:00 AM	26	8	15	0	0	49	19	15	22	0	0	56	32	50	16	0	1	98	26	65	20	0	0	111	314
8:15 AM	33	17	21	0	0	71	19	23	22	1	1	65	35	69	15	0	0	119	45	65	17	0	0	127	382
8:30 AM	34	14	24	0	2	72	29	37	19	0	0	85	38	57	21	0	3	116	41	84	24	0	0	149	422
8:45 AM	24	27	19	0	0	70	27	30	22	1	0	80	41	53	35	0	3	129	47	83	47	1	0	178	457
Hourly Total	117	66	79	0	2	262	94	105	85	2	1	286	146	229	87	0	7	462	159	297	108	1	0	565	1575
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	58	38	42	0	0	138	44	40	20	0	1	104	72	47	20	0	0	139	34	69	37	0	1	140	521
11:15 AM	40	38	46	0	0	124	60	45	28	0	0	133	74	58	34	0	0	166	22	60	44	0	0	126	549
11:30 AM	60	26	38	0	1	124	46	36	19	0	0	101	65	70	32	0	0	167	19	72	45	0	0	136	528
11:45 AM	60	36	48	0	0	144	43	40	19	0	2	102	63	69	32	0	2	164	34	63	47	0	0	144	554
Hourly Total	218	138	174	0	1	530	193	161	86	0	3	440	274	244	118	0	2	636	109	264	173	0	1	546	2152
12:00 PM	57	51	30	0	2	138	62	72	30	0	1	164	85	68	28	0	0	181	41	69	42	0	3	152	635
12:15 PM	57	38	37	0	4	132	48	49	28	0	0	125	71	53	38	0	1	162	29	92	44	0	2	165	584
12:30 PM	43	36	47	0	1	126	61	50	32	0	9	143	54	54	31	0	4	139	43	65	56	0	2	164	572
12:45 PM	52	33	56	0	3	141	43	52	36	0	2	131	61	62	25	0	6	148	34	90	59	0	2	183	603
Hourly Total	209	158	170	0	10	537	214	223	126	0	12	563	271	237	122	0	11	630	147	316	201	0	9	664	2394
1:00 PM	62	47	57	0	2	166	45	55	37	0	1	137	78	77	32	0	2	187	39	70	33	0	0	142	632
1:15 PM	60	35	53	0	0	148	67	50	22	0	0	139	68	48	30	1	0	147	38	95	41	0	1	174	608
1:30 PM	56	54	48	0	3	158	38	52	32	0	2	122	62	69	40	0	4	171	38	78	32	0	1	148	599
1:45 PM	52	28	51	0	0	131	61	35	39	0	1	135	75	69	22	0	0	166	32	76	52	0	1	160	592
Hourly Total	230	164	209	0	5	603	211	192	130	0	4	533	283	263	124	1	6	671	147	319	158	0	3	624	2431
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	45	33	60	0	5	138	56	43	39	0	4	138	68	70	45	0	0	183	43	89	31	0	4	163	622
3:15 PM	55	35	45	0	2	135	65	48	38	1	3	152	59	83	25	0	0	167	59	98	42	0	0	199	653
3:30 PM	53	31	68	0	0	152	50	41	43	0	7	134	67	77	41	0	0	185	35	87	32	0	0	154	625
3:45 PM	50	35	70	0	3	155	53	40	36	0	5	129	62	89	37	0	3	188	33	80	50	0	2	163	635
Hourly Total	203	134	243	0	10	580	224	172	156	1	19	553	256	319	148	0	3	723	170	354	155	0	6	679	2535
4:00 PM	62	34	42	0	2	138	94	48	36	0	2	178	72	107	34	0	4	213	28	103	41	0	4	172	701
4:15 PM	39	31	44	0	2	114	65	38	41	0	1	144	69	85	51	0	1	205	43	98	36	0	2	177	640
4:30 PM	49	41	44	0	7	134	63	39	39	0	1	141	53	69	30	0	0	152	34	81	35	0	3	150	577

4:45 PM	43	34	35	0	2	112	51	46	38	0	16	135	77	103	34	0	4	214	39	108	41	0	3	188	649
Hourly Total	193	140	165	0	13	498	273	171	154	0	20	598	271	364	149	0	9	784	144	390	153	0	12	687	2567
5:00 PM	71	38	52	0	0	161	66	46	41	0	2	153	59	97	22	0	2	178	31	90	40	0	1	161	653
5:15 PM	54	38	46	0	1	138	50	40	33	0	4	123	61	82	35	0	2	178	39	93	41	1	2	174	613
5:30 PM	52	34	30	1	3	117	52	46	36	0	3	134	60	78	23	0	3	161	36	102	44	0	4	182	594
5:45 PM	53	32	41	0	0	126	49	28	31	0	4	108	47	71	21	1	5	140	33	84	30	0	2	147	521
Hourly Total	230	142	169	1	4	542	217	160	141	0	13	518	227	328	101	1	12	657	139	369	155	1	9	664	2381
Grand Total	1466	975	1253	1	48	3695	1480	1246	931	3	75	3660	1839	2096	888	2	51	4825	1101	2485	1157	2	41	4745	16925
Approach %	39.7	26.4	33.9	0.0	-	-	40.4	34.0	25.4	0.1	-	-	38.1	43.4	18.4	0.0	-	-	23.2	52.4	24.4	0.0	-	-	-
Total %	8.7	5.8	7.4	0.0	-	21.8	8.7	7.4	5.5	0.0	-	21.6	10.9	12.4	5.2	0.0	-	28.5	6.5	14.7	6.8	0.0	-	28.0	-
Motorcycles	0	2	0	0	-	2	2	0	1	0	-	3	5	3	0	0	-	8	5	2	0	0	-	7	20
% Motorcycles	0.0	0.2	0.0	0.0	-	0.1	0.1	0.0	0.1	0.0	-	0.1	0.3	0.1	0.0	0.0	-	0.2	0.5	0.1	0.0	0.0	-	0.1	0.1
Cars & Light Goods	1388	924	1181	1	-	3494	1470	1194	918	3	-	3585	1796	2069	871	2	-	4738	1091	2434	1045	2	-	4572	16389
% Cars & Light Goods	94.7	94.8	94.3	100.0	-	94.6	99.3	95.8	98.6	100.0	-	98.0	97.7	98.7	98.1	100.0	-	98.2	99.1	97.9	90.3	100.0	-	96.4	96.8
Buses	71	41	52	0	-	164	1	42	7	0	-	50	24	11	2	0	-	37	2	16	100	0	-	118	369
% Buses	4.8	4.2	4.2	0.0	-	4.4	0.1	3.4	0.8	0.0	-	1.4	1.3	0.5	0.2	0.0	-	0.8	0.2	0.6	8.6	0.0	-	2.5	2.2
Single-Unit Trucks	6	7	9	0	-	22	7	8	5	0	-	20	10	7	12	0	-	29	3	23	3	0	-	29	100
% Single-Unit Trucks	0.4	0.7	0.7	0.0	-	0.6	0.5	0.6	0.5	0.0	-	0.5	0.5	0.3	1.4	0.0	-	0.6	0.3	0.9	0.3	0.0	-	0.6	0.6
Articulated Trucks	1	1	11	0	-	13	0	0	0	0	-	0	3	4	2	0	-	9	0	9	9	0	-	18	40
% Articulated Trucks	0.1	0.1	0.9	0.0	-	0.4	0.0	0.0	0.0	0.0	-	0.0	0.2	0.2	0.2	0.0	-	0.2	0.0	0.4	0.8	0.0	-	0.4	0.2
Bicycles on Road	0	0	0	0	-	0	0	2	0	0	-	2	1	2	1	0	-	4	0	1	0	0	-	1	7
% Bicycles on Road	0.0	0.0	0.0	0.0	-	0.0	0.0	0.2	0.0	0.0	-	0.1	0.1	0.1	0.1	0.0	-	0.1	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	16	-	-	-	-	-	5	-	-	-	-	-	2	-	-
% Bicycles on Crosswalk	-	-	-	-	2.1	-	-	-	-	-	21.3	-	-	-	-	-	9.8	-	-	-	-	-	4.9	-	-
Pedestrians	-	-	-	-	47	-	-	-	-	-	59	-	-	-	-	-	46	-	-	-	-	-	39	-	-
% Pedestrians	-	-	-	-	97.9	-	-	-	-	-	78.7	-	-	-	-	-	90.2	-	-	-	-	-	95.1	-	-

Paradigm Transportation Solutions Limited
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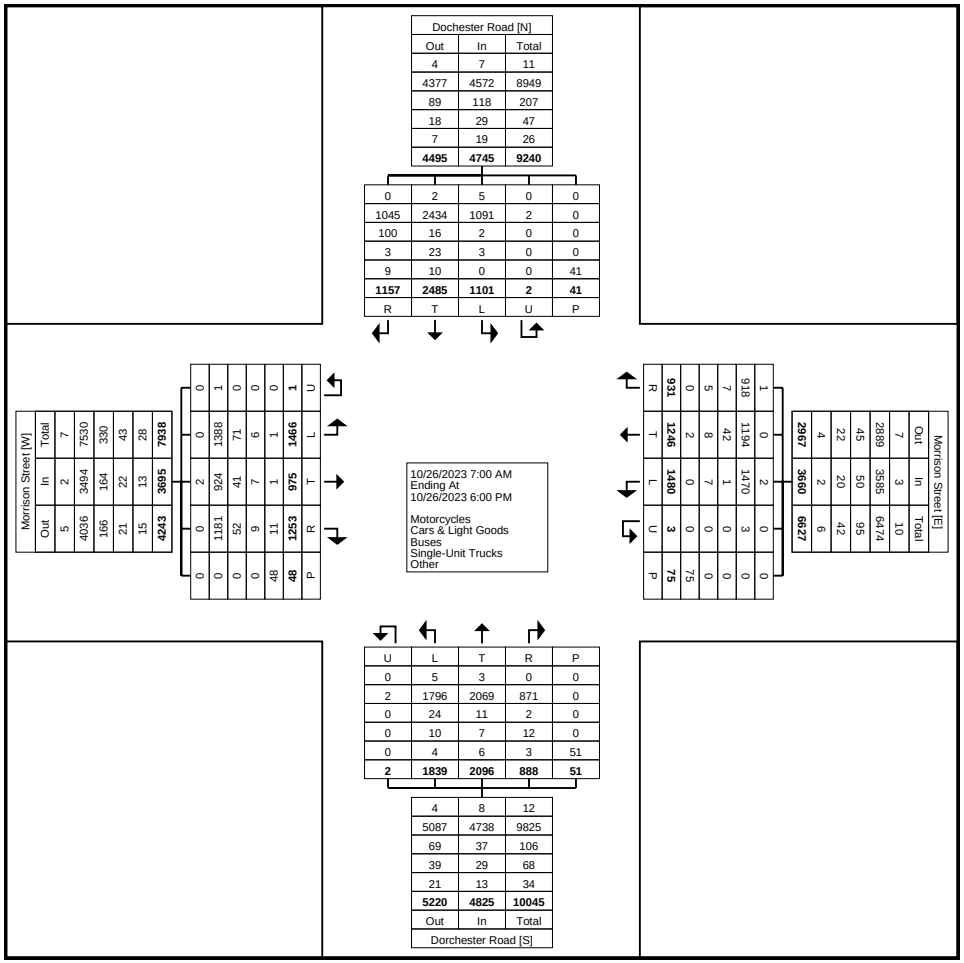
Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Dorchester Road & Morrison Street
Site Code: 230334
Start Date: 10/26/2023



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Dorchester Road & Morrison Street
Site Code: 230334
Start Date: 10/26/2023

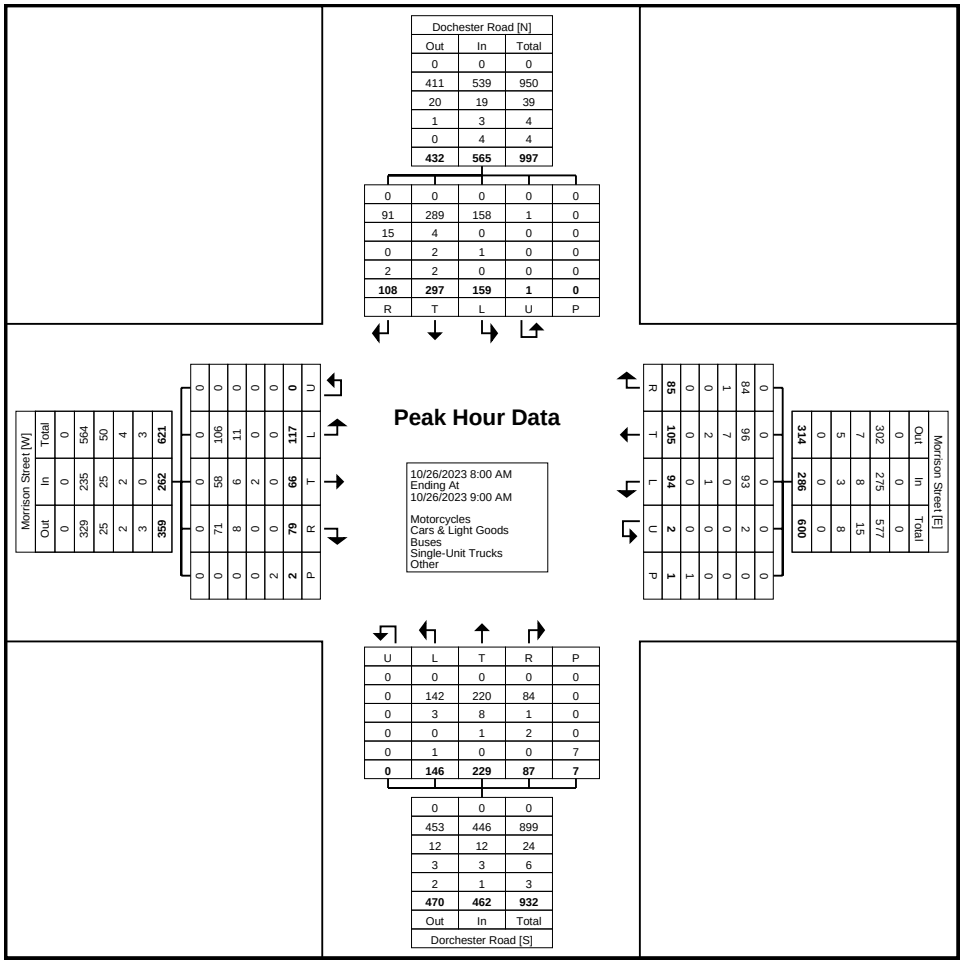
Turning Movement Peak Hour Data (8:00 AM)

Start Time	Morrison Street Eastbound						Morrison Street Westbound						Dorchester Road Northbound						Dochester Road Southbound						
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Int. Total
8:00 AM	26	8	15	0	0	49	19	15	22	0	0	56	32	50	16	0	1	98	26	65	20	0	0	111	314
8:15 AM	33	17	21	0	0	71	19	23	22	1	1	65	35	69	15	0	0	119	45	65	17	0	0	127	382
8:30 AM	34	14	24	0	2	72	29	37	19	0	0	85	38	57	21	0	3	116	41	84	24	0	0	149	422
8:45 AM	24	27	19	0	0	70	27	30	22	1	0	80	41	53	35	0	3	129	47	83	47	1	0	178	457
Total	117	66	79	0	2	262	94	105	85	2	1	286	146	229	87	0	7	462	159	297	108	1	0	565	1575
Approach %	44.7	25.2	30.2	0.0	-	-	32.9	36.7	29.7	0.7	-	-	31.6	49.6	18.8	0.0	-	-	28.1	52.6	19.1	0.2	-	-	-
Total %	7.4	4.2	5.0	0.0	-	16.6	6.0	6.7	5.4	0.1	-	18.2	9.3	14.5	5.5	0.0	-	29.3	10.1	18.9	6.9	0.1	-	35.9	-
PHF	0.860	0.611	0.823	0.000	-	0.910	0.810	0.709	0.966	0.500	-	0.841	0.890	0.830	0.621	0.000	-	0.895	0.846	0.884	0.574	0.250	-	0.794	0.862
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Cars & Light Goods	106	58	71	0	-	235	93	96	84	2	-	275	142	220	84	0	-	446	158	289	91	1	-	539	1495
% Cars & Light Goods	90.6	87.9	89.9	-	-	89.7	98.9	91.4	98.8	100.0	-	96.2	97.3	96.1	96.6	-	-	96.5	99.4	97.3	84.3	100.0	-	95.4	94.9
Buses	11	6	8	0	-	25	0	7	1	0	-	8	3	8	1	0	-	12	0	4	15	0	-	19	64
% Buses	9.4	9.1	10.1	-	-	9.5	0.0	6.7	1.2	0.0	-	2.8	2.1	3.5	1.1	-	-	2.6	0.0	1.3	13.9	0.0	-	3.4	4.1
Single-Unit Trucks	0	2	0	0	-	2	1	2	0	0	-	3	0	1	2	0	-	3	1	2	0	0	-	3	11
% Single-Unit Trucks	0.0	3.0	0.0	-	-	0.8	1.1	1.9	0.0	0.0	-	1.0	0.0	0.4	2.3	-	-	0.6	0.6	0.7	0.0	0.0	-	0.5	0.7
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	1	0	2	2	0	-	4	5
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.7	0.0	0.0	-	-	0.2	0.0	0.7	1.9	0.0	-	0.7	0.3
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	28.6	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	2	-	-	-	-	-	1	-	-	-	-	-	5	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	71.4	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Dorchester Road & Morrison Street
Site Code: 230334
Start Date: 10/26/2023



Turning Movement Peak Hour Data Plot (8:00 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Dorchester Road & Morrison Street
Site Code: 230334
Start Date: 10/26/2023

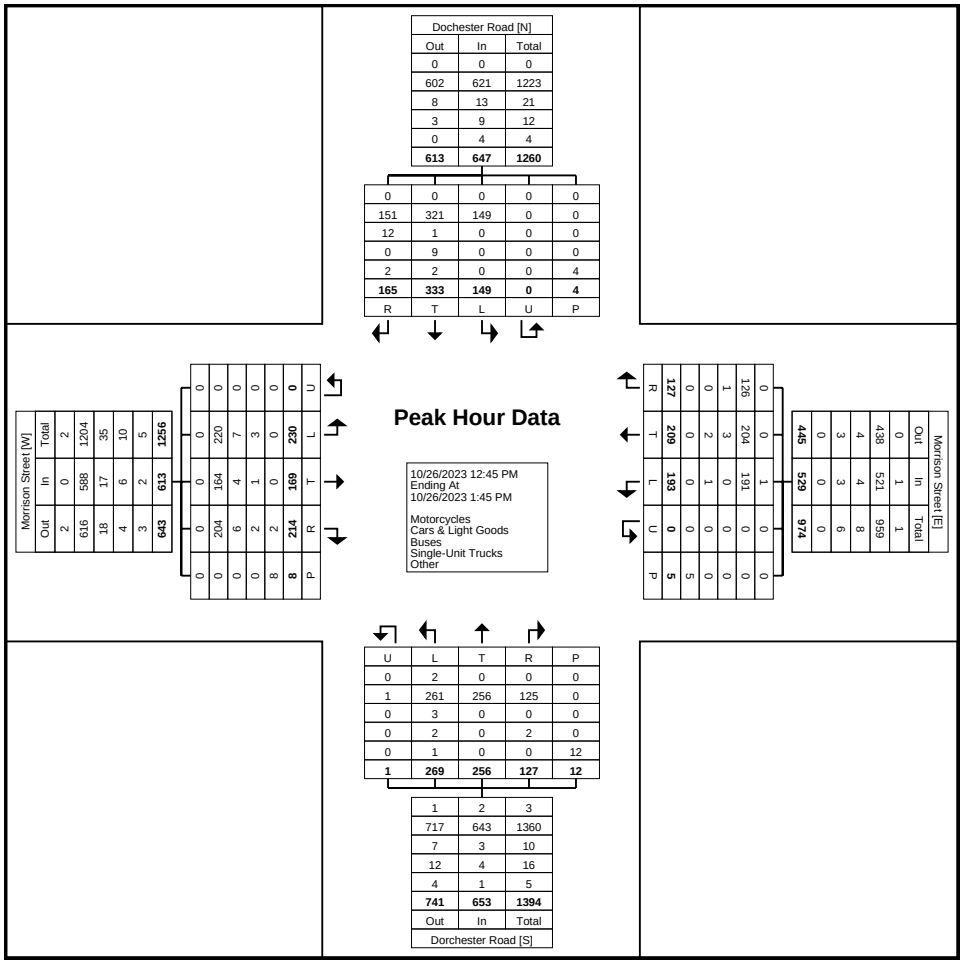
Turning Movement Peak Hour Data (12:45 PM)

Start Time	Morrison Street Eastbound						Morrison Street Westbound						Dorchester Road Northbound						Dochester Road Southbound						
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Int. Total
12:45 PM	52	33	56	0	3	141	43	52	36	0	2	131	61	62	25	0	6	148	34	90	59	0	2	183	603
1:00 PM	62	47	57	0	2	166	45	55	37	0	1	137	78	77	32	0	2	187	39	70	33	0	0	142	632
1:15 PM	60	35	53	0	0	148	67	50	22	0	0	139	68	48	30	1	0	147	38	95	41	0	1	174	608
1:30 PM	56	54	48	0	3	158	38	52	32	0	2	122	62	69	40	0	4	171	38	78	32	0	1	148	599
Total	230	169	214	0	8	613	193	209	127	0	5	529	269	256	127	1	12	653	149	333	165	0	4	647	2442
Approach %	37.5	27.6	34.9	0.0	-	-	36.5	39.5	24.0	0.0	-	-	41.2	39.2	19.4	0.2	-	-	23.0	51.5	25.5	0.0	-	-	-
Total %	9.4	6.9	8.8	0.0	-	25.1	7.9	8.6	5.2	0.0	-	21.7	11.0	10.5	5.2	0.0	-	26.7	6.1	13.6	6.8	0.0	-	26.5	-
PHF	0.927	0.782	0.939	0.000	-	0.923	0.720	0.950	0.858	0.000	-	0.951	0.862	0.831	0.794	0.250	-	0.873	0.955	0.876	0.699	0.000	-	0.884	0.966
Motorcycles	0	0	0	0	-	0	1	0	0	0	-	1	2	0	0	0	-	2	0	0	0	0	-	0	3
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.5	0.0	0.0	-	-	0.2	0.7	0.0	0.0	0.0	-	0.3	0.0	0.0	0.0	-	-	0.0	0.1
Cars & Light Goods	220	164	204	0	-	588	191	204	126	0	-	521	261	256	125	1	-	643	149	321	151	0	-	621	2373
% Cars & Light Goods	95.7	97.0	95.3	-	-	95.9	99.0	97.6	99.2	-	-	98.5	97.0	100.0	98.4	100.0	-	98.5	100.0	96.4	91.5	-	-	96.0	97.2
Buses	7	4	6	0	-	17	0	3	1	0	-	4	3	0	0	0	-	3	0	1	12	0	-	13	37
% Buses	3.0	2.4	2.8	-	-	2.8	0.0	1.4	0.8	-	-	0.8	1.1	0.0	0.0	0.0	-	0.5	0.0	0.3	7.3	-	-	2.0	1.5
Single-Unit Trucks	3	1	2	0	-	6	1	2	0	0	-	3	2	0	2	0	-	4	0	9	0	0	-	9	22
% Single-Unit Trucks	1.3	0.6	0.9	-	-	1.0	0.5	1.0	0.0	-	-	0.6	0.7	0.0	1.6	0.0	-	0.6	0.0	2.7	0.0	-	-	1.4	0.9
Articulated Trucks	0	0	2	0	-	2	0	0	0	0	-	0	1	0	0	0	-	1	0	1	2	0	-	3	6
% Articulated Trucks	0.0	0.0	0.9	-	-	0.3	0.0	0.0	0.0	-	-	0.0	0.4	0.0	0.0	0.0	-	0.2	0.0	0.3	1.2	-	-	0.5	0.2
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	1
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.3	0.0	-	-	0.2	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	8	-	-	-	-	-	5	-	-	-	-	-	12	-	-	-	-	-	4	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Dorchester Road & Morrison Street
Site Code: 230334
Start Date: 10/26/2023



Turning Movement Peak Hour Data Plot (12:45 PM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Dorchester Road & Morrison Street
Site Code: 230334
Start Date: 10/26/2023

Turning Movement Peak Hour Data (3:15 PM)

Start Time	Morrison Street Eastbound						Morrison Street Westbound						Dorchester Road Northbound						Dochester Road Southbound						
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Int. Total
3:15 PM	55	35	45	0	2	135	65	48	38	1	3	152	59	83	25	0	0	167	59	98	42	0	0	199	653
3:30 PM	53	31	68	0	0	152	50	41	43	0	7	134	67	77	41	0	0	185	35	87	32	0	0	154	625
3:45 PM	50	35	70	0	3	155	53	40	36	0	5	129	62	89	37	0	3	188	33	80	50	0	2	163	635
4:00 PM	62	34	42	0	2	138	94	48	36	0	2	178	72	107	34	0	4	213	28	103	41	0	4	172	701
Total	220	135	225	0	7	580	262	177	153	1	17	593	260	356	137	0	7	753	155	368	165	0	6	688	2614
Approach %	37.9	23.3	38.8	0.0	-	-	44.2	29.8	25.8	0.2	-	-	34.5	47.3	18.2	0.0	-	-	22.5	53.5	24.0	0.0	-	-	-
Total %	8.4	5.2	8.6	0.0	-	22.2	10.0	6.8	5.9	0.0	-	22.7	9.9	13.6	5.2	0.0	-	28.8	5.9	14.1	6.3	0.0	-	26.3	-
PHF	0.887	0.964	0.804	0.000	-	0.935	0.697	0.922	0.890	0.250	-	0.833	0.903	0.832	0.835	0.000	-	0.884	0.657	0.893	0.825	0.000	-	0.864	0.932
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	1	1	1	0	0	-	2	3
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.4	0.0	0.0	-	-	0.1	0.6	0.3	0.0	-	-	0.3	0.1
Cars & Light Goods	211	128	216	0	-	555	259	171	151	1	-	582	251	353	135	0	-	739	154	360	150	0	-	664	2540
% Cars & Light Goods	95.9	94.8	96.0	-	-	95.7	98.9	96.6	98.7	100.0	-	98.1	96.5	99.2	98.5	-	-	98.1	99.4	97.8	90.9	-	-	96.5	97.2
Buses	9	6	7	0	-	22	0	6	0	0	-	6	5	1	1	0	-	7	0	3	14	0	-	17	52
% Buses	4.1	4.4	3.1	-	-	3.8	0.0	3.4	0.0	0.0	-	1.0	1.9	0.3	0.7	-	-	0.9	0.0	0.8	8.5	-	-	2.5	2.0
Single-Unit Trucks	0	1	2	0	-	3	3	0	2	0	-	5	2	0	1	0	-	3	0	3	1	0	-	4	15
% Single-Unit Trucks	0.0	0.7	0.9	-	-	0.5	1.1	0.0	1.3	0.0	-	0.8	0.8	0.0	0.7	-	-	0.4	0.0	0.8	0.6	-	-	0.6	0.6
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	1	1	0	0	-	2	0	1	0	0	-	1	3
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.4	0.3	0.0	-	-	0.3	0.0	0.3	0.0	-	-	0.1	0.1
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.3	0.0	-	-	0.1	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	6	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	14.3	-	-	-	-	-	35.3	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	6	-	-	-	-	-	11	-	-	-	-	-	7	-	-	-	-	-	6	-	-
% Pedestrians	-	-	-	-	85.7	-	-	-	-	-	64.7	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

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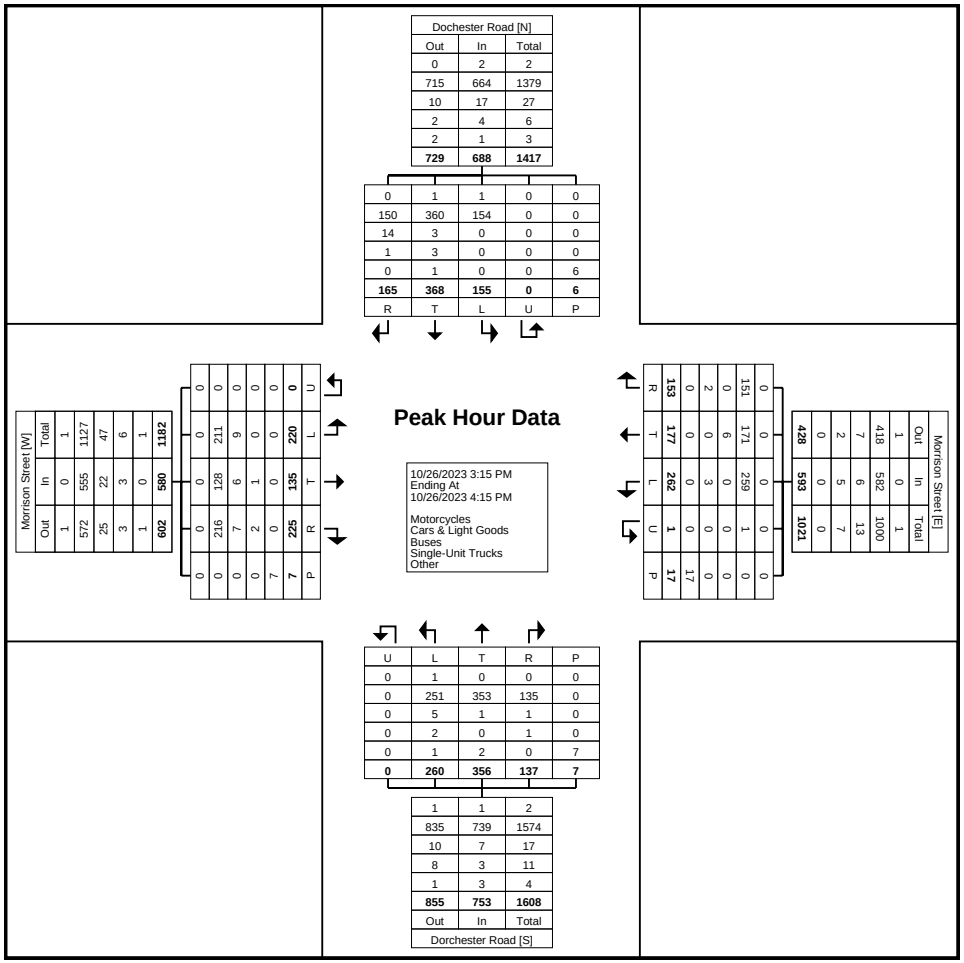
Start Date: 10/26/2023



Turning Movement Peak Hour Data Plot (3:15 PM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Dorchester Road & Morrison Street - Saturday
Site Code: 230334
Start Date: 10/28/2023

Turning Movement Data

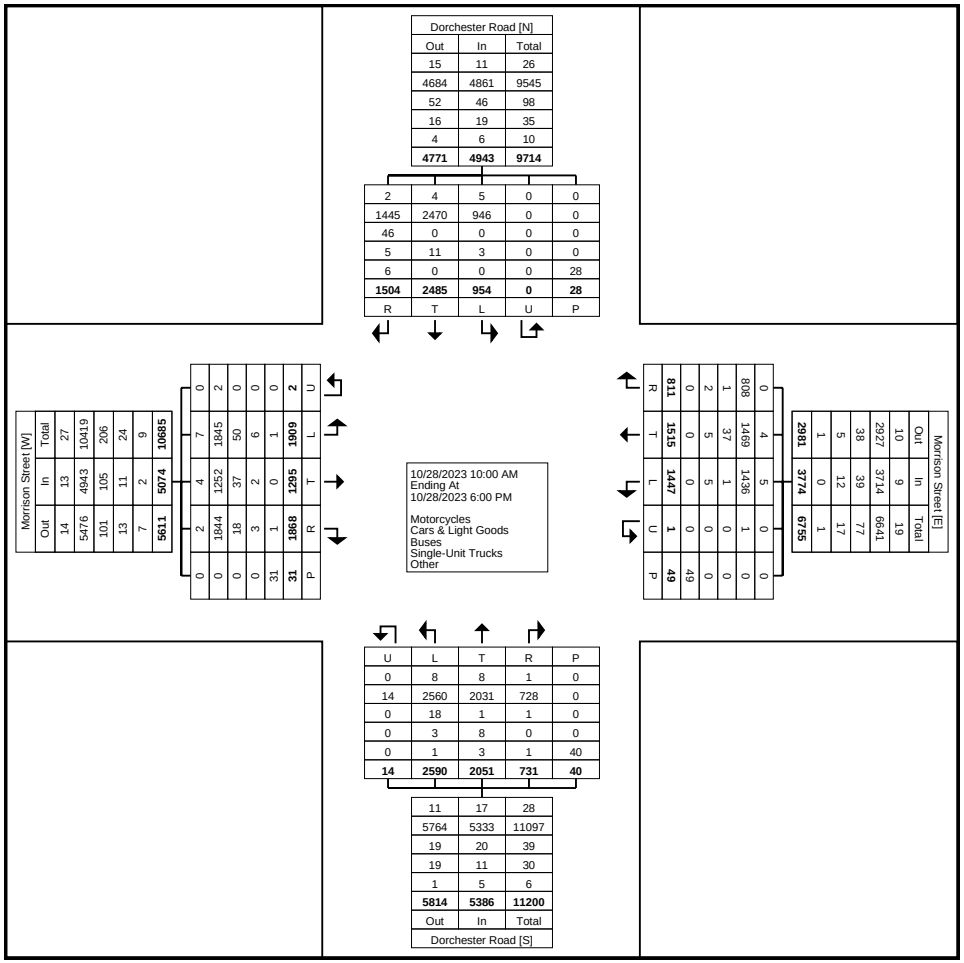
Start Time	Morrison Street Eastbound						Morrison Street Westbound						Dorchester Road Northbound						Dorchester Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
10:00 AM	51	15	40	0	1	106	41	52	13	0	3	106	94	55	25	1	3	175	28	61	44	0	0	133	520
10:15 AM	47	38	43	0	0	128	41	40	20	0	1	101	96	43	23	1	2	163	20	56	46	0	1	122	514
10:30 AM	58	36	59	0	0	153	53	45	19	0	0	117	88	52	26	0	2	166	20	59	48	0	1	127	563
10:45 AM	53	36	41	0	0	130	45	47	22	0	1	114	87	50	20	1	0	158	35	76	67	0	0	178	580
Hourly Total	209	125	183	0	1	517	180	184	74	0	5	438	365	200	94	3	7	662	103	252	205	0	2	560	2177
11:00 AM	60	49	57	0	0	166	49	38	24	0	1	111	82	58	34	0	0	174	32	75	43	0	0	150	601
11:15 AM	61	41	57	1	0	160	46	72	21	0	0	139	93	62	26	0	0	181	36	86	36	0	0	158	638
11:30 AM	68	49	51	0	0	168	44	54	31	0	1	129	101	57	19	0	0	177	31	70	53	0	2	154	628
11:45 AM	63	44	61	0	0	168	38	67	21	0	2	126	96	66	27	1	0	190	32	109	54	0	0	195	679
Hourly Total	252	183	226	1	0	662	177	231	97	0	4	505	372	243	106	1	0	722	131	340	186	0	2	657	2546
12:00 PM	63	33	71	0	0	167	46	65	33	0	2	144	94	58	16	2	1	170	38	100	48	0	3	186	667
12:15 PM	61	54	80	0	0	195	58	56	24	0	0	138	104	58	20	0	2	182	34	74	60	0	0	168	683
12:30 PM	59	33	64	0	0	156	52	51	34	0	0	137	87	62	19	0	0	168	32	98	54	0	0	184	645
12:45 PM	73	59	81	0	0	213	40	67	28	0	2	135	100	57	30	0	0	187	37	83	47	0	1	167	702
Hourly Total	256	179	296	0	0	731	196	239	119	0	4	554	385	235	85	2	3	707	141	355	209	0	4	705	2697
1:00 PM	58	52	71	0	0	181	54	58	27	0	0	139	99	77	22	1	2	199	36	92	46	0	0	174	693
1:15 PM	61	45	55	0	0	161	61	51	26	0	1	138	84	73	19	0	0	176	39	81	56	0	4	176	651
1:30 PM	63	39	87	0	0	189	47	47	26	0	3	120	86	55	20	0	1	161	22	80	41	0	3	143	613
1:45 PM	67	33	65	0	2	165	56	52	36	0	3	144	100	86	32	0	4	218	38	75	50	0	0	163	690
Hourly Total	249	169	278	0	2	696	218	208	115	0	7	541	369	291	93	1	7	754	135	328	193	0	7	656	2647
2:00 PM	80	52	57	0	2	189	49	66	27	0	3	142	92	98	18	0	0	208	29	74	65	0	2	168	707
2:15 PM	67	55	73	0	0	195	40	42	22	0	3	104	98	72	27	0	2	197	42	97	58	0	2	197	693
2:30 PM	70	48	62	0	3	180	52	67	33	0	3	152	72	84	24	0	3	180	30	77	54	0	2	161	673
2:45 PM	68	54	75	0	0	197	42	50	28	0	4	120	68	72	33	1	7	174	27	73	61	0	0	161	652
Hourly Total	285	209	267	0	5	761	183	225	110	0	13	518	330	326	102	1	12	759	128	321	238	0	6	687	2725
3:00 PM	59	46	65	0	6	170	48	60	34	0	1	142	68	46	15	0	1	129	33	79	40	0	4	152	593
3:15 PM	62	22	63	0	1	147	37	39	34	0	1	110	89	75	34	0	1	198	22	97	52	0	0	171	626
3:30 PM	75	45	57	0	2	177	50	43	29	0	1	122	75	58	21	1	0	155	29	64	40	0	0	133	587
3:45 PM	59	38	51	0	0	148	40	39	20	0	0	99	77	81	16	0	0	174	20	73	47	0	0	140	561
Hourly Total	255	151	236	0	9	642	175	181	117	0	3	473	309	260	86	1	2	656	104	313	179	0	4	596	2367
4:00 PM	71	36	53	1	1	161	51	40	22	0	2	113	70	61	18	1	1	150	29	69	47	0	0	145	569
4:15 PM	68	31	64	0	1	163	52	27	39	0	4	118	60	67	23	0	3	150	32	77	49	0	0	158	589
4:30 PM	59	41	41	0	3	141	32	40	21	0	3	93	75	66	32	0	2	173	26	79	43	0	0	148	555
4:45 PM	57	38	42	0	6	137	41	36	21	0	1	98	55	58	21	0	2	134	24	84	32	0	2	140	509
Hourly Total	255	146	200	1	11	602	176	143	103	0	10	422	260	252	94	1	8	607	111	309	171	0	2	591	2222

5:00 PM	45	29	52	0	0	126	31	22	20	0	2	73	42	64	22	1	0	129	26	58	26	0	1	110	438
5:15 PM	36	43	51	0	1	130	30	34	23	1	0	88	57	61	15	1	0	134	25	73	39	0	0	137	489
5:30 PM	36	30	37	0	0	103	48	29	13	0	0	90	58	53	18	1	0	130	28	74	38	0	0	140	463
5:45 PM	31	31	42	0	2	104	33	19	20	0	1	72	43	66	16	1	1	126	22	62	20	0	0	104	406
Hourly Total	148	133	182	0	3	463	142	104	76	1	3	323	200	244	71	4	1	519	101	267	123	0	1	491	1796
Grand Total	1909	1295	1868	2	31	5074	1447	1515	811	1	49	3774	2590	2051	731	14	40	5386	954	2485	1504	0	28	4943	19177
Approach %	37.6	25.5	36.8	0.0	-	-	38.3	40.1	21.5	0.0	-	-	48.1	38.1	13.6	0.3	-	-	19.3	50.3	30.4	0.0	-	-	-
Total %	10.0	6.8	9.7	0.0	-	26.5	7.5	7.9	4.2	0.0	-	19.7	13.5	10.7	3.8	0.1	-	28.1	5.0	13.0	7.8	0.0	-	25.8	-
Motorcycles	7	4	2	0	-	13	5	4	0	0	-	9	8	8	1	0	-	17	5	4	2	0	-	11	50
% Motorcycles	0.4	0.3	0.1	0.0	-	0.3	0.3	0.3	0.0	0.0	-	0.2	0.3	0.4	0.1	0.0	-	0.3	0.5	0.2	0.1	-	-	0.2	0.3
Cars & Light Goods	1845	1252	1844	2	-	4943	1436	1469	808	1	-	3714	2560	2031	728	14	-	5333	946	2470	1445	0	-	4861	18851
% Cars & Light Goods	96.6	96.7	98.7	100.0	-	97.4	99.2	97.0	99.6	100.0	-	98.4	98.8	99.0	99.6	100.0	-	99.0	99.2	99.4	96.1	-	-	98.3	98.3
Buses	50	37	18	0	-	105	1	37	1	0	-	39	18	1	1	0	-	20	0	0	46	0	-	46	210
% Buses	2.6	2.9	1.0	0.0	-	2.1	0.1	2.4	0.1	0.0	-	1.0	0.7	0.0	0.1	0.0	-	0.4	0.0	0.0	3.1	-	-	0.9	1.1
Single-Unit Trucks	6	2	3	0	-	11	5	5	2	0	-	12	3	8	0	0	-	11	3	11	5	0	-	19	53
% Single-Unit Trucks	0.3	0.2	0.2	0.0	-	0.2	0.3	0.3	0.2	0.0	-	0.3	0.1	0.4	0.0	0.0	-	0.2	0.3	0.4	0.3	-	-	0.4	0.3
Articulated Trucks	1	0	1	0	-	2	0	0	0	0	-	0	1	2	1	0	-	4	0	0	4	0	-	4	10
% Articulated Trucks	0.1	0.0	0.1	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.1	0.1	0.0	-	0.1	0.0	0.0	0.3	-	-	0.1	0.1
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	0	2	0	-	2	3
% Bicycles on Road	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.1	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	2	-	-	-	-	-	11	-	-	-	-	-	6	-	-	-	-	-	4	-	-
% Bicycles on Crosswalk	-	-	-	-	6.5	-	-	-	-	-	22.4	-	-	-	-	-	15.0	-	-	-	-	-	14.3	-	-
Pedestrians	-	-	-	-	29	-	-	-	-	-	38	-	-	-	-	-	34	-	-	-	-	-	24	-	-
% Pedestrians	-	-	-	-	93.5	-	-	-	-	-	77.6	-	-	-	-	-	85.0	-	-	-	-	-	85.7	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Dorchester Road & Morrison Street - Saturday
Site Code: 230334
Start Date: 10/28/2023



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Dorchester Road & Morrison Street - Saturday
Site Code: 230334
Start Date: 10/28/2023

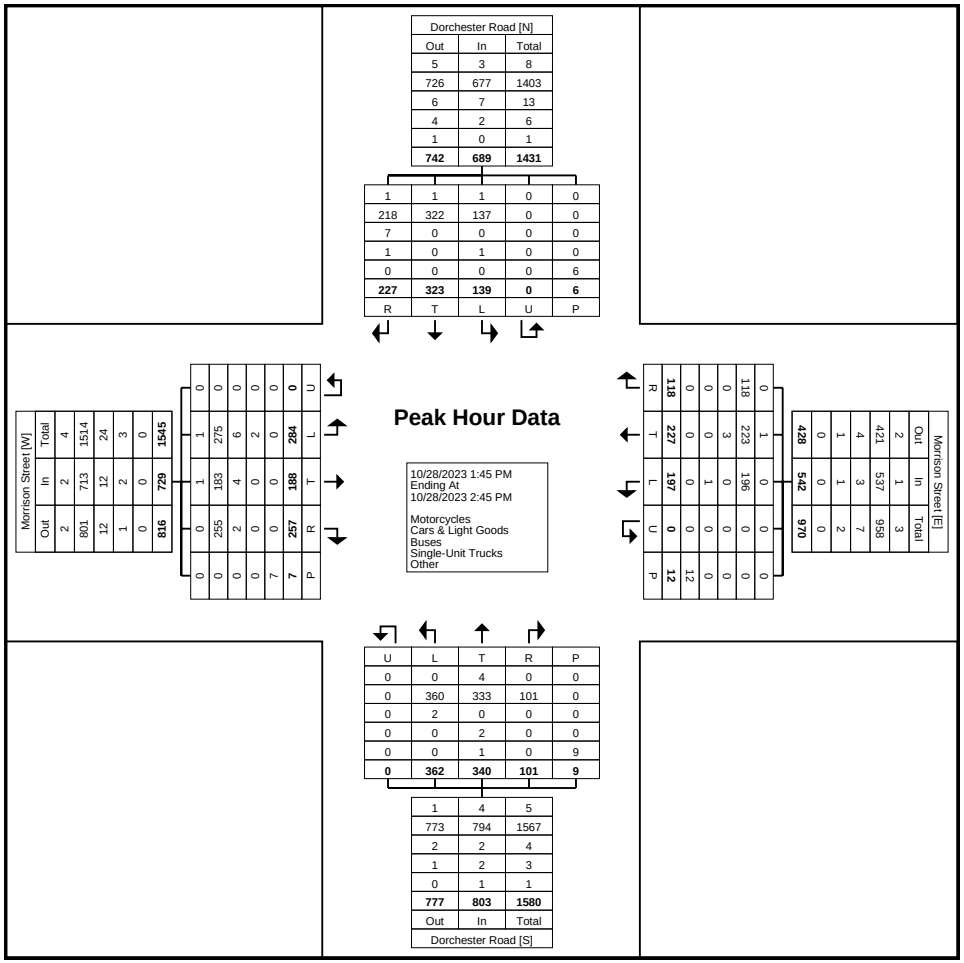
Turning Movement Peak Hour Data (1:45 PM)

Start Time	Morrison Street Eastbound						Morrison Street Westbound						Dorchester Road Northbound						Dorchester Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
1:45 PM	67	33	65	0	2	165	56	52	36	0	3	144	100	86	32	0	4	218	38	75	50	0	0	163	690
2:00 PM	80	52	57	0	2	189	49	66	27	0	3	142	92	98	18	0	0	208	29	74	65	0	2	168	707
2:15 PM	67	55	73	0	0	195	40	42	22	0	3	104	98	72	27	0	2	197	42	97	58	0	2	197	693
2:30 PM	70	48	62	0	3	180	52	67	33	0	3	152	72	84	24	0	3	180	30	77	54	0	2	161	673
Total	284	188	257	0	7	729	197	227	118	0	12	542	362	340	101	0	9	803	139	323	227	0	6	689	2763
Approach %	39.0	25.8	35.3	0.0	-	-	36.3	41.9	21.8	0.0	-	-	45.1	42.3	12.6	0.0	-	-	20.2	46.9	32.9	0.0	-	-	-
Total %	10.3	6.8	9.3	0.0	-	26.4	7.1	8.2	4.3	0.0	-	19.6	13.1	12.3	3.7	0.0	-	29.1	5.0	11.7	8.2	0.0	-	24.9	-
PHF	0.888	0.855	0.880	0.000	-	0.935	0.879	0.847	0.819	0.000	-	0.891	0.905	0.867	0.789	0.000	-	0.921	0.827	0.832	0.873	0.000	-	0.874	0.977
Motorcycles	1	1	0	0	-	2	0	1	0	0	-	1	0	4	0	0	-	4	1	1	1	0	-	3	10
% Motorcycles	0.4	0.5	0.0	-	-	0.3	0.0	0.4	0.0	-	-	0.2	0.0	1.2	0.0	-	-	0.5	0.7	0.3	0.4	-	-	0.4	0.4
Cars & Light Goods	275	183	255	0	-	713	196	223	118	0	-	537	360	333	101	0	-	794	137	322	218	0	-	677	2721
% Cars & Light Goods	96.8	97.3	99.2	-	-	97.8	99.5	98.2	100.0	-	-	99.1	99.4	97.9	100.0	-	-	98.9	98.6	99.7	96.0	-	-	98.3	98.5
Buses	6	4	2	0	-	12	0	3	0	0	-	3	2	0	0	0	-	2	0	0	7	0	-	7	24
% Buses	2.1	2.1	0.8	-	-	1.6	0.0	1.3	0.0	-	-	0.6	0.6	0.0	0.0	-	-	0.2	0.0	0.0	3.1	-	-	1.0	0.9
Single-Unit Trucks	2	0	0	0	-	2	1	0	0	0	-	1	0	2	0	0	-	2	1	0	1	0	-	2	7
% Single-Unit Trucks	0.7	0.0	0.0	-	-	0.3	0.5	0.0	0.0	-	-	0.2	0.0	0.6	0.0	-	-	0.2	0.7	0.0	0.4	-	-	0.3	0.3
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	1
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.3	0.0	-	-	0.1	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	5	-	-	-	-	-	3	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	14.3	-	-	-	-	-	41.7	-	-	-	-	-	33.3	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	6	-	-	-	-	-	7	-	-	-	-	-	6	-	-	-	-	-	6	-	-
% Pedestrians	-	-	-	-	85.7	-	-	-	-	-	58.3	-	-	-	-	-	66.7	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Dorchester Road & Morrison Street - Saturday
Site Code: 230334
Start Date: 10/28/2023



Turning Movement Peak Hour Data Plot (1:45 PM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Dorchester Road & Dawson Street
Site Code: 230334
Start Date: 10/26/2023

Turning Movement Data

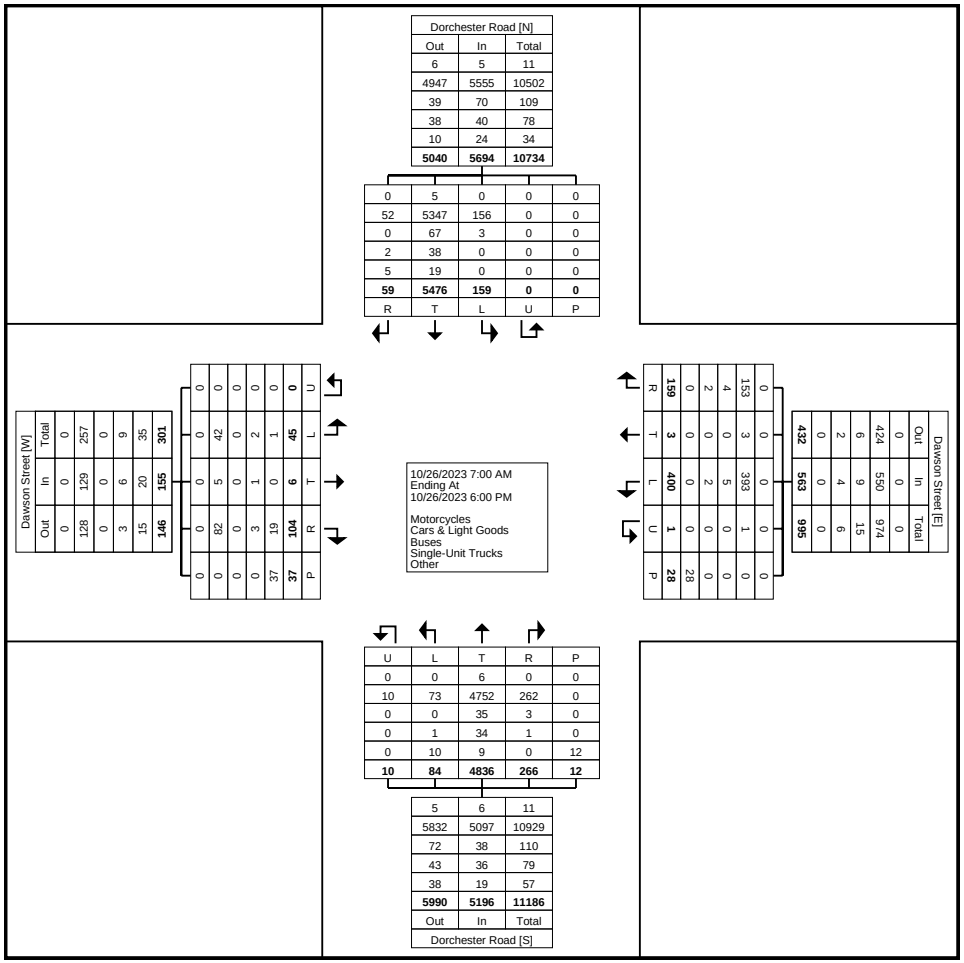
Start Time	Dawson Street Eastbound						Dawson Street Westbound						Dorchester Road Northbound						Dorchester Road Southbound						
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Int. Total
7:00 AM	1	0	2	0	0	3	8	0	1	0	0	9	8	48	1	0	0	57	1	52	2	0	0	55	124
7:15 AM	0	0	1	0	0	1	9	1	1	0	1	11	8	55	1	0	0	64	0	58	4	0	0	62	138
7:30 AM	1	0	11	0	0	12	12	0	2	0	1	14	2	64	1	0	0	67	1	79	1	0	0	81	174
7:45 AM	0	0	3	0	0	3	12	0	2	0	0	14	0	109	3	0	0	112	0	86	3	0	0	89	218
Hourly Total	2	0	17	0	0	19	41	1	6	0	2	48	18	276	6	0	0	300	2	275	10	0	0	287	654
8:00 AM	0	0	1	0	1	1	13	1	7	0	0	21	6	95	5	0	0	106	5	103	4	0	0	112	240
8:15 AM	0	0	0	0	0	0	13	0	4	1	1	18	7	125	3	1	0	136	2	115	2	0	0	119	273
8:30 AM	1	0	0	0	0	1	15	0	2	0	1	17	5	138	3	0	0	146	2	142	1	0	0	145	309
8:45 AM	0	0	4	0	0	4	12	0	8	0	1	20	3	140	8	0	0	151	0	125	1	0	0	126	301
Hourly Total	1	0	5	0	1	6	53	1	21	1	3	76	21	498	19	1	0	539	9	485	8	0	0	502	1123
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	0	1	3	0	1	4	13	0	2	0	1	15	2	125	3	0	0	130	2	173	2	0	0	177	326
11:15 AM	8	0	5	0	0	13	12	0	3	0	1	15	4	151	8	1	0	164	2	176	2	0	0	180	372
11:30 AM	5	1	3	0	0	9	11	0	4	0	0	15	5	169	5	0	0	179	3	177	3	0	0	183	386
11:45 AM	3	0	2	0	0	5	9	0	7	0	0	16	1	158	7	0	0	166	4	168	1	0	0	173	360
Hourly Total	16	2	13	0	1	31	45	0	16	0	2	61	12	603	23	1	0	639	11	694	8	0	0	713	1444
12:00 PM	1	0	3	0	3	4	13	0	5	0	0	18	2	175	9	0	0	186	11	173	5	0	0	189	397
12:15 PM	3	0	1	0	1	4	13	0	7	0	1	20	1	152	6	1	0	160	7	192	1	0	0	200	384
12:30 PM	0	0	3	0	0	3	11	0	3	0	3	14	1	146	15	1	0	163	8	195	5	0	0	208	388
12:45 PM	0	0	1	0	2	1	14	0	9	0	2	23	2	165	13	1	1	181	4	180	3	0	0	187	392
Hourly Total	4	0	8	0	6	12	51	0	24	0	6	75	6	638	43	3	1	690	30	740	14	0	0	784	1561
1:00 PM	1	0	1	0	2	2	8	0	7	0	3	15	0	168	4	0	1	172	5	188	2	0	0	195	384
1:15 PM	0	1	3	0	1	4	20	0	5	0	0	25	1	158	9	0	0	168	8	213	0	0	0	221	418
1:30 PM	0	0	0	0	2	0	11	0	8	0	0	19	2	151	12	0	0	165	6	182	0	0	0	188	372
1:45 PM	1	0	0	0	2	1	18	0	7	0	1	25	3	166	5	0	1	174	5	179	4	0	0	188	388
Hourly Total	2	1	4	0	7	7	57	0	27	0	4	84	6	643	30	0	2	679	24	762	6	0	0	792	1562
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	2	0	4	0	1	6	19	0	5	0	3	24	1	178	11	1	0	191	3	221	2	0	0	226	447
3:15 PM	0	0	3	0	2	3	9	0	7	0	2	16	10	175	18	0	2	203	6	200	4	0	0	210	432
3:30 PM	4	0	17	0	2	21	12	0	1	0	2	13	6	179	15	0	1	200	10	215	1	0	0	226	460
3:45 PM	7	0	9	0	0	16	11	1	11	0	0	23	0	190	12	0	0	202	10	205	4	0	0	219	460
Hourly Total	13	0	33	0	5	46	51	1	24	0	7	76	17	722	56	1	3	796	29	841	11	0	0	881	1799
4:00 PM	0	0	2	0	3	2	16	0	7	0	1	23	0	207	9	0	1	216	6	226	0	0	0	232	473
4:15 PM	0	0	4	0	1	4	12	0	5	0	0	17	0	204	10	2	0	216	9	214	0	0	0	223	460
4:30 PM	0	0	5	0	4	5	9	0	5	0	0	14	0	171	10	1	1	182	6	189	1	0	0	196	397

4:45 PM	3	0	4	0	4	7	19	0	6	0	0	25	2	205	11	0	3	218	14	188	0	0	0	202	452
Hourly Total	3	0	15	0	12	18	56	0	23	0	1	79	2	787	40	3	5	832	35	817	1	0	0	853	1782
5:00 PM	2	0	1	0	2	3	12	0	4	0	2	16	0	187	10	0	1	197	1	241	0	0	0	242	458
5:15 PM	1	0	5	0	2	6	9	0	7	0	0	16	0	185	12	0	0	197	7	226	0	0	0	233	452
5:30 PM	1	0	2	0	0	3	18	0	3	0	0	21	0	162	16	0	0	178	5	201	1	0	0	207	409
5:45 PM	0	3	1	0	1	4	7	0	4	0	1	11	2	135	11	1	0	149	6	194	0	0	0	200	364
Hourly Total	4	3	9	0	5	16	46	0	18	0	3	64	2	669	49	1	1	721	19	862	1	0	0	882	1683
Grand Total	45	6	104	0	37	155	400	3	159	1	28	563	84	4836	266	10	12	5196	159	5476	59	0	0	5694	11608
Approach %	29.0	3.9	67.1	0.0	-	-	71.0	0.5	28.2	0.2	-	-	1.6	93.1	5.1	0.2	-	-	2.8	96.2	1.0	0.0	-	-	-
Total %	0.4	0.1	0.9	0.0	-	1.3	3.4	0.0	1.4	0.0	-	4.9	0.7	41.7	2.3	0.1	-	44.8	1.4	47.2	0.5	0.0	-	49.1	-
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	6	0	0	-	6	0	5	0	0	-	5	11
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.1	0.0	0.0	-	0.1	0.0	0.1	0.0	-	-	0.1	0.1
Cars & Light Goods	42	5	82	0	-	129	393	3	153	1	-	550	73	4752	262	10	-	5097	156	5347	52	0	-	5555	11331
% Cars & Light Goods	93.3	83.3	78.8	-	-	83.2	98.3	100.0	96.2	100.0	-	97.7	86.9	98.3	98.5	100.0	-	98.1	98.1	97.6	88.1	-	-	97.6	97.6
Buses	0	0	0	0	-	0	5	0	4	0	-	9	0	35	3	0	-	38	3	67	0	0	-	70	117
% Buses	0.0	0.0	0.0	-	-	0.0	1.3	0.0	2.5	0.0	-	1.6	0.0	0.7	1.1	0.0	-	0.7	1.9	1.2	0.0	-	-	1.2	1.0
Single-Unit Trucks	2	1	3	0	-	6	2	0	2	0	-	4	1	34	1	0	-	36	0	38	2	0	-	40	86
% Single-Unit Trucks	4.4	16.7	2.9	-	-	3.9	0.5	0.0	1.3	0.0	-	0.7	1.2	0.7	0.4	0.0	-	0.7	0.0	0.7	3.4	-	-	0.7	0.7
Articulated Trucks	1	0	19	0	-	20	0	0	0	0	-	0	10	6	0	0	-	16	0	15	5	0	-	20	56
% Articulated Trucks	2.2	0.0	18.3	-	-	12.9	0.0	0.0	0.0	0.0	-	0.0	11.9	0.1	0.0	0.0	-	0.3	0.0	0.3	8.5	-	-	0.4	0.5
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	3	0	0	-	3	0	4	0	0	-	4	7
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.1	0.0	0.0	-	0.1	0.0	0.1	0.0	-	-	0.1	0.1
Bicycles on Crosswalk	-	-	-	-	14	-	-	-	-	-	8	-	-	-	-	-	4	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	37.8	-	-	-	-	-	28.6	-	-	-	-	-	33.3	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	23	-	-	-	-	-	20	-	-	-	-	-	8	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	62.2	-	-	-	-	-	71.4	-	-	-	-	-	66.7	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Dorchester Road & Dawson Street
Site Code: 230334
Start Date: 10/26/2023



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Dorchester Road & Dawson Street
Site Code: 230334
Start Date: 10/26/2023

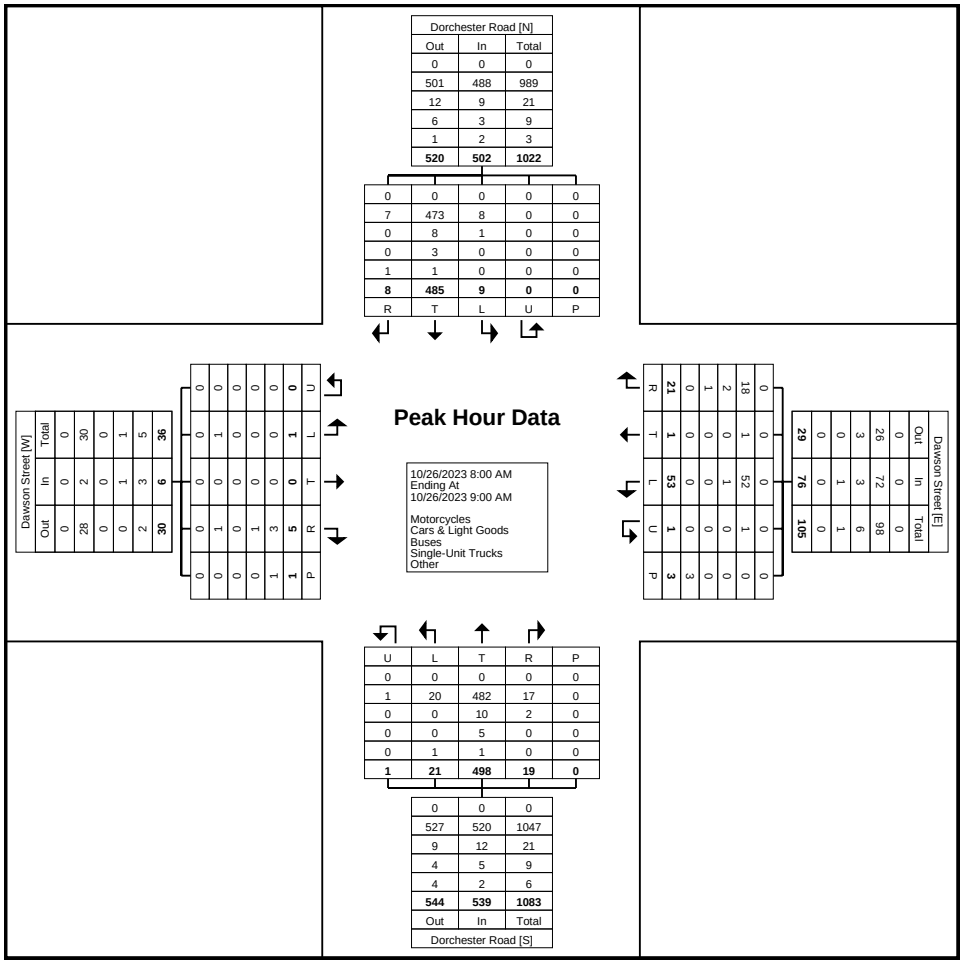
Turning Movement Peak Hour Data (8:00 AM)

Start Time	Dawson Street Eastbound						Dawson Street Westbound						Dorchester Road Northbound						Dorchester Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
8:00 AM	0	0	1	0	1	1	13	1	7	0	0	21	6	95	5	0	0	106	5	103	4	0	0	112	240
8:15 AM	0	0	0	0	0	0	13	0	4	1	1	18	7	125	3	1	0	136	2	115	2	0	0	119	273
8:30 AM	1	0	0	0	0	1	15	0	2	0	1	17	5	138	3	0	0	146	2	142	1	0	0	145	309
8:45 AM	0	0	4	0	0	4	12	0	8	0	1	20	3	140	8	0	0	151	0	125	1	0	0	126	301
Total	1	0	5	0	1	6	53	1	21	1	3	76	21	498	19	1	0	539	9	485	8	0	0	502	1123
Approach %	16.7	0.0	83.3	0.0	-	-	69.7	1.3	27.6	1.3	-	-	3.9	92.4	3.5	0.2	-	-	1.8	96.6	1.6	0.0	-	-	-
Total %	0.1	0.0	0.4	0.0	-	0.5	4.7	0.1	1.9	0.1	-	6.8	1.9	44.3	1.7	0.1	-	48.0	0.8	43.2	0.7	0.0	-	44.7	-
PHF	0.250	0.000	0.313	0.000	-	0.375	0.883	0.250	0.656	0.250	-	0.905	0.750	0.889	0.594	0.250	-	0.892	0.450	0.854	0.500	0.000	-	0.866	0.909
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	1	0	1	0	-	2	52	1	18	1	-	72	20	482	17	1	-	520	8	473	7	0	-	488	1082
% Cars & Light Goods	100.0	-	20.0	-	-	33.3	98.1	100.0	85.7	100.0	-	94.7	95.2	96.8	89.5	100.0	-	96.5	88.9	97.5	87.5	-	-	97.2	96.3
Buses	0	0	0	0	-	0	1	0	2	0	-	3	0	10	2	0	-	12	1	8	0	0	-	9	24
% Buses	0.0	-	0.0	-	-	0.0	1.9	0.0	9.5	0.0	-	3.9	0.0	2.0	10.5	0.0	-	2.2	11.1	1.6	0.0	-	-	1.8	2.1
Single-Unit Trucks	0	0	1	0	-	1	0	0	1	0	-	1	0	5	0	0	-	5	0	3	0	0	-	3	10
% Single-Unit Trucks	0.0	-	20.0	-	-	16.7	0.0	0.0	4.8	0.0	-	1.3	0.0	1.0	0.0	0.0	-	0.9	0.0	0.6	0.0	-	-	0.6	0.9
Articulated Trucks	0	0	3	0	-	3	0	0	0	0	-	0	1	1	0	0	-	2	0	1	1	0	-	2	7
% Articulated Trucks	0.0	-	60.0	-	-	50.0	0.0	0.0	0.0	0.0	-	0.0	4.8	0.2	0.0	0.0	-	0.4	0.0	0.2	12.5	-	-	0.4	0.6
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	-	3	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Dorchester Road & Dawson Street
Site Code: 230334
Start Date: 10/26/2023



Turning Movement Peak Hour Data Plot (8:00 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Dorchester Road & Dawson Street
Site Code: 230334
Start Date: 10/26/2023

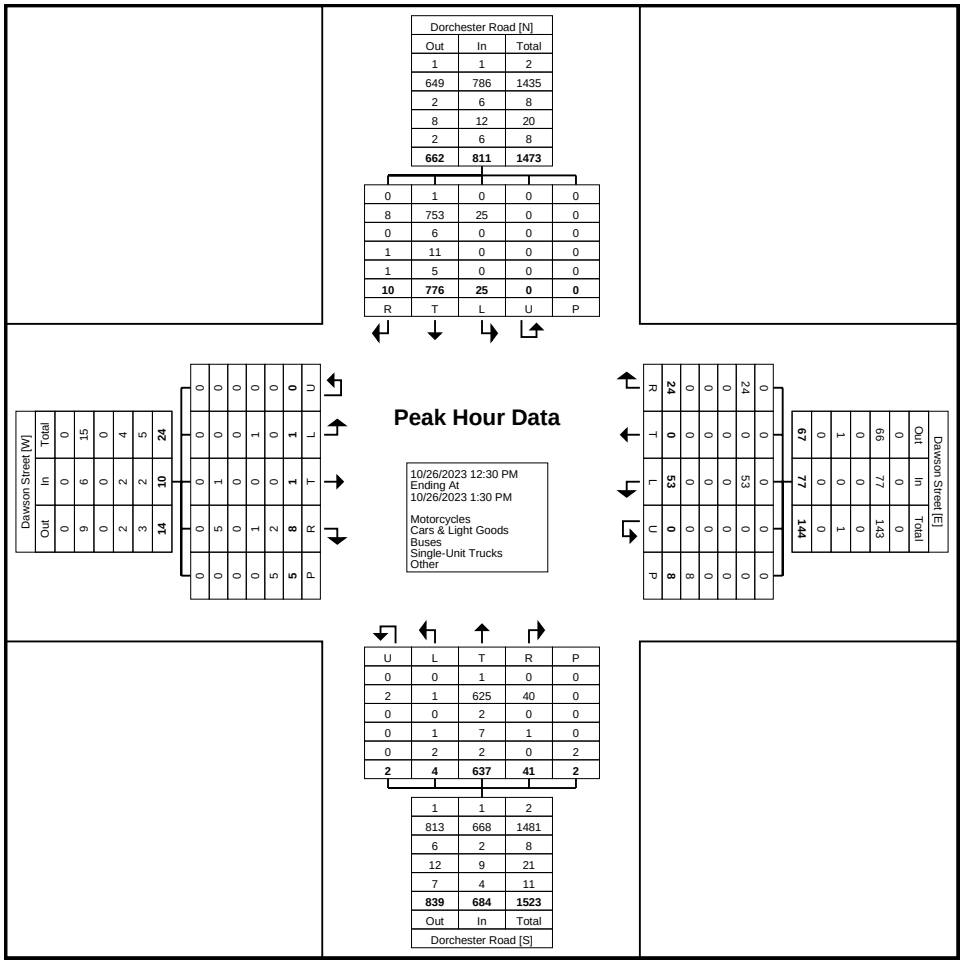
Turning Movement Peak Hour Data (12:30 PM)

Start Time	Dawson Street Eastbound						Dawson Street Westbound						Dorchester Road Northbound						Dorchester Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
12:30 PM	0	0	3	0	0	3	11	0	3	0	3	14	1	146	15	1	0	163	8	195	5	0	0	208	388
12:45 PM	0	0	1	0	2	1	14	0	9	0	2	23	2	165	13	1	1	181	4	180	3	0	0	187	392
1:00 PM	1	0	1	0	2	2	8	0	7	0	3	15	0	168	4	0	1	172	5	188	2	0	0	195	384
1:15 PM	0	1	3	0	1	4	20	0	5	0	0	25	1	158	9	0	0	168	8	213	0	0	0	221	418
Total	1	1	8	0	5	10	53	0	24	0	8	77	4	637	41	2	2	684	25	776	10	0	0	811	1582
Approach %	10.0	10.0	80.0	0.0	-	-	68.8	0.0	31.2	0.0	-	-	0.6	93.1	6.0	0.3	-	-	3.1	95.7	1.2	0.0	-	-	-
Total %	0.1	0.1	0.5	0.0	-	0.6	3.4	0.0	1.5	0.0	-	4.9	0.3	40.3	2.6	0.1	-	43.2	1.6	49.1	0.6	0.0	-	51.3	-
PHF	0.250	0.250	0.667	0.000	-	0.625	0.663	0.000	0.667	0.000	-	0.770	0.500	0.948	0.683	0.500	-	0.945	0.781	0.911	0.500	0.000	-	0.917	0.946
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	1	0	0	-	1	2
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.2	0.0	0.0	-	0.1	0.0	0.1	0.0	-	-	0.1	0.1
Cars & Light Goods	0	1	5	0	-	6	53	0	24	0	-	77	1	625	40	2	-	668	25	753	8	0	-	786	1537
% Cars & Light Goods	0.0	100.0	62.5	-	-	60.0	100.0	-	100.0	-	-	100.0	25.0	98.1	97.6	100.0	-	97.7	100.0	97.0	80.0	-	-	96.9	97.2
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	2	0	0	-	2	0	6	0	0	-	6	8
% Buses	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.3	0.0	0.0	-	0.3	0.0	0.8	0.0	-	-	0.7	0.5
Single-Unit Trucks	1	0	1	0	-	2	0	0	0	0	-	0	1	7	1	0	-	9	0	11	1	0	-	12	23
% Single-Unit Trucks	100.0	0.0	12.5	-	-	20.0	0.0	-	0.0	-	-	0.0	25.0	1.1	2.4	0.0	-	1.3	0.0	1.4	10.0	-	-	1.5	1.5
Articulated Trucks	0	0	2	0	-	2	0	0	0	0	-	0	2	2	0	0	-	4	0	4	1	0	-	5	11
% Articulated Trucks	0.0	0.0	25.0	-	-	20.0	0.0	-	0.0	-	-	0.0	50.0	0.3	0.0	0.0	-	0.6	0.0	0.5	10.0	-	-	0.6	0.7
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	1
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.1	0.0	-	-	0.1	0.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	5	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	62.5	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	5	-	-	-	-	-	3	-	-	-	-	-	2	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	37.5	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Dorchester Road & Dawson Street
Site Code: 230334
Start Date: 10/26/2023



Turning Movement Peak Hour Data Plot (12:30 PM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Dorchester Road & Dawson Street
Site Code: 230334
Start Date: 10/26/2023

Turning Movement Peak Hour Data (3:30 PM)

Start Time	Dawson Street Eastbound						Dawson Street Westbound						Dorchester Road Northbound						Dorchester Road Southbound						
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Int. Total
3:30 PM	4	0	17	0	2	21	12	0	1	0	2	13	6	179	15	0	1	200	10	215	1	0	0	226	460
3:45 PM	7	0	9	0	0	16	11	1	11	0	0	23	0	190	12	0	0	202	10	205	4	0	0	219	460
4:00 PM	0	0	2	0	3	2	16	0	7	0	1	23	0	207	9	0	1	216	6	226	0	0	0	232	473
4:15 PM	0	0	4	0	1	4	12	0	5	0	0	17	0	204	10	2	0	216	9	214	0	0	0	223	460
Total	11	0	32	0	6	43	51	1	24	0	3	76	6	780	46	2	2	834	35	860	5	0	0	900	1853
Approach %	25.6	0.0	74.4	0.0	-	-	67.1	1.3	31.6	0.0	-	-	0.7	93.5	5.5	0.2	-	-	3.9	95.6	0.6	0.0	-	-	-
Total %	0.6	0.0	1.7	0.0	-	2.3	2.8	0.1	1.3	0.0	-	4.1	0.3	42.1	2.5	0.1	-	45.0	1.9	46.4	0.3	0.0	-	48.6	-
PHF	0.393	0.000	0.471	0.000	-	0.512	0.797	0.250	0.545	0.000	-	0.826	0.250	0.942	0.767	0.250	-	0.965	0.875	0.951	0.313	0.000	-	0.970	0.979
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	2	0	0	-	2	0	3	0	0	-	3	5
% Motorcycles	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.3	0.0	0.0	-	0.2	0.0	0.3	0.0	-	-	0.3	0.3
Cars & Light Goods	11	0	29	0	-	40	51	1	23	0	-	75	6	768	46	2	-	822	34	835	5	0	-	874	1811
% Cars & Light Goods	100.0	-	90.6	-	-	93.0	100.0	100.0	95.8	-	-	98.7	100.0	98.5	100.0	100.0	-	98.6	97.1	97.1	100.0	-	-	97.1	97.7
Buses	0	0	0	0	-	0	0	0	1	0	-	1	0	6	0	0	-	6	1	10	0	0	-	11	18
% Buses	0.0	-	0.0	-	-	0.0	0.0	0.0	4.2	-	-	1.3	0.0	0.8	0.0	0.0	-	0.7	2.9	1.2	0.0	-	-	1.2	1.0
Single-Unit Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	3	0	0	-	3	0	8	0	0	-	8	11
% Single-Unit Trucks	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.4	0.0	0.0	-	0.4	0.0	0.9	0.0	-	-	0.9	0.6
Articulated Trucks	0	0	3	0	-	3	0	0	0	0	-	0	0	1	0	0	-	1	0	3	0	0	-	3	7
% Articulated Trucks	0.0	-	9.4	-	-	7.0	0.0	0.0	0.0	-	-	0.0	0.0	0.1	0.0	0.0	-	0.1	0.0	0.3	0.0	-	-	0.3	0.4
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	1
% Bicycles on Road	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.1	0.0	-	-	0.1	0.1
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	16.7	-	-	-	-	-	33.3	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	5	-	-	-	-	-	2	-	-	-	-	-	2	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	83.3	-	-	-	-	-	66.7	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
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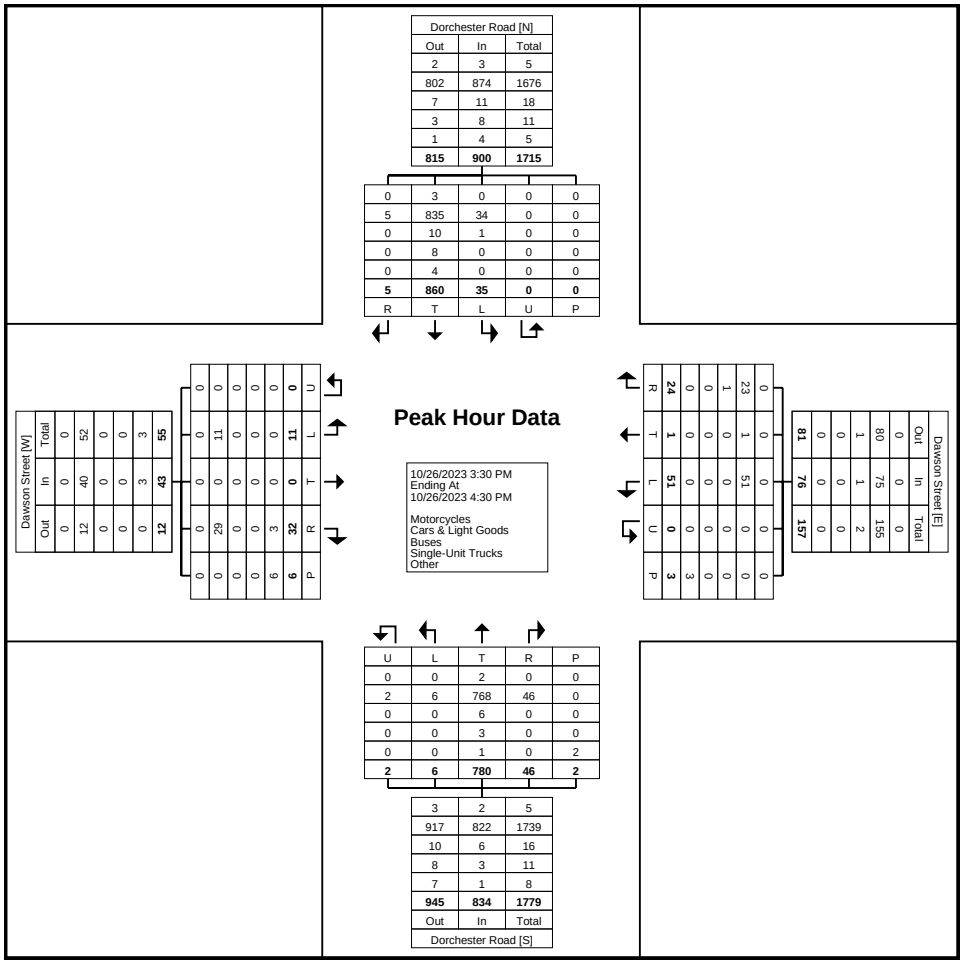
Site Code: 230334
Start Date: 10/26/2023



Turning Movement Peak Hour Data Plot (3:30 PM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Dorchester Road & Dawson Street - Saturday
Site Code: 230334
Start Date: 10/28/2023

Turning Movement Data

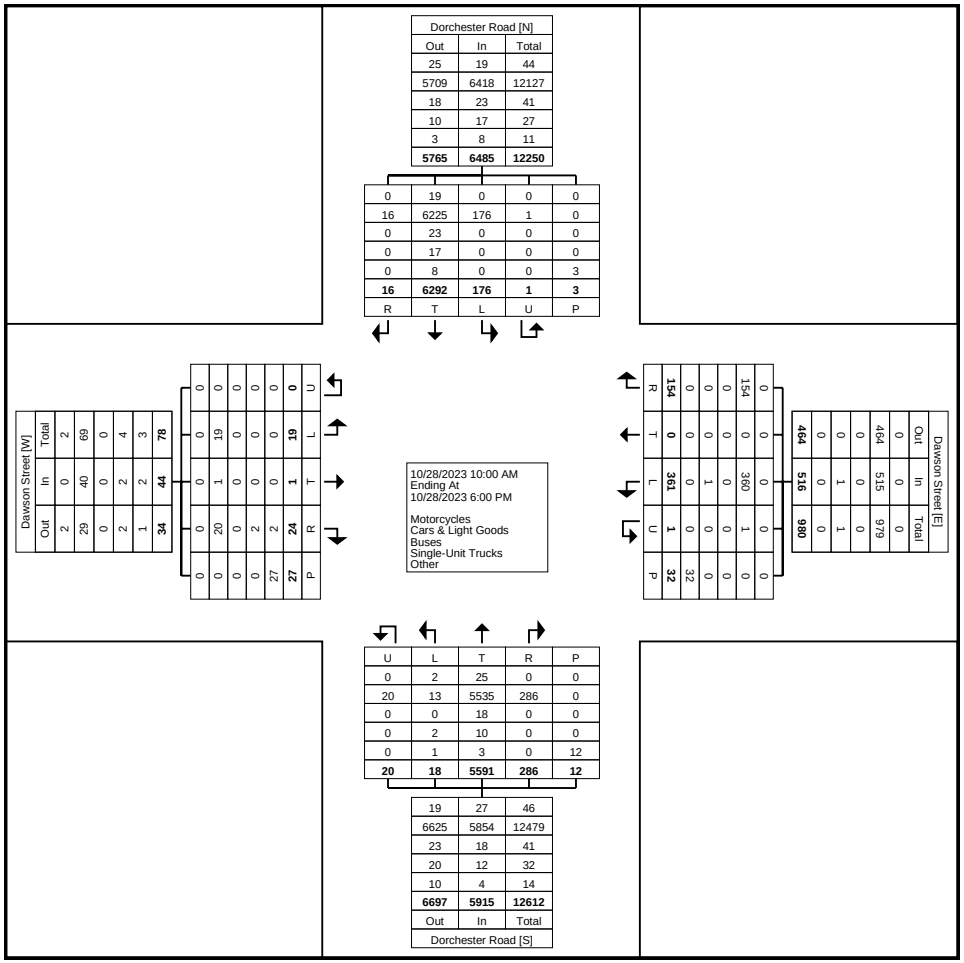
Start Time	Dawson Street Eastbound						Dawson Street Westbound						Dorchester Road Northbound						Dorchester Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
10:00 AM	0	0	0	0	1	0	15	0	2	0	4	17	0	146	6	2	1	154	5	151	0	0	0	156	327
10:15 AM	1	0	0	0	0	1	6	0	4	0	0	10	0	160	7	1	0	168	5	176	1	0	0	182	361
10:30 AM	1	0	1	0	1	2	7	0	8	0	2	15	1	168	9	0	1	178	4	184	2	0	0	190	385
10:45 AM	0	0	0	0	0	0	12	0	3	0	1	15	1	169	2	0	0	172	6	170	0	0	0	176	363
Hourly Total	2	0	1	0	2	3	40	0	17	0	7	57	2	643	24	3	2	672	20	681	3	0	0	704	1436
11:00 AM	0	0	1	0	1	1	13	0	7	0	2	20	1	171	6	0	0	178	5	184	0	1	0	190	389
11:15 AM	1	0	1	0	0	2	6	0	6	0	0	12	2	184	5	0	0	191	3	207	2	0	0	212	417
11:30 AM	1	0	2	0	0	3	13	0	7	0	1	20	1	187	4	0	0	192	5	188	0	0	0	193	408
11:45 AM	1	0	0	0	0	1	18	0	4	0	1	22	1	191	9	1	0	202	6	193	1	0	0	200	425
Hourly Total	3	0	4	0	1	7	50	0	24	0	4	74	5	733	24	1	0	763	19	772	3	1	0	795	1639
12:00 PM	0	0	0	0	3	0	15	0	4	0	1	19	0	189	10	1	0	200	10	243	0	0	0	253	472
12:15 PM	0	0	0	0	0	0	16	0	8	0	1	24	0	187	8	0	0	195	6	237	0	0	0	243	462
12:30 PM	1	0	1	0	0	2	15	0	5	0	2	20	0	188	15	0	0	203	4	223	0	0	0	227	452
12:45 PM	0	0	0	0	1	0	9	0	7	0	2	16	0	190	14	0	0	204	5	222	1	0	2	228	448
Hourly Total	1	0	1	0	4	2	55	0	24	0	6	79	0	754	47	1	0	802	25	925	1	0	2	951	1834
1:00 PM	1	0	1	0	1	2	18	0	6	0	1	24	1	208	10	1	1	220	3	222	1	0	0	226	472
1:15 PM	1	0	0	0	0	1	11	0	5	1	0	17	0	193	6	3	0	202	6	247	0	0	0	253	473
1:30 PM	0	0	0	0	3	0	12	0	8	0	1	20	0	185	7	1	0	193	5	242	0	0	0	247	460
1:45 PM	2	0	0	0	3	2	17	0	3	0	0	20	2	209	12	0	1	223	3	209	0	0	0	212	457
Hourly Total	4	0	1	0	7	5	58	0	22	1	2	81	3	795	35	5	2	838	17	920	1	0	0	938	1862
2:00 PM	1	0	1	0	0	2	5	0	5	0	2	10	0	226	8	2	0	236	6	196	0	0	0	202	450
2:15 PM	2	0	1	0	2	3	8	0	8	0	1	16	0	189	14	0	1	203	8	233	0	0	1	241	463
2:30 PM	0	0	2	0	0	2	15	0	4	0	1	19	0	176	11	2	0	189	8	224	3	0	0	235	445
2:45 PM	0	0	3	0	0	3	13	0	2	0	2	15	1	183	14	0	0	198	7	193	1	0	0	201	417
Hourly Total	3	0	7	0	2	10	41	0	19	0	6	60	1	774	47	4	1	826	29	846	4	0	1	879	1775
3:00 PM	0	0	2	0	3	2	11	0	5	0	2	16	0	157	8	2	4	167	6	217	1	0	0	224	409
3:15 PM	1	0	0	0	3	1	9	0	5	0	0	14	1	190	12	0	0	203	2	205	0	0	0	207	425
3:30 PM	0	0	4	0	1	4	8	0	4	0	1	12	1	170	14	0	1	185	4	208	0	0	0	212	413
3:45 PM	0	0	0	0	2	0	8	0	3	0	0	11	0	165	7	0	0	172	7	175	0	0	0	182	365
Hourly Total	1	0	6	0	9	7	36	0	17	0	3	53	2	682	41	2	5	727	19	805	1	0	0	825	1612
4:00 PM	1	0	0	0	0	1	5	0	5	0	0	10	3	163	11	1	0	178	7	179	0	0	0	186	375
4:15 PM	0	0	0	0	0	0	12	0	3	0	0	15	1	177	11	0	0	189	3	203	1	0	0	207	411
4:30 PM	2	0	0	0	0	2	14	0	2	0	0	16	0	171	8	0	0	179	5	169	0	0	0	174	371
4:45 PM	1	1	2	0	1	4	11	0	6	0	1	17	0	137	6	0	1	143	5	185	0	0	0	190	354
Hourly Total	4	1	2	0	1	7	42	0	16	0	1	58	4	648	36	1	1	689	20	736	1	0	0	757	1511

5:00 PM	0	0	0	0	0	0	11	0	2	0	0	13	0	125	9	1	0	135	6	144	1	0	0	151	299
5:15 PM	0	0	0	0	0	0	13	0	6	0	1	19	1	147	8	1	1	157	5	160	0	0	0	165	341
5:30 PM	0	0	2	0	0	2	8	0	5	0	2	13	0	144	9	0	0	153	8	158	1	0	0	167	335
5:45 PM	1	0	0	0	1	1	7	0	2	0	0	9	0	146	6	1	0	153	8	145	0	0	0	153	316
Hourly Total	1	0	2	0	1	3	39	0	15	0	3	54	1	562	32	3	1	598	27	607	2	0	0	636	1291
Grand Total	19	1	24	0	27	44	361	0	154	1	32	516	18	5591	286	20	12	5915	176	6292	16	1	3	6485	12960
Approach %	43.2	2.3	54.5	0.0	-	-	70.0	0.0	29.8	0.2	-	-	0.3	94.5	4.8	0.3	-	-	2.7	97.0	0.2	0.0	-	-	-
Total %	0.1	0.0	0.2	0.0	-	0.3	2.8	0.0	1.2	0.0	-	4.0	0.1	43.1	2.2	0.2	-	45.6	1.4	48.5	0.1	0.0	-	50.0	-
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	2	25	0	0	-	27	0	19	0	0	-	19	46
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	0.0	-	0.0	11.1	0.4	0.0	0.0	-	0.5	0.0	0.3	0.0	0.0	-	0.3	0.4
Cars & Light Goods	19	1	20	0	-	40	360	0	154	1	-	515	13	5535	286	20	-	5854	176	6225	16	1	-	6418	12827
% Cars & Light Goods	100.0	100.0	83.3	-	-	90.9	99.7	-	100.0	100.0	-	99.8	72.2	99.0	100.0	100.0	-	99.0	100.0	98.9	100.0	100.0	-	99.0	99.0
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	18	0	0	-	18	0	23	0	0	-	23	41
% Buses	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	0.0	-	0.0	0.0	0.3	0.0	0.0	-	0.3	0.0	0.4	0.0	0.0	-	0.4	0.3
Single-Unit Trucks	0	0	2	0	-	2	1	0	0	0	-	1	2	10	0	0	-	12	0	17	0	0	-	17	32
% Single-Unit Trucks	0.0	0.0	8.3	-	-	4.5	0.3	-	0.0	0.0	-	0.2	11.1	0.2	0.0	0.0	-	0.2	0.0	0.3	0.0	0.0	-	0.3	0.2
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	2	0	0	-	2	0	5	0	0	-	5	7
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.1	0.0	0.0	-	0.1	0.1
Bicycles on Road	0	0	2	0	-	2	0	0	0	0	-	0	1	1	0	0	-	2	0	3	0	0	-	3	7
% Bicycles on Road	0.0	0.0	8.3	-	-	4.5	0.0	-	0.0	0.0	-	0.0	5.6	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	-	9	-	-	-	-	-	10	-	-	-	-	-	3	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	33.3	-	-	-	-	-	31.3	-	-	-	-	-	25.0	-	-	-	-	-	33.3	-	-
Pedestrians	-	-	-	-	18	-	-	-	-	-	22	-	-	-	-	-	9	-	-	-	-	-	2	-	-
% Pedestrians	-	-	-	-	66.7	-	-	-	-	-	68.8	-	-	-	-	-	75.0	-	-	-	-	-	66.7	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Dorchester Road & Dawson Street - Saturday
Site Code: 230334
Start Date: 10/28/2023



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Dorchester Road & Dawson Street - Saturday
Site Code: 230334
Start Date: 10/28/2023

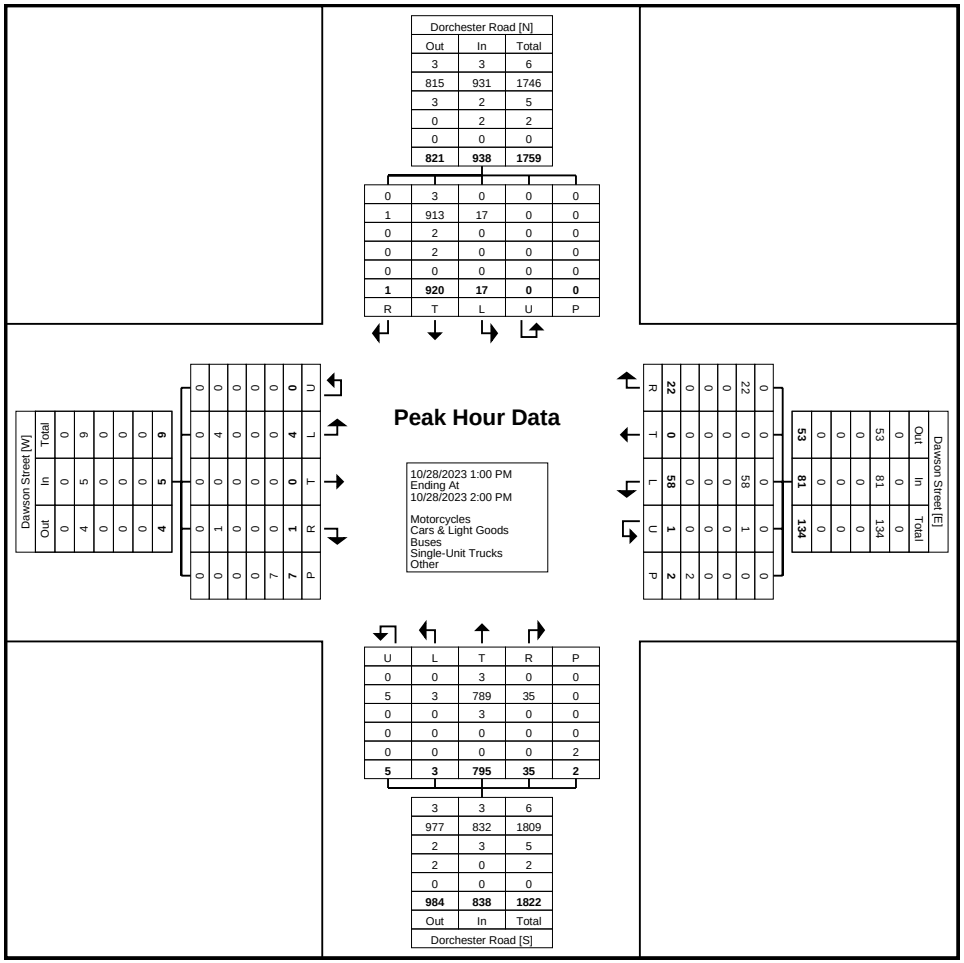
Turning Movement Peak Hour Data (1:00 PM)

Start Time	Dawson Street Eastbound						Dawson Street Westbound						Dorchester Road Northbound						Dorchester Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
1:00 PM	1	0	1	0	1	2	18	0	6	0	1	24	1	208	10	1	1	220	3	222	1	0	0	226	472
1:15 PM	1	0	0	0	0	1	11	0	5	1	0	17	0	193	6	3	0	202	6	247	0	0	0	253	473
1:30 PM	0	0	0	0	3	0	12	0	8	0	1	20	0	185	7	1	0	193	5	242	0	0	0	247	460
1:45 PM	2	0	0	0	3	2	17	0	3	0	0	20	2	209	12	0	1	223	3	209	0	0	0	212	457
Total	4	0	1	0	7	5	58	0	22	1	2	81	3	795	35	5	2	838	17	920	1	0	0	938	1862
Approach %	80.0	0.0	20.0	0.0	-	-	71.6	0.0	27.2	1.2	-	-	0.4	94.9	4.2	0.6	-	-	1.8	98.1	0.1	0.0	-	-	-
Total %	0.2	0.0	0.1	0.0	-	0.3	3.1	0.0	1.2	0.1	-	4.4	0.2	42.7	1.9	0.3	-	45.0	0.9	49.4	0.1	0.0	-	50.4	-
PHF	0.500	0.000	0.250	0.000	-	0.625	0.806	0.000	0.688	0.250	-	0.844	0.375	0.951	0.729	0.417	-	0.939	0.708	0.931	0.250	0.000	-	0.927	0.984
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	3	0	0	-	3	0	3	0	0	-	3	6
% Motorcycles	0.0	-	0.0	-	-	0.0	0.0	-	0.0	0.0	-	0.0	0.0	0.4	0.0	0.0	-	0.4	0.0	0.3	0.0	-	-	0.3	0.3
Cars & Light Goods	4	0	1	0	-	5	58	0	22	1	-	81	3	789	35	5	-	832	17	913	1	0	-	931	1849
% Cars & Light Goods	100.0	-	100.0	-	-	100.0	100.0	-	100.0	100.0	-	100.0	100.0	99.2	100.0	100.0	-	99.3	100.0	99.2	100.0	-	-	99.3	99.3
Buses	0	0	0	0	-	0	0	0	0	0	-	0	0	3	0	0	-	3	0	2	0	0	-	2	5
% Buses	0.0	-	0.0	-	-	0.0	0.0	-	0.0	0.0	-	0.0	0.0	0.4	0.0	0.0	-	0.4	0.0	0.2	0.0	-	-	0.2	0.3
Single-Unit Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	2	0	0	-	2	2
% Single-Unit Trucks	0.0	-	0.0	-	-	0.0	0.0	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.2	0.0	-	-	0.2	0.1
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	0.0	-	0.0	-	-	0.0	0.0	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Bicycles on Road	0.0	-	0.0	-	-	0.0	0.0	-	0.0	0.0	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	-	4	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	57.1	-	-	-	-	-	50.0	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	3	-	-	-	-	-	1	-	-	-	-	-	2	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	42.9	-	-	-	-	-	50.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Dorchester Road & Dawson Street - Saturday
Site Code: 230334
Start Date: 10/28/2023



Turning Movement Peak Hour Data Plot (1:00 PM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Dorchester Road & Highway 420 North Ramp
Site Code: 230334
Start Date: 10/26/2023

Turning Movement Data

Start Time	Highway 420 North Ramp Eastbound					Dorchester Road Northbound					Dorchester Road Southbound					
	Left	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Int. Total
7:00 AM	2	1	0	0	3	30	54	0	0	84	30	32	0	0	62	149
7:15 AM	3	2	0	0	5	30	59	0	0	89	34	38	0	0	72	166
7:30 AM	2	3	0	0	5	36	68	0	0	104	42	56	0	0	98	207
7:45 AM	5	1	0	0	6	44	113	0	0	157	58	45	0	0	103	266
Hourly Total	12	7	0	0	19	140	294	0	0	434	164	171	0	0	335	788
8:00 AM	5	6	0	0	11	39	100	0	0	139	59	50	0	0	109	259
8:15 AM	3	3	0	0	6	44	134	0	0	178	59	62	0	0	121	305
8:30 AM	5	3	0	0	8	39	138	0	0	177	96	65	0	0	161	346
8:45 AM	4	0	0	0	4	30	149	0	0	179	72	67	0	0	139	322
Hourly Total	17	12	0	0	29	152	521	0	0	673	286	244	0	0	530	1232
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	3	9	0	0	12	27	130	0	0	157	107	77	0	0	184	353
11:15 AM	7	1	0	0	8	36	157	0	0	193	107	87	0	0	194	395
11:30 AM	5	1	0	0	6	41	174	0	0	215	103	93	0	0	196	417
11:45 AM	8	3	0	1	11	43	167	0	1	210	98	85	0	2	183	404
Hourly Total	23	14	0	1	37	147	628	0	1	775	415	342	0	2	757	1569
12:00 PM	11	5	0	0	16	46	169	0	0	215	89	100	0	1	189	420
12:15 PM	6	6	0	1	12	37	159	0	0	196	112	99	0	0	211	419
12:30 PM	6	2	0	1	8	39	154	0	0	193	111	93	0	1	204	405
12:45 PM	5	5	0	0	10	37	186	0	0	223	113	90	0	0	203	436
Hourly Total	28	18	0	2	46	159	668	0	0	827	425	382	0	2	807	1680
1:00 PM	3	2	0	1	5	41	157	0	0	198	100	85	0	0	185	388
1:15 PM	6	2	0	1	8	41	180	0	0	221	130	113	0	0	243	472
1:30 PM	7	6	0	3	13	42	156	0	0	198	103	87	0	1	190	401
1:45 PM	11	5	0	0	16	26	178	0	0	204	102	89	0	0	191	411
Hourly Total	27	15	0	5	42	150	671	0	0	821	435	374	0	1	809	1672
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	6	7	0	0	13	43	184	0	0	227	124	113	0	0	237	477
3:15 PM	9	8	0	0	17	49	198	0	0	247	109	111	0	0	220	484
3:30 PM	12	10	0	0	22	47	197	0	0	244	128	122	0	0	250	516
3:45 PM	9	8	1	0	18	48	195	0	0	243	111	112	0	1	223	484
Hourly Total	36	33	1	0	70	187	774	0	0	961	472	458	0	1	930	1961
4:00 PM	6	13	0	2	19	54	223	0	0	277	120	128	0	0	248	544
4:15 PM	11	6	0	1	17	52	205	0	0	257	123	107	0	0	230	504
4:30 PM	13	11	0	3	24	33	177	0	0	210	121	91	0	0	212	446
4:45 PM	14	8	0	2	22	66	215	0	0	281	111	107	0	0	218	521

Hourly Total	44	38	0	8	82	205	820	0	0	1025	475	433	0	0	908	2015
5:00 PM	10	7	0	0	17	38	188	0	0	226	131	123	0	0	254	497
5:15 PM	11	9	0	0	20	67	189	0	0	256	117	117	0	1	234	510
5:30 PM	10	11	0	0	21	43	170	0	0	213	117	97	0	0	214	448
5:45 PM	8	4	0	0	12	37	149	0	0	186	119	95	0	0	214	412
Hourly Total	39	31	0	0	70	185	696	0	0	881	484	432	0	1	916	1867
Grand Total	226	168	1	16	395	1325	5072	0	1	6397	3156	2836	0	7	5992	12784
Approach %	57.2	42.5	0.3	-	-	20.7	79.3	0.0	-	-	52.7	47.3	0.0	-	-	-
Total %	1.8	1.3	0.0	-	3.1	10.4	39.7	0.0	-	50.0	24.7	22.2	0.0	-	46.9	-
Motorcycles	1	0	0	-	1	0	8	0	-	8	6	2	0	-	8	17
% Motorcycles	0.4	0.0	0.0	-	0.3	0.0	0.2	-	-	0.1	0.2	0.1	-	-	0.1	0.1
Cars & Light Goods	218	163	1	-	382	1289	4977	0	-	6266	3094	2728	0	-	5822	12470
% Cars & Light Goods	96.5	97.0	100.0	-	96.7	97.3	98.1	-	-	98.0	98.0	96.2	-	-	97.2	97.5
Buses	1	2	0	-	3	11	38	0	-	49	24	43	0	-	67	119
% Buses	0.4	1.2	0.0	-	0.8	0.8	0.7	-	-	0.8	0.8	1.5	-	-	1.1	0.9
Single-Unit Trucks	6	1	0	-	7	20	30	0	-	50	18	30	0	-	48	105
% Single-Unit Trucks	2.7	0.6	0.0	-	1.8	1.5	0.6	-	-	0.8	0.6	1.1	-	-	0.8	0.8
Articulated Trucks	0	2	0	-	2	5	15	0	-	20	7	33	0	-	40	62
% Articulated Trucks	0.0	1.2	0.0	-	0.5	0.4	0.3	-	-	0.3	0.2	1.2	-	-	0.7	0.5
Bicycles on Road	0	0	0	-	0	0	4	0	-	4	7	0	0	-	7	11
% Bicycles on Road	0.0	0.0	0.0	-	0.0	0.0	0.1	-	-	0.1	0.2	0.0	-	-	0.1	0.1
Bicycles on Crosswalk	-	-	-	9	-	-	-	-	0	-	-	-	-	3	-	-
% Bicycles on Crosswalk	-	-	-	56.3	-	-	-	-	0.0	-	-	-	-	42.9	-	-
Pedestrians	-	-	-	7	-	-	-	-	1	-	-	-	-	4	-	-
% Pedestrians	-	-	-	43.8	-	-	-	-	100.0	-	-	-	-	57.1	-	-

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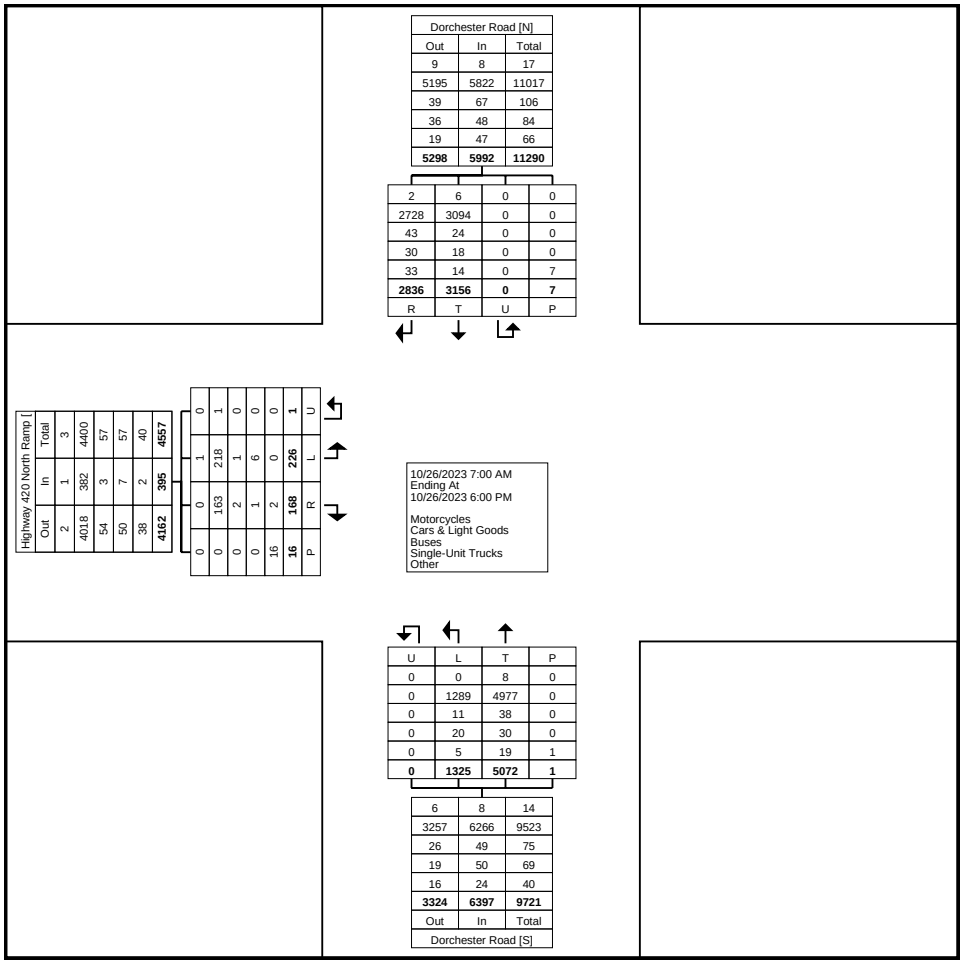

Turning Movement Data Plot

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Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Dorchester Road & Highway 420 North Ramp
Site Code: 230334
Start Date: 10/26/2023

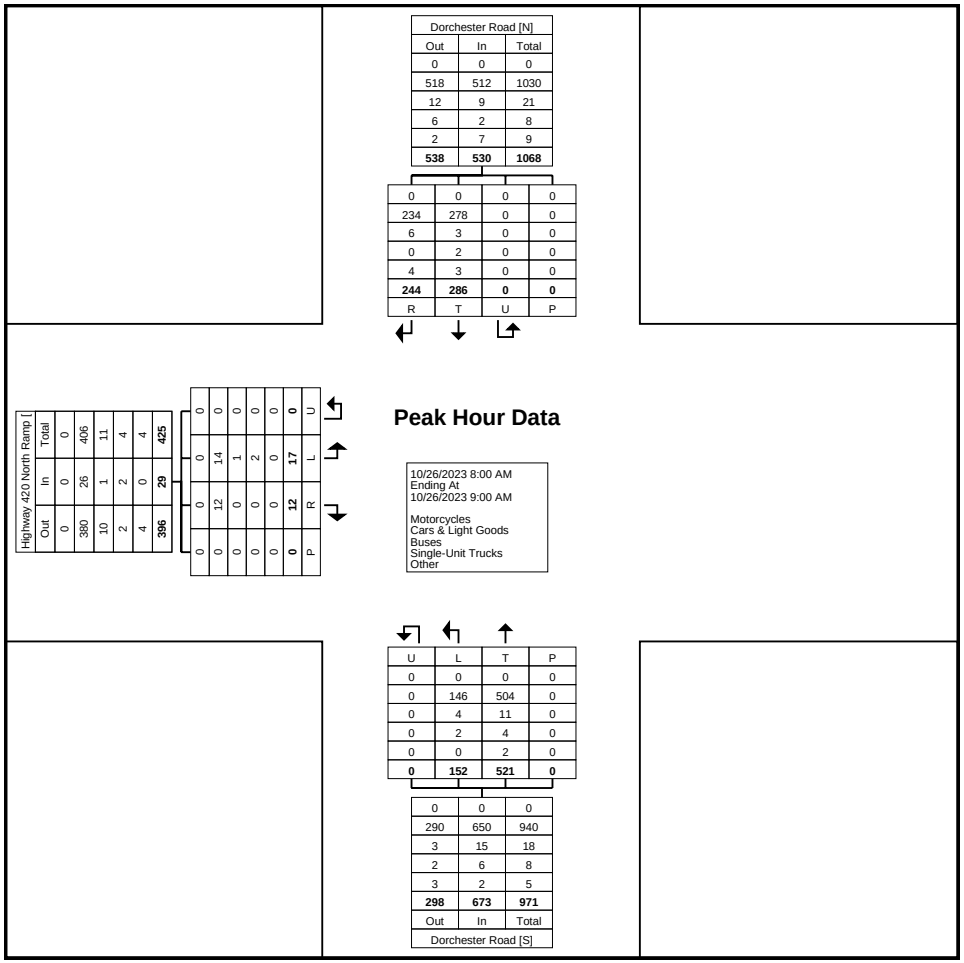
Turning Movement Peak Hour Data (8:00 AM)

Start Time	Highway 420 North Ramp Eastbound					Dorchester Road Northbound					Dorchester Road Southbound					
	Left	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Int. Total
8:00 AM	5	6	0	0	11	39	100	0	0	139	59	50	0	0	109	259
8:15 AM	3	3	0	0	6	44	134	0	0	178	59	62	0	0	121	305
8:30 AM	5	3	0	0	8	39	138	0	0	177	96	65	0	0	161	346
8:45 AM	4	0	0	0	4	30	149	0	0	179	72	67	0	0	139	322
Total	17	12	0	0	29	152	521	0	0	673	286	244	0	0	530	1232
Approach %	58.6	41.4	0.0	-	-	22.6	77.4	0.0	-	-	54.0	46.0	0.0	-	-	-
Total %	1.4	1.0	0.0	-	2.4	12.3	42.3	0.0	-	54.6	23.2	19.8	0.0	-	43.0	-
PHF	0.850	0.500	0.000	-	0.659	0.864	0.874	0.000	-	0.940	0.745	0.910	0.000	-	0.823	0.890
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	14	12	0	-	26	146	504	0	-	650	278	234	0	-	512	1188
% Cars & Light Goods	82.4	100.0	-	-	89.7	96.1	96.7	-	-	96.6	97.2	95.9	-	-	96.6	96.4
Buses	1	0	0	-	1	4	11	0	-	15	3	6	0	-	9	25
% Buses	5.9	0.0	-	-	3.4	2.6	2.1	-	-	2.2	1.0	2.5	-	-	1.7	2.0
Single-Unit Trucks	2	0	0	-	2	2	4	0	-	6	2	0	0	-	2	10
% Single-Unit Trucks	11.8	0.0	-	-	6.9	1.3	0.8	-	-	0.9	0.7	0.0	-	-	0.4	0.8
Articulated Trucks	0	0	0	-	0	0	2	0	-	2	2	4	0	-	6	8
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	0.4	-	-	0.3	0.7	1.6	-	-	1.1	0.6
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	1	0	0	-	1	1
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.3	0.0	-	-	0.2	0.1
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Dorchester Road & Highway 420 North Ramp
Site Code: 230334
Start Date: 10/26/2023



Turning Movement Peak Hour Data Plot (8:00 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Dorchester Road & Highway 420 North Ramp
Site Code: 230334
Start Date: 10/26/2023

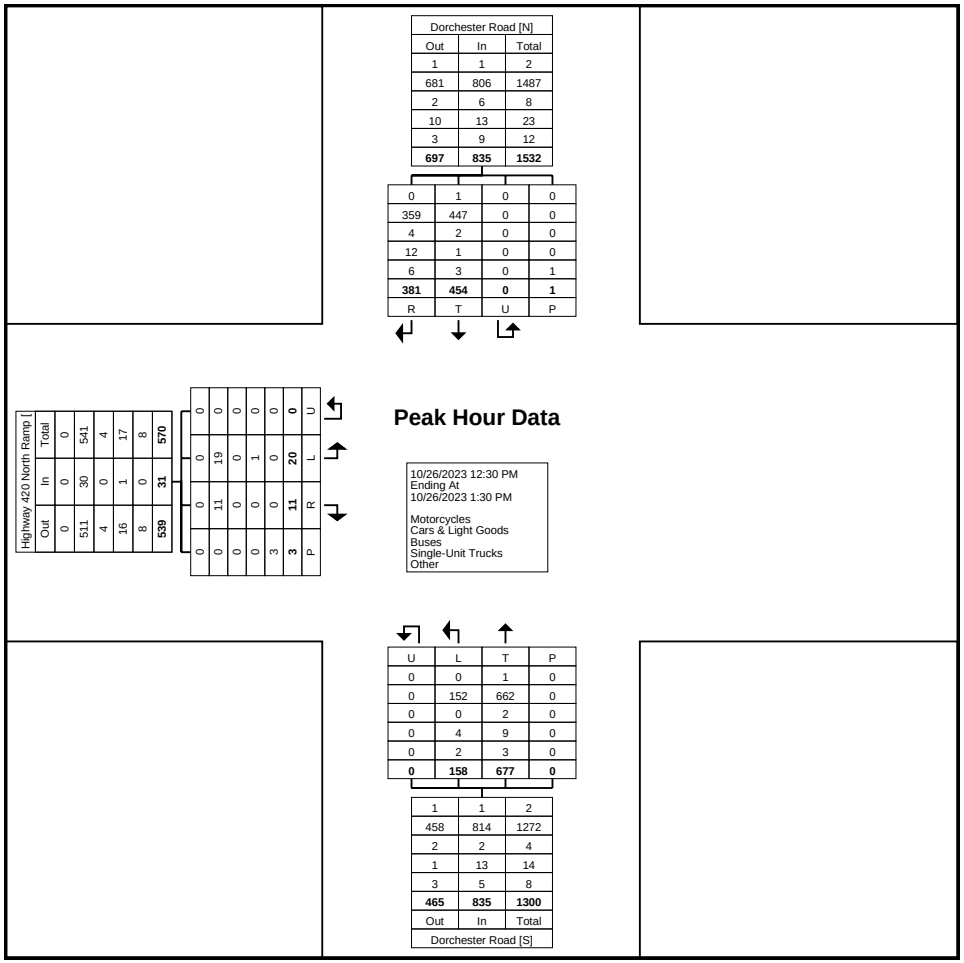
Turning Movement Peak Hour Data (12:30 PM)

Start Time	Highway 420 North Ramp Eastbound					Dorchester Road Northbound					Dorchester Road Southbound					
	Left	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Int. Total
12:30 PM	6	2	0	1	8	39	154	0	0	193	111	93	0	1	204	405
12:45 PM	5	5	0	0	10	37	186	0	0	223	113	90	0	0	203	436
1:00 PM	3	2	0	1	5	41	157	0	0	198	100	85	0	0	185	388
1:15 PM	6	2	0	1	8	41	180	0	0	221	130	113	0	0	243	472
Total	20	11	0	3	31	158	677	0	0	835	454	381	0	1	835	1701
Approach %	64.5	35.5	0.0	-	-	18.9	81.1	0.0	-	-	54.4	45.6	0.0	-	-	-
Total %	1.2	0.6	0.0	-	1.8	9.3	39.8	0.0	-	49.1	26.7	22.4	0.0	-	49.1	-
PHF	0.833	0.550	0.000	-	0.775	0.963	0.910	0.000	-	0.936	0.873	0.843	0.000	-	0.859	0.901
Motorcycles	0	0	0	-	0	0	1	0	-	1	1	0	0	-	1	2
% Motorcycles	0.0	0.0	-	-	0.0	0.0	0.1	-	-	0.1	0.2	0.0	-	-	0.1	0.1
Cars & Light Goods	19	11	0	-	30	152	662	0	-	814	447	359	0	-	806	1650
% Cars & Light Goods	95.0	100.0	-	-	96.8	96.2	97.8	-	-	97.5	98.5	94.2	-	-	96.5	97.0
Buses	0	0	0	-	0	0	2	0	-	2	2	4	0	-	6	8
% Buses	0.0	0.0	-	-	0.0	0.0	0.3	-	-	0.2	0.4	1.0	-	-	0.7	0.5
Single-Unit Trucks	1	0	0	-	1	4	9	0	-	13	1	12	0	-	13	27
% Single-Unit Trucks	5.0	0.0	-	-	3.2	2.5	1.3	-	-	1.6	0.2	3.1	-	-	1.6	1.6
Articulated Trucks	0	0	0	-	0	2	3	0	-	5	2	6	0	-	8	13
% Articulated Trucks	0.0	0.0	-	-	0.0	1.3	0.4	-	-	0.6	0.4	1.6	-	-	1.0	0.8
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	1	0	0	-	1	1
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.2	0.0	-	-	0.1	0.1
Bicycles on Crosswalk	-	-	-	1	-	-	-	-	0	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	33.3	-	-	-	-	-	-	-	-	-	100.0	-	-
Pedestrians	-	-	-	2	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	66.7	-	-	-	-	-	-	-	-	-	0.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Dorchester Road & Highway 420 North Ramp
Site Code: 230334
Start Date: 10/26/2023



Turning Movement Peak Hour Data Plot (12:30 PM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Dorchester Road & Highway 420 North Ramp
Site Code: 230334
Start Date: 10/26/2023

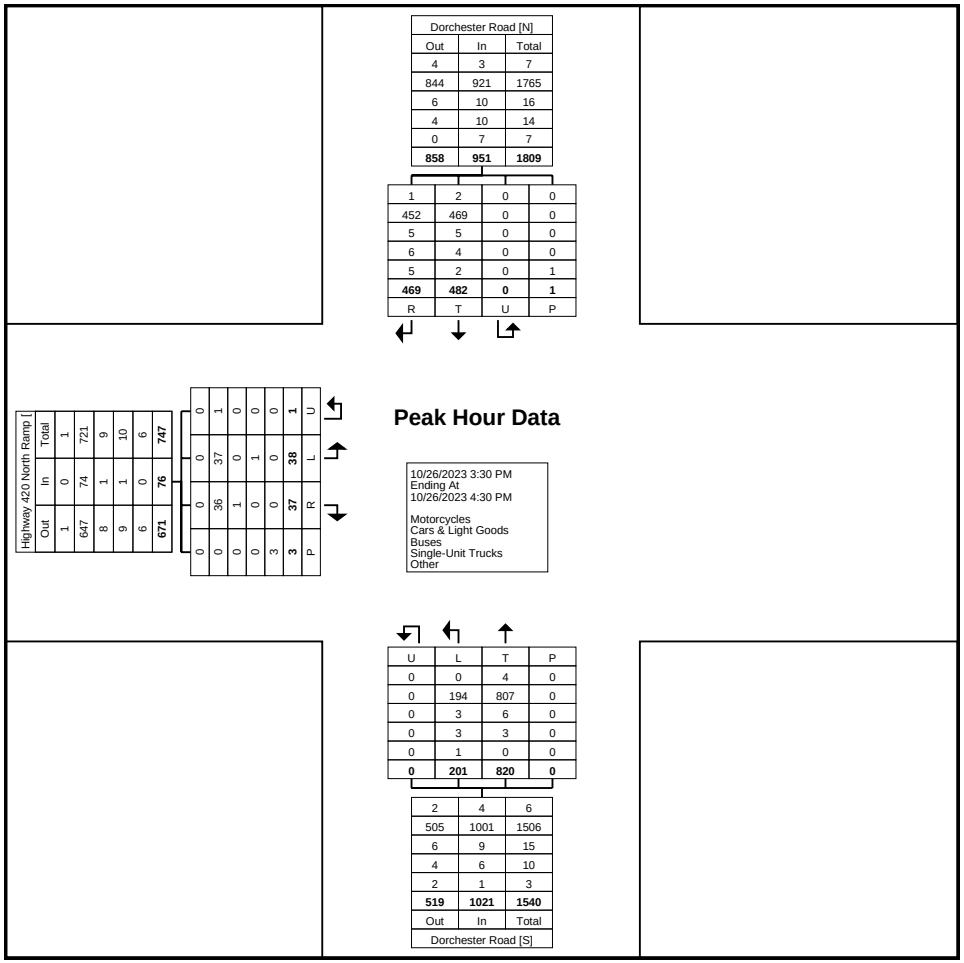
Turning Movement Peak Hour Data (3:30 PM)

Start Time	Highway 420 North Ramp Eastbound					Dorchester Road Northbound					Dorchester Road Southbound					
	Left	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Int. Total
3:30 PM	12	10	0	0	22	47	197	0	0	244	128	122	0	0	250	516
3:45 PM	9	8	1	0	18	48	195	0	0	243	111	112	0	1	223	484
4:00 PM	6	13	0	2	19	54	223	0	0	277	120	128	0	0	248	544
4:15 PM	11	6	0	1	17	52	205	0	0	257	123	107	0	0	230	504
Total	38	37	1	3	76	201	820	0	0	1021	482	469	0	1	951	2048
Approach %	50.0	48.7	1.3	-	-	19.7	80.3	0.0	-	-	50.7	49.3	0.0	-	-	-
Total %	1.9	1.8	0.0	-	3.7	9.8	40.0	0.0	-	49.9	23.5	22.9	0.0	-	46.4	-
PHF	0.792	0.712	0.250	-	0.864	0.931	0.919	0.000	-	0.921	0.941	0.916	0.000	-	0.951	0.941
Motorcycles	0	0	0	-	0	0	4	0	-	4	2	1	0	-	3	7
% Motorcycles	0.0	0.0	0.0	-	0.0	0.0	0.5	-	-	0.4	0.4	0.2	-	-	0.3	0.3
Cars & Light Goods	37	36	1	-	74	194	807	0	-	1001	469	452	0	-	921	1996
% Cars & Light Goods	97.4	97.3	100.0	-	97.4	96.5	98.4	-	-	98.0	97.3	96.4	-	-	96.8	97.5
Buses	0	1	0	-	1	3	6	0	-	9	5	5	0	-	10	20
% Buses	0.0	2.7	0.0	-	1.3	1.5	0.7	-	-	0.9	1.0	1.1	-	-	1.1	1.0
Single-Unit Trucks	1	0	0	-	1	3	3	0	-	6	4	6	0	-	10	17
% Single-Unit Trucks	2.6	0.0	0.0	-	1.3	1.5	0.4	-	-	0.6	0.8	1.3	-	-	1.1	0.8
Articulated Trucks	0	0	0	-	0	1	0	0	-	1	0	5	0	-	5	6
% Articulated Trucks	0.0	0.0	0.0	-	0.0	0.5	0.0	-	-	0.1	0.0	1.1	-	-	0.5	0.3
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	2	0	0	-	2	2
% Bicycles on Road	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.4	0.0	-	-	0.2	0.1
Bicycles on Crosswalk	-	-	-	3	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	100.0	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
% Pedestrians	-	-	-	0.0	-	-	-	-	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Dorchester Road & Highway 420 North Ramp
Site Code: 230334
Start Date: 10/26/2023



Turning Movement Peak Hour Data Plot (3:30 PM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Dorchester Road & Highway 420 North Ramp - Saturday
Site Code: 230334
Start Date: 10/28/2023

Turning Movement Data

Start Time	Highway 420 North Ramp Eastbound					Dorchester Road Northbound					Dorchester Road Southbound					
	Left	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Int. Total
10:00 AM	7	6	0	0	13	31	155	0	0	186	93	85	0	0	178	377
10:15 AM	6	8	0	0	14	33	159	0	0	192	87	97	0	0	184	390
10:30 AM	2	4	0	0	6	33	172	0	0	205	93	92	0	0	185	396
10:45 AM	6	2	0	0	8	41	170	0	0	211	96	83	0	0	179	398
Hourly Total	21	20	0	0	41	138	656	0	0	794	369	357	0	0	726	1561
11:00 AM	5	2	0	0	7	47	182	0	0	229	112	77	0	1	189	425
11:15 AM	6	2	0	0	8	43	179	0	0	222	104	85	0	0	189	419
11:30 AM	8	4	0	0	12	39	188	0	0	227	109	88	0	0	197	436
11:45 AM	14	8	0	0	22	54	190	0	0	244	116	82	0	0	198	464
Hourly Total	33	16	0	0	49	183	739	0	0	922	441	332	0	1	773	1744
12:00 PM	11	5	0	2	16	54	184	0	0	238	138	113	0	0	251	505
12:15 PM	7	5	0	0	12	40	186	0	0	226	145	96	0	0	241	479
12:30 PM	13	11	0	0	24	48	197	0	0	245	135	104	0	1	239	508
12:45 PM	6	8	0	1	14	57	191	0	0	248	130	95	0	0	225	487
Hourly Total	37	29	0	3	66	199	758	0	0	957	548	408	0	1	956	1979
1:00 PM	8	5	1	0	14	48	215	0	0	263	122	123	0	0	245	522
1:15 PM	8	3	0	0	11	41	192	0	0	233	133	119	0	0	252	496
1:30 PM	3	5	0	3	8	59	193	0	0	252	133	130	0	0	263	523
1:45 PM	8	6	0	0	14	54	219	0	0	273	129	100	1	1	230	517
Hourly Total	27	19	1	3	47	202	819	0	0	1021	517	472	1	1	990	2058
2:00 PM	9	8	0	0	17	40	227	0	0	267	118	80	0	0	198	482
2:15 PM	6	5	0	0	11	50	186	0	0	236	126	98	0	0	224	471
2:30 PM	11	4	0	0	15	59	186	0	0	245	129	121	0	0	250	510
2:45 PM	2	4	0	0	6	40	188	0	0	228	115	94	0	0	209	443
Hourly Total	28	21	0	0	49	189	787	0	0	976	488	393	0	0	881	1906
3:00 PM	6	6	0	0	12	39	159	1	0	199	132	97	0	0	229	440
3:15 PM	8	8	0	3	16	48	203	0	0	251	121	96	0	0	217	484
3:30 PM	15	5	0	0	20	57	164	0	0	221	102	99	1	0	202	443
3:45 PM	6	5	0	0	11	45	161	0	0	206	115	69	0	0	184	401
Hourly Total	35	24	0	3	59	189	687	1	0	877	470	361	1	0	832	1768
4:00 PM	11	11	0	0	22	46	173	0	0	219	100	78	0	0	178	419
4:15 PM	6	13	0	0	19	53	179	0	0	232	112	92	0	0	204	455
4:30 PM	9	9	0	0	18	51	168	0	0	219	116	67	0	0	183	420
4:45 PM	2	3	0	1	5	50	141	0	0	191	121	66	0	0	187	383
Hourly Total	28	36	0	1	64	200	661	0	0	861	449	303	0	0	752	1677
5:00 PM	6	9	0	0	15	55	133	0	0	188	89	71	0	0	160	363

5:15 PM	8	7	0	0	15	37	143	0	0	180	89	85	0	0	174	369
5:30 PM	9	8	0	0	17	44	146	0	0	190	99	69	0	0	168	375
5:45 PM	5	9	0	1	14	43	145	0	0	188	93	62	0	1	155	357
Hourly Total	28	33	0	1	61	179	567	0	0	746	370	287	0	1	657	1464
Grand Total	237	198	1	11	436	1479	5674	1	0	7154	3652	2913	2	4	6567	14157
Approach %	54.4	45.4	0.2	-	-	20.7	79.3	0.0	-	-	55.6	44.4	0.0	-	-	-
Total %	1.7	1.4	0.0	-	3.1	10.4	40.1	0.0	-	50.5	25.8	20.6	0.0	-	46.4	-
Motorcycles	2	0	0	-	2	2	22	0	-	24	16	5	0	-	21	47
% Motorcycles	0.8	0.0	0.0	-	0.5	0.1	0.4	0.0	-	0.3	0.4	0.2	0.0	-	0.3	0.3
Cars & Light Goods	235	198	1	-	434	1466	5615	1	-	7082	3606	2882	2	-	6490	14006
% Cars & Light Goods	99.2	100.0	100.0	-	99.5	99.1	99.0	100.0	-	99.0	98.7	98.9	100.0	-	98.8	98.9
Buses	0	0	0	-	0	2	19	0	-	21	16	3	0	-	19	40
% Buses	0.0	0.0	0.0	-	0.0	0.1	0.3	0.0	-	0.3	0.4	0.1	0.0	-	0.3	0.3
Single-Unit Trucks	0	0	0	-	0	9	11	0	-	20	11	15	0	-	26	46
% Single-Unit Trucks	0.0	0.0	0.0	-	0.0	0.6	0.2	0.0	-	0.3	0.3	0.5	0.0	-	0.4	0.3
Articulated Trucks	0	0	0	-	0	0	3	0	-	3	0	6	0	-	6	9
% Articulated Trucks	0.0	0.0	0.0	-	0.0	0.0	0.1	0.0	-	0.0	0.0	0.2	0.0	-	0.1	0.1
Bicycles on Road	0	0	0	-	0	0	4	0	-	4	3	2	0	-	5	9
% Bicycles on Road	0.0	0.0	0.0	-	0.0	0.0	0.1	0.0	-	0.1	0.1	0.1	0.0	-	0.1	0.1
Bicycles on Crosswalk	-	-	-	8	-	-	-	-	0	-	-	-	-	2	-	-
% Bicycles on Crosswalk	-	-	-	72.7	-	-	-	-	-	-	-	-	-	50.0	-	-
Pedestrians	-	-	-	3	-	-	-	-	0	-	-	-	-	2	-	-
% Pedestrians	-	-	-	27.3	-	-	-	-	-	-	-	-	-	50.0	-	-

Paradigm Transportation Solutions Limited
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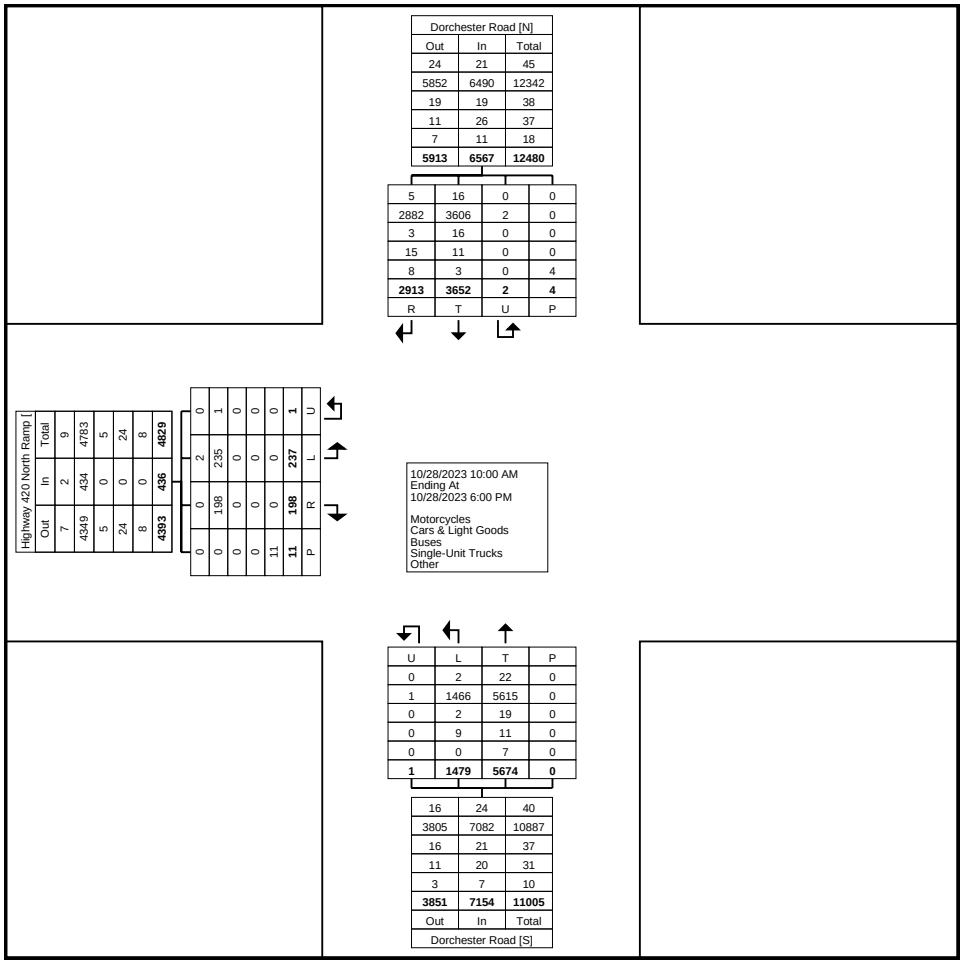
Count Name: Dorchester Road & Highway 420 North Ramp - Saturday
Site Code: 230334
Start Date: 10/28/2023



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Dorchester Road & Highway 420 North Ramp - Saturday
Site Code: 230334
Start Date: 10/28/2023

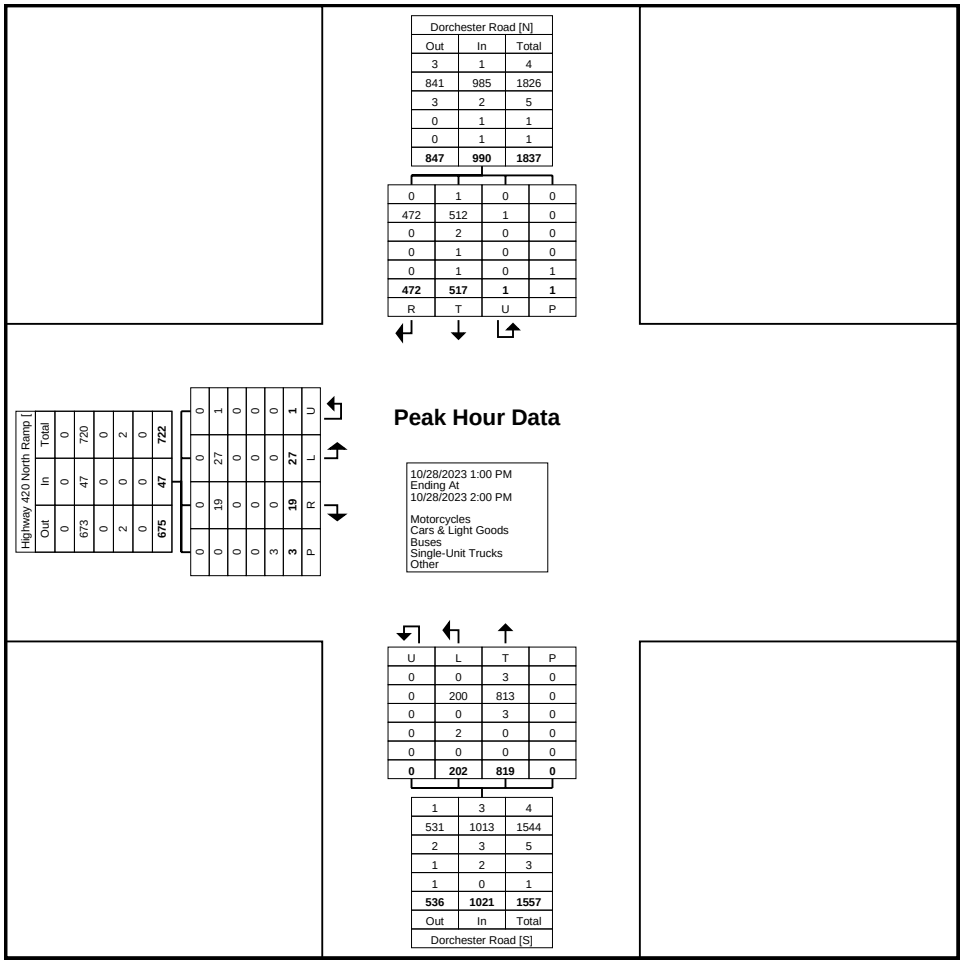
Turning Movement Peak Hour Data (1:00 PM)

Start Time	Highway 420 North Ramp Eastbound					Dorchester Road Northbound					Dorchester Road Southbound					
	Left	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Int. Total
1:00 PM	8	5	1	0	14	48	215	0	0	263	122	123	0	0	245	522
1:15 PM	8	3	0	0	11	41	192	0	0	233	133	119	0	0	252	496
1:30 PM	3	5	0	3	8	59	193	0	0	252	133	130	0	0	263	523
1:45 PM	8	6	0	0	14	54	219	0	0	273	129	100	1	1	230	517
Total	27	19	1	3	47	202	819	0	0	1021	517	472	1	1	990	2058
Approach %	57.4	40.4	2.1	-	-	19.8	80.2	0.0	-	-	52.2	47.7	0.1	-	-	-
Total %	1.3	0.9	0.0	-	2.3	9.8	39.8	0.0	-	49.6	25.1	22.9	0.0	-	48.1	-
PHF	0.844	0.792	0.250	-	0.839	0.856	0.935	0.000	-	0.935	0.972	0.908	0.250	-	0.941	0.984
Motorcycles	0	0	0	-	0	0	3	0	-	3	1	0	0	-	1	4
% Motorcycles	0.0	0.0	0.0	-	0.0	0.0	0.4	-	-	0.3	0.2	0.0	0.0	-	0.1	0.2
Cars & Light Goods	27	19	1	-	47	200	813	0	-	1013	512	472	1	-	985	2045
% Cars & Light Goods	100.0	100.0	100.0	-	100.0	99.0	99.3	-	-	99.2	99.0	100.0	100.0	-	99.5	99.4
Buses	0	0	0	-	0	0	3	0	-	3	2	0	0	-	2	5
% Buses	0.0	0.0	0.0	-	0.0	0.0	0.4	-	-	0.3	0.4	0.0	0.0	-	0.2	0.2
Single-Unit Trucks	0	0	0	-	0	2	0	0	-	2	1	0	0	-	1	3
% Single-Unit Trucks	0.0	0.0	0.0	-	0.0	1.0	0.0	-	-	0.2	0.2	0.0	0.0	-	0.1	0.1
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	1	0	0	-	1	1
% Bicycles on Road	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.2	0.0	0.0	-	0.1	0.0
Bicycles on Crosswalk	-	-	-	3	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	100.0	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
% Pedestrians	-	-	-	0.0	-	-	-	-	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Dorchester Road & Highway 420 North Ramp - Saturday
Site Code: 230334
Start Date: 10/28/2023



Turning Movement Peak Hour Data Plot (1:00 PM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Dorchester Road & Frederica Street
Site Code: 230334
Start Date: 10/26/2023

Turning Movement Data

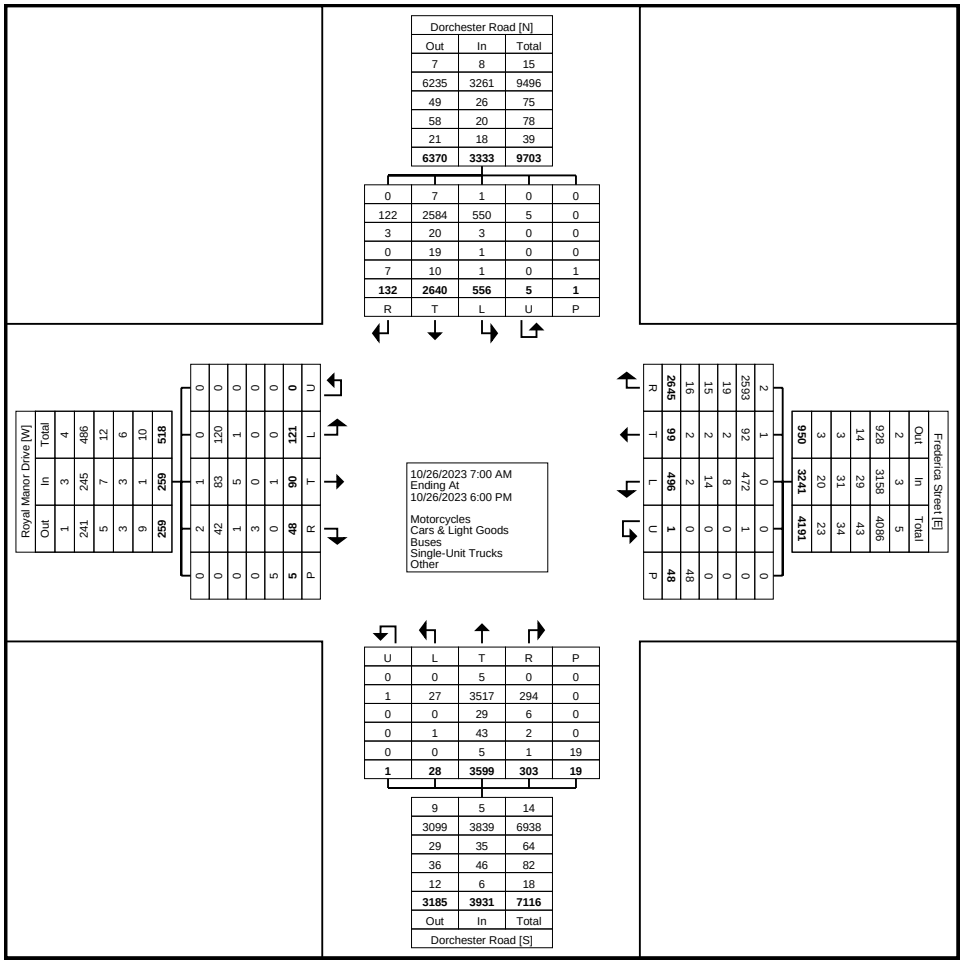
Start Time	Royal Manor Drive Eastbound						Frederica Street Westbound						Dorchester Road Northbound						Dorchester Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	4	0	0	0	0	4	5	0	27	0	0	32	0	51	6	0	0	57	4	24	0	0	0	28	121
7:15 AM	3	4	1	0	0	8	6	1	29	0	1	36	0	57	4	0	1	61	6	31	0	0	0	37	142
7:30 AM	5	3	0	0	0	8	5	0	35	0	0	40	0	67	4	0	0	71	6	37	0	0	0	43	162
7:45 AM	3	3	1	0	0	7	6	0	62	0	0	68	0	89	5	0	2	94	16	40	4	0	0	60	229
Hourly Total	15	10	2	0	0	27	22	1	153	0	1	176	0	264	19	0	3	283	32	132	4	0	0	168	654
8:00 AM	5	4	1	0	0	10	10	1	69	0	0	80	1	67	2	0	0	70	14	45	6	0	0	65	225
8:15 AM	3	6	3	0	0	12	9	2	81	0	0	92	0	98	7	0	0	105	19	41	2	0	0	62	271
8:30 AM	4	5	0	0	0	9	12	1	80	1	0	94	1	94	10	0	0	105	28	68	1	0	0	97	305
8:45 AM	4	3	2	0	0	9	10	1	71	0	1	82	0	96	15	0	0	111	17	50	4	0	0	71	273
Hourly Total	16	18	6	0	0	40	41	5	301	1	1	348	2	355	34	0	0	391	78	204	13	0	0	295	1074
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	2	2	3	0	0	7	12	1	64	0	1	77	2	94	6	0	0	102	21	94	6	0	0	121	307
11:15 AM	6	5	1	0	0	12	13	4	78	0	0	95	1	112	9	0	0	122	19	89	2	0	0	110	339
11:30 AM	7	1	2	0	0	10	14	3	74	0	1	91	1	128	10	0	0	139	22	79	1	0	0	102	342
11:45 AM	6	2	1	0	0	9	20	2	87	0	0	109	2	114	16	0	0	132	21	76	1	0	1	98	348
Hourly Total	21	10	7	0	0	38	59	10	303	0	2	372	6	448	41	0	0	495	83	338	10	0	1	431	1336
12:00 PM	4	2	1	0	0	7	22	4	96	0	0	122	2	120	11	0	0	133	10	79	5	1	0	95	357
12:15 PM	5	3	1	0	0	9	17	2	76	0	4	95	2	109	8	0	0	119	22	92	5	0	0	119	342
12:30 PM	6	6	2	0	0	14	17	0	74	0	4	91	0	117	10	0	4	127	17	89	7	0	0	113	345
12:45 PM	6	1	2	0	1	9	22	4	93	0	5	119	3	122	16	0	4	141	17	97	5	1	0	120	389
Hourly Total	21	12	6	0	1	39	78	10	339	0	13	427	7	468	45	0	8	520	66	357	22	2	0	447	1433
1:00 PM	1	1	4	0	0	6	7	1	72	0	5	80	0	124	7	0	0	131	22	80	1	0	0	103	320
1:15 PM	2	2	1	0	0	5	7	4	100	0	2	111	0	119	10	0	0	129	19	109	8	0	0	136	381
1:30 PM	1	2	1	0	0	4	12	5	69	0	1	86	0	127	10	0	0	137	16	99	7	0	0	122	349
1:45 PM	2	1	0	0	0	3	20	2	92	0	0	114	0	111	13	0	0	124	12	93	5	0	0	110	351
Hourly Total	6	6	6	0	0	18	46	12	333	0	8	391	0	481	40	0	0	521	69	381	21	0	0	471	1401
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	2	3	3	0	2	8	22	3	105	0	1	130	1	116	8	0	2	125	21	105	6	1	0	133	396
3:15 PM	1	2	1	0	0	4	25	2	131	0	4	158	2	120	9	0	1	131	24	90	2	0	0	116	409
3:30 PM	2	2	2	0	0	6	15	4	93	0	4	112	1	139	9	0	1	149	19	110	4	0	0	133	400
3:45 PM	5	3	1	0	0	9	16	9	117	0	3	142	0	129	4	0	0	133	15	98	9	0	0	122	406
Hourly Total	10	10	7	0	2	27	78	18	446	0	12	542	4	504	30	0	4	538	79	403	21	1	0	504	1611
4:00 PM	6	6	2	0	0	14	18	7	97	0	2	122	1	168	16	0	1	185	19	106	5	1	0	131	452
4:15 PM	4	2	1	0	1	7	31	8	105	0	2	144	2	130	9	0	1	141	22	104	0	1	0	127	419
4:30 PM	1	0	2	0	1	3	21	3	85	0	0	109	1	126	11	0	1	138	14	99	7	0	0	120	370

4:45 PM	4	3	2	0	0	9	27	7	132	0	1	166	1	136	16	0	0	153	16	98	5	0	0	119	447
Hourly Total	15	11	7	0	2	33	97	25	419	0	5	541	5	560	52	0	3	617	71	407	17	2	0	497	1688
5:00 PM	6	3	0	0	0	9	19	7	93	0	2	119	2	128	12	0	0	142	24	117	3	0	0	144	414
5:15 PM	2	7	2	0	0	11	18	3	114	0	3	135	1	140	8	1	1	150	13	93	12	0	0	118	414
5:30 PM	8	1	3	0	0	12	20	5	83	0	1	108	0	134	6	0	0	140	27	106	5	0	0	138	398
5:45 PM	1	2	2	0	0	5	18	3	61	0	0	82	1	117	16	0	0	134	14	102	4	0	0	120	341
Hourly Total	17	13	7	0	0	37	75	18	351	0	6	444	4	519	42	1	1	566	78	418	24	0	0	520	1567
Grand Total	121	90	48	0	5	259	496	99	2645	1	48	3241	28	3599	303	1	19	3931	556	2640	132	5	1	3333	10764
Approach %	46.7	34.7	18.5	0.0	-	-	15.3	3.1	81.6	0.0	-	-	0.7	91.6	7.7	0.0	-	-	16.7	79.2	4.0	0.2	-	-	-
Total %	1.1	0.8	0.4	0.0	-	2.4	4.6	0.9	24.6	0.0	-	30.1	0.3	33.4	2.8	0.0	-	36.5	5.2	24.5	1.2	0.0	-	31.0	-
Motorcycles	0	1	2	0	-	3	0	1	2	0	-	3	0	5	0	0	-	5	1	7	0	0	-	8	19
% Motorcycles	0.0	1.1	4.2	-	-	1.2	0.0	1.0	0.1	0.0	-	0.1	0.0	0.1	0.0	0.0	-	0.1	0.2	0.3	0.0	0.0	-	0.2	0.2
Cars & Light Goods	120	83	42	0	-	245	472	92	2593	1	-	3158	27	3517	294	1	-	3839	550	2584	122	5	-	3261	10503
% Cars & Light Goods	99.2	92.2	87.5	-	-	94.6	95.2	92.9	98.0	100.0	-	97.4	96.4	97.7	97.0	100.0	-	97.7	98.9	97.9	92.4	100.0	-	97.8	97.6
Buses	1	5	1	0	-	7	8	2	19	0	-	29	0	29	6	0	-	35	3	20	3	0	-	26	97
% Buses	0.8	5.6	2.1	-	-	2.7	1.6	2.0	0.7	0.0	-	0.9	0.0	0.8	2.0	0.0	-	0.9	0.5	0.8	2.3	0.0	-	0.8	0.9
Single-Unit Trucks	0	0	3	0	-	3	14	2	15	0	-	31	1	43	2	0	-	46	1	19	0	0	-	20	100
% Single-Unit Trucks	0.0	0.0	6.3	-	-	1.2	2.8	2.0	0.6	0.0	-	1.0	3.6	1.2	0.7	0.0	-	1.2	0.2	0.7	0.0	0.0	-	0.6	0.9
Articulated Trucks	0	0	0	0	-	0	2	0	14	0	-	16	0	1	0	0	-	1	1	4	0	0	-	5	22
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.4	0.0	0.5	0.0	-	0.5	0.0	0.0	0.0	0.0	-	0.0	0.2	0.2	0.0	0.0	-	0.2	0.2
Bicycles on Road	0	1	0	0	-	1	0	2	2	0	-	4	0	4	1	0	-	5	0	6	7	0	-	13	23
% Bicycles on Road	0.0	1.1	0.0	-	-	0.4	0.0	2.0	0.1	0.0	-	0.1	0.0	0.1	0.3	0.0	-	0.1	0.0	0.2	5.3	0.0	-	0.4	0.2
Bicycles on Crosswalk	-	-	-	-	2	-	-	-	-	-	20	-	-	-	-	-	6	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	40.0	-	-	-	-	-	41.7	-	-	-	-	-	31.6	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	3	-	-	-	-	-	28	-	-	-	-	-	13	-	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	60.0	-	-	-	-	-	58.3	-	-	-	-	-	68.4	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Dorchester Road & Frederica Street
Site Code: 230334
Start Date: 10/26/2023



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Dorchester Road & Frederica Street
Site Code: 230334
Start Date: 10/26/2023

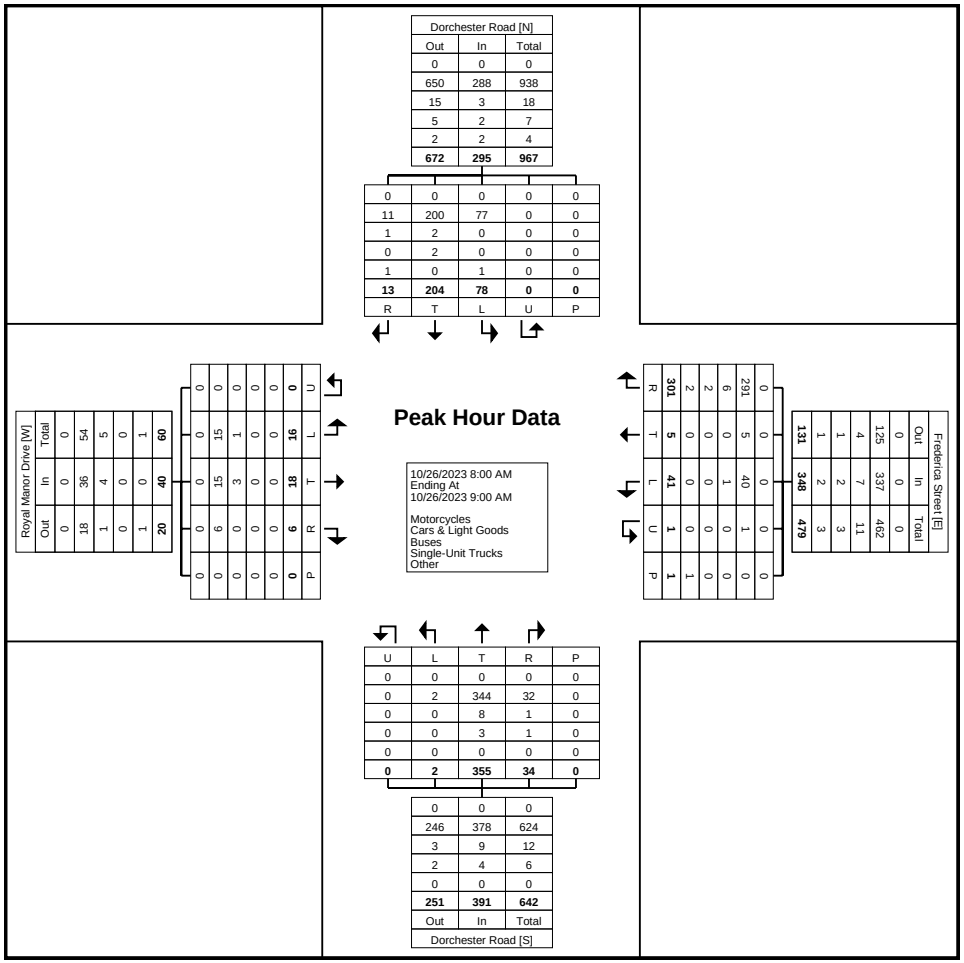
Turning Movement Peak Hour Data (8:00 AM)

Start Time	Royal Manor Drive Eastbound						Frederica Street Westbound						Dorchester Road Northbound						Dorchester Road Southbound						
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Int. Total
8:00 AM	5	4	1	0	0	10	10	1	69	0	0	80	1	67	2	0	0	70	14	45	6	0	0	65	225
8:15 AM	3	6	3	0	0	12	9	2	81	0	0	92	0	98	7	0	0	105	19	41	2	0	0	62	271
8:30 AM	4	5	0	0	0	9	12	1	80	1	0	94	1	94	10	0	0	105	28	68	1	0	0	97	305
8:45 AM	4	3	2	0	0	9	10	1	71	0	1	82	0	96	15	0	0	111	17	50	4	0	0	71	273
Total	16	18	6	0	0	40	41	5	301	1	1	348	2	355	34	0	0	391	78	204	13	0	0	295	1074
Approach %	40.0	45.0	15.0	0.0	-	-	11.8	1.4	86.5	0.3	-	-	0.5	90.8	8.7	0.0	-	-	26.4	69.2	4.4	0.0	-	-	-
Total %	1.5	1.7	0.6	0.0	-	3.7	3.8	0.5	28.0	0.1	-	32.4	0.2	33.1	3.2	0.0	-	36.4	7.3	19.0	1.2	0.0	-	27.5	-
PHF	0.800	0.750	0.500	0.000	-	0.833	0.854	0.625	0.929	0.250	-	0.926	0.500	0.906	0.567	0.000	-	0.881	0.696	0.750	0.542	0.000	-	0.760	0.880
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	15	15	6	0	-	36	40	5	291	1	-	337	2	344	32	0	-	378	77	200	11	0	-	288	1039
% Cars & Light Goods	93.8	83.3	100.0	-	-	90.0	97.6	100.0	96.7	100.0	-	96.8	100.0	96.9	94.1	-	-	96.7	98.7	98.0	84.6	-	-	97.6	96.7
Buses	1	3	0	0	-	4	1	0	6	0	-	7	0	8	1	0	-	9	0	2	1	0	-	3	23
% Buses	6.3	16.7	0.0	-	-	10.0	2.4	0.0	2.0	0.0	-	2.0	0.0	2.3	2.9	-	-	2.3	0.0	1.0	7.7	-	-	1.0	2.1
Single-Unit Trucks	0	0	0	0	-	0	0	0	2	0	-	2	0	3	1	0	-	4	0	2	0	0	-	2	8
% Single-Unit Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.7	0.0	-	0.6	0.0	0.8	2.9	-	-	1.0	0.0	1.0	0.0	-	-	0.7	0.7
Articulated Trucks	0	0	0	0	-	0	0	0	2	0	-	2	0	0	0	0	-	0	1	0	0	0	-	1	3
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.7	0.0	-	0.6	0.0	0.0	0.0	-	-	0.0	1.3	0.0	0.0	-	-	0.3	0.3
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	1	1
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	7.7	-	-	0.3	0.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Dorchester Road & Frederica Street
Site Code: 230334
Start Date: 10/26/2023



Turning Movement Peak Hour Data Plot (8:00 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Dorchester Road & Frederica Street
Site Code: 230334
Start Date: 10/26/2023

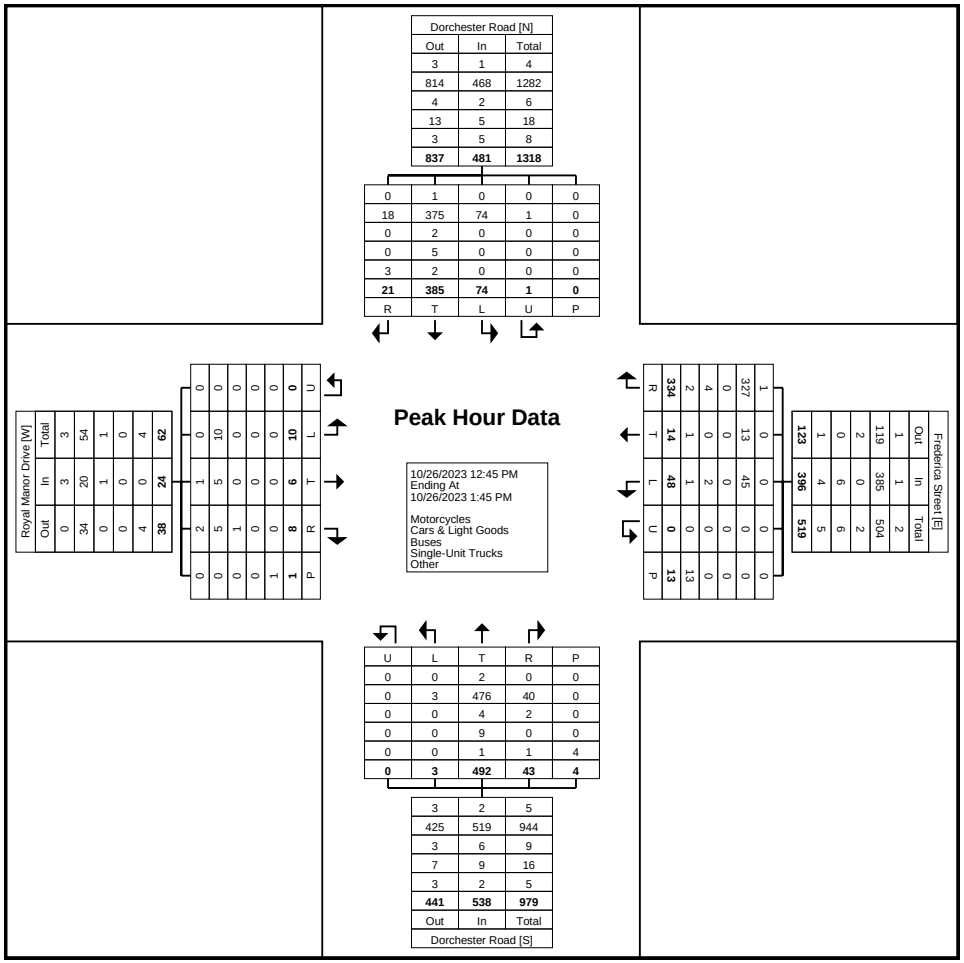
Turning Movement Peak Hour Data (12:45 PM)

Start Time	Royal Manor Drive Eastbound						Frederica Street Westbound						Dorchester Road Northbound						Dorchester Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
12:45 PM	6	1	2	0	1	9	22	4	93	0	5	119	3	122	16	0	4	141	17	97	5	1	0	120	389
1:00 PM	1	1	4	0	0	6	7	1	72	0	5	80	0	124	7	0	0	131	22	80	1	0	0	103	320
1:15 PM	2	2	1	0	0	5	7	4	100	0	2	111	0	119	10	0	0	129	19	109	8	0	0	136	381
1:30 PM	1	2	1	0	0	4	12	5	69	0	1	86	0	127	10	0	0	137	16	99	7	0	0	122	349
Total	10	6	8	0	1	24	48	14	334	0	13	396	3	492	43	0	4	538	74	385	21	1	0	481	1439
Approach %	41.7	25.0	33.3	0.0	-	-	12.1	3.5	84.3	0.0	-	-	0.6	91.4	8.0	0.0	-	-	15.4	80.0	4.4	0.2	-	-	-
Total %	0.7	0.4	0.6	0.0	-	1.7	3.3	1.0	23.2	0.0	-	27.5	0.2	34.2	3.0	0.0	-	37.4	5.1	26.8	1.5	0.1	-	33.4	-
PHF	0.417	0.750	0.500	0.000	-	0.667	0.545	0.700	0.835	0.000	-	0.832	0.250	0.969	0.672	0.000	-	0.954	0.841	0.883	0.656	0.250	-	0.884	0.925
Motorcycles	0	1	2	0	-	3	0	0	1	0	-	1	0	2	0	0	-	2	0	1	0	0	-	1	7
% Motorcycles	0.0	16.7	25.0	-	-	12.5	0.0	0.0	0.3	-	-	0.3	0.0	0.4	0.0	-	-	0.4	0.0	0.3	0.0	0.0	-	0.2	0.5
Cars & Light Goods	10	5	5	0	-	20	45	13	327	0	-	385	3	476	40	0	-	519	74	375	18	1	-	468	1392
% Cars & Light Goods	100.0	83.3	62.5	-	-	83.3	93.8	92.9	97.9	-	-	97.2	100.0	96.7	93.0	-	-	96.5	100.0	97.4	85.7	100.0	-	97.3	96.7
Buses	0	0	1	0	-	1	0	0	0	0	-	0	0	4	2	0	-	6	0	2	0	0	-	2	9
% Buses	0.0	0.0	12.5	-	-	4.2	0.0	0.0	0.0	-	-	0.0	0.0	0.8	4.7	-	-	1.1	0.0	0.5	0.0	0.0	-	0.4	0.6
Single-Unit Trucks	0	0	0	0	-	0	2	0	4	0	-	6	0	9	0	0	-	9	0	5	0	0	-	5	20
% Single-Unit Trucks	0.0	0.0	0.0	-	-	0.0	4.2	0.0	1.2	-	-	1.5	0.0	1.8	0.0	-	-	1.7	0.0	1.3	0.0	0.0	-	1.0	1.4
Articulated Trucks	0	0	0	0	-	0	1	0	2	0	-	3	0	0	0	0	-	0	0	0	0	0	-	0	3
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	2.1	0.0	0.6	-	-	0.8	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.2
Bicycles on Road	0	0	0	0	-	0	0	1	0	0	-	1	0	1	1	0	-	2	0	2	3	0	-	5	8
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	7.1	0.0	-	-	0.3	0.0	0.2	2.3	-	-	0.4	0.0	0.5	14.3	0.0	-	1.0	0.6
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	8	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	61.5	-	-	-	-	-	25.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	-	5	-	-	-	-	-	3	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	38.5	-	-	-	-	-	75.0	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Dorchester Road & Frederica Street
Site Code: 230334
Start Date: 10/26/2023



Turning Movement Peak Hour Data Plot (12:45 PM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Dorchester Road & Frederica Street
Site Code: 230334
Start Date: 10/26/2023

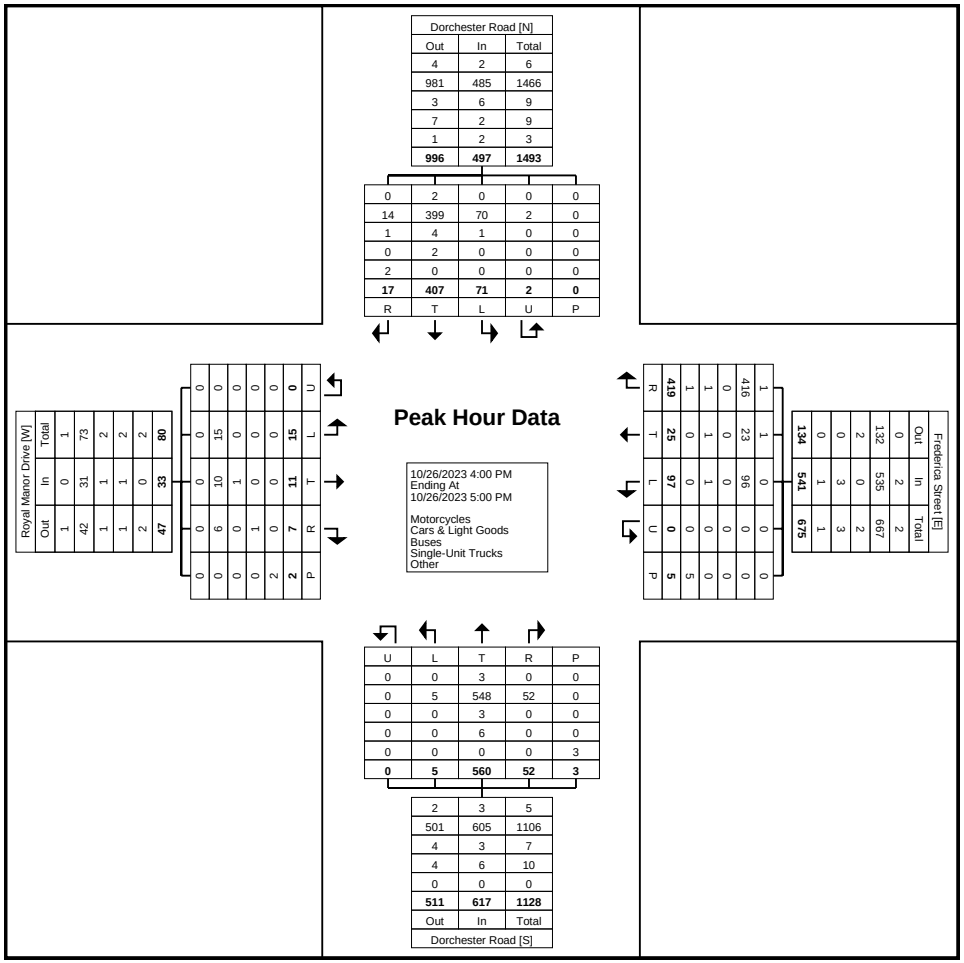
Turning Movement Peak Hour Data (4:00 PM)

Start Time	Royal Manor Drive Eastbound						Frederica Street Westbound						Dorchester Road Northbound						Dorchester Road Southbound						
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Int. Total
4:00 PM	6	6	2	0	0	14	18	7	97	0	2	122	1	168	16	0	1	185	19	106	5	1	0	131	452
4:15 PM	4	2	1	0	1	7	31	8	105	0	2	144	2	130	9	0	1	141	22	104	0	1	0	127	419
4:30 PM	1	0	2	0	1	3	21	3	85	0	0	109	1	126	11	0	1	138	14	99	7	0	0	120	370
4:45 PM	4	3	2	0	0	9	27	7	132	0	1	166	1	136	16	0	0	153	16	98	5	0	0	119	447
Total	15	11	7	0	2	33	97	25	419	0	5	541	5	560	52	0	3	617	71	407	17	2	0	497	1688
Approach %	45.5	33.3	21.2	0.0	-	-	17.9	4.6	77.4	0.0	-	-	0.8	90.8	8.4	0.0	-	-	14.3	81.9	3.4	0.4	-	-	-
Total %	0.9	0.7	0.4	0.0	-	2.0	5.7	1.5	24.8	0.0	-	32.0	0.3	33.2	3.1	0.0	-	36.6	4.2	24.1	1.0	0.1	-	29.4	-
PHF	0.625	0.458	0.875	0.000	-	0.589	0.782	0.781	0.794	0.000	-	0.815	0.625	0.833	0.813	0.000	-	0.834	0.807	0.960	0.607	0.500	-	0.948	0.934
Motorcycles	0	0	0	0	-	0	0	1	1	0	-	2	0	3	0	0	-	3	0	2	0	0	-	2	7
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	4.0	0.2	-	-	0.4	0.0	0.5	0.0	-	-	0.5	0.0	0.5	0.0	0.0	-	0.4	0.4
Cars & Light Goods	15	10	6	0	-	31	96	23	416	0	-	535	5	548	52	0	-	605	70	399	14	2	-	485	1656
% Cars & Light Goods	100.0	90.9	85.7	-	-	93.9	99.0	92.0	99.3	-	-	98.9	100.0	97.9	100.0	-	-	98.1	98.6	98.0	82.4	100.0	-	97.6	98.1
Buses	0	1	0	0	-	1	0	0	0	0	-	0	0	3	0	0	-	3	1	4	1	0	-	6	10
% Buses	0.0	9.1	0.0	-	-	3.0	0.0	0.0	0.0	-	-	0.0	0.0	0.5	0.0	-	-	0.5	1.4	1.0	5.9	0.0	-	1.2	0.6
Single-Unit Trucks	0	0	1	0	-	1	1	1	1	0	-	3	0	6	0	0	-	6	0	2	0	0	-	2	12
% Single-Unit Trucks	0.0	0.0	14.3	-	-	3.0	1.0	4.0	0.2	-	-	0.6	0.0	1.1	0.0	-	-	1.0	0.0	0.5	0.0	0.0	-	0.4	0.7
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Road	0	0	0	0	-	0	0	0	1	0	-	1	0	0	0	0	-	0	0	0	2	0	-	2	3
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.2	-	-	0.2	0.0	0.0	0.0	-	-	0.0	0.0	0.0	11.8	0.0	-	0.4	0.2
Bicycles on Crosswalk	-	-	-	-	2	-	-	-	-	-	3	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	100.0	-	-	-	-	-	60.0	-	-	-	-	-	0.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	3	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	0.0	-	-	-	-	-	40.0	-	-	-	-	-	100.0	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Dorchester Road & Frederica Street
Site Code: 230334
Start Date: 10/26/2023



Turning Movement Peak Hour Data Plot (4:00 PM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Dorchester Road & Frederica Street - Saturday
Site Code: 230334
Start Date: 10/28/2023

Turning Movement Data

Start Time	Royal Manor Drive Eastbound						Frederica Street Westbound						Dorchester Road Northbound						Dorchester Road Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
10:00 AM	3	0	1	0	0	4	11	1	70	0	3	82	1	114	6	0	10	121	17	92	4	0	0	113	320
10:15 AM	4	2	0	0	0	6	15	0	68	1	2	84	1	119	10	0	1	130	10	79	2	0	0	91	311
10:30 AM	1	3	2	0	0	6	16	6	81	0	2	103	2	124	14	0	1	140	22	76	6	1	0	105	354
10:45 AM	5	5	0	0	0	10	24	4	76	0	1	104	0	127	12	0	1	139	14	79	2	1	1	96	349
Hourly Total	13	10	3	0	0	26	66	11	295	1	8	373	4	484	42	0	13	530	63	326	14	2	1	405	1334
11:00 AM	6	5	3	0	0	14	18	0	91	0	2	109	0	131	3	0	2	134	15	90	7	1	1	113	370
11:15 AM	8	4	0	0	1	12	7	3	78	0	1	88	1	135	6	0	1	142	17	90	2	0	0	109	351
11:30 AM	6	2	1	0	0	9	14	3	106	0	0	123	0	119	9	0	14	128	18	93	3	0	1	114	374
11:45 AM	3	0	1	0	0	4	14	1	83	0	1	98	0	163	7	0	1	170	23	104	5	0	0	132	404
Hourly Total	23	11	5	0	1	39	53	7	358	0	4	418	1	548	25	0	18	574	73	377	17	1	2	468	1499
12:00 PM	8	3	2	0	0	13	16	1	75	0	2	92	0	144	12	0	0	156	24	101	7	0	1	132	393
12:15 PM	6	3	0	0	0	9	22	2	86	0	2	110	2	137	11	0	0	150	27	121	7	0	0	155	424
12:30 PM	7	1	1	0	0	9	11	2	98	0	1	111	1	141	9	0	0	151	19	118	10	1	0	148	419
12:45 PM	5	2	2	0	0	9	21	6	81	0	0	108	1	163	9	0	3	173	13	121	4	1	0	139	429
Hourly Total	26	9	5	0	0	40	70	11	340	0	5	421	4	585	41	0	3	630	83	461	28	2	1	574	1665
1:00 PM	6	0	2	0	0	8	12	3	79	0	0	94	0	169	18	0	0	187	19	103	5	0	0	127	416
1:15 PM	3	1	2	0	0	6	19	7	87	0	3	113	1	153	16	0	0	170	19	111	3	1	0	134	423
1:30 PM	10	4	2	0	0	16	14	5	86	0	1	105	0	150	13	0	0	163	19	105	5	0	0	129	413
1:45 PM	4	1	1	0	0	6	16	4	105	0	5	125	1	161	11	0	2	173	25	106	7	1	0	139	443
Hourly Total	23	6	7	0	0	36	61	19	357	0	9	437	2	633	58	0	2	693	82	425	20	2	0	529	1695
2:00 PM	7	1	1	0	0	9	25	7	100	0	2	132	1	163	12	0	2	176	20	102	5	0	0	127	444
2:15 PM	5	3	2	0	0	10	14	5	83	0	2	102	1	153	7	0	0	161	23	108	3	1	0	135	408
2:30 PM	7	2	0	0	0	9	19	4	81	0	0	104	1	148	12	0	1	161	24	107	3	0	0	134	408
2:45 PM	3	5	1	0	0	9	23	2	98	0	3	123	1	132	14	0	3	147	14	95	10	1	0	120	399
Hourly Total	22	11	4	0	0	37	81	18	362	0	7	461	4	596	45	0	6	645	81	412	21	2	0	516	1659
3:00 PM	2	2	3	0	0	7	18	3	72	0	1	93	0	126	12	0	0	138	16	113	8	0	0	137	375
3:15 PM	6	3	5	0	0	14	15	5	112	0	3	132	2	130	6	0	1	138	19	102	9	0	0	130	414
3:30 PM	5	2	3	0	0	10	13	3	88	0	0	104	1	128	8	0	0	137	12	99	1	1	0	113	364
3:45 PM	6	0	2	0	0	8	17	6	67	0	2	90	1	135	14	0	1	150	26	103	2	1	0	132	380
Hourly Total	19	7	13	0	0	39	63	17	339	0	6	419	4	519	40	0	2	563	73	417	20	2	0	512	1533
4:00 PM	11	1	1	0	0	13	12	7	72	0	1	91	0	135	13	0	2	148	21	86	4	0	0	111	363
4:15 PM	5	2	2	0	0	9	22	5	82	0	2	109	1	148	8	0	5	157	15	102	6	1	0	124	399
4:30 PM	6	5	2	0	0	13	22	0	80	0	0	102	2	129	12	0	1	143	20	105	2	1	0	128	386
4:45 PM	4	2	1	0	1	7	20	3	57	0	0	80	3	129	13	0	0	145	21	100	6	0	0	127	359
Hourly Total	26	10	6	0	1	42	76	15	291	0	3	382	6	541	46	0	8	593	77	393	18	2	0	490	1507

5:00 PM	2	2	1	0	0	5	15	4	72	0	1	91	1	118	9	0	1	128	10	86	4	0	0	100	324
5:15 PM	2	1	3	0	0	6	13	3	70	0	1	86	0	109	13	0	1	122	15	82	1	0	0	98	312
5:30 PM	0	1	0	0	0	1	26	3	64	0	2	93	1	129	12	0	0	142	15	84	3	0	0	102	338
5:45 PM	5	3	1	0	1	9	24	4	61	0	0	89	4	116	11	0	0	131	11	89	4	0	0	104	333
Hourly Total	9	7	5	0	1	21	78	14	267	0	4	359	6	472	45	0	2	523	51	341	12	0	0	404	1307
Grand Total	161	71	48	0	3	280	548	112	2609	1	46	3270	31	4378	342	0	54	4751	583	3152	150	13	4	3898	12199
Approach %	57.5	25.4	17.1	0.0	-	-	16.8	3.4	79.8	0.0	-	-	0.7	92.1	7.2	0.0	-	-	15.0	80.9	3.8	0.3	-	-	-
Total %	1.3	0.6	0.4	0.0	-	2.3	4.5	0.9	21.4	0.0	-	26.8	0.3	35.9	2.8	0.0	-	38.9	4.8	25.8	1.2	0.1	-	32.0	-
Motorcycles	8	0	2	0	-	10	2	2	2	0	-	6	1	14	0	0	-	15	3	8	6	0	-	17	48
% Motorcycles	5.0	0.0	4.2	-	-	3.6	0.4	1.8	0.1	0.0	-	0.2	3.2	0.3	0.0	-	-	0.3	0.5	0.3	4.0	0.0	-	0.4	0.4
Cars & Light Goods	152	71	46	0	-	269	544	109	2592	1	-	3246	30	4334	338	0	-	4702	580	3115	140	13	-	3848	12065
% Cars & Light Goods	94.4	100.0	95.8	-	-	96.1	99.3	97.3	99.3	100.0	-	99.3	96.8	99.0	98.8	-	-	99.0	99.5	98.8	93.3	100.0	-	98.7	98.9
Buses	0	0	0	0	-	0	1	0	1	0	-	2	0	19	0	0	-	19	0	18	0	0	-	18	39
% Buses	0.0	0.0	0.0	-	-	0.0	0.2	0.0	0.0	0.0	-	0.1	0.0	0.4	0.0	-	-	0.4	0.0	0.6	0.0	0.0	-	0.5	0.3
Single-Unit Trucks	0	0	0	0	-	0	1	1	13	0	-	15	0	8	3	0	-	11	0	6	0	0	-	6	32
% Single-Unit Trucks	0.0	0.0	0.0	-	-	0.0	0.2	0.9	0.5	0.0	-	0.5	0.0	0.2	0.9	-	-	0.2	0.0	0.2	0.0	0.0	-	0.2	0.3
Articulated Trucks	0	0	0	0	-	0	0	0	1	0	-	1	0	1	0	0	-	1	0	2	0	0	-	2	4
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.1	0.0	0.0	-	0.1	0.0
Bicycles on Road	1	0	0	0	-	1	0	0	0	0	-	0	0	2	1	0	-	3	0	3	4	0	-	7	11
% Bicycles on Road	0.6	0.0	0.0	-	-	0.4	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.3	-	-	0.1	0.0	0.1	2.7	0.0	-	0.2	0.1
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	11	-	-	-	-	-	8	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	33.3	-	-	-	-	-	23.9	-	-	-	-	-	14.8	-	-	-	-	-	25.0	-	-
Pedestrians	-	-	-	-	2	-	-	-	-	-	35	-	-	-	-	-	46	-	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	66.7	-	-	-	-	-	76.1	-	-	-	-	-	85.2	-	-	-	-	-	75.0	-	-

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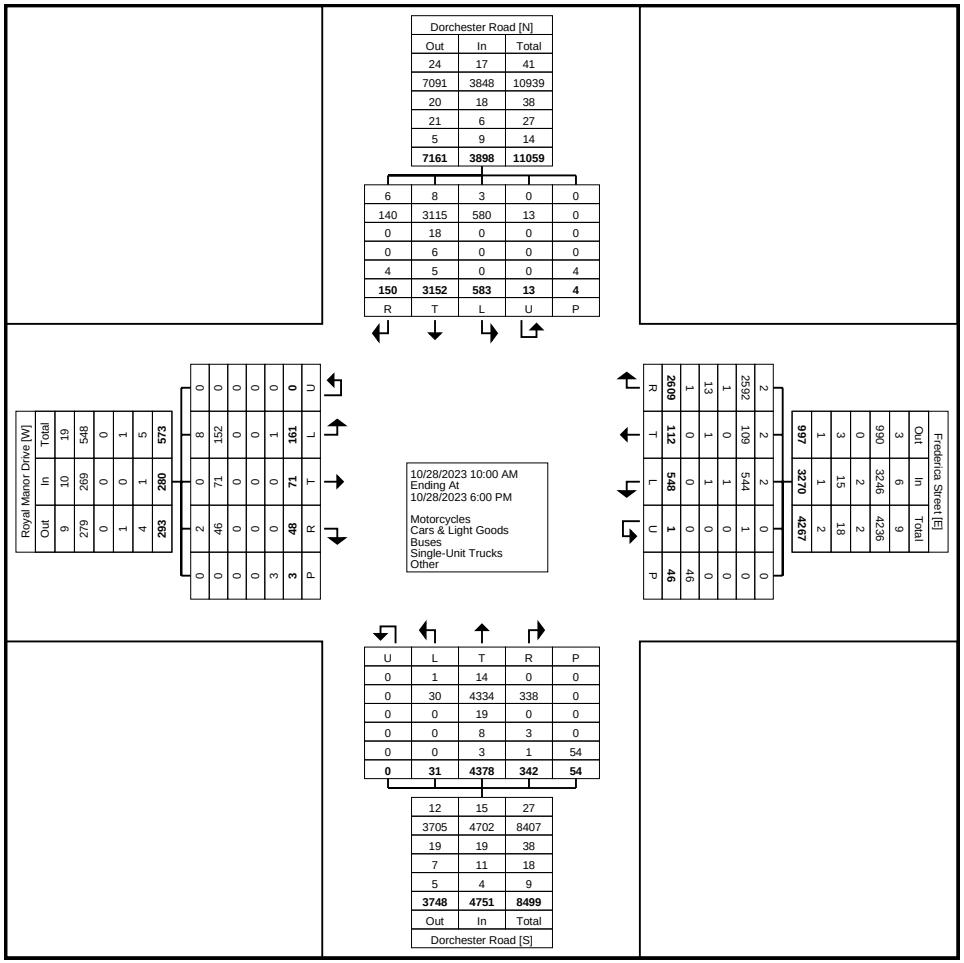
Site Code: 230334
Start Date: 10/28/2023



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Dorchester Road & Frederica Street - Saturday
Site Code: 230334
Start Date: 10/28/2023

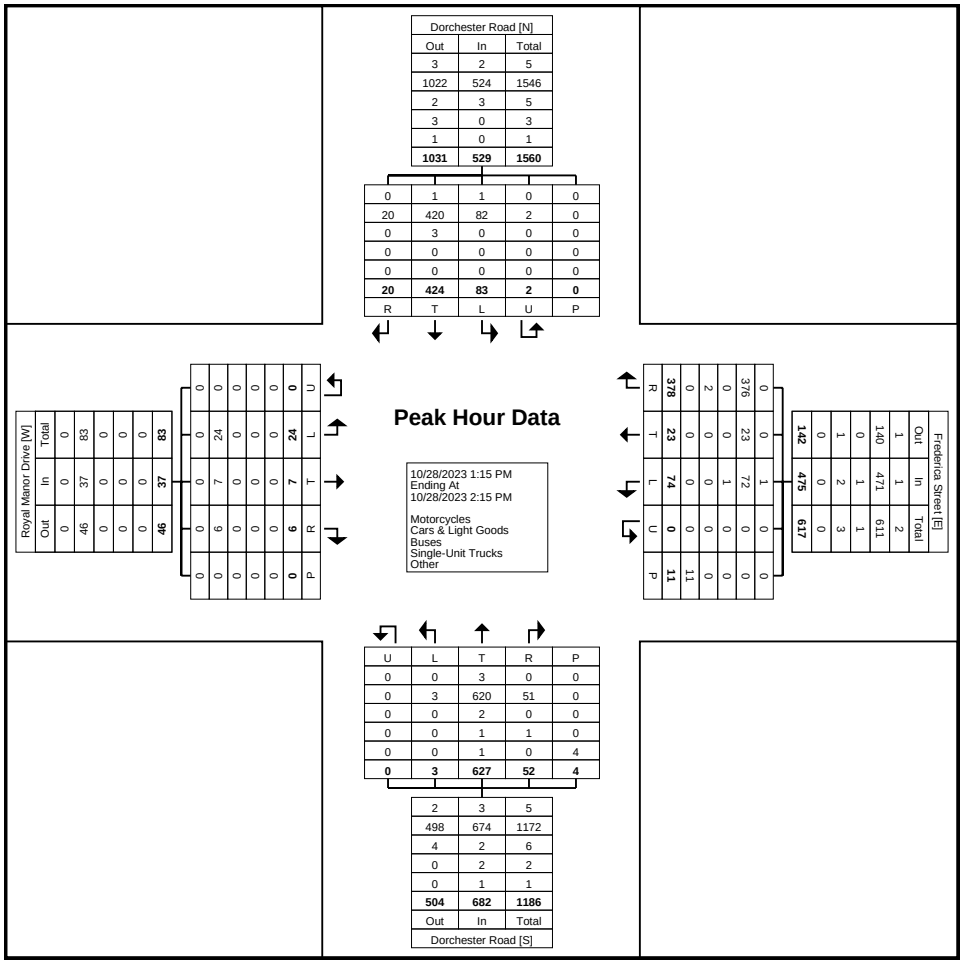
Turning Movement Peak Hour Data (1:15 PM)

Start Time	Royal Manor Drive Eastbound						Frederica Street Westbound						Dorchester Road Northbound						Dorchester Road Southbound						
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Int. Total
1:15 PM	3	1	2	0	0	6	19	7	87	0	3	113	1	153	16	0	0	170	19	111	3	1	0	134	423
1:30 PM	10	4	2	0	0	16	14	5	86	0	1	105	0	150	13	0	0	163	19	105	5	0	0	129	413
1:45 PM	4	1	1	0	0	6	16	4	105	0	5	125	1	161	11	0	2	173	25	106	7	1	0	139	443
2:00 PM	7	1	1	0	0	9	25	7	100	0	2	132	1	163	12	0	2	176	20	102	5	0	0	127	444
Total	24	7	6	0	0	37	74	23	378	0	11	475	3	627	52	0	4	682	83	424	20	2	0	529	1723
Approach %	64.9	18.9	16.2	0.0	-	-	15.6	4.8	79.6	0.0	-	-	0.4	91.9	7.6	0.0	-	-	15.7	80.2	3.8	0.4	-	-	-
Total %	1.4	0.4	0.3	0.0	-	2.1	4.3	1.3	21.9	0.0	-	27.6	0.2	36.4	3.0	0.0	-	39.6	4.8	24.6	1.2	0.1	-	30.7	-
PHF	0.600	0.438	0.750	0.000	-	0.578	0.740	0.821	0.900	0.000	-	0.900	0.750	0.962	0.813	0.000	-	0.969	0.830	0.955	0.714	0.500	-	0.951	0.970
Motorcycles	0	0	0	0	-	0	1	0	0	0	-	1	0	3	0	0	-	3	1	1	0	0	-	2	6
% Motorcycles	0.0	0.0	0.0	-	-	0.0	1.4	0.0	0.0	-	-	0.2	0.0	0.5	0.0	-	-	0.4	1.2	0.2	0.0	0.0	-	0.4	0.3
Cars & Light Goods	24	7	6	0	-	37	72	23	376	0	-	471	3	620	51	0	-	674	82	420	20	2	-	524	1706
% Cars & Light Goods	100.0	100.0	100.0	-	-	100.0	97.3	100.0	99.5	-	-	99.2	100.0	98.9	98.1	-	-	98.8	98.8	99.1	100.0	100.0	-	99.1	99.0
Buses	0	0	0	0	-	0	1	0	0	0	-	1	0	2	0	0	-	2	0	3	0	0	-	3	6
% Buses	0.0	0.0	0.0	-	-	0.0	1.4	0.0	0.0	-	-	0.2	0.0	0.3	0.0	-	-	0.3	0.0	0.7	0.0	0.0	-	0.6	0.3
Single-Unit Trucks	0	0	0	0	-	0	0	0	2	0	-	2	0	1	1	0	-	2	0	0	0	0	-	0	4
% Single-Unit Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.5	-	-	0.4	0.0	0.2	1.9	-	-	0.3	0.0	0.0	0.0	0.0	-	0.0	0.2
Articulated Trucks	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Road	0	0	0	0	-	0	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.0	0.2	0.0	-	-	0.1	0.0	0.0	0.0	0.0	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	3	-	-	-	-	-	2	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	27.3	-	-	-	-	-	50.0	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	8	-	-	-	-	-	2	-	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	72.7	-	-	-	-	-	50.0	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Dorchester Road & Frederica Street - Saturday
Site Code: 230334
Start Date: 10/28/2023



Turning Movement Peak Hour Data Plot (1:15 PM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Frederica Street & Highway 420 South Ramp
Site Code: 230334
Start Date: 10/26/2023

Turning Movement Data

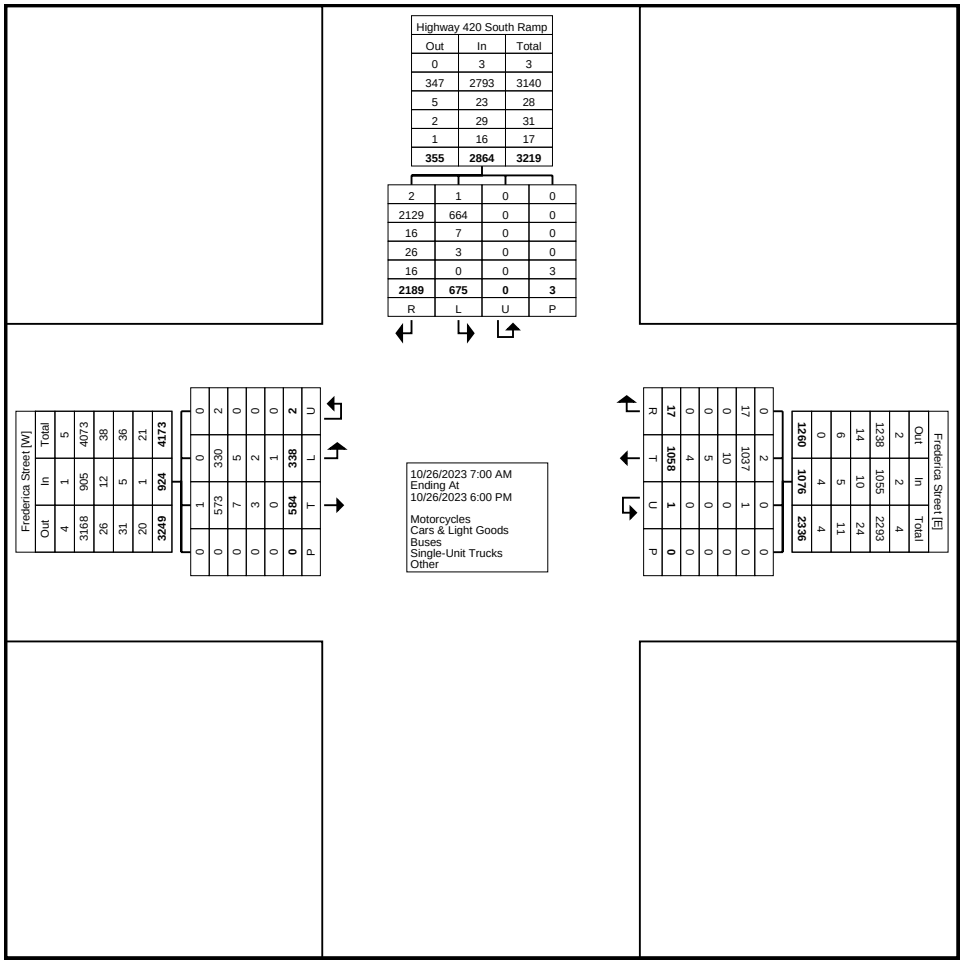
Start Time	Frederica Street Eastbound					Frederica Street Westbound					Highway 420 South Ramp Southbound					Int. Total
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
7:00 AM	8	2	0	0	10	16	0	0	0	16	1	21	0	0	22	48
7:15 AM	8	1	0	0	9	11	0	0	0	11	9	24	0	0	33	53
7:30 AM	4	8	0	0	12	16	0	0	0	16	7	27	0	0	34	62
7:45 AM	10	11	0	0	21	19	1	0	0	20	11	47	0	0	58	99
Hourly Total	30	22	0	0	52	62	1	0	0	63	28	119	0	0	147	262
8:00 AM	10	9	0	0	19	42	1	0	0	43	15	39	0	0	54	116
8:15 AM	9	21	0	0	30	30	0	0	0	30	19	61	0	0	80	140
8:30 AM	20	28	0	0	48	29	0	0	0	29	17	72	0	0	89	166
8:45 AM	13	19	0	0	32	16	1	0	0	17	23	64	0	0	87	136
Hourly Total	52	77	0	0	129	117	2	0	0	119	74	236	0	0	310	558
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	8	17	0	0	25	25	0	0	0	25	8	57	0	0	65	115
11:15 AM	11	19	0	0	30	34	1	1	0	36	18	60	0	0	78	144
11:30 AM	8	22	0	0	30	26	0	0	0	26	13	67	0	0	80	136
11:45 AM	11	23	0	0	34	40	1	0	0	41	20	72	0	0	92	167
Hourly Total	38	81	0	0	119	125	2	1	0	128	59	256	0	0	315	562
12:00 PM	7	14	0	0	21	33	1	0	0	34	23	75	0	0	98	153
12:15 PM	7	26	0	0	33	24	0	0	0	24	21	65	0	0	86	143
12:30 PM	12	21	0	0	33	32	1	0	0	33	18	60	0	0	78	144
12:45 PM	9	19	0	0	28	37	0	0	0	37	21	88	0	0	109	174
Hourly Total	35	80	0	0	115	126	2	0	0	128	83	288	0	0	371	614
1:00 PM	13	18	1	0	32	24	0	0	0	24	18	61	0	0	79	135
1:15 PM	14	17	0	0	31	46	0	0	0	46	17	62	0	0	79	156
1:30 PM	15	17	0	0	32	38	0	0	0	38	17	52	0	0	69	139
1:45 PM	10	16	0	0	26	37	1	0	0	38	13	80	0	0	93	157
Hourly Total	52	68	1	0	121	145	1	0	0	146	65	255	0	0	320	587
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:00 PM	11	16	0	0	27	43	4	0	0	47	29	87	0	0	116	190
3:15 PM	10	26	0	0	36	43	0	0	0	43	36	111	0	0	147	226
3:30 PM	10	21	0	0	31	34	1	0	0	35	25	85	0	0	110	176
3:45 PM	6	17	1	0	24	41	0	0	0	41	31	90	0	1	121	186
Hourly Total	37	80	1	0	118	161	5	0	0	166	121	373	0	1	494	778
4:00 PM	16	27	0	0	43	43	0	0	0	43	42	95	0	0	137	223
4:15 PM	12	20	0	0	32	42	1	0	0	43	28	94	0	0	122	197
4:30 PM	7	17	0	0	24	30	1	0	0	31	32	79	0	0	111	166
4:45 PM	18	23	0	0	41	45	0	0	0	45	32	104	0	2	136	222

Hourly Total	53	87	0	0	140	160	2	0	0	162	134	372	0	2	506	808
5:00 PM	9	28	0	0	37	44	0	0	0	44	30	79	0	0	109	190
5:15 PM	8	20	0	0	28	46	0	0	0	46	30	91	0	0	121	195
5:30 PM	13	19	0	0	32	39	1	0	0	40	26	67	0	0	93	165
5:45 PM	11	22	0	0	33	33	1	0	0	34	25	53	0	0	78	145
Hourly Total	41	89	0	0	130	162	2	0	0	164	111	290	0	0	401	695
Grand Total	338	584	2	0	924	1058	17	1	0	1076	675	2189	0	3	2864	4864
Approach %	36.6	63.2	0.2	-	-	98.3	1.6	0.1	-	-	23.6	76.4	0.0	-	-	-
Total %	6.9	12.0	0.0	-	19.0	21.8	0.3	0.0	-	22.1	13.9	45.0	0.0	-	58.9	-
Motorcycles	0	1	0	-	1	2	0	0	-	2	1	2	0	-	3	6
% Motorcycles	0.0	0.2	0.0	-	0.1	0.2	0.0	0.0	-	0.2	0.1	0.1	-	-	0.1	0.1
Cars & Light Goods	330	573	2	-	905	1037	17	1	-	1055	664	2129	0	-	2793	4753
% Cars & Light Goods	97.6	98.1	100.0	-	97.9	98.0	100.0	100.0	-	98.0	98.4	97.3	-	-	97.5	97.7
Buses	5	7	0	-	12	10	0	0	-	10	7	16	0	-	23	45
% Buses	1.5	1.2	0.0	-	1.3	0.9	0.0	0.0	-	0.9	1.0	0.7	-	-	0.8	0.9
Single-Unit Trucks	2	3	0	-	5	5	0	0	-	5	3	26	0	-	29	39
% Single-Unit Trucks	0.6	0.5	0.0	-	0.5	0.5	0.0	0.0	-	0.5	0.4	1.2	-	-	1.0	0.8
Articulated Trucks	1	0	0	-	1	0	0	0	-	0	0	16	0	-	16	17
% Articulated Trucks	0.3	0.0	0.0	-	0.1	0.0	0.0	0.0	-	0.0	0.0	0.7	-	-	0.6	0.3
Bicycles on Road	0	0	0	-	0	4	0	0	-	4	0	0	0	-	0	4
% Bicycles on Road	0.0	0.0	0.0	-	0.0	0.4	0.0	0.0	-	0.4	0.0	0.0	-	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Frederica Street & Highway 420 South Ramp
Site Code: 230334
Start Date: 10/26/2023



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Frederica Street & Highway 420 South Ramp
Site Code: 230334
Start Date: 10/26/2023

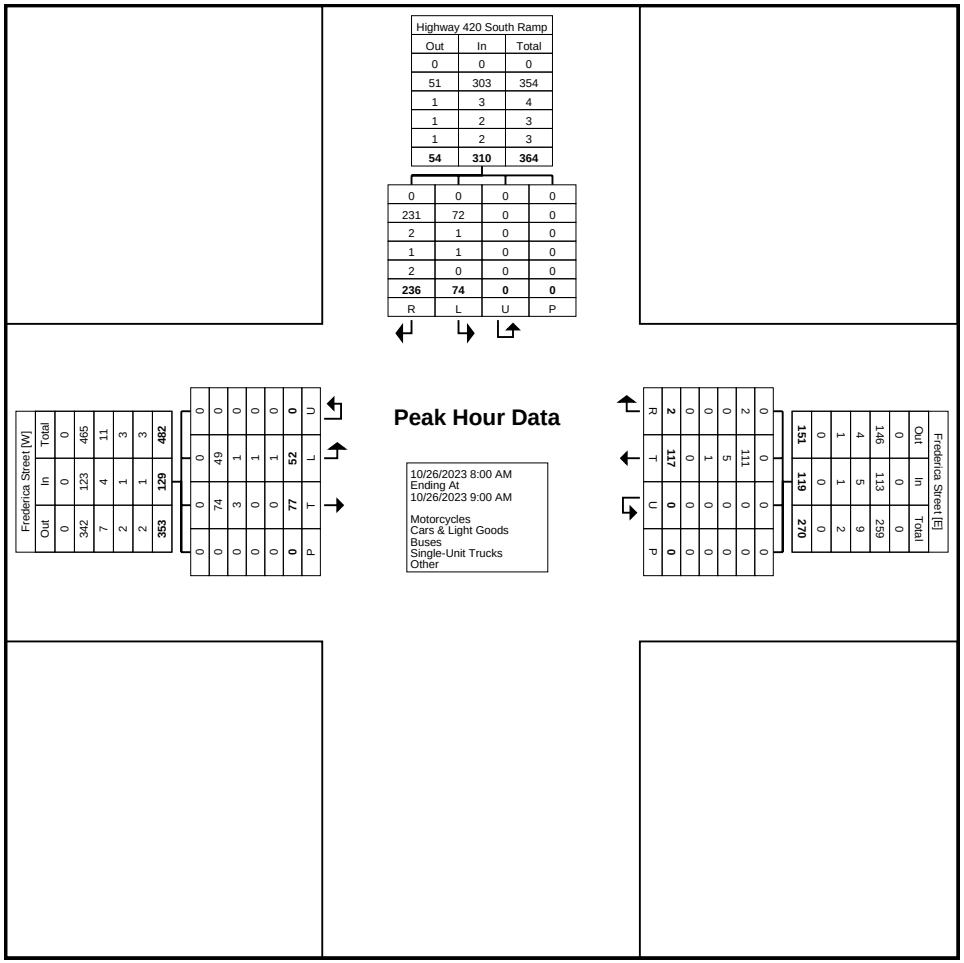
Turning Movement Peak Hour Data (8:00 AM)

Start Time	Frederica Street Eastbound					Frederica Street Westbound					Highway 420 South Ramp Southbound					
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
8:00 AM	10	9	0	0	19	42	1	0	0	43	15	39	0	0	54	116
8:15 AM	9	21	0	0	30	30	0	0	0	30	19	61	0	0	80	140
8:30 AM	20	28	0	0	48	29	0	0	0	29	17	72	0	0	89	166
8:45 AM	13	19	0	0	32	16	1	0	0	17	23	64	0	0	87	136
Total	52	77	0	0	129	117	2	0	0	119	74	236	0	0	310	558
Approach %	40.3	59.7	0.0	-	-	98.3	1.7	0.0	-	-	23.9	76.1	0.0	-	-	-
Total %	9.3	13.8	0.0	-	23.1	21.0	0.4	0.0	-	21.3	13.3	42.3	0.0	-	55.6	-
PHF	0.650	0.688	0.000	-	0.672	0.696	0.500	0.000	-	0.692	0.804	0.819	0.000	-	0.871	0.840
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	49	74	0	-	123	111	2	0	-	113	72	231	0	-	303	539
% Cars & Light Goods	94.2	96.1	-	-	95.3	94.9	100.0	-	-	95.0	97.3	97.9	-	-	97.7	96.6
Buses	1	3	0	-	4	5	0	0	-	5	1	2	0	-	3	12
% Buses	1.9	3.9	-	-	3.1	4.3	0.0	-	-	4.2	1.4	0.8	-	-	1.0	2.2
Single-Unit Trucks	1	0	0	-	1	1	0	0	-	1	1	1	0	-	2	4
% Single-Unit Trucks	1.9	0.0	-	-	0.8	0.9	0.0	-	-	0.8	1.4	0.4	-	-	0.6	0.7
Articulated Trucks	1	0	0	-	1	0	0	0	-	0	0	2	0	-	2	3
% Articulated Trucks	1.9	0.0	-	-	0.8	0.0	0.0	-	-	0.0	0.0	0.8	-	-	0.6	0.5
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Frederica Street & Highway 420 South Ramp
Site Code: 230334
Start Date: 10/26/2023



Turning Movement Peak Hour Data Plot (8:00 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Frederica Street & Highway 420 South Ramp
Site Code: 230334
Start Date: 10/26/2023

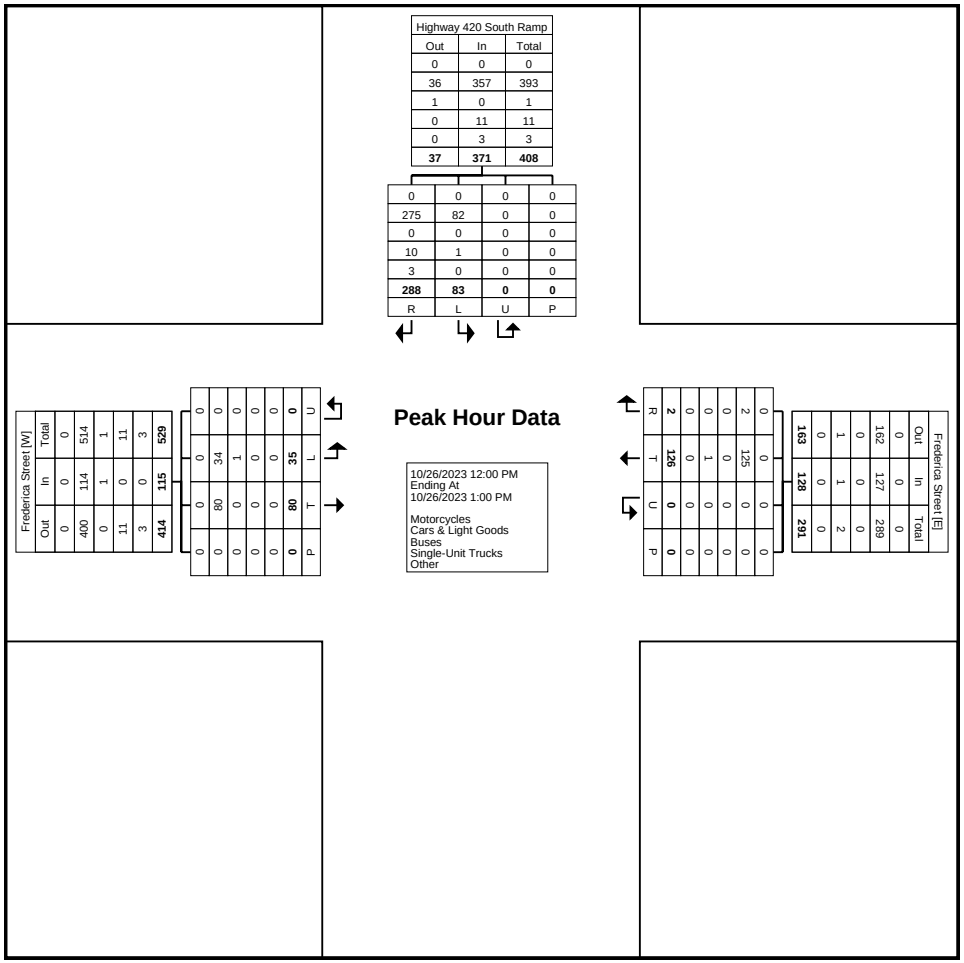
Turning Movement Peak Hour Data (12:00 PM)

Start Time	Frederica Street Eastbound					Frederica Street Westbound					Highway 420 South Ramp Southbound					
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
12:00 PM	7	14	0	0	21	33	1	0	0	34	23	75	0	0	98	153
12:15 PM	7	26	0	0	33	24	0	0	0	24	21	65	0	0	86	143
12:30 PM	12	21	0	0	33	32	1	0	0	33	18	60	0	0	78	144
12:45 PM	9	19	0	0	28	37	0	0	0	37	21	88	0	0	109	174
Total	35	80	0	0	115	126	2	0	0	128	83	288	0	0	371	614
Approach %	30.4	69.6	0.0	-	-	98.4	1.6	0.0	-	-	22.4	77.6	0.0	-	-	-
Total %	5.7	13.0	0.0	-	18.7	20.5	0.3	0.0	-	20.8	13.5	46.9	0.0	-	60.4	-
PHF	0.729	0.769	0.000	-	0.871	0.851	0.500	0.000	-	0.865	0.902	0.818	0.000	-	0.851	0.882
Motorcycles	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Motorcycles	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Cars & Light Goods	34	80	0	-	114	125	2	0	-	127	82	275	0	-	357	598
% Cars & Light Goods	97.1	100.0	-	-	99.1	99.2	100.0	-	-	99.2	98.8	95.5	-	-	96.2	97.4
Buses	1	0	0	-	1	0	0	0	-	0	0	0	0	-	0	1
% Buses	2.9	0.0	-	-	0.9	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.2
Single-Unit Trucks	0	0	0	-	0	1	0	0	-	1	1	10	0	-	11	12
% Single-Unit Trucks	0.0	0.0	-	-	0.0	0.8	0.0	-	-	0.8	1.2	3.5	-	-	3.0	2.0
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	3	0	-	3	3
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	1.0	-	-	0.8	0.5
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Frederica Street & Highway 420 South Ramp
Site Code: 230334
Start Date: 10/26/2023



Turning Movement Peak Hour Data Plot (12:00 PM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Frederica Street & Highway 420 South Ramp
Site Code: 230334
Start Date: 10/26/2023

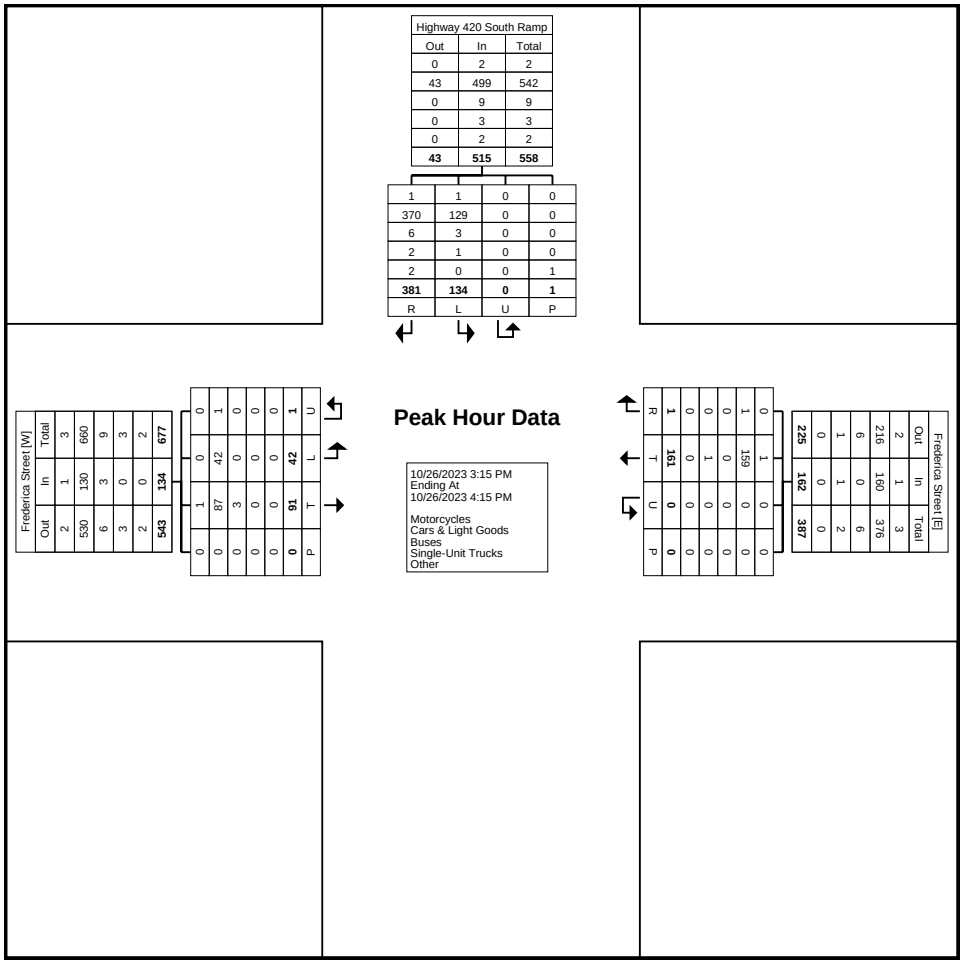
Turning Movement Peak Hour Data (3:15 PM)

Start Time	Frederica Street Eastbound					Frederica Street Westbound					Highway 420 South Ramp Southbound					
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
3:15 PM	10	26	0	0	36	43	0	0	0	43	36	111	0	0	147	226
3:30 PM	10	21	0	0	31	34	1	0	0	35	25	85	0	0	110	176
3:45 PM	6	17	1	0	24	41	0	0	0	41	31	90	0	1	121	186
4:00 PM	16	27	0	0	43	43	0	0	0	43	42	95	0	0	137	223
Total	42	91	1	0	134	161	1	0	0	162	134	381	0	1	515	811
Approach %	31.3	67.9	0.7	-	-	99.4	0.6	0.0	-	-	26.0	74.0	0.0	-	-	-
Total %	5.2	11.2	0.1	-	16.5	19.9	0.1	0.0	-	20.0	16.5	47.0	0.0	-	63.5	-
PHF	0.656	0.843	0.250	-	0.779	0.936	0.250	0.000	-	0.942	0.798	0.858	0.000	-	0.876	0.897
Motorcycles	0	1	0	-	1	1	0	0	-	1	1	1	0	-	2	4
% Motorcycles	0.0	1.1	0.0	-	0.7	0.6	0.0	-	-	0.6	0.7	0.3	-	-	0.4	0.5
Cars & Light Goods	42	87	1	-	130	159	1	0	-	160	129	370	0	-	499	789
% Cars & Light Goods	100.0	95.6	100.0	-	97.0	98.8	100.0	-	-	98.8	96.3	97.1	-	-	96.9	97.3
Buses	0	3	0	-	3	0	0	0	-	0	3	6	0	-	9	12
% Buses	0.0	3.3	0.0	-	2.2	0.0	0.0	-	-	0.0	2.2	1.6	-	-	1.7	1.5
Single-Unit Trucks	0	0	0	-	0	1	0	0	-	1	1	2	0	-	3	4
% Single-Unit Trucks	0.0	0.0	0.0	-	0.0	0.6	0.0	-	-	0.6	0.7	0.5	-	-	0.6	0.5
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	2	0	-	2	2
% Articulated Trucks	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0	0.5	-	-	0.4	0.2
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Frederica Street & Highway 420 South Ramp
Site Code: 230334
Start Date: 10/26/2023



Turning Movement Peak Hour Data Plot (3:15 PM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Frederica Street & Highway 420 South Ramp - Saturday
Site Code: 230334
Start Date: 10/28/2023

Turning Movement Data

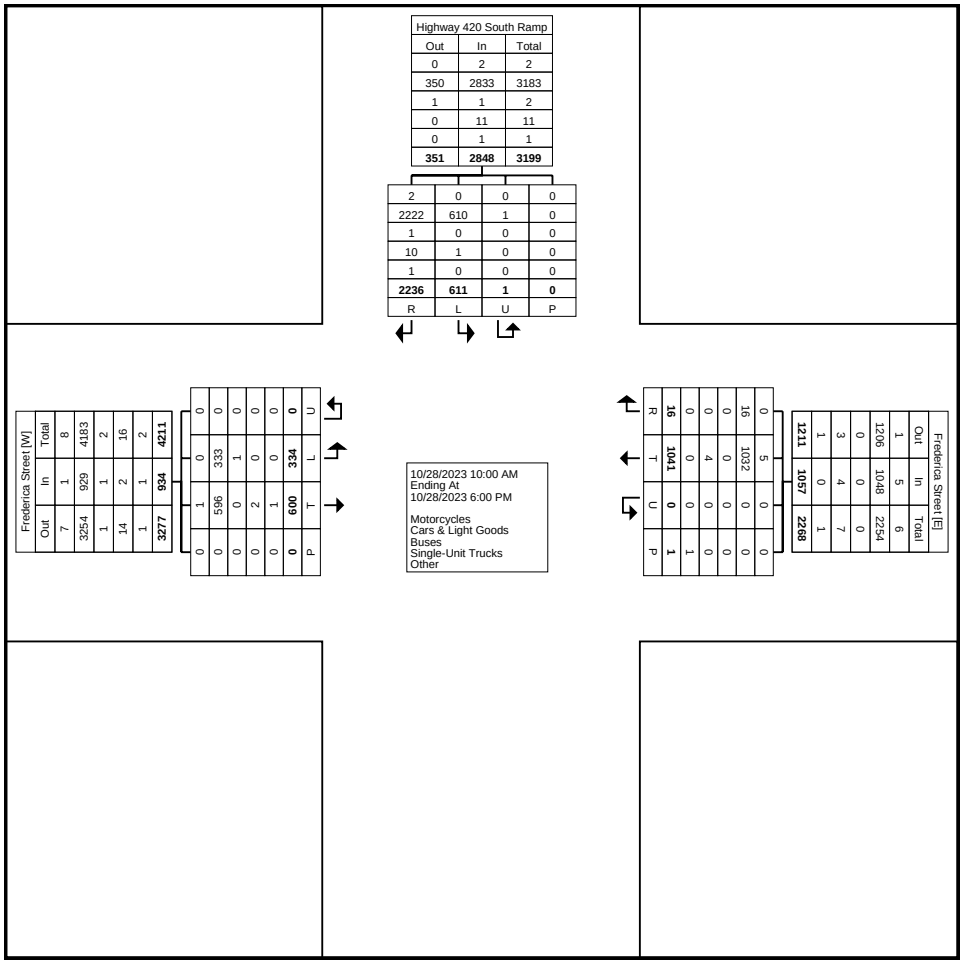
Start Time	Frederica Street Eastbound					Frederica Street Westbound					Highway 420 South Ramp Southbound					
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
10:00 AM	4	16	0	0	20	22	0	0	0	22	13	67	0	0	80	122
10:15 AM	5	13	0	0	18	22	1	0	0	23	14	59	0	0	73	114
10:30 AM	18	21	0	0	39	23	0	0	0	23	9	74	0	0	83	145
10:45 AM	10	20	0	0	30	30	0	0	0	30	14	76	0	0	90	150
Hourly Total	37	70	0	0	107	97	1	0	0	98	50	276	0	0	326	531
11:00 AM	4	19	0	0	23	46	2	0	0	48	19	61	0	0	80	151
11:15 AM	3	17	0	0	20	32	1	0	0	33	21	56	0	0	77	130
11:30 AM	5	19	0	0	24	31	1	0	0	32	15	93	0	0	108	164
11:45 AM	12	16	0	0	28	22	0	0	0	22	28	76	0	0	104	154
Hourly Total	24	71	0	0	95	131	4	0	0	135	83	286	0	0	369	599
12:00 PM	12	23	0	0	35	23	1	0	0	24	15	73	0	0	88	147
12:15 PM	7	29	0	0	36	29	0	0	0	29	11	81	0	0	92	157
12:30 PM	11	17	0	0	28	36	0	0	0	36	15	74	0	0	89	153
12:45 PM	12	14	0	0	26	43	0	0	0	43	18	71	0	0	89	158
Hourly Total	42	83	0	0	125	131	1	0	0	132	59	299	0	0	358	615
1:00 PM	17	21	0	0	38	24	1	0	0	25	16	70	0	0	86	149
1:15 PM	11	24	0	0	35	37	1	0	0	38	23	78	0	0	101	174
1:30 PM	18	16	0	0	34	34	0	0	0	34	24	69	0	0	93	161
1:45 PM	10	26	0	0	36	46	0	0	0	46	17	78	0	0	95	177
Hourly Total	56	87	0	0	143	141	2	0	0	143	80	295	0	0	375	661
2:00 PM	14	21	0	0	35	46	2	0	0	48	23	84	0	0	107	190
2:15 PM	10	16	0	0	26	35	1	0	0	36	23	72	0	0	95	157
2:30 PM	12	28	0	0	40	35	0	0	0	35	27	65	0	0	92	167
2:45 PM	12	21	0	0	33	45	1	0	0	46	22	79	0	0	101	180
Hourly Total	48	86	0	0	134	161	4	0	0	165	95	300	0	0	395	694
3:00 PM	10	18	0	0	28	30	1	0	0	31	26	65	0	0	91	150
3:15 PM	12	12	0	0	24	50	2	0	0	52	14	78	0	0	92	168
3:30 PM	7	13	0	0	20	33	0	0	0	33	25	74	0	0	99	152
3:45 PM	13	23	0	0	36	35	0	0	0	35	22	56	0	0	78	149
Hourly Total	42	66	0	0	108	148	3	0	0	151	87	273	0	0	360	619
4:00 PM	14	16	0	0	30	34	0	0	0	34	29	57	0	0	86	150
4:15 PM	8	16	0	0	24	29	0	0	0	29	16	79	0	0	95	148
4:30 PM	15	21	0	0	36	35	0	0	1	35	17	67	1	0	85	156
4:45 PM	13	19	0	0	32	19	0	0	0	19	18	58	0	0	76	127
Hourly Total	50	72	0	0	122	117	0	0	1	117	80	261	1	0	342	581
5:00 PM	8	14	0	0	22	34	0	0	0	34	14	61	0	0	75	131

5:15 PM	9	17	0	0	26	22	0	0	0	22	21	65	0	0	86	134
5:30 PM	8	20	0	0	28	31	0	0	0	31	23	60	0	0	83	142
5:45 PM	10	14	0	0	24	28	1	0	0	29	19	60	0	0	79	132
Hourly Total	35	65	0	0	100	115	1	0	0	116	77	246	0	0	323	539
Grand Total	334	600	0	0	934	1041	16	0	1	1057	611	2236	1	0	2848	4839
Approach %	35.8	64.2	0.0	-	-	98.5	1.5	0.0	-	-	21.5	78.5	0.0	-	-	-
Total %	6.9	12.4	0.0	-	19.3	21.5	0.3	0.0	-	21.8	12.6	46.2	0.0	-	58.9	-
Motorcycles	0	1	0	-	1	5	0	0	-	5	0	2	0	-	2	8
% Motorcycles	0.0	0.2	-	-	0.1	0.5	0.0	-	-	0.5	0.0	0.1	0.0	-	0.1	0.2
Cars & Light Goods	333	596	0	-	929	1032	16	0	-	1048	610	2222	1	-	2833	4810
% Cars & Light Goods	99.7	99.3	-	-	99.5	99.1	100.0	-	-	99.1	99.8	99.4	100.0	-	99.5	99.4
Buses	1	0	0	-	1	0	0	0	-	0	0	1	0	-	1	2
% Buses	0.3	0.0	-	-	0.1	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Single-Unit Trucks	0	2	0	-	2	4	0	0	-	4	1	10	0	-	11	17
% Single-Unit Trucks	0.0	0.3	-	-	0.2	0.4	0.0	-	-	0.4	0.2	0.4	0.0	-	0.4	0.4
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	1	0	-	1	1
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Road	0	1	0	-	1	0	0	0	-	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.2	-	-	0.1	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	1	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Frederica Street & Highway 420 South Ramp - Saturday
Site Code: 230334
Start Date: 10/28/2023



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Frederica Street & Highway 420 South Ramp - Saturday
Site Code: 230334
Start Date: 10/28/2023

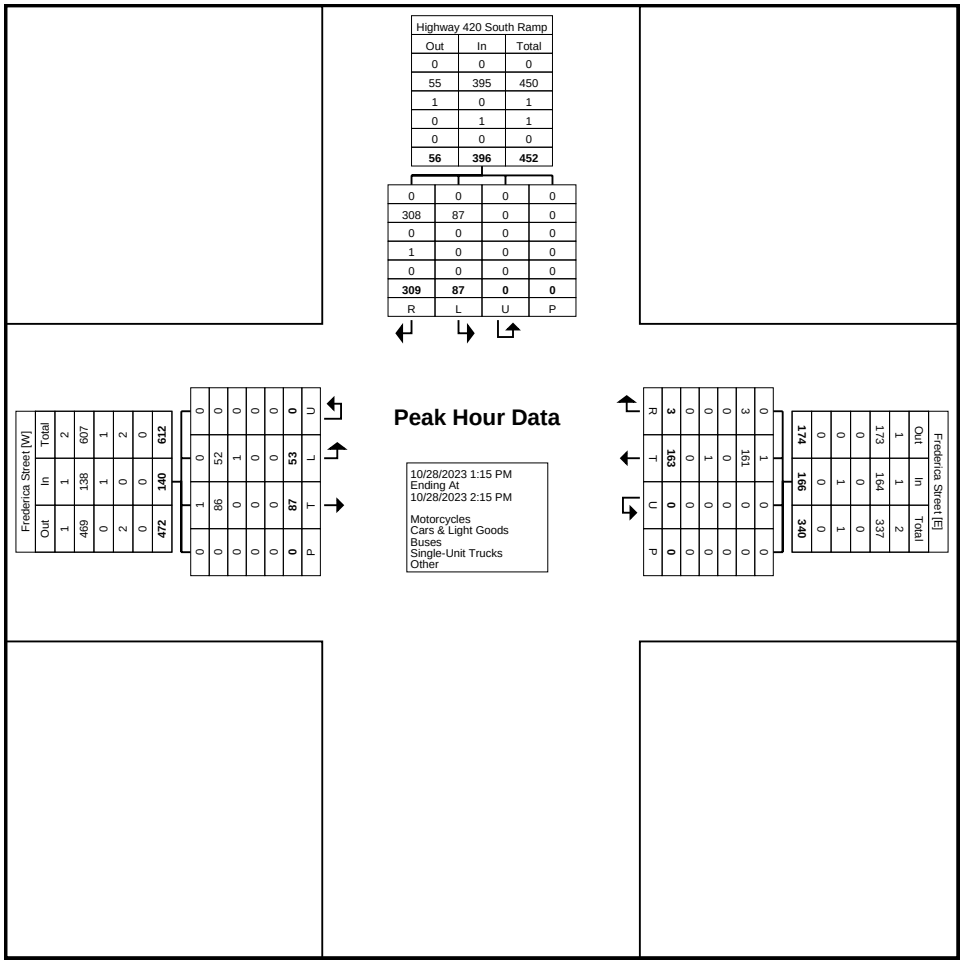
Turning Movement Peak Hour Data (1:15 PM)

Start Time	Frederica Street Eastbound					Frederica Street Westbound					Highway 420 South Ramp Southbound					Int. Total
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
1:15 PM	11	24	0	0	35	37	1	0	0	38	23	78	0	0	101	174
1:30 PM	18	16	0	0	34	34	0	0	0	34	24	69	0	0	93	161
1:45 PM	10	26	0	0	36	46	0	0	0	46	17	78	0	0	95	177
2:00 PM	14	21	0	0	35	46	2	0	0	48	23	84	0	0	107	190
Total	53	87	0	0	140	163	3	0	0	166	87	309	0	0	396	702
Approach %	37.9	62.1	0.0	-	-	98.2	1.8	0.0	-	-	22.0	78.0	0.0	-	-	-
Total %	7.5	12.4	0.0	-	19.9	23.2	0.4	0.0	-	23.6	12.4	44.0	0.0	-	56.4	-
PHF	0.736	0.837	0.000	-	0.972	0.886	0.375	0.000	-	0.865	0.906	0.920	0.000	-	0.925	0.924
Motorcycles	0	1	0	-	1	1	0	0	-	1	0	0	0	-	0	2
% Motorcycles	0.0	1.1	-	-	0.7	0.6	0.0	-	-	0.6	0.0	0.0	-	-	0.0	0.3
Cars & Light Goods	52	86	0	-	138	161	3	0	-	164	87	308	0	-	395	697
% Cars & Light Goods	98.1	98.9	-	-	98.6	98.8	100.0	-	-	98.8	100.0	99.7	-	-	99.7	99.3
Buses	1	0	0	-	1	0	0	0	-	0	0	0	0	-	0	1
% Buses	1.9	0.0	-	-	0.7	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.1
Single-Unit Trucks	0	0	0	-	0	1	0	0	-	1	0	1	0	-	1	2
% Single-Unit Trucks	0.0	0.0	-	-	0.0	0.6	0.0	-	-	0.6	0.0	0.3	-	-	0.3	0.3
Articulated Trucks	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Articulated Trucks	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Road	0	0	0	-	0	0	0	0	-	0	0	0	0	-	0	0
% Bicycles on Road	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
519-896-3163 cbowness@ptsl.com

Count Name: Frederica Street & Highway 420 South Ramp - Saturday
Site Code: 230334
Start Date: 10/28/2023



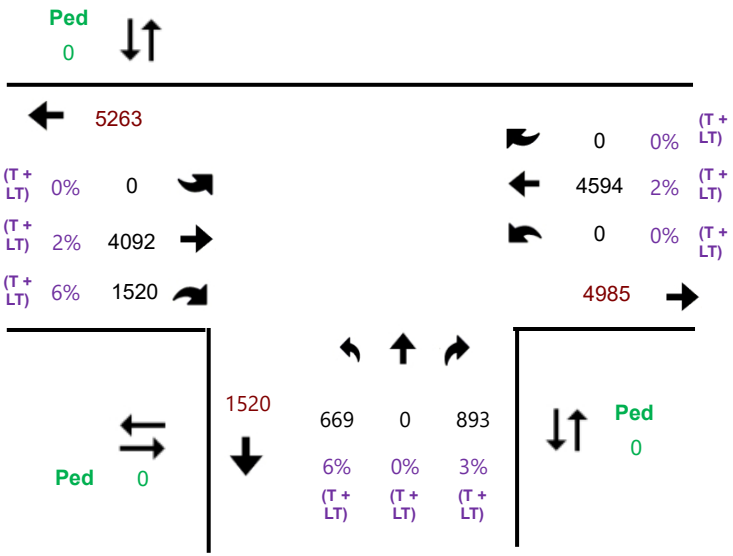
Turning Movement Peak Hour Data Plot (1:15 PM)

Ontario

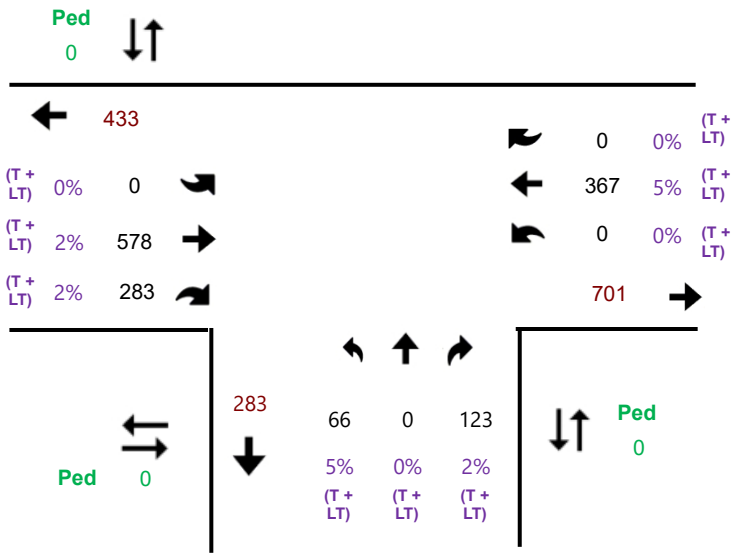
TES - Traffic Engineering System
Turning Movement Total Count and Peak Summary Report

Description:	HWY 1 @ HWY 420 - RAMP 24		
Region	CENTRAL	**Hwy #:**	HWY 1
LHRS_Offset:	10040_0000_24T	**Int. Type:**	T-South
Count Date:	Tuesday, 29 November, 2022		

Full Study Tue, 29 Nov, 2022 07:00 AM - 06:00 PM



AM Period Tue, 29 Nov, 2022 08:00 AM - 09:00 AM

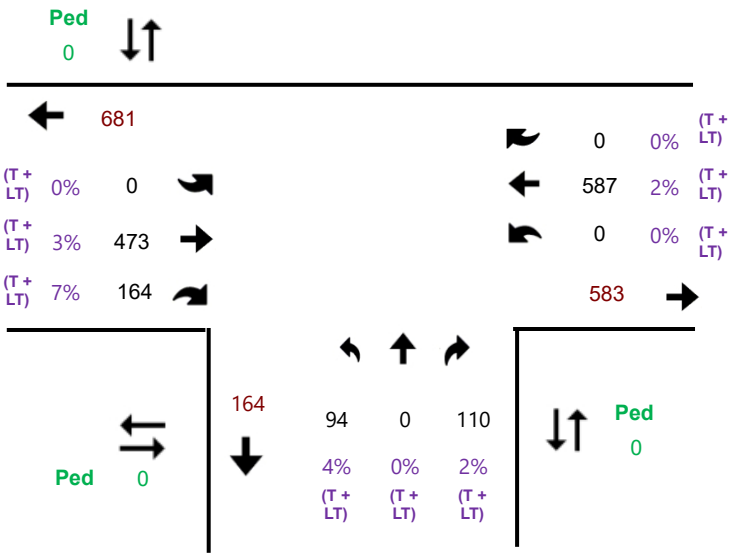


Ontario

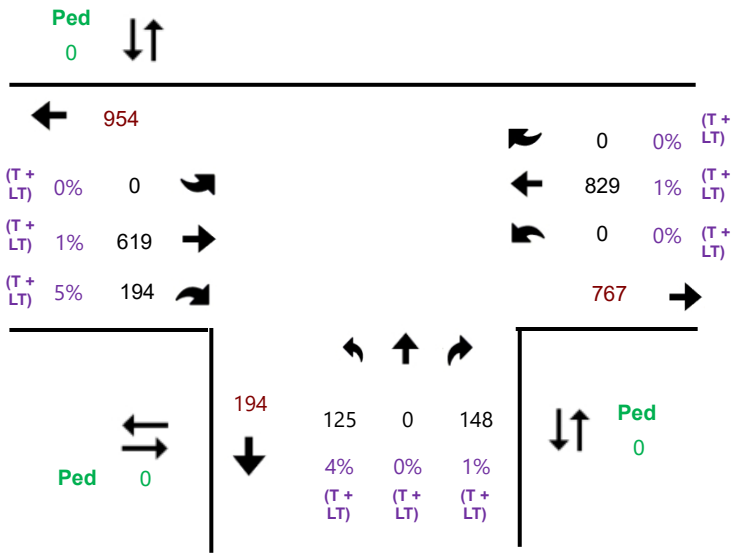
TES - Traffic Engineering System
Turning Movement Total Count and Peak Summary Report

Description: HWY 1 @ HWY 420 - RAMP 24
Region CENTRAL
Hwy #: HWY 1
LHRS_Offset: 10040_0000_24T
Int. Type: T-South
Count Date: Tuesday, 29 November, 2022

MD Period Tue, 29 Nov, 2022 12:15 PM - 01:15 PM



PM Period Tue, 29 Nov, 2022 04:15 PM - 05:15 PM

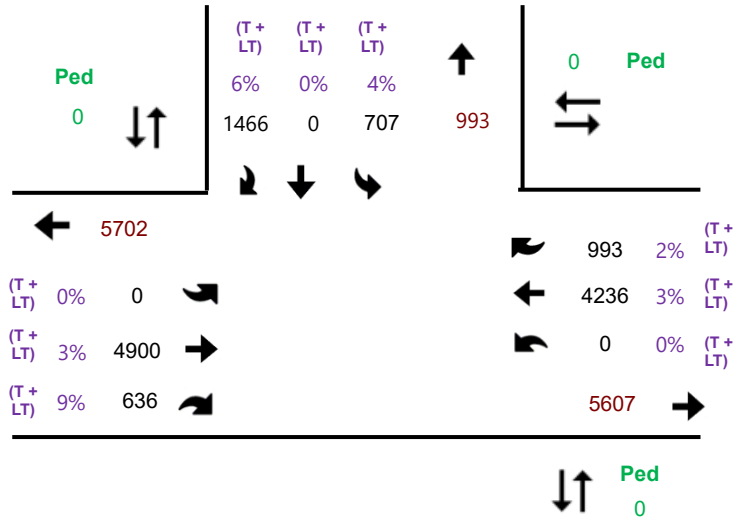


Ontario

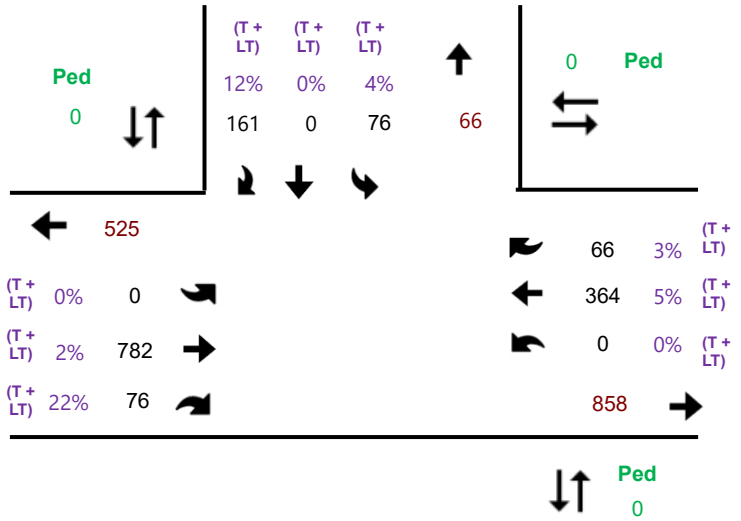
TES - Traffic Engineering System
Turning Movement Total Count and Peak Summary Report

Description: HWY 1 @ HWY 420 - RAMP 34
Region CENTRAL
Hwy #: HWY 1
LHRS_Offset: 10040_0000_34T
Int. Type: T-North
Count Date: Tuesday, 29 November, 2022

Full Study Tue, 29 Nov, 2022 07:00 AM - 06:00 PM



AM Period Tue, 29 Nov, 2022 08:00 AM - 09:00 AM

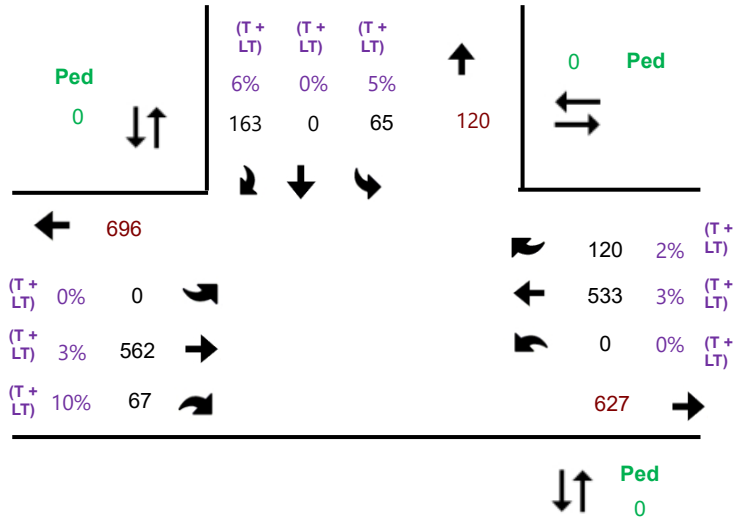


Ontario

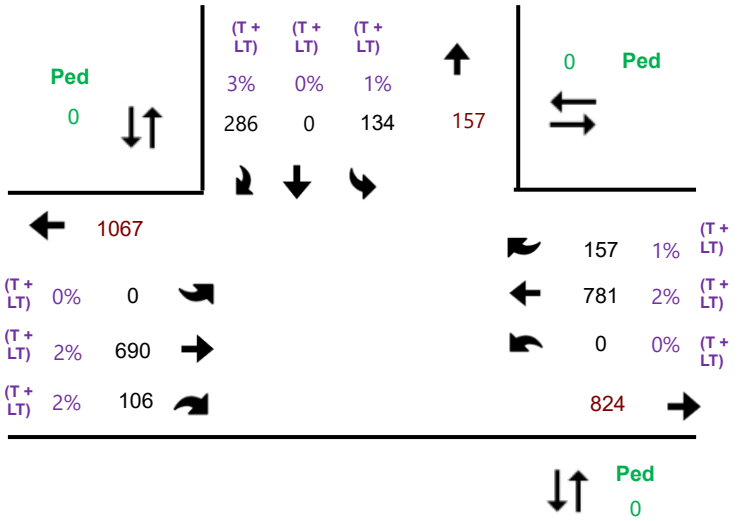
TES - Traffic Engineering System
Turning Movement Total Count and Peak Summary Report

Description:	HWY 1 @ HWY 420 - RAMP 34		
Region	CENTRAL	**Hwy #:**	HWY 1
LHRS_Offset:	10040_0000_34T	**Int. Type:**	T-North
Count Date:	Tuesday, 29 November, 2022		

MD Period Tue, 29 Nov, 2022 11:45 AM - 12:45 PM



PM Period Tue, 29 Nov, 2022 04:15 PM - 05:15 PM



From: Dutchak, Lance (MTO)
To: Christine Bowness
Subject: RE: TMC"s & Signal Timings
Date: August 9, 2021 3:54:01 PM
Attachments: image003.png

Hi Christine,

The image below is from the Region of Niagara – they operate and maintain this intersection for the MTO.

Lance

Signal Code: H40DRC						
Intersection: HIGHWAY 420 RAMP & DORCHESTER RD.						
Municipality: niagarafalls						
Owner: MTO						
Last Modified: 1/28/2013 10:43:13 AM						
Timing Parameters	**NBD & SBD DORCHESTER**	**EBD HWY 420**	**n/a**	**n/a**	**n/a**	**n/a**
Min Green	10	8	0	0	0	0
Walk	0	12	0	0	0	0
Ped Clearance	0	20	0	0	0	0
Vehicle Ext.	2.5	2.5	0	0	0	0
Max Green	42	32	0	0	0	0
Yellow	4.1	4.1	0	0	0	0
All Red	2	2.6	0	0	0	0

		Offset
Minimum Cycle	30.8	0
Pedestrian Cycle	44.8	
Maximum Cycle	86.8	0
Operation	FA	

Installed On:
10/14/1998
Count Date:
--/--/----

FA = Fully Actuated SA = Semi Actuated FT = Fixed Time

Close Window Print Entry* Refresh Entry

From: Christine Bowness <cbowness@ptsl.com>
Sent: August 9, 2021 10:58
To: Dutchak, Lance (MTO) <Lance.Dutchak@ontario.ca>
Subject: RE: TMC's & Signal Timings

CAUTION -- EXTERNAL E-MAIL - Do not click links or open attachments unless you recognize the sender.

Good morning,

Just following up if you have a signal timing available at the following intersection,

- Dorchester Road at Highway 420 North Ramp (signalized);

Regards,

Christine Bowness
Data Collection Coordinator

Paradigm Transportation Solutions Limited
p: 519.896.3163 x403

From: Christine Bowness
Sent: July 23, 2021 10:32 AM
To: Eric Terro (Eric.Terro@ontario.ca) <Eric.Terro@ontario.ca>; Dutchak, Lance (MTO) <Lance.Dutchak@ontario.ca>
Subject: TMC's & Signal Timings

Good morning,

Would you have available TMC's or signal timings at the following locations,

- Dorchester Road at Highway 420 North Ramp (signalized);
- Frederica Street at Highway 420 South Ramp (unsignalized)

Regards,

Christine Bowness
Data Collection Coordinator

Paradigm Transportation Solutions Limited
5A-150 Pinebush Road, Cambridge, ON N1R 8J8
p: 519.896.3163 x403
e: cbowness@ptsl.com
w: www.ptsl.com

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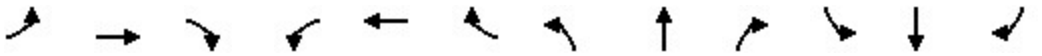
Appendix C

Base Year Traffic Operations

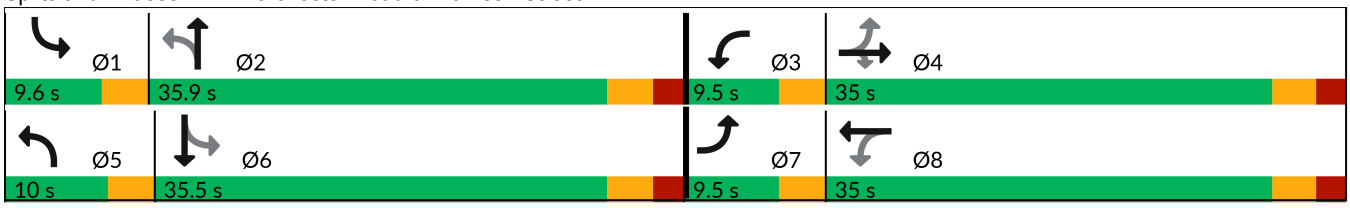


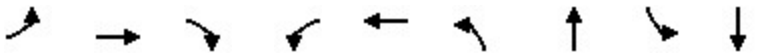
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	119	67	81	96	107	87	149	234	89	162	303	110
Future Volume (vph)	119	67	81	96	107	87	149	234	89	162	303	110
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Storage Length (m)	70.0		0.0	105.0		125.0	90.0		0.0	95.0		41.0
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor			0.98	1.00			1.00	1.00		1.00	1.00	
Frt			0.850		0.933			0.959			0.960	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1267	1410	1005	1368	2250	0	1341	2342	0	1368	2284	0
Flt Permitted	0.549			0.706			0.445			0.529		
Satd. Flow (perm)	732	1410	989	1012	2250	0	628	2342	0	761	2284	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			97		101			67			62	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		205.0			291.8			454.1			179.9	
Travel Time (s)		14.8			21.0			32.7			13.0	
Confl. Peds. (#/hr)			5	5			2		1	1		2
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	9%	12%	10%	1%	9%	1%	3%	4%	3%	1%	3%	16%
Adj. Flow (vph)	138	78	94	112	124	101	173	272	103	188	352	128
Shared Lane Traffic (%)												
Lane Group Flow (vph)	138	78	94	112	225	0	173	375	0	188	480	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	9.5	35.0	35.0	9.5	35.0		9.5	35.0		9.5	35.0	
Total Split (s)	9.5	35.0	35.0	9.5	35.0		10.0	35.9		9.6	35.5	
Total Split (%)	10.6%	38.9%	38.9%	10.6%	38.9%		11.1%	39.9%		10.7%	39.4%	
Maximum Green (s)	6.5	30.0	30.0	6.5	30.0		7.0	30.9		6.6	30.5	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)		10.0	10.0		10.0			10.0			10.0	
Flash Don't Walk (s)		20.0	20.0		20.0			20.0			20.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	20.0	12.8	12.8	19.4	10.9		39.9	30.9		39.1	30.5	
Actuated g/C Ratio	0.28	0.18	0.18	0.27	0.15		0.56	0.44		0.55	0.43	
v/c Ratio	0.54	0.31	0.36	0.36	0.52		0.41	0.35		0.39	0.47	
Control Delay (s/veh)	28.1	30.5	10.7	22.1	20.0		10.2	12.1		9.9	14.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	28.1	30.5	10.7	22.1	20.0		10.2	12.1		9.9	14.5	
LOS	C	C	B	C	B		B	B		A	B	
Approach Delay (s/veh)		23.4			20.7			11.5			13.2	
Approach LOS		C			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 70.9			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.54			
Intersection Signal Delay (s/veh): 15.8		Intersection LOS: B	
Intersection Capacity Utilization 69.6%		ICU Level of Service C	
Analysis Period (min) 15			

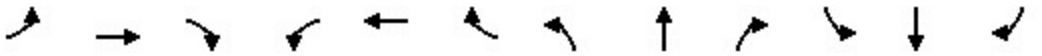
Splits and Phases: 1: Dorchester Road & Morrison Street





Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	138	78	94	112	225	173	375	188	480
v/c Ratio	0.54	0.31	0.36	0.36	0.52	0.41	0.35	0.39	0.47
Control Delay (s/veh)	28.1	30.5	10.7	22.1	20.0	10.2	12.1	9.9	14.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	28.1	30.5	10.7	22.1	20.0	10.2	12.1	9.9	14.5
Queue Length 50th (m)	14.7	9.9	0.0	11.5	8.3	9.5	13.7	10.4	20.2
Queue Length 95th (m)	27.3	20.9	10.5	22.3	17.1	19.6	23.9	21.2	33.4
Internal Link Dist (m)		181.0			267.8		430.1		155.9
Turn Bay Length (m)	70.0			105.0		90.0		95.0	
Base Capacity (vph)	255	596	474	309	1011	424	1059	476	1019
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.54	0.13	0.20	0.36	0.22	0.41	0.35	0.39	0.47

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	119	67	81	96	107	87	149	234	89	162	303	110
Future Volume (vph)	119	67	81	96	107	87	149	234	89	162	303	110
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Total Lost time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.93		1.00	0.96		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1267	1410	990	1365	2249		1341	2342		1367	2284	
Flt Permitted	0.55	1.00	1.00	0.71	1.00		0.45	1.00		0.53	1.00	
Satd. Flow (perm)	733	1410	990	1015	2249		629	2342		761	2284	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	138	78	94	112	124	101	173	272	103	188	352	128
RTOR Reduction (vph)	0	0	77	0	85	0	0	38	0	0	36	0
Lane Group Flow (vph)	138	78	17	112	140	0	173	337	0	188	444	0
Confl. Peds. (#/hr)			5	5			2		1	1		2
Heavy Vehicles (%)	9%	12%	10%	1%	9%	1%	3%	4%	3%	1%	3%	16%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	19.3	12.8	12.8	16.7	11.5		37.9	30.9		37.1	30.5	
Effective Green, g (s)	19.3	12.8	12.8	16.7	11.5		37.9	30.9		37.1	30.5	
Actuated g/C Ratio	0.27	0.18	0.18	0.23	0.16		0.53	0.43		0.52	0.43	
Clearance Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	246	252	177	262	361		403	1012		450	974	
v/s Ratio Prot	c0.05	0.06		0.03	0.06		c0.04	0.14		0.04	c0.19	
v/s Ratio Perm	c0.10		0.02	0.07			0.19			0.18		
v/c Ratio	0.56	0.31	0.10	0.43	0.39		0.43	0.33		0.42	0.46	
Uniform Delay, d1	21.4	25.5	24.5	22.9	26.9		9.1	13.5		9.6	14.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.9	0.7	0.2	1.1	0.7		0.7	0.9		0.6	1.5	
Delay (s)	24.3	26.2	24.7	24.0	27.5		9.8	14.3		10.2	16.1	
Level of Service	C	C	C	C	C		A	B		B	B	
Approach Delay (s/veh)		24.9			26.4			12.9			14.5	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	17.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	71.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	69.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

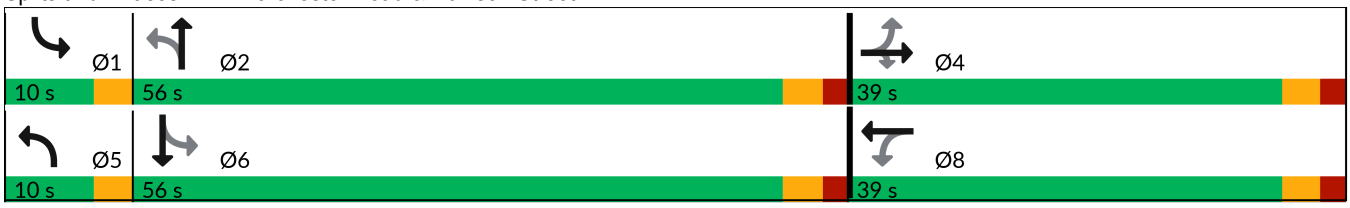
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	5	54	1	21	21	508	19	9	495	8
Future Volume (vph)	1	0	5	54	1	21	21	508	19	9	495	8
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Storage Length (m)	30.0		35.0	20.0		0.0	180.0		0.0	30.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.91	0.91
Ped Bike Factor							1.00	1.00		1.00	1.00	
Frt			0.850		0.856			0.995			0.998	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1381	1579	614	1354	1010	0	1316	2447	0	1244	3566	0
Flt Permitted	0.742			0.757			0.425			0.434		
Satd. Flow (perm)	1079	1579	614	1079	1010	0	588	2447	0	568	3566	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			296		23			5			3	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		106.7			108.0			280.1			454.1	
Travel Time (s)		7.7			7.8			20.2			32.7	
Confl. Peds. (#/hr)							1		3	3		1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	80%	2%	0%	14%	5%	3%	11%	11%	2%	13%
Adj. Flow (vph)	1	0	5	59	1	23	23	558	21	10	544	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	1	0	5	59	24	0	23	579	0	10	553	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

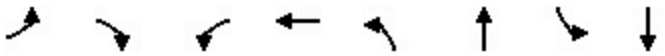
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	1.0		5.0	5.0	
Minimum Split (s)	39.0	39.0	39.0	39.0	39.0		9.5	52.0		9.5	52.0	
Total Split (s)	39.0	39.0	39.0	39.0	39.0		10.0	56.0		10.0	56.0	
Total Split (%)	37.1%	37.1%	37.1%	37.1%	37.1%		9.5%	53.3%		9.5%	53.3%	
Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		7.0	51.0		7.0	51.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)	11.0	11.0	11.0	11.0	11.0			16.0			16.0	
Flash Don't Walk (s)	23.0	23.0	23.0	23.0	23.0			31.0			31.0	
Pedestrian Calls (#/hr)	0	0	0	0	0			0			0	
Act Effct Green (s)	9.6		9.6	9.6	9.6		62.6	60.5		61.8	58.7	
Actuated g/C Ratio	0.12		0.12	0.12	0.12		0.80	0.77		0.79	0.75	
v/c Ratio	0.01		0.01	0.45	0.17		0.04	0.31		0.02	0.21	
Control Delay (s/veh)	30.0		0.0	42.8	16.1		2.8	5.0		2.9	5.1	
Queue Delay	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	30.0		0.0	42.8	16.1		2.8	5.0		2.9	5.1	
LOS	C		A	D	B		A	A		A	A	
Approach Delay (s/veh)		5.0			35.1			4.9			5.1	
Approach LOS		A			D			A			A	

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 78.5
Natural Cycle: 105
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.45
Intersection Signal Delay (s/veh): 7.0 Intersection LOS: A
Intersection Capacity Utilization 60.0% ICU Level of Service B
Analysis Period (min) 15

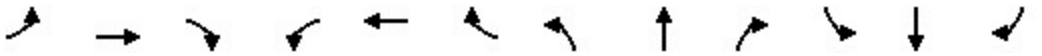
Splits and Phases: 2: Dorchester Road & Dawson Street





Lane Group	EBL	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1	5	59	24	23	579	10	553
v/c Ratio	0.01	0.01	0.45	0.17	0.04	0.31	0.02	0.21
Control Delay (s/veh)	30.0	0.0	42.8	16.1	2.8	5.0	2.9	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	30.0	0.0	42.8	16.1	2.8	5.0	2.9	5.1
Queue Length 50th (m)	0.1	0.0	7.7	0.1	0.6	11.5	0.3	6.9
Queue Length 95th (m)	1.6	0.0	20.7	6.8	2.6	34.7	1.5	20.5
Internal Link Dist (m)				84.0		256.1		430.1
Turn Bay Length (m)	30.0	35.0	20.0		180.0		30.0	
Base Capacity (vph)	470	434	470	453	535	1888	510	2666
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	0.00	0.01	0.13	0.05	0.04	0.31	0.02	0.21

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	5	54	1	21	21	508	19	9	495	8
Future Volume (vph)	1	0	5	54	1	21	21	508	19	9	495	8
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Total Lost time (s)	5.0		5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00		1.00	1.00	1.00		1.00	0.95		1.00	0.91	
Frpb, ped/bikes	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00		0.85	1.00	0.86		1.00	0.99		1.00	1.00	
Flt Protected	0.95		1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1381		614	1354	1010		1315	2446		1244	3565	
Flt Permitted	0.74		1.00	0.76	1.00		0.43	1.00		0.43	1.00	
Satd. Flow (perm)	1078		614	1079	1010		589	2446		568	3565	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	1	0	5	59	1	23	23	558	21	10	544	9
RTOR Reduction (vph)	0	0	4	0	21	0	0	1	0	0	1	0
Lane Group Flow (vph)	1	0	1	59	3	0	23	578	0	10	552	0
Confl. Peds. (#/hr)							1		3	3		1
Heavy Vehicles (%)	0%	0%	80%	2%	0%	14%	5%	3%	11%	11%	2%	13%
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	8.4		8.4	8.4	8.4		61.8	59.4		59.2	58.1	
Effective Green, g (s)	8.4		8.4	8.4	8.4		61.8	59.4		59.2	58.1	
Actuated g/C Ratio	0.10		0.10	0.10	0.10		0.75	0.73		0.72	0.71	
Clearance Time (s)	5.0		5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	110		62	110	103		465	1774		419	2529	
v/s Ratio Prot					0.00		c0.00	c0.24		0.00	0.15	
v/s Ratio Perm	0.00		0.00	c0.05			0.04			0.02		
v/c Ratio	0.01		0.01	0.54	0.03		0.05	0.33		0.02	0.22	
Uniform Delay, d1	33.0		33.0	34.9	33.1		2.5	4.0		3.2	4.1	
Progression Factor	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0		0.1	5.0	0.1		0.0	0.5		0.0	0.2	
Delay (s)	33.0		33.1	39.9	33.2		2.6	4.5		3.2	4.3	
Level of Service	C		C	D	C		A	A		A	A	
Approach Delay (s/veh)		33.1			37.9			4.5			4.3	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	6.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	81.9	Sum of lost time (s)	13.0
Intersection Capacity Utilization	60.0%	ICU Level of Service	B
Analysis Period (min)	15		

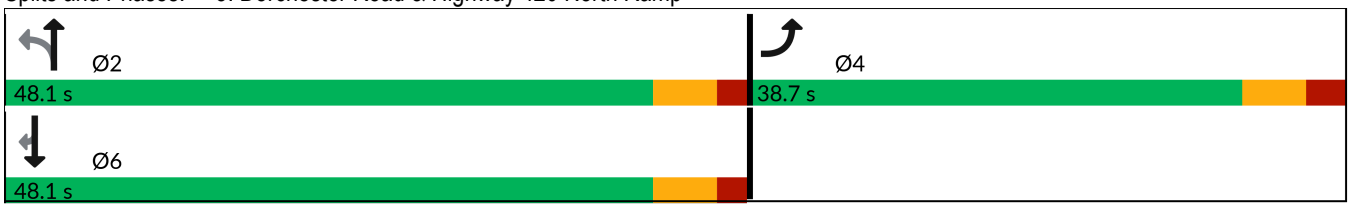
c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	17	0	155	531	292	249
Future Volume (vph)	17	0	155	531	292	249
Ideal Flow (vphpl)	1454	1301	1454	1579	1579	1301
Storage Length (m)	0.0	0.0	160.0			0.0
Storage Lanes	2	0	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt						0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	2271	0	1328	2913	2941	1063
Flt Permitted	0.950		0.554			
Satd. Flow (perm)	2271	0	775	2913	2941	1063
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						280
Link Speed (k/h)	50			50	50	
Link Distance (m)	166.4			377.5	280.1	
Travel Time (s)	12.0			27.2	20.2	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	18%	0%	4%	3%	2%	4%
Adj. Flow (vph)	19	0	174	597	328	280
Shared Lane Traffic (%)						
Lane Group Flow (vph)	19	0	174	597	328	280
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.2			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.60	1.40	1.26	1.26	1.60
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1		1	2	2	1
Detector Template	Left		Left	Thru	Thru	Right
Leading Detector (m)	2.0		2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0		2.0	0.6	0.6	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	8.0		10.0	10.0	10.0	10.0
Minimum Split (s)	38.7		24.1	24.1	24.1	24.1
Total Split (s)	38.7		48.1	48.1	48.1	48.1
Total Split (%)	44.6%		55.4%	55.4%	55.4%	55.4%
Maximum Green (s)	32.0		42.0	42.0	42.0	42.0
Yellow Time (s)	4.1		4.1	4.1	4.1	4.1
All-Red Time (s)	2.6		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7		6.1	6.1	6.1	6.1
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		Max	Max	Max	Max
Walk Time (s)	12.0					
Flash Don't Walk (s)	20.0					
Pedestrian Calls (#/hr)	0					
Act Effct Green (s)	8.0		58.8	58.8	58.8	58.8
Actuated g/C Ratio	0.13		0.93	0.93	0.93	0.93
v/c Ratio	0.07		0.24	0.22	0.12	0.28
Control Delay (s/veh)	24.9		2.7	1.5	1.4	1.2
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay (s/veh)	24.9		2.7	1.5	1.4	1.2
LOS	C		A	A	A	A
Approach Delay (s/veh)	24.9			1.8	1.3	
Approach LOS	C			A	A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 86.8			
Actuated Cycle Length: 63			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.28			
Intersection Signal Delay (s/veh): 1.9		Intersection LOS: A	
Intersection Capacity Utilization 43.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Dorchester Road & Highway 420 North Ramp

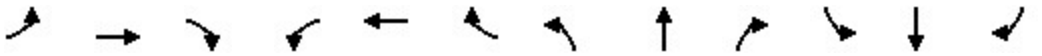


Lane Group	EBL	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	19	174	597	328	280
v/c Ratio	0.07	0.24	0.22	0.12	0.28
Control Delay (s/veh)	24.9	2.7	1.5	1.4	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	24.9	2.7	1.5	1.4	1.2
Queue Length 50th (m)	1.0	0.0	0.0	0.0	0.0
Queue Length 95th (m)	3.7	16.2	19.2	10.2	5.9
Internal Link Dist (m)	142.4		353.5	256.1	
Turn Bay Length (m)		160.0			
Base Capacity (vph)	1152	724	2720	2746	1011
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.02	0.24	0.22	0.12	0.28

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	17	0	155	531	292	249
Future Volume (vph)	17	0	155	531	292	249
Ideal Flow (vphpl)	1454	1301	1454	1579	1579	1301
Total Lost time (s)	6.7		6.1	6.1	6.1	6.1
Lane Util. Factor	0.97		1.00	0.95	0.95	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	0.95		0.95	1.00	1.00	1.00
Satd. Flow (prot)	2271		1328	2913	2941	1063
Flt Permitted	0.95		0.55	1.00	1.00	1.00
Satd. Flow (perm)	2271		774	2913	2941	1063
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	19	0	174	597	328	280
RTOR Reduction (vph)	0	0	0	0	0	59
Lane Group Flow (vph)	19	0	174	597	328	221
Heavy Vehicles (%)	18%	0%	4%	3%	2%	4%
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Actuated Green, G (s)	1.6		54.0	54.0	54.0	54.0
Effective Green, g (s)	1.6		54.0	54.0	54.0	54.0
Actuated g/C Ratio	0.02		0.79	0.79	0.79	0.79
Clearance Time (s)	6.7		6.1	6.1	6.1	6.1
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	53		611	2299	2321	839
v/s Ratio Prot	c0.01			0.20	0.11	
v/s Ratio Perm			c0.22			0.21
v/c Ratio	0.36		0.28	0.26	0.14	0.26
Uniform Delay, d1	32.9		2.0	1.9	1.7	1.9
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	4.1		1.2	0.3	0.1	0.8
Delay (s)	37.0		3.1	2.2	1.8	2.7
Level of Service	D		A	A	A	A
Approach Delay (s/veh)	37.0			2.4	2.2	
Approach LOS	D			A	A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	2.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	68.4	Sum of lost time (s)	12.8
Intersection Capacity Utilization	43.9%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

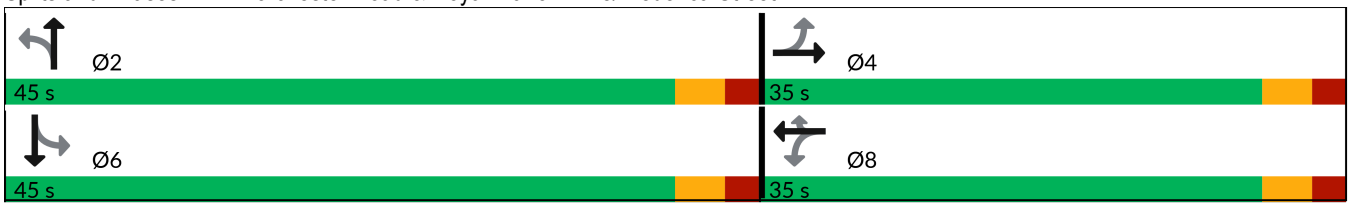


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	18	6	42	5	307	2	362	35	80	208	13
Future Volume (vph)	16	18	6	42	5	307	2	362	35	80	208	13
Ideal Flow (vphpl)	1433	1433	1433	1454	1579	1301	1454	1338	1338	1454	1338	1338
Storage Length (m)	0.0		0.0	45.0		0.0	95.0		0.0	165.0		0.0
Storage Lanes	0		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor								1.00		1.00		
Frt		0.979				0.850		0.987			0.991	
Flt Protected		0.980		0.950			0.950			0.950		
Satd. Flow (prot)	0	1250	0	1354	1579	1074	1381	2427	0	1368	2461	0
Flt Permitted		0.889		0.728			0.596			0.491		
Satd. Flow (perm)	0	1134	0	1038	1579	1074	867	2427	0	707	2461	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7				349		18			12	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		47.8			201.0			125.1			377.5	
Travel Time (s)		3.4			14.5			9.0			27.2	
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	6%	17%	0%	2%	0%	3%	0%	3%	6%	1%	2%	8%
Adj. Flow (vph)	18	20	7	48	6	349	2	411	40	91	236	15
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	45	0	48	6	349	2	451	0	91	251	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.42	1.42	1.42	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	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	5.0	
Minimum Split (s)	32.0	32.0		32.0	32.0	32.0	41.0	41.0		41.0	41.0	
Total Split (s)	35.0	35.0		35.0	35.0	35.0	45.0	45.0		45.0	45.0	
Total Split (%)	43.8%	43.8%		43.8%	43.8%	43.8%	56.3%	56.3%		56.3%	56.3%	
Maximum Green (s)	30.0	30.0		30.0	30.0	30.0	40.0	40.0		40.0	40.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	Max	Max		Max	Max	
Walk Time (s)	9.0	9.0		9.0	9.0	9.0	12.0	12.0		12.0	12.0	
Flash Don't Walk (s)	18.0	18.0		18.0	18.0	18.0	24.0	24.0		24.0	24.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	
Act Effct Green (s)		9.9		9.9	9.9	9.9	40.3	40.3		40.3	40.3	
Actuated g/C Ratio		0.16		0.16	0.16	0.16	0.67	0.67		0.67	0.67	
v/c Ratio		0.23		0.28	0.02	0.75	0.00	0.28		0.19	0.15	
Control Delay (s/veh)		21.3		25.4	19.6	13.7	5.5	5.3		6.6	4.7	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay (s/veh)		21.3		25.4	19.6	13.7	5.5	5.3		6.6	4.7	
LOS		C		C	B	B	A	A		A	A	
Approach Delay (s/veh)		21.3			15.2			5.3			5.2	
Approach LOS		C			B			A			A	

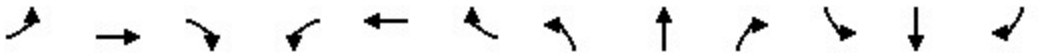
Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 60.3			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay (s/veh): 9.1		Intersection LOS: A	
Intersection Capacity Utilization 74.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 4: Dorchester Road & Royal Manor Drive/Frederica Street



Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	45	48	6	349	2	451	91	251
v/c Ratio	0.23	0.28	0.02	0.75	0.00	0.28	0.19	0.15
Control Delay (s/veh)	21.3	25.4	19.6	13.7	5.5	5.3	6.6	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	21.3	25.4	19.6	13.7	5.5	5.3	6.6	4.7
Queue Length 50th (m)	3.9	4.9	0.6	0.0	0.1	7.4	2.8	3.7
Queue Length 95th (m)	11.0	12.5	3.1	19.2	0.9	22.7	13.0	12.5
Internal Link Dist (m)	23.8		177.0			101.1		353.5
Turn Bay Length (m)		45.0			95.0		165.0	
Base Capacity (vph)	572	520	791	712	579	1628	472	1649
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	0.09	0.01	0.49	0.00	0.28	0.19	0.15

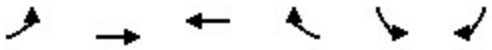
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	18	6	42	5	307	2	362	35	80	208	13
Future Volume (vph)	16	18	6	42	5	307	2	362	35	80	208	13
Ideal Flow (vphpl)	1433	1433	1433	1454	1579	1301	1454	1338	1338	1454	1338	1338
Total Lost time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt		0.98		1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected		0.98		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1251		1354	1579	1074	1381	2426		1367	2461	
Flt Permitted		0.89		0.73	1.00	1.00	0.60	1.00		0.49	1.00	
Satd. Flow (perm)		1134		1037	1579	1074	867	2426		707	2461	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	18	20	7	48	6	349	2	411	40	91	236	15
RTOR Reduction (vph)	0	6	0	0	0	292	0	6	0	0	4	0
Lane Group Flow (vph)	0	39	0	48	6	57	2	445	0	91	247	0
Confl. Peds. (#/hr)									1	1		
Heavy Vehicles (%)	6%	17%	0%	2%	0%	3%	0%	3%	6%	1%	2%	8%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		9.9		9.9	9.9	9.9	40.3	40.3		40.3	40.3	
Effective Green, g (s)		9.9		9.9	9.9	9.9	40.3	40.3		40.3	40.3	
Actuated g/C Ratio		0.16		0.16	0.16	0.16	0.67	0.67		0.67	0.67	
Clearance Time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		186		170	259	176	580	1624		473	1647	
v/s Ratio Prot					0.00			c0.18			0.10	
v/s Ratio Perm		0.03		0.05		c0.05	0.00			0.13		
v/c Ratio		0.21		0.28	0.02	0.33	0.00	0.27		0.19	0.15	
Uniform Delay, d1		21.8		22.0	21.1	22.2	3.3	4.0		3.8	3.7	
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.6		0.9	0.0	1.1	0.0	0.4		0.9	0.2	
Delay (s)		22.3		23.0	21.1	23.3	3.3	4.4		4.7	3.8	
Level of Service		C		C	C	C	A	A		A	A	
Approach Delay (s/veh)		22.3			23.2			4.4			4.1	
Approach LOS		C			C			A			A	

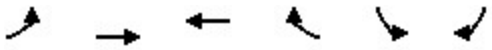
Intersection Summary			
HCM 2000 Control Delay (s/veh)	11.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	60.2	Sum of lost time (s)	10.0
Intersection Capacity Utilization	74.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	53	79	119	2	75	241
Future Volume (vph)	53	79	119	2	75	241
Ideal Flow (vphpl)	1454	1579	1338	1338	1454	1301
Storage Length (m)	85.0			0.0	40.0	0.0
Storage Lanes	1			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.998			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1303	2885	2418	0	1341	1084
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1303	2885	2418	0	1341	1084
Link Speed (k/h)		50	50		50	
Link Distance (m)		201.0	149.3		70.1	
Travel Time (s)		14.5	10.7		5.0	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	6%	4%	5%	0%	3%	2%
Adj. Flow (vph)	63	94	142	2	89	287
Shared Lane Traffic (%)						
Lane Group Flow (vph)	63	94	144	0	89	287
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.26	1.55	1.55	1.40	1.60
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 33.2%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	53	79	119	2	75	241
Future Volume (Veh/h)	53	79	119	2	75	241
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	63	94	142	2	89	287
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		201				
pX, platoon unblocked						
vC, conflicting volume	144				316	72
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	144				316	72
tC, single (s)	4.2				6.9	6.9
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.3
p0 queue free %	96				86	71
cM capacity (veh/h)	1407				620	975

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1	SB 2
Volume Total	63	47	47	95	49	89	287
Volume Left	63	0	0	0	0	89	0
Volume Right	0	0	0	0	2	0	287
cSH	1407	1700	1700	1700	1700	620	975
Volume to Capacity	0.04	0.03	0.03	0.06	0.03	0.14	0.29
Queue Length 95th (m)	1.1	0.0	0.0	0.0	0.0	4.0	9.9
Control Delay (s/veh)	7.7	0.0	0.0	0.0	0.0	11.8	10.2
Lane LOS	A					B	B
Approach Delay (s/veh)	3.1			0.0		10.6	
Approach LOS						B	

Intersection Summary			
Average Delay	6.6		
Intersection Capacity Utilization	33.2%	ICU Level of Service	A
Analysis Period (min)	15		

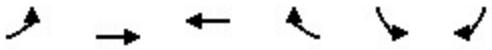
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	595	0	0	378	68	0
Future Volume (vph)	595	0	0	378	68	0
Ideal Flow (vphpl)	1579	1301	1454	1579	1454	1301
Lane Util. Factor	0.95	1.00	1.00	0.91	1.00	1.00
Frt						
Flt Protected					0.950	
Satd. Flow (prot)	2941	0	0	4105	1316	0
Flt Permitted					0.950	
Satd. Flow (perm)	2941	0	0	4105	1316	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	266.5			178.9	263.7	
Travel Time (s)	19.2			12.9	19.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	0%	5%	5%	2%
Adj. Flow (vph)	647	0	0	411	74	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	647	0	0	411	74	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.26	1.60	1.40	1.26	1.40	1.60
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 39.2%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	595	0	0	378	68	0
Future Volume (Veh/h)	595	0	0	378	68	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	647	0	0	411	74	0
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			647		784	324
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			647		784	324
tC, single (s)			4.1		6.9	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			100		77	100
cM capacity (veh/h)			948		324	672

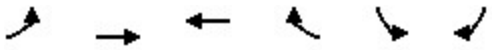
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	324	324	137	137	137	74
Volume Left	0	0	0	0	0	74
Volume Right	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	324
Volume to Capacity	0.19	0.19	0.08	0.08	0.08	0.23
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	6.9
Control Delay (s/veh)	0.0	0.0	0.0	0.0	0.0	19.4
Lane LOS						C
Approach Delay (s/veh)	0.0		0.0			19.4
Approach LOS						C

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	39.2%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	805	375	0	78	166
Future Volume (vph)	0	805	375	0	78	166
Ideal Flow (vphpl)	1454	1579	1579	1301	1433	1433
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	2941	2857	0	1309	1088
Flt Permitted					0.950	
Satd. Flow (perm)	0	2941	2857	0	1309	1088
Link Speed (k/h)		50	50		50	
Link Distance (m)		152.8	266.5		231.4	
Travel Time (s)		11.0	19.2		16.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	5%	3%	4%	12%
Adj. Flow (vph)	0	875	408	0	85	180
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	875	408	0	85	180
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.26	1.26	1.60	1.42	1.42
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 39.2%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↰	↱
Traffic Volume (veh/h)	0	805	375	0	78	166
Future Volume (Veh/h)	0	805	375	0	78	166
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	875	408	0	85	180
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	408				846	204
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	408				846	204
tC, single (s)	4.1				6.9	7.1
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.4
p0 queue free %	100				71	77
cM capacity (veh/h)	1162				298	773

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	438	438	204	204	85	180
Volume Left	0	0	0	0	85	0
Volume Right	0	0	0	0	0	180
cSH	1700	1700	1700	1700	298	773
Volume to Capacity	0.26	0.26	0.12	0.12	0.29	0.23
Queue Length 95th (m)	0.0	0.0	0.0	0.0	9.2	7.2
Control Delay (s/veh)	0.0	0.0	0.0	0.0	21.9	11.1
Lane LOS					C	B
Approach Delay (s/veh)	0.0		0.0		14.5	
Approach LOS					B	

Intersection Summary			
Average Delay	2.5		
Intersection Capacity Utilization	39.2%	ICU Level of Service	A
Analysis Period (min)	15		

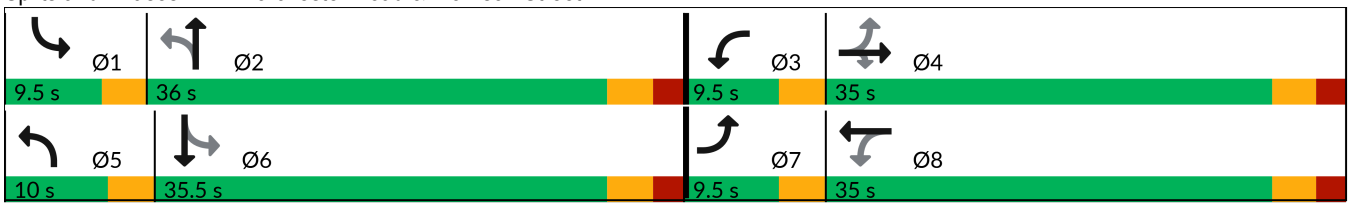
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	224	138	230	267	181	156	265	363	140	158	375	168
Future Volume (vph)	224	138	230	267	181	156	265	363	140	158	375	168
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Storage Length (m)	70.0		0.0	105.0		125.0	90.0		0.0	95.0		41.0
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00		0.98	0.99	0.99		1.00	0.99		1.00	0.99	
Frt			0.850		0.931			0.958			0.954	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1328	1504	1063	1368	2300	0	1341	2397	0	1381	2316	0
Flt Permitted	0.446			0.643			0.373			0.416		
Satd. Flow (perm)	622	1504	1044	921	2300	0	525	2397	0	602	2316	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			247		168			69			87	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		205.0			291.8			454.1			179.9	
Travel Time (s)		14.8			21.0			32.7			13.0	
Confl. Peds. (#/hr)	6		7	7		6	6		11	11		6
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	4%	5%	4%	1%	3%	1%	3%	1%	1%	0%	2%	9%
Adj. Flow (vph)	241	148	247	287	195	168	285	390	151	170	403	181
Shared Lane Traffic (%)												
Lane Group Flow (vph)	241	148	247	287	363	0	285	541	0	170	584	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

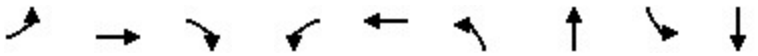
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	9.5	35.0	35.0	9.5	35.0		9.5	35.0		9.5	35.0	
Total Split (s)	9.5	35.0	35.0	9.5	35.0		10.0	36.0		9.5	35.5	
Total Split (%)	10.6%	38.9%	38.9%	10.6%	38.9%		11.1%	40.0%		10.6%	39.4%	
Maximum Green (s)	6.5	30.0	30.0	6.5	30.0		7.0	31.0		6.5	30.5	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)		10.0	10.0		10.0			10.0			10.0	
Flash Don't Walk (s)		20.0	20.0		20.0			20.0			20.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	21.4	12.8	12.8	21.4	12.8		40.0	31.0		39.0	30.5	
Actuated g/C Ratio	0.29	0.18	0.18	0.29	0.18		0.55	0.43		0.53	0.42	
v/c Ratio	0.98	0.56	0.64	0.93	0.67		0.78	0.51		0.43	0.57	
Control Delay (s/veh)	80.4	35.9	12.2	61.4	21.1		28.5	15.8		12.1	16.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	80.4	35.9	12.2	61.4	21.1		28.5	15.8		12.1	16.8	
LOS	F	D	B	E	C		C	B		B	B	
Approach Delay (s/veh)		43.5			38.9			20.2			15.7	
Approach LOS		D			D			C			B	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 72.9
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.98
Intersection Signal Delay (s/veh): 28.4 Intersection LOS: C
Intersection Capacity Utilization 91.8% ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 1: Dorchester Road & Morrison Street





Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	241	148	247	287	363	285	541	170	584
v/c Ratio	0.98	0.56	0.64	0.93	0.67	0.78	0.51	0.43	0.57
Control Delay (s/veh)	80.4	35.9	12.2	61.4	21.1	28.5	15.8	12.1	16.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	80.4	35.9	12.2	61.4	21.1	28.5	15.8	12.1	16.8
Queue Length 50th (m)	27.8	19.7	0.0	34.4	13.4	19.2	24.6	10.3	27.0
Queue Length 95th (m)	#71.3	37.1	20.2	#77.0	27.0	#58.3	43.7	23.3	48.3
Internal Link Dist (m)		181.0			267.8		430.1		155.9
Turn Bay Length (m)	70.0			105.0		90.0		95.0	
Base Capacity (vph)	245	619	575	309	1046	366	1059	391	1020
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.98	0.24	0.43	0.93	0.35	0.78	0.51	0.43	0.57

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	224	138	230	267	181	156	265	363	140	158	375	168
Future Volume (vph)	224	138	230	267	181	156	265	363	140	158	375	168
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Total Lost time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.93		1.00	0.96		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1327	1504	1045	1364	2300		1340	2398		1379	2315	
Flt Permitted	0.45	1.00	1.00	0.64	1.00		0.37	1.00		0.42	1.00	
Satd. Flow (perm)	623	1504	1045	924	2300		526	2398		603	2315	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	241	148	247	287	195	168	285	390	151	170	403	181
RTOR Reduction (vph)	0	0	204	0	138	0	0	40	0	0	51	0
Lane Group Flow (vph)	241	148	43	287	225	0	285	501	0	170	533	0
Confl. Peds. (#/hr)	6		7	7		6	6		11	11		6
Heavy Vehicles (%)	4%	5%	4%	1%	3%	1%	3%	1%	1%	0%	2%	9%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	19.3	12.8	12.8	19.3	12.8		38.0	31.0		37.0	30.5	
Effective Green, g (s)	19.3	12.8	12.8	19.3	12.8		38.0	31.0		37.0	30.5	
Actuated g/C Ratio	0.27	0.18	0.18	0.27	0.18		0.52	0.43		0.51	0.42	
Clearance Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	228	264	183	284	404		352	1021		375	969	
v/s Ratio Prot	c0.09	0.10		0.09	0.10		c0.08	0.21		0.04	0.23	
v/s Ratio Perm	c0.19		0.04	0.18			c0.34			0.19		
v/c Ratio	1.06	0.56	0.24	1.01	0.56		0.81	0.49		0.45	0.55	
Uniform Delay, d1	25.5	27.4	25.8	26.0	27.4		12.1	15.2		10.1	16.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	75.4	2.7	0.7	56.1	1.7		12.9	1.7		0.9	2.3	
Delay (s)	100.9	30.1	26.5	82.1	29.1		24.9	16.9		11.0	18.2	
Level of Service	F	C	C	F	C		C	B		B	B	
Approach Delay (s/veh)		55.5			52.5			19.7			16.6	
Approach LOS		E			D			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	34.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	72.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	91.8%	ICU Level of Service	F
Analysis Period (min)	15		

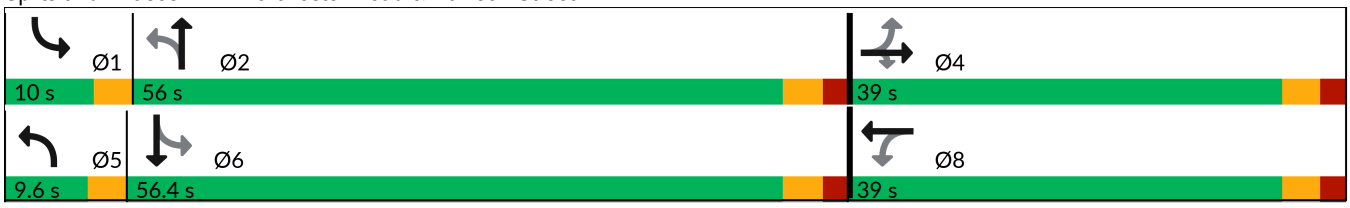
c Critical Lane Group

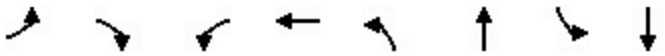
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	0	33	52	1	24	6	796	47	36	877	5
Future Volume (vph)	11	0	33	52	1	24	6	796	47	36	877	5
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Storage Length (m)	30.0		35.0	20.0		0.0	180.0		0.0	30.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.91	0.91
Ped Bike Factor			0.99	1.00			1.00	1.00		1.00	1.00	
Frt			0.850		0.856			0.992			0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1381	1579	1015	1381	1103	0	1381	2495	0	1341	3577	0
Flt Permitted	0.741			0.757			0.304			0.297		
Satd. Flow (perm)	1077	1579	1001	1099	1103	0	441	2495	0	419	3577	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			199		24			8			1	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		106.7			108.0			280.1			454.1	
Travel Time (s)		7.7			7.8			20.2			32.7	
Confl. Peds. (#/hr)			2	2			5		2	2		5
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	9%	0%	0%	4%	0%	1%	0%	3%	2%	0%
Adj. Flow (vph)	11	0	34	53	1	24	6	812	48	37	895	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	11	0	34	53	25	0	6	860	0	37	900	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	1.0		5.0	5.0	
Minimum Split (s)	39.0	39.0	39.0	39.0	39.0		9.5	52.0		9.5	52.0	
Total Split (s)	39.0	39.0	39.0	39.0	39.0		9.6	56.0		10.0	56.4	
Total Split (%)	37.1%	37.1%	37.1%	37.1%	37.1%		9.1%	53.3%		9.5%	53.7%	
Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		6.6	51.0		7.0	51.4	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)	11.0	11.0	11.0	11.0	11.0			16.0			16.0	
Flash Don't Walk (s)	23.0	23.0	23.0	23.0	23.0			31.0			31.0	
Pedestrian Calls (#/hr)	0	0	0	0	0			0			0	
Act Effct Green (s)	9.2		9.2	9.2	9.2		62.4	58.2		64.2	62.0	
Actuated g/C Ratio	0.12		0.12	0.12	0.12		0.78	0.73		0.81	0.78	
v/c Ratio	0.09		0.12	0.42	0.17		0.01	0.47		0.09	0.32	
Control Delay (s/veh)	32.4		0.8	42.8	16.0		2.7	7.9		2.9	4.5	
Queue Delay	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	32.4		0.8	42.8	16.0		2.7	7.9		2.9	4.5	
LOS	C		A	D	B		A	A		A	A	
Approach Delay (s/veh)		8.5			34.2			7.9			4.5	
Approach LOS		A			C			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 105			
Actuated Cycle Length: 79.5			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.47			
Intersection Signal Delay (s/veh): 7.3		Intersection LOS: A	
Intersection Capacity Utilization 61.6%		ICU Level of Service B	
Analysis Period (min) 15			

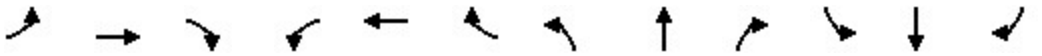
Splits and Phases: 2: Dorchester Road & Dawson Street





Lane Group	EBL	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	11	34	53	25	6	860	37	900
v/c Ratio	0.09	0.12	0.42	0.17	0.01	0.47	0.09	0.32
Control Delay (s/veh)	32.4	0.8	42.8	16.0	2.7	7.9	2.9	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	32.4	0.8	42.8	16.0	2.7	7.9	2.9	4.5
Queue Length 50th (m)	1.6	0.0	7.9	0.2	0.2	33.5	1.0	12.9
Queue Length 95th (m)	6.3	0.0	19.1	7.1	1.0	58.5	3.4	34.0
Internal Link Dist (m)				84.0		256.1		430.1
Turn Bay Length (m)	30.0	35.0	20.0		180.0		30.0	
Base Capacity (vph)	461	542	471	486	427	1829	419	2791
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	0.02	0.06	0.11	0.05	0.01	0.47	0.09	0.32

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	0	33	52	1	24	6	796	47	36	877	5
Future Volume (vph)	11	0	33	52	1	24	6	796	47	36	877	5
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Total Lost time (s)	5.0		5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00		1.00	1.00	1.00		1.00	0.95		1.00	0.91	
Frpb, ped/bikes	1.00		0.99	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00		0.85	1.00	0.86		1.00	0.99		1.00	1.00	
Flt Protected	0.95		1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1381		1001	1379	1103		1381	2494		1341	3578	
Flt Permitted	0.74		1.00	0.76	1.00		0.30	1.00		0.30	1.00	
Satd. Flow (perm)	1077		1001	1099	1103		442	2494		420	3578	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	11	0	34	53	1	24	6	812	48	37	895	5
RTOR Reduction (vph)	0	0	31	0	22	0	0	2	0	0	0	0
Lane Group Flow (vph)	11	0	3	53	3	0	6	858	0	37	900	0
Confl. Peds. (#/hr)			2	2			5		2	2		5
Heavy Vehicles (%)	0%	0%	9%	0%	0%	4%	0%	1%	0%	3%	2%	0%
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	8.0		8.0	8.0	8.0		59.5	58.4		64.7	61.0	
Effective Green, g (s)	8.0		8.0	8.0	8.0		59.5	58.4		64.7	61.0	
Actuated g/C Ratio	0.10		0.10	0.10	0.10		0.72	0.70		0.78	0.73	
Clearance Time (s)	5.0		5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	103		96	105	106		328	1752		368	2626	
v/s Ratio Prot					0.00		0.00	c0.34		c0.00	0.25	
v/s Ratio Perm	0.01		0.00	c0.05			0.01			0.07		
v/c Ratio	0.11		0.03	0.50	0.03		0.02	0.49		0.10	0.34	
Uniform Delay, d1	34.3		34.0	35.7	34.0		3.4	5.6		2.3	3.9	
Progression Factor	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5		0.1	3.8	0.1		0.0	1.0		0.1	0.4	
Delay (s)	34.7		34.2	39.4	34.2		3.4	6.6		2.4	4.3	
Level of Service	C		C	D	C		A	A		A	A	
Approach Delay (s/veh)		34.3			37.8			6.6			4.2	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	7.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	83.1	Sum of lost time (s)	13.0
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		

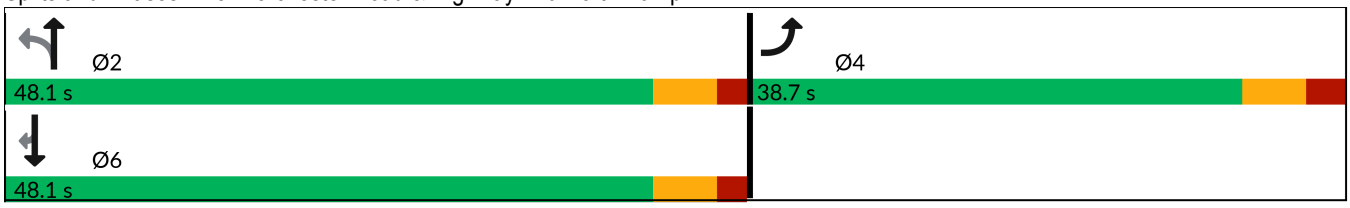
c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	39	0	205	836	492	478
Future Volume (vph)	39	0	205	836	492	478
Ideal Flow (vphpl)	1454	1301	1454	1579	1579	1301
Storage Length (m)	0.0	0.0	160.0			0.0
Storage Lanes	2	0	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor	1.00					
Frt						0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	2602	0	1341	2970	2941	1074
Flt Permitted	0.950		0.458			
Satd. Flow (perm)	2598	0	647	2970	2941	1074
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						509
Link Speed (k/h)	50			50	50	
Link Distance (m)	166.4			377.5	280.1	
Travel Time (s)	12.0			27.2	20.2	
Confl. Peds. (#/hr)	1					
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	3%	3%	3%	1%	2%	3%
Adj. Flow (vph)	41	0	218	889	523	509
Shared Lane Traffic (%)						
Lane Group Flow (vph)	41	0	218	889	523	509
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.2			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.60	1.40	1.26	1.26	1.60
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1		1	2	2	1
Detector Template	Left		Left	Thru	Thru	Right
Leading Detector (m)	2.0		2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0		2.0	0.6	0.6	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	8.0		10.0	10.0	10.0	10.0
Minimum Split (s)	38.7		24.1	24.1	24.1	24.1
Total Split (s)	38.7		48.1	48.1	48.1	48.1
Total Split (%)	44.6%		55.4%	55.4%	55.4%	55.4%
Maximum Green (s)	32.0		42.0	42.0	42.0	42.0
Yellow Time (s)	4.1		4.1	4.1	4.1	4.1
All-Red Time (s)	2.6		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7		6.1	6.1	6.1	6.1
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		Max	Max	Max	Max
Walk Time (s)	12.0					
Flash Don't Walk (s)	20.0					
Pedestrian Calls (#/hr)	0					
Act Effct Green (s)	8.0		54.7	54.7	54.7	54.7
Actuated g/C Ratio	0.13		0.87	0.87	0.87	0.87
v/c Ratio	0.12		0.39	0.35	0.21	0.51
Control Delay (s/veh)	25.4		6.1	3.1	2.5	2.5
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay (s/veh)	25.4		6.1	3.1	2.5	2.5
LOS	C		A	A	A	A
Approach Delay (s/veh)	25.4			3.7	2.5	
Approach LOS	C			A	A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 86.8			
Actuated Cycle Length: 63			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.51			
Intersection Signal Delay (s/veh): 3.5		Intersection LOS: A	
Intersection Capacity Utilization 68.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Dorchester Road & Highway 420 North Ramp



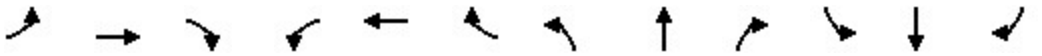
Lane Group	EBL	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	41	218	889	523	509
v/c Ratio	0.12	0.39	0.35	0.21	0.51
Control Delay (s/veh)	25.4	6.1	3.1	2.5	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	25.4	6.1	3.1	2.5	2.5
Queue Length 50th (m)	2.3	0.0	0.0	0.0	0.0
Queue Length 95th (m)	6.3	27.1	31.8	16.7	8.2
Internal Link Dist (m)	142.4		353.5	256.1	
Turn Bay Length (m)		160.0			
Base Capacity (vph)	1321	561	2576	2551	999
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.39	0.35	0.21	0.51

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	39	0	205	836	492	478
Future Volume (vph)	39	0	205	836	492	478
Ideal Flow (vphpl)	1454	1301	1454	1579	1579	1301
Total Lost time (s)	6.7		6.1	6.1	6.1	6.1
Lane Util. Factor	0.97		1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	0.95		0.95	1.00	1.00	1.00
Satd. Flow (prot)	2602		1341	2970	2941	1074
Flt Permitted	0.95		0.46	1.00	1.00	1.00
Satd. Flow (perm)	2602		647	2970	2941	1074
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	41	0	218	889	523	509
RTOR Reduction (vph)	0	0	0	0	0	122
Lane Group Flow (vph)	41	0	218	889	523	387
Confl. Peds. (#/hr)	1					
Heavy Vehicles (%)	3%	3%	3%	1%	2%	3%
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Actuated Green, G (s)	3.2		51.0	51.0	51.0	51.0
Effective Green, g (s)	3.2		51.0	51.0	51.0	51.0
Actuated g/C Ratio	0.05		0.76	0.76	0.76	0.76
Clearance Time (s)	6.7		6.1	6.1	6.1	6.1
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	124		492	2260	2238	817
v/s Ratio Prot	c0.02			0.30	0.18	
v/s Ratio Perm			0.34			c0.36
v/c Ratio	0.33		0.44	0.39	0.23	0.47
Uniform Delay, d1	30.9		2.9	2.7	2.3	3.0
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.6		2.9	0.5	0.2	2.0
Delay (s)	32.4		5.8	3.2	2.6	5.0
Level of Service	C		A	A	A	A
Approach Delay (s/veh)	32.4			3.7	3.7	
Approach LOS	C			A	A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	4.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	67.0	Sum of lost time (s)	12.8
Intersection Capacity Utilization	68.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

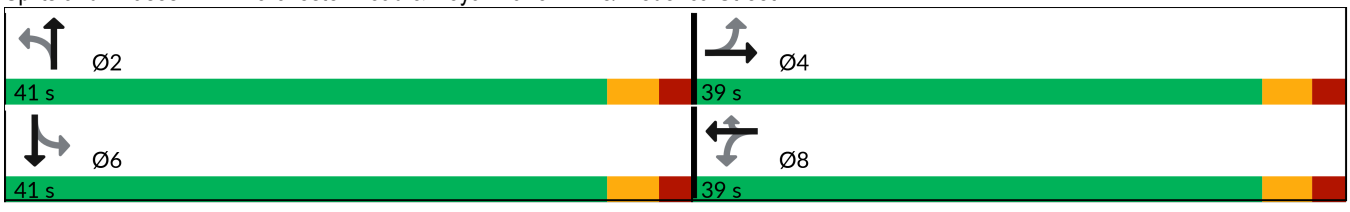


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	11	7	99	26	427	5	571	53	72	415	17
Future Volume (vph)	15	11	7	99	26	427	5	571	53	72	415	17
Ideal Flow (vphpl)	1433	1433	1433	1454	1579	1301	1454	1338	1338	1454	1338	1338
Storage Length (m)	0.0		0.0	45.0		0.0	95.0		0.0	165.0		0.0
Storage Lanes	0		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		1.00		1.00				1.00		1.00		
Frt		0.970				0.850		0.987			0.994	
Flt Protected		0.978		0.950			0.950			0.950		
Satd. Flow (prot)	0	1320	0	1303	1423	1095	1381	2455	0	1368	2474	0
Flt Permitted		0.916		0.734			0.477			0.356		
Satd. Flow (perm)	0	1236	0	1004	1423	1095	694	2455	0	512	2474	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8				177		16			7	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		47.8			201.0			125.1			377.5	
Travel Time (s)		3.4			14.5			9.0			27.2	
Confl. Peds. (#/hr)			3	3					5	5		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	8%	0%	6%	11%	1%	0%	2%	3%	1%	2%	6%
Adj. Flow (vph)	16	12	8	106	28	459	5	614	57	77	446	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	36	0	106	28	459	5	671	0	77	464	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.42	1.42	1.42	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	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	5.0	
Minimum Split (s)	32.0	32.0		32.0	32.0	32.0	41.0	41.0		41.0	41.0	
Total Split (s)	39.0	39.0		39.0	39.0	39.0	41.0	41.0		41.0	41.0	
Total Split (%)	48.8%	48.8%		48.8%	48.8%	48.8%	51.3%	51.3%		51.3%	51.3%	
Maximum Green (s)	34.0	34.0		34.0	34.0	34.0	36.0	36.0		36.0	36.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	Max	Max		Max	Max	
Walk Time (s)	9.0	9.0		9.0	9.0	9.0	12.0	12.0		12.0	12.0	
Flash Don't Walk (s)	18.0	18.0		18.0	18.0	18.0	24.0	24.0		24.0	24.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	
Act Effct Green (s)		25.8		25.8	25.8	25.8	36.5	36.5		36.5	36.5	
Actuated g/C Ratio		0.36		0.36	0.36	0.36	0.50	0.50		0.50	0.50	
v/c Ratio		0.08		0.30	0.06	0.91	0.01	0.54		0.30	0.37	
Control Delay (s/veh)		12.2		18.1	14.2	37.5	12.2	15.6		17.5	13.5	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay (s/veh)		12.2		18.1	14.2	37.5	12.2	15.6		17.5	13.5	
LOS		B		B	B	D	B	B		B	B	
Approach Delay (s/veh)		12.2			32.9			15.6			14.1	
Approach LOS		B			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 72.4			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.91			
Intersection Signal Delay (s/veh): 20.7		Intersection LOS: C	
Intersection Capacity Utilization 87.0%		ICU Level of Service E	
Analysis Period (min) 15			

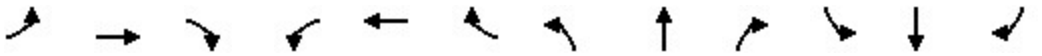
Splits and Phases: 4: Dorchester Road & Royal Manor Drive/Frederica Street



Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	36	106	28	459	5	671	77	464
v/c Ratio	0.08	0.30	0.06	0.91	0.01	0.54	0.30	0.37
Control Delay (s/veh)	12.2	18.1	14.2	37.5	12.2	15.6	17.5	13.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	12.2	18.1	14.2	37.5	12.2	15.6	17.5	13.5
Queue Length 50th (m)	2.6	10.6	2.6	39.1	0.4	35.0	6.7	21.8
Queue Length 95th (m)	8.0	21.9	7.2	#98.2	2.4	57.7	19.1	37.3
Internal Link Dist (m)	23.8		177.0			101.1		353.5
Turn Bay Length (m)		45.0			95.0		165.0	
Base Capacity (vph)	592	477	676	614	349	1244	257	1249
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.22	0.04	0.75	0.01	0.54	0.30	0.37

Intersection Summary

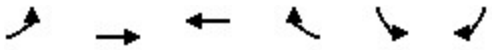
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	11	7	99	26	427	5	571	53	72	415	17
Future Volume (vph)	15	11	7	99	26	427	5	571	53	72	415	17
Ideal Flow (vphpl)	1433	1433	1433	1454	1579	1301	1454	1338	1338	1454	1338	1338
Total Lost time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt		0.97		1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected		0.98		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1320		1300	1423	1095	1381	2455		1366	2474	
Flt Permitted		0.92		0.73	1.00	1.00	0.48	1.00		0.36	1.00	
Satd. Flow (perm)		1236		1004	1423	1095	694	2455		512	2474	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	16	12	8	106	28	459	5	614	57	77	446	18
RTOR Reduction (vph)	0	5	0	0	0	114	0	8	0	0	3	0
Lane Group Flow (vph)	0	31	0	106	28	345	5	663	0	77	461	0
Confl. Peds. (#/hr)			3	3					5	5		
Heavy Vehicles (%)	0%	8%	0%	6%	11%	1%	0%	2%	3%	1%	2%	6%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		25.8		25.8	25.8	25.8	36.5	36.5		36.5	36.5	
Effective Green, g (s)		25.8		25.8	25.8	25.8	36.5	36.5		36.5	36.5	
Actuated g/C Ratio		0.36		0.36	0.36	0.36	0.50	0.50		0.50	0.50	
Clearance Time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		441		358	507	390	350	1239		258	1248	
v/s Ratio Prot					0.02			c0.27			0.19	
v/s Ratio Perm		0.02		0.11		c0.32	0.01			0.15		
v/c Ratio		0.07		0.30	0.06	0.89	0.01	0.54		0.30	0.37	
Uniform Delay, d1		15.3		16.7	15.3	21.9	8.9	12.1		10.4	10.9	
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1		0.5	0.0	20.5	0.1	1.7		2.9	0.8	
Delay (s)		15.4		17.2	15.3	42.4	9.0	13.8		13.4	11.7	
Level of Service		B		B	B	D	A	B		B	B	
Approach Delay (s/veh)		15.4			36.6			13.8			12.0	
Approach LOS		B			D			B			B	

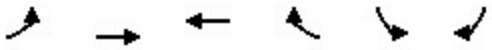
Intersection Summary			
HCM 2000 Control Delay (s/veh)	20.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	72.3	Sum of lost time (s)	10.0
Intersection Capacity Utilization	87.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	43	93	164	1	137	389
Future Volume (vph)	43	93	164	1	137	389
Ideal Flow (vphpl)	1454	1579	1338	1338	1454	1301
Storage Length (m)	85.0			0.0	0.0	40.0
Storage Lanes	1			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1381	2913	2515	0	1341	1074
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1381	2913	2515	0	1341	1074
Link Speed (k/h)		50	50		50	
Link Distance (m)		201.0	149.3		70.1	
Travel Time (s)		14.5	10.7		5.0	
Confl. Peds. (#/hr)	1			1		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	3%	1%	0%	3%	3%
Adj. Flow (vph)	48	103	182	1	152	432
Shared Lane Traffic (%)						
Lane Group Flow (vph)	48	103	183	0	152	432
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.26	1.55	1.55	1.40	1.60
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 48.6%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	43	93	164	1	137	389
Future Volume (Veh/h)	43	93	164	1	137	389
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)	48	103	182	1	152	432
Pedestrians					1	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						5
Median type		None	None			
Median storage veh)						
Upstream signal (m)		201				
pX, platoon unblocked						
vC, conflicting volume	184				331	93
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	184				331	93
tC, single (s)	4.1				6.9	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				75	54
cM capacity (veh/h)	1402				613	942

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	48	52	52	121	62	584
Volume Left	48	0	0	0	0	152
Volume Right	0	0	0	0	1	432
cSH	1402	1700	1700	1700	1700	1274
Volume to Capacity	0.03	0.03	0.03	0.07	0.04	0.46
Queue Length 95th (m)	0.9	0.0	0.0	0.0	0.0	19.7
Control Delay (s/veh)	7.7	0.0	0.0	0.0	0.0	12.2
Lane LOS	A					B
Approach Delay (s/veh)	2.4			0.0		12.2
Approach LOS						B

Intersection Summary			
Average Delay	8.2		
Intersection Capacity Utilization	48.6%	ICU Level of Service	A
Analysis Period (min)	15		

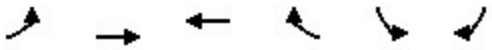
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	638	0	0	854	129	0
Future Volume (vph)	638	0	0	854	129	0
Ideal Flow (vphpl)	1579	1301	1454	1579	1454	1301
Lane Util. Factor	0.95	1.00	1.00	0.91	1.00	1.00
Frt						
Flt Protected					0.950	
Satd. Flow (prot)	2970	0	0	4268	1328	0
Flt Permitted					0.950	
Satd. Flow (perm)	2970	0	0	4268	1328	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	266.5			178.9	263.7	
Travel Time (s)	19.2			12.9	19.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	5%	0%	1%	4%	1%
Adj. Flow (vph)	693	0	0	928	140	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	693	0	0	928	140	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.26	1.60	1.40	1.26	1.40	1.60
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 57.6%		ICU Level of Service B	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	638	0	0	854	129	0
Future Volume (Veh/h)	638	0	0	854	129	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	693	0	0	928	140	0
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			693		1002	347
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			693		1002	347
tC, single (s)			4.1		6.9	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		41	100
cM capacity (veh/h)			912		235	652

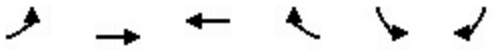
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	347	347	309	309	309	140
Volume Left	0	0	0	0	0	140
Volume Right	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	235
Volume to Capacity	0.20	0.20	0.18	0.18	0.18	0.59
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	27.4
Control Delay (s/veh)	0.0	0.0	0.0	0.0	0.0	40.5
Lane LOS						E
Approach Delay (s/veh)	0.0		0.0			40.5
Approach LOS						E

Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	57.6%	ICU Level of Service	B
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↰	↱
Traffic Volume (vph)	0	711	804	0	138	295
Future Volume (vph)	0	711	804	0	138	295
Ideal Flow (vphpl)	1454	1579	1579	1301	1433	1433
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	2941	2941	0	1348	1183
Flt Permitted					0.950	
Satd. Flow (perm)	0	2941	2941	0	1348	1183
Link Speed (k/h)		50	50		50	
Link Distance (m)		152.8	266.5		231.4	
Travel Time (s)		11.0	19.2		16.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	1%	1%	3%
Adj. Flow (vph)	0	773	874	0	150	321
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	773	874	0	150	321
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.26	1.26	1.60	1.42	1.42
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 57.6%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↰	↱
Traffic Volume (veh/h)	0	711	804	0	138	295
Future Volume (Veh/h)	0	711	804	0	138	295
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	773	874	0	150	321
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	874				1261	437
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	874				1261	437
tC, single (s)	4.1				6.8	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				8	43
cM capacity (veh/h)	781				164	565

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	387	387	437	437	150	321
Volume Left	0	0	0	0	150	0
Volume Right	0	0	0	0	0	321
cSH	1700	1700	1700	1700	164	565
Volume to Capacity	0.23	0.23	0.26	0.26	0.92	0.57
Queue Length 95th (m)	0.0	0.0	0.0	0.0	53.6	28.3
Control Delay (s/veh)	0.0	0.0	0.0	0.0	105.4	19.4
Lane LOS					F	C
Approach Delay (s/veh)	0.0		0.0		46.8	
Approach LOS					E	

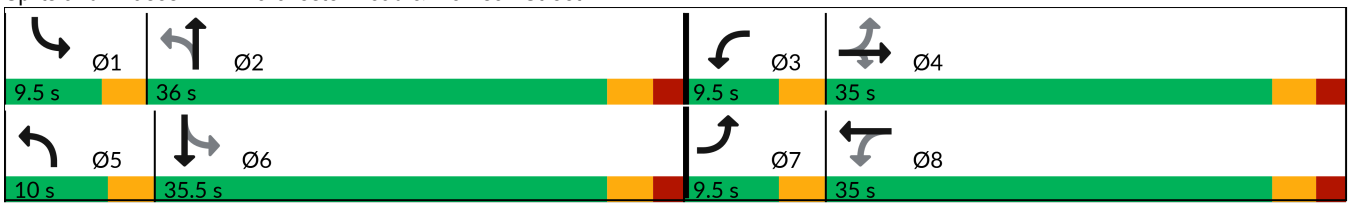
Intersection Summary			
Average Delay	10.4		
Intersection Capacity Utilization	57.6%	ICU Level of Service	B
Analysis Period (min)	15		

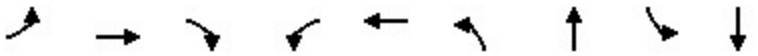
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	290	192	262	201	232	120	369	347	103	142	329	232
Future Volume (vph)	290	192	262	201	232	120	369	347	103	142	329	232
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Storage Length (m)	70.0		0.0	105.0		125.0	90.0		0.0	95.0		41.0
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00		0.98	1.00	0.99		1.00	1.00		1.00	0.99	
Frt			0.850		0.949			0.966			0.938	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1341	1548	1095	1368	2383	0	1368	2427	0	1368	2329	0
Flt Permitted	0.464			0.535			0.374			0.467		
Satd. Flow (perm)	653	1548	1076	767	2383	0	537	2427	0	670	2329	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			267		109			47			214	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		205.0			291.8			454.1			179.9	
Travel Time (s)		14.8			21.0			32.7			13.0	
Confl. Peds. (#/hr)	6		6	6		6	6		7	7		6
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	3%	2%	1%	1%	1%	0%	1%	1%	0%	1%	0%	4%
Adj. Flow (vph)	296	196	267	205	237	122	377	354	105	145	336	237
Shared Lane Traffic (%)												
Lane Group Flow (vph)	296	196	267	205	359	0	377	459	0	145	573	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	9.5	35.0	35.0	9.5	35.0		9.5	35.0		9.5	35.0	
Total Split (s)	9.5	35.0	35.0	9.5	35.0		10.0	36.0		9.5	35.5	
Total Split (%)	10.6%	38.9%	38.9%	10.6%	38.9%		11.1%	40.0%		10.6%	39.4%	
Maximum Green (s)	6.5	30.0	30.0	6.5	30.0		7.0	31.0		6.5	30.5	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)		10.0	10.0		10.0			10.0			10.0	
Flash Don't Walk (s)		20.0	20.0		20.0			20.0			20.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	23.5	15.0	15.0	23.5	15.0		40.2	31.1		39.1	30.6	
Actuated g/C Ratio	0.31	0.20	0.20	0.31	0.20		0.53	0.41		0.52	0.41	
v/c Ratio	1.13	0.64	0.62	0.70	0.64		1.04	0.44		0.36	0.53	
Control Delay (s/veh)	118.5	37.2	10.6	33.8	24.2		76.3	16.5		12.0	12.9	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	118.5	37.2	10.6	33.8	24.2		76.3	16.5		12.0	12.9	
LOS	F	D	B	C	C		E	B		B	B	
Approach Delay (s/veh)		59.6			27.7			43.5			12.7	
Approach LOS		E			C			D			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 75.2			
Natural Cycle: 100			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.13			
Intersection Signal Delay (s/veh): 36.9		Intersection LOS: D	
Intersection Capacity Utilization 104.3%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 1: Dorchester Road & Morrison Street



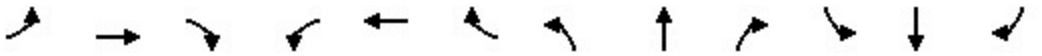


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	296	196	267	205	359	377	459	145	573
v/c Ratio	1.13	0.64	0.62	0.70	0.64	1.04	0.44	0.36	0.53
Control Delay (s/veh)	118.5	37.2	10.6	33.8	24.2	76.3	16.5	12.0	12.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	118.5	37.2	10.6	33.8	24.2	76.3	16.5	12.0	12.9
Queue Length 50th (m)	~42.3	26.9	0.0	22.8	17.7	~32.1	21.8	9.4	19.2
Queue Length 95th (m)	#94.4	47.3	20.1	40.3	31.2	#116.3	40.4	22.6	40.1
Internal Link Dist (m)		181.0			267.8		430.1		155.9
Turn Bay Length (m)	70.0			105.0		90.0		95.0	
Base Capacity (vph)	263	619	590	292	1019	364	1032	409	1074
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.13	0.32	0.45	0.70	0.35	1.04	0.44	0.35	0.53

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	290	192	262	201	232	120	369	347	103	142	329	232
Future Volume (vph)	290	192	262	201	232	120	369	347	103	142	329	232
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Total Lost time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.95		1.00	0.97		1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1340	1548	1077	1365	2383		1367	2427		1366	2330	
Flt Permitted	0.46	1.00	1.00	0.54	1.00		0.37	1.00		0.47	1.00	
Satd. Flow (perm)	654	1548	1077	769	2383		538	2427		671	2330	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	296	196	267	205	237	122	377	354	105	145	336	237
RTOR Reduction (vph)	0	0	214	0	87	0	0	28	0	0	127	0
Lane Group Flow (vph)	296	196	53	205	272	0	377	431	0	145	446	0
Confl. Peds. (#/hr)	6		6	6		6	6		7	7		6
Heavy Vehicles (%)	3%	2%	1%	1%	1%	0%	1%	1%	0%	1%	0%	4%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	21.5	15.0	15.0	21.5	15.0		38.1	31.1		37.1	30.6	
Effective Green, g (s)	21.5	15.0	15.0	21.5	15.0		38.1	31.1		37.1	30.6	
Actuated g/C Ratio	0.29	0.20	0.20	0.29	0.20		0.51	0.41		0.49	0.41	
Clearance Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	246	309	215	271	475		350	1005		391	949	
v/s Ratio Prot	c0.10	0.13		0.07	0.11		c0.10	0.18		0.03	0.19	
v/s Ratio Perm	c0.24		0.05	0.15			c0.45			0.15		
v/c Ratio	1.20	0.63	0.25	0.76	0.57		1.08	0.43		0.37	0.47	
Uniform Delay, d1	25.5	27.5	25.3	23.4	27.2		16.5	15.7		10.8	16.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	123.5	4.2	0.6	11.4	1.7		70.2	1.3		0.6	1.7	
Delay (s)	149.0	31.8	25.9	34.8	28.8		86.7	17.0		11.4	18.0	
Level of Service	F	C	C	C	C		F	B		B	B	
Approach Delay (s/veh)		75.4			31.0			48.4			16.6	
Approach LOS		E			C			D			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	44.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	75.1	Sum of lost time (s)	16.0
Intersection Capacity Utilization	104.3%	ICU Level of Service	G
Analysis Period (min)	15		

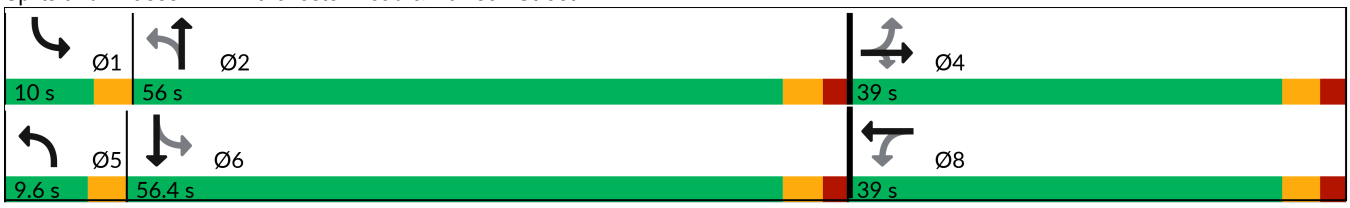
c Critical Lane Group

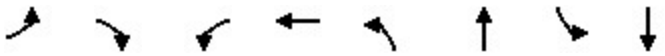
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	0	1	59	0	22	3	811	36	17	938	1
Future Volume (vph)	4	0	1	59	0	22	3	811	36	17	938	1
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Storage Length (m)	30.0		35.0	20.0		0.0	180.0		0.0	30.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.91	0.91
Ped Bike Factor			0.99	1.00			1.00	1.00		1.00	1.00	
Frt			0.850		0.850			0.994				
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1381	1579	1106	1381	1137	0	1381	2525	0	1381	3653	0
Flt Permitted	0.743			0.757			0.285			0.311		
Satd. Flow (perm)	1080	1579	1091	1099	1137	0	414	2525	0	452	3653	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			195		226			6				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		106.7			108.0			280.1			454.1	
Travel Time (s)		7.7			7.8			20.2			32.7	
Confl. Peds. (#/hr)			2	2			3		1	1		3
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	4	0	1	60	0	22	3	828	37	17	957	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	4	0	1	60	22	0	3	865	0	17	958	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	1.0		5.0	5.0	
Minimum Split (s)	39.0	39.0	39.0	39.0	39.0		9.5	52.0		9.5	52.0	
Total Split (s)	39.0	39.0	39.0	39.0	39.0		9.6	56.0		10.0	56.4	
Total Split (%)	37.1%	37.1%	37.1%	37.1%	37.1%		9.1%	53.3%		9.5%	53.7%	
Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		6.6	51.0		7.0	51.4	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)	11.0	11.0	11.0	11.0	11.0			16.0			16.0	
Flash Don't Walk (s)	23.0	23.0	23.0	23.0	23.0			31.0			31.0	
Pedestrian Calls (#/hr)	0	0	0	0	0			0			0	
Act Effct Green (s)	9.7		9.7	9.7	9.7		61.3	59.3		61.5	59.4	
Actuated g/C Ratio	0.13		0.13	0.13	0.13		0.79	0.77		0.79	0.77	
v/c Ratio	0.03		0.00	0.44	0.06		0.01	0.45		0.04	0.34	
Control Delay (s/veh)	29.0		0.0	41.0	0.4		3.0	6.2		2.9	4.9	
Queue Delay	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	29.0		0.0	41.0	0.4		3.0	6.2		2.9	4.9	
LOS	C		A	D	A		A	A		A	A	
Approach Delay (s/veh)		23.2			30.1			6.2			4.9	
Approach LOS		C			C			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 105			
Actuated Cycle Length: 77.4			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.45			
Intersection Signal Delay (s/veh): 6.6		Intersection LOS: A	
Intersection Capacity Utilization 61.7%		ICU Level of Service B	
Analysis Period (min) 15			

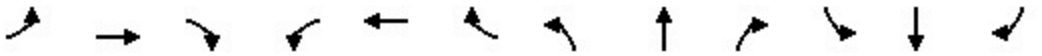
Splits and Phases: 2: Dorchester Road & Dawson Street





Lane Group	EBL	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	4	1	60	22	3	865	17	958
v/c Ratio	0.03	0.00	0.44	0.06	0.01	0.45	0.04	0.34
Control Delay (s/veh)	29.0	0.0	41.0	0.4	3.0	6.2	2.9	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	29.0	0.0	41.0	0.4	3.0	6.2	2.9	4.9
Queue Length 50th (m)	0.5	0.0	8.2	0.0	0.1	20.2	0.4	14.0
Queue Length 95th (m)	3.4	0.0	20.9	0.0	0.7	58.8	2.1	37.4
Internal Link Dist (m)				84.0		256.1		430.1
Turn Bay Length (m)	30.0	35.0	20.0		180.0		30.0	
Base Capacity (vph)	477	590	485	628	411	1936	444	2804
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	0.01	0.00	0.12	0.04	0.01	0.45	0.04	0.34

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	0	1	59	0	22	3	811	36	17	938	1
Future Volume (vph)	4	0	1	59	0	22	3	811	36	17	938	1
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Total Lost time (s)	5.0		5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00		1.00	1.00	1.00		1.00	0.95		1.00	0.91	
Frpb, ped/bikes	1.00		0.99	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00		0.85	1.00	0.85		1.00	0.99		1.00	1.00	
Flt Protected	0.95		1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1381		1091	1379	1137		1381	2524		1381	3652	
Flt Permitted	0.74		1.00	0.76	1.00		0.29	1.00		0.31	1.00	
Satd. Flow (perm)	1080		1091	1099	1137		415	2524		453	3652	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	4	0	1	60	0	22	3	828	37	17	957	1
RTOR Reduction (vph)	0	0	1	0	20	0	0	2	0	0	0	0
Lane Group Flow (vph)	4	0	0	60	2	0	3	863	0	17	958	0
Confl. Peds. (#/hr)			2	2			3		1	1		3
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	8.5		8.5	8.5	8.5		59.2	58.2		59.6	58.4	
Effective Green, g (s)	8.5		8.5	8.5	8.5		59.2	58.2		59.6	58.4	
Actuated g/C Ratio	0.11		0.11	0.11	0.11		0.73	0.72		0.74	0.72	
Clearance Time (s)	5.0		5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	113		114	115	119		315	1815		347	2636	
v/s Ratio Prot					0.00		0.00	c0.34		c0.00	0.26	
v/s Ratio Perm	0.00		0.00	c0.05			0.01			0.04		
v/c Ratio	0.04		0.00	0.52	0.02		0.01	0.48		0.05	0.36	
Uniform Delay, d1	32.5		32.4	34.3	32.5		2.9	4.8		2.9	4.2	
Progression Factor	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1		0.0	4.2	0.1		0.0	0.9		0.1	0.4	
Delay (s)	32.6		32.4	38.5	32.5		2.9	5.7		3.0	4.6	
Level of Service	C		C	D	C		A	A		A	A	
Approach Delay (s/veh)		32.6			36.9			5.7			4.6	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	6.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	80.9	Sum of lost time (s)	13.0
Intersection Capacity Utilization	61.7%	ICU Level of Service	B
Analysis Period (min)	15		

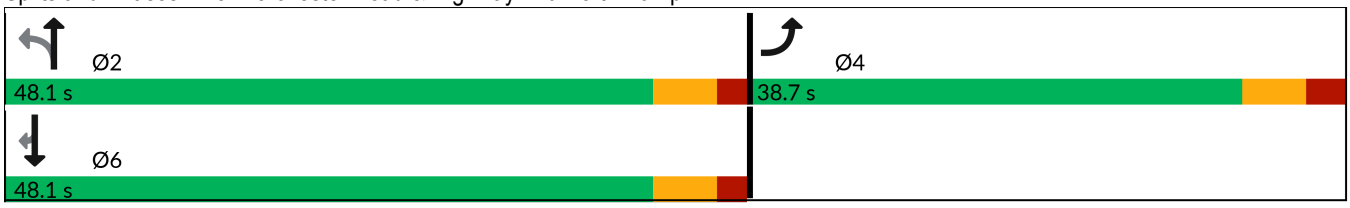
c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	28	0	206	835	527	481
Future Volume (vph)	28	0	206	835	527	481
Ideal Flow (vphpl)	1454	1301	1454	1579	1579	1301
Storage Length (m)	0.0	0.0	160.0			0.0
Storage Lanes	2	0	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor	1.00					
Frt						0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	2680	0	1368	3000	2970	1106
Flt Permitted	0.950		0.452			
Satd. Flow (perm)	2676	0	651	3000	2970	1106
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						491
Link Speed (k/h)	50			50	50	
Link Distance (m)	166.4			377.5	280.1	
Travel Time (s)	12.0			27.2	20.2	
Confl. Peds. (#/hr)	1					
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	1%	0%	1%	0%
Adj. Flow (vph)	29	0	210	852	538	491
Shared Lane Traffic (%)						
Lane Group Flow (vph)	29	0	210	852	538	491
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.2			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.60	1.40	1.26	1.26	1.60
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1		1	2	2	1
Detector Template	Left		Left	Thru	Thru	Right
Leading Detector (m)	2.0		2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0		2.0	0.6	0.6	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	8.0		10.0	10.0	10.0	10.0
Minimum Split (s)	38.7		24.1	24.1	24.1	24.1
Total Split (s)	38.7		48.1	48.1	48.1	48.1
Total Split (%)	44.6%		55.4%	55.4%	55.4%	55.4%
Maximum Green (s)	32.0		42.0	42.0	42.0	42.0
Yellow Time (s)	4.1		4.1	4.1	4.1	4.1
All-Red Time (s)	2.6		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7		6.1	6.1	6.1	6.1
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		Max	Max	Max	Max
Walk Time (s)	12.0					
Flash Don't Walk (s)	20.0					
Pedestrian Calls (#/hr)	0					
Act Effct Green (s)	8.0		55.6	55.6	55.6	55.6
Actuated g/C Ratio	0.13		0.87	0.87	0.87	0.87
v/c Ratio	0.09		0.37	0.33	0.21	0.48
Control Delay (s/veh)	25.6		5.7	2.9	2.4	2.2
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay (s/veh)	25.6		5.7	2.9	2.4	2.2
LOS	C		A	A	A	A
Approach Delay (s/veh)	25.6			3.5	2.3	
Approach LOS	C			A	A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 86.8			
Actuated Cycle Length: 63.8			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.48			
Intersection Signal Delay (s/veh): 3.2		Intersection LOS: A	
Intersection Capacity Utilization 68.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Dorchester Road & Highway 420 North Ramp



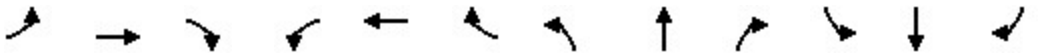
Lane Group	EBL	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	29	210	852	538	491
v/c Ratio	0.09	0.37	0.33	0.21	0.48
Control Delay (s/veh)	25.6	5.7	2.9	2.4	2.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	25.6	5.7	2.9	2.4	2.2
Queue Length 50th (m)	1.6	0.0	0.0	0.0	0.0
Queue Length 95th (m)	5.0	25.2	29.8	17.2	8.0
Internal Link Dist (m)	142.4		353.5	256.1	
Turn Bay Length (m)		160.0			
Base Capacity (vph)	1345	567	2614	2588	1027
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.02	0.37	0.33	0.21	0.48

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	28	0	206	835	527	481
Future Volume (vph)	28	0	206	835	527	481
Ideal Flow (vphpl)	1454	1301	1454	1579	1579	1301
Total Lost time (s)	6.7		6.1	6.1	6.1	6.1
Lane Util. Factor	0.97		1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	0.95		0.95	1.00	1.00	1.00
Satd. Flow (prot)	2680		1368	3000	2970	1106
Flt Permitted	0.95		0.45	1.00	1.00	1.00
Satd. Flow (perm)	2680		650	3000	2970	1106
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	29	0	210	852	538	491
RTOR Reduction (vph)	0	0	0	0	0	116
Lane Group Flow (vph)	29	0	210	852	538	375
Confl. Peds. (#/hr)	1					
Heavy Vehicles (%)	0%	0%	1%	0%	1%	0%
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Actuated Green, G (s)	3.2		51.9	51.9	51.9	51.9
Effective Green, g (s)	3.2		51.9	51.9	51.9	51.9
Actuated g/C Ratio	0.05		0.76	0.76	0.76	0.76
Clearance Time (s)	6.7		6.1	6.1	6.1	6.1
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	126		496	2293	2270	845
v/s Ratio Prot	c0.01			0.28	0.18	
v/s Ratio Perm			0.32			c0.34
v/c Ratio	0.23		0.42	0.37	0.24	0.44
Uniform Delay, d1	31.2		2.8	2.6	2.3	2.9
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.9		2.6	0.5	0.2	1.7
Delay (s)	32.1		5.4	3.1	2.5	4.5
Level of Service	C		A	A	A	A
Approach Delay (s/veh)	32.1			3.6	3.5	
Approach LOS	C			A	A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	3.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	67.9	Sum of lost time (s)	12.8
Intersection Capacity Utilization	68.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

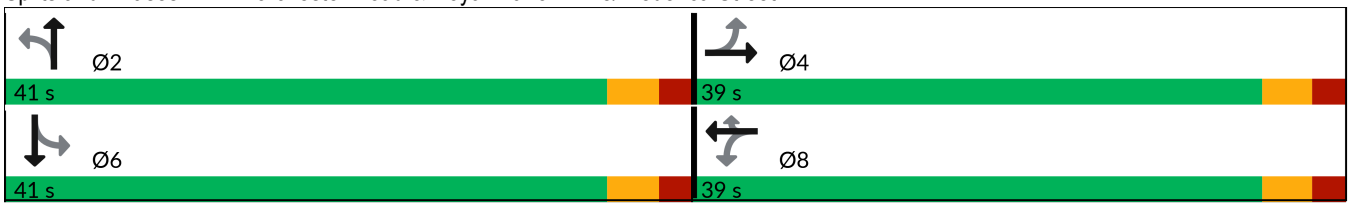


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	7	6	75	23	386	3	640	53	85	432	20
Future Volume (vph)	24	7	6	75	23	386	3	640	53	85	432	20
Ideal Flow (vphpl)	1433	1433	1433	1454	1579	1301	1454	1338	1338	1454	1338	1338
Storage Length (m)	0.0		0.0	45.0		0.0	95.0		0.0	165.0		0.0
Storage Lanes	0		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		1.00		1.00				1.00		1.00		
Frt		0.979				0.850		0.988			0.993	
Flt Protected		0.968		0.950			0.950			0.950		
Satd. Flow (prot)	0	1355	0	1368	1579	1095	1381	2505	0	1381	2501	0
Flt Permitted		0.863		0.732			0.483			0.343		
Satd. Flow (perm)	0	1208	0	1052	1579	1095	702	2505	0	498	2501	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6				151		14			8	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		47.8			201.0			125.1			377.5	
Travel Time (s)		3.4			14.5			9.0			27.2	
Confl. Peds. (#/hr)			2	2					8	8		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	0%	0%	1%	0%	1%	0%	0%	2%	0%	1%	0%
Adj. Flow (vph)	25	7	6	77	24	398	3	660	55	88	445	21
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	38	0	77	24	398	3	715	0	88	466	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.42	1.42	1.42	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	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	5.0	
Minimum Split (s)	32.0	32.0		32.0	32.0	32.0	41.0	41.0		41.0	41.0	
Total Split (s)	39.0	39.0		39.0	39.0	39.0	41.0	41.0		41.0	41.0	
Total Split (%)	48.8%	48.8%		48.8%	48.8%	48.8%	51.3%	51.3%		51.3%	51.3%	
Maximum Green (s)	34.0	34.0		34.0	34.0	34.0	36.0	36.0		36.0	36.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	Max	Max		Max	Max	
Walk Time (s)	9.0	9.0		9.0	9.0	9.0	12.0	12.0		12.0	12.0	
Flash Don't Walk (s)	18.0	18.0		18.0	18.0	18.0	24.0	24.0		24.0	24.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	
Act Effct Green (s)		22.2		22.2	22.2	22.2	36.6	36.6		36.6	36.6	
Actuated g/C Ratio		0.32		0.32	0.32	0.32	0.53	0.53		0.53	0.53	
v/c Ratio		0.10		0.23	0.05	0.88	0.01	0.54		0.33	0.35	
Control Delay (s/veh)		13.4		17.4	14.5	34.0	11.7	14.2		17.3	12.0	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay (s/veh)		13.4		17.4	14.5	34.0	11.7	14.2		17.3	12.0	
LOS		B		B	B	C	B	B		B	B	
Approach Delay (s/veh)		13.4			30.5			14.2			12.8	
Approach LOS		B			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 69			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay (s/veh): 18.3		Intersection LOS: B	
Intersection Capacity Utilization 82.8%		ICU Level of Service E	
Analysis Period (min) 15			

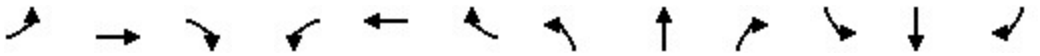
Splits and Phases: 4: Dorchester Road & Royal Manor Drive/Frederica Street



Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	38	77	24	398	3	715	88	466
v/c Ratio	0.10	0.23	0.05	0.88	0.01	0.54	0.33	0.35
Control Delay (s/veh)	13.4	17.4	14.5	34.0	11.7	14.2	17.3	12.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	13.4	17.4	14.5	34.0	11.7	14.2	17.3	12.0
Queue Length 50th (m)	2.9	7.4	2.2	31.4	0.2	31.1	6.5	17.8
Queue Length 95th (m)	8.5	16.4	6.5	#70.6	1.7	62.2	22.4	37.2
Internal Link Dist (m)	23.8		177.0			101.1		353.5
Turn Bay Length (m)		45.0			95.0		165.0	
Base Capacity (vph)	608	527	791	624	372	1335	264	1330
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.15	0.03	0.64	0.01	0.54	0.33	0.35

Intersection Summary

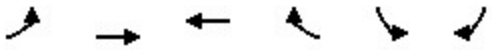
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	7	6	75	23	386	3	640	53	85	432	20
Future Volume (vph)	24	7	6	75	23	386	3	640	53	85	432	20
Ideal Flow (vphpl)	1433	1433	1433	1454	1579	1301	1454	1338	1338	1454	1338	1338
Total Lost time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt		0.98		1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected		0.97		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1355		1366	1579	1095	1381	2506		1379	2501	
Flt Permitted		0.86		0.73	1.00	1.00	0.48	1.00		0.34	1.00	
Satd. Flow (perm)		1208		1053	1579	1095	703	2506		498	2501	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	25	7	6	77	24	398	3	660	55	88	445	21
RTOR Reduction (vph)	0	4	0	0	0	102	0	7	0	0	4	0
Lane Group Flow (vph)	0	34	0	77	24	296	3	708	0	88	462	0
Confl. Peds. (#/hr)			2	2					8	8		
Heavy Vehicles (%)	0%	0%	0%	1%	0%	1%	0%	0%	2%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		22.2		22.2	22.2	22.2	36.6	36.6		36.6	36.6	
Effective Green, g (s)		22.2		22.2	22.2	22.2	36.6	36.6		36.6	36.6	
Actuated g/C Ratio		0.32		0.32	0.32	0.32	0.53	0.53		0.53	0.53	
Clearance Time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		389		339	509	353	373	1333		264	1330	
v/s Ratio Prot					0.02			c0.28			0.18	
v/s Ratio Perm		0.03		0.07		c0.27	0.00			0.18		
v/c Ratio		0.09		0.23	0.05	0.84	0.01	0.53		0.33	0.35	
Uniform Delay, d1		16.2		17.0	16.0	21.6	7.6	10.5		9.2	9.2	
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1		0.3	0.0	15.8	0.0	1.5		3.4	0.7	
Delay (s)		16.3		17.4	16.1	37.4	7.6	12.0		12.5	10.0	
Level of Service		B		B	B	D	A	B		B	A	
Approach Delay (s/veh)		16.3			33.3			12.0			10.4	
Approach LOS		B			C			B			B	

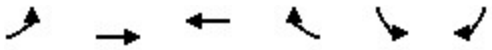
Intersection Summary			
HCM 2000 Control Delay (s/veh)	17.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	68.8	Sum of lost time (s)	10.0
Intersection Capacity Utilization	82.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	54	89	166	3	89	315
Future Volume (vph)	54	89	166	3	89	315
Ideal Flow (vphpl)	1454	1579	1338	1338	1454	1301
Storage Length (m)	85.0			0.0	0.0	40.0
Storage Lanes	1			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.998			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1354	3000	2512	0	1381	1106
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1354	3000	2512	0	1381	1106
Link Speed (k/h)		50	50		50	
Link Distance (m)		201.0	149.3		70.1	
Travel Time (s)		14.5	10.7		5.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	1%	0%	0%	0%
Adj. Flow (vph)	59	97	180	3	97	342
Shared Lane Traffic (%)						
Lane Group Flow (vph)	59	97	183	0	97	342
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.26	1.55	1.55	1.40	1.60
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

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



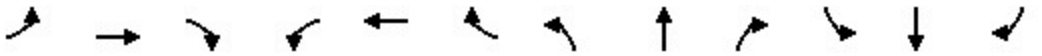
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	54	89	166	3	89	315
Future Volume (Veh/h)	54	89	166	3	89	315
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	59	97	180	3	97	342
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						5
Median type		None	None			
Median storage veh)						
Upstream signal (m)		201				
pX, platoon unblocked						
vC, conflicting volume	183				348	92
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	183				348	92
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				84	64
cM capacity (veh/h)	1389				602	954

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	59	49	49	120	63	439
Volume Left	59	0	0	0	0	97
Volume Right	0	0	0	0	3	342
cSH	1389	1700	1700	1700	1700	1225
Volume to Capacity	0.04	0.03	0.03	0.07	0.04	0.36
Queue Length 95th (m)	1.1	0.0	0.0	0.0	0.0	13.2
Control Delay (s/veh)	7.7	0.0	0.0	0.0	0.0	11.1
Lane LOS	A					B
Approach Delay (s/veh)	2.9			0.0		11.1
Approach LOS						B

Intersection Summary			
Average Delay	6.9		
Intersection Capacity Utilization	41.8%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix D

Background Traffic Operations



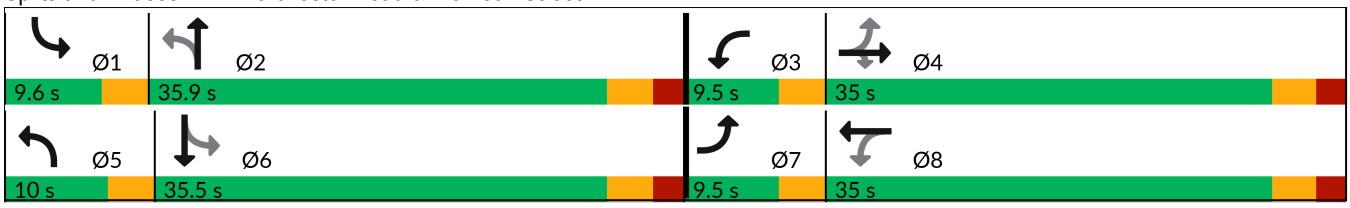
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	70	85	101	112	91	156	246	93	170	318	116
Future Volume (vph)	125	70	85	101	112	91	156	246	93	170	318	116
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Storage Length (m)	70.0		0.0	105.0		125.0	90.0		0.0	95.0		41.0
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor			0.98	1.00			1.00	1.00		1.00	1.00	
Frt			0.850		0.933			0.959			0.960	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1267	1410	1005	1368	2250	0	1341	2342	0	1368	2284	0
Flt Permitted	0.544			0.704			0.428			0.519		
Satd. Flow (perm)	726	1410	989	1009	2250	0	604	2342	0	747	2284	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			99		106			66			62	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		205.0			291.8			454.1			179.9	
Travel Time (s)		14.8			21.0			32.7			13.0	
Confl. Peds. (#/hr)			5	5			2		1	1		2
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	9%	12%	10%	1%	9%	1%	3%	4%	3%	1%	3%	16%
Adj. Flow (vph)	145	81	99	117	130	106	181	286	108	198	370	135
Shared Lane Traffic (%)												
Lane Group Flow (vph)	145	81	99	117	236	0	181	394	0	198	505	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

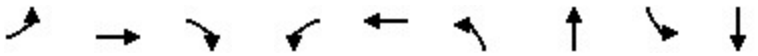
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	9.5	35.0	35.0	9.5	35.0		9.5	35.0		9.5	35.0	
Total Split (s)	9.5	35.0	35.0	9.5	35.0		10.0	35.9		9.6	35.5	
Total Split (%)	10.6%	38.9%	38.9%	10.6%	38.9%		11.1%	39.9%		10.7%	39.4%	
Maximum Green (s)	6.5	30.0	30.0	6.5	30.0		7.0	30.9		6.6	30.5	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)		10.0	10.0		10.0			10.0			10.0	
Flash Don't Walk (s)		20.0	20.0		20.0			20.0			20.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	20.1	12.9	12.9	19.5	11.0		39.9	30.9		39.1	30.5	
Actuated g/C Ratio	0.28	0.18	0.18	0.27	0.15		0.56	0.44		0.55	0.43	
v/c Ratio	0.57	0.32	0.38	0.38	0.54		0.44	0.37		0.42	0.50	
Control Delay (s/veh)	29.3	30.6	11.0	22.4	20.1		10.9	12.5		10.5	15.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	29.3	30.6	11.0	22.4	20.1		10.9	12.5		10.5	15.0	
LOS	C	C	B	C	C		B	B		B	B	
Approach Delay (s/veh)		24.0			20.8			12.0			13.7	
Approach LOS		C			C			B			B	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 71
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.57
Intersection Signal Delay (s/veh): 16.2 Intersection LOS: B
Intersection Capacity Utilization 70.5% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 1: Dorchester Road & Morrison Street





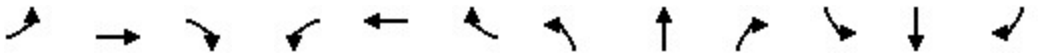
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	145	81	99	117	236	181	394	198	505
v/c Ratio	0.57	0.32	0.38	0.38	0.54	0.44	0.37	0.42	0.50
Control Delay (s/veh)	29.3	30.6	11.0	22.4	20.1	10.9	12.5	10.5	15.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	29.3	30.6	11.0	22.4	20.1	10.9	12.5	10.5	15.0
Queue Length 50th (m)	15.5	10.3	0.0	12.1	8.7	10.0	14.7	11.1	21.7
Queue Length 95th (m)	28.4	21.4	11.0	23.1	17.7	20.8	25.7	22.6	35.8
Internal Link Dist (m)		181.0			267.8		430.1		155.9
Turn Bay Length (m)	70.0			105.0		90.0		95.0	
Base Capacity (vph)	255	596	475	310	1011	411	1056	468	1016
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.14	0.21	0.38	0.23	0.44	0.37	0.42	0.50

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	70	85	101	112	91	156	246	93	170	318	116
Future Volume (vph)	125	70	85	101	112	91	156	246	93	170	318	116
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Total Lost time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.93		1.00	0.96		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1267	1410	990	1365	2249		1341	2342		1367	2284	
Flt Permitted	0.54	1.00	1.00	0.70	1.00		0.43	1.00		0.52	1.00	
Satd. Flow (perm)	726	1410	990	1012	2249		604	2342		748	2284	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	145	81	99	117	130	106	181	286	108	198	370	135
RTOR Reduction (vph)	0	0	81	0	89	0	0	38	0	0	36	0
Lane Group Flow (vph)	145	81	18	117	147	0	181	356	0	198	469	0
Confl. Peds. (#/hr)			5	5			2		1	1		2
Heavy Vehicles (%)	9%	12%	10%	1%	9%	1%	3%	4%	3%	1%	3%	16%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	19.4	12.9	12.9	16.8	11.6		37.9	30.9		37.1	30.5	
Effective Green, g (s)	19.4	12.9	12.9	16.8	11.6		37.9	30.9		37.1	30.5	
Actuated g/C Ratio	0.27	0.18	0.18	0.23	0.16		0.53	0.43		0.52	0.43	
Clearance Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	245	254	178	263	364		391	1010		444	972	
v/s Ratio Prot	c0.05	0.06		0.03	0.07		c0.05	0.15		0.04	c0.21	
v/s Ratio Perm	c0.11		0.02	0.07			0.20			0.19		
v/c Ratio	0.59	0.32	0.10	0.44	0.40		0.46	0.35		0.45	0.48	
Uniform Delay, d1	21.5	25.5	24.5	22.9	26.9		9.2	13.6		9.7	14.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.8	0.7	0.2	1.2	0.7		0.9	1.0		0.7	1.7	
Delay (s)	25.3	26.3	24.8	24.1	27.6		10.1	14.6		10.4	16.6	
Level of Service	C	C	C	C	C		B	B		B	B	
Approach Delay (s/veh)		25.4			26.5			13.2			14.8	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	18.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.53		
Actuated Cycle Length (s)	71.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	70.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

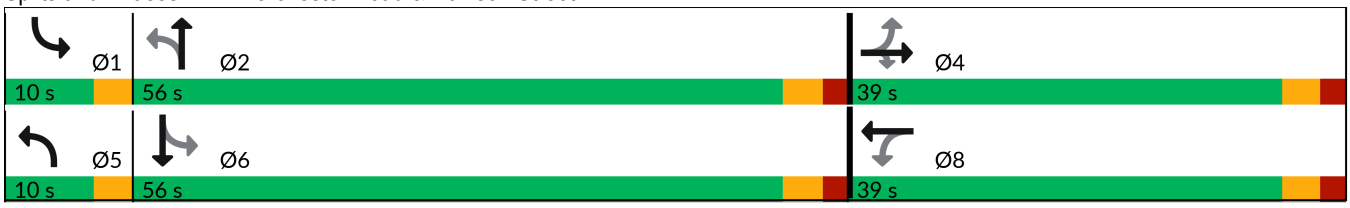


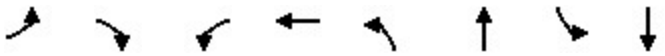
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	5	57	1	22	22	533	20	9	520	8
Future Volume (vph)	1	0	5	57	1	22	22	533	20	9	520	8
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Storage Length (m)	30.0		35.0	20.0		0.0	180.0		0.0	30.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.91	0.91
Ped Bike Factor							1.00	1.00		1.00	1.00	
Frt			0.850		0.856			0.995			0.998	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1381	1579	614	1354	1010	0	1316	2447	0	1244	3567	0
Flt Permitted	0.741			0.757			0.414			0.422		
Satd. Flow (perm)	1077	1579	614	1079	1010	0	573	2447	0	552	3567	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			280		24			5			3	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		106.7			108.0			280.1			454.1	
Travel Time (s)		7.7			7.8			20.2			32.7	
Confl. Peds. (#/hr)							1		3	3		1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	80%	2%	0%	14%	5%	3%	11%	11%	2%	13%
Adj. Flow (vph)	1	0	5	63	1	24	24	586	22	10	571	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	1	0	5	63	25	0	24	608	0	10	580	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	1.0		5.0	5.0	
Minimum Split (s)	39.0	39.0	39.0	39.0	39.0		9.5	52.0		9.5	52.0	
Total Split (s)	39.0	39.0	39.0	39.0	39.0		10.0	56.0		10.0	56.0	
Total Split (%)	37.1%	37.1%	37.1%	37.1%	37.1%		9.5%	53.3%		9.5%	53.3%	
Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		7.0	51.0		7.0	51.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)	11.0	11.0	11.0	11.0	11.0			16.0			16.0	
Flash Don't Walk (s)	23.0	23.0	23.0	23.0	23.0			31.0			31.0	
Pedestrian Calls (#/hr)	0	0	0	0	0			0			0	
Act Effct Green (s)	9.9		9.9	9.9	9.9		62.6	60.5		61.7	58.6	
Actuated g/C Ratio	0.13		0.13	0.13	0.13		0.80	0.77		0.78	0.74	
v/c Ratio	0.01		0.02	0.46	0.17		0.05	0.32		0.02	0.22	
Control Delay (s/veh)	29.0		0.0	43.2	15.7		2.9	5.2		2.9	5.3	
Queue Delay	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	29.0		0.0	43.2	15.7		2.9	5.2		2.9	5.3	
LOS	C		A	D	B		A	A		A	A	
Approach Delay (s/veh)		4.8			35.4			5.1			5.3	
Approach LOS		A			D			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 105			
Actuated Cycle Length: 78.7			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.46			
Intersection Signal Delay (s/veh): 7.2		Intersection LOS: A	
Intersection Capacity Utilization 60.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: Dorchester Road & Dawson Street





Lane Group	EBL	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1	5	63	25	24	608	10	580
v/c Ratio	0.01	0.02	0.46	0.17	0.05	0.32	0.02	0.22
Control Delay (s/veh)	29.0	0.0	43.2	15.7	2.9	5.2	2.9	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	29.0	0.0	43.2	15.7	2.9	5.2	2.9	5.3
Queue Length 50th (m)	0.1	0.0	8.2	0.1	0.6	12.5	0.3	7.5
Queue Length 95th (m)	1.6	0.0	21.8	6.9	2.7	37.5	1.6	22.0
Internal Link Dist (m)				84.0		256.1		430.1
Turn Bay Length (m)	30.0	35.0	20.0		180.0		30.0	
Base Capacity (vph)	468	425	469	453	523	1881	497	2656
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	0.00	0.01	0.13	0.06	0.05	0.32	0.02	0.22

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	5	57	1	22	22	533	20	9	520	8
Future Volume (vph)	1	0	5	57	1	22	22	533	20	9	520	8
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Total Lost time (s)	5.0		5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00		1.00	1.00	1.00		1.00	0.95		1.00	0.91	
Frpb, ped/bikes	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00		0.85	1.00	0.86		1.00	0.99		1.00	1.00	
Flt Protected	0.95		1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1381		614	1354	1010		1315	2446		1244	3566	
Flt Permitted	0.74		1.00	0.76	1.00		0.41	1.00		0.42	1.00	
Satd. Flow (perm)	1077		614	1079	1010		573	2446		552	3566	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	1	0	5	63	1	24	24	586	22	10	571	9
RTOR Reduction (vph)	0	0	4	0	21	0	0	1	0	0	1	0
Lane Group Flow (vph)	1	0	1	63	4	0	24	607	0	10	579	0
Confl. Peds. (#/hr)							1		3	3		1
Heavy Vehicles (%)	0%	0%	80%	2%	0%	14%	5%	3%	11%	11%	2%	13%
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	8.7		8.7	8.7	8.7		61.8	59.4		59.2	58.1	
Effective Green, g (s)	8.7		8.7	8.7	8.7		61.8	59.4		59.2	58.1	
Actuated g/C Ratio	0.11		0.11	0.11	0.11		0.75	0.72		0.72	0.71	
Clearance Time (s)	5.0		5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	113		64	114	106		452	1767		406	2520	
v/s Ratio Prot					0.00		c0.00	c0.25		0.00	0.16	
v/s Ratio Perm	0.00		0.00	c0.06			0.04			0.02		
v/c Ratio	0.01		0.01	0.55	0.03		0.05	0.34		0.02	0.23	
Uniform Delay, d1	32.9		32.9	34.9	33.0		2.6	4.2		3.2	4.2	
Progression Factor	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0		0.1	5.7	0.1		0.0	0.5		0.0	0.2	
Delay (s)	32.9		32.9	40.6	33.1		2.6	4.7		3.3	4.4	
Level of Service	C		C	D	C		A	A		A	A	
Approach Delay (s/veh)		32.9			38.5			4.7			4.4	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	6.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	82.2	Sum of lost time (s)	13.0
Intersection Capacity Utilization	60.0%	ICU Level of Service	B
Analysis Period (min)	15		

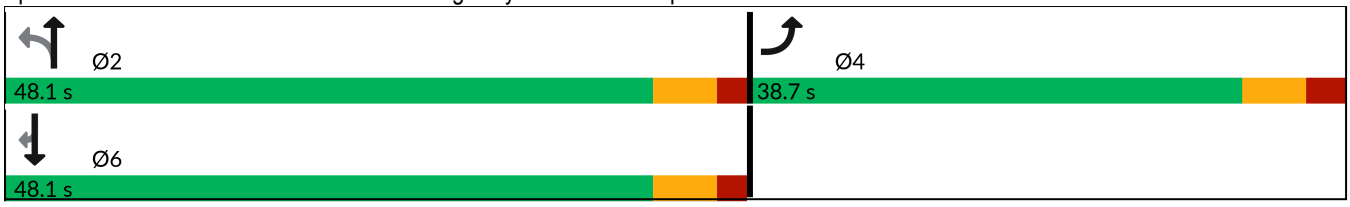
c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	18	0	163	558	307	261
Future Volume (vph)	18	0	163	558	307	261
Ideal Flow (vphpl)	1454	1301	1454	1579	1579	1301
Storage Length (m)	0.0	0.0	160.0			0.0
Storage Lanes	2	0	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt						0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	2271	0	1328	2913	2941	1063
Flt Permitted	0.950		0.545			
Satd. Flow (perm)	2271	0	762	2913	2941	1063
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						293
Link Speed (k/h)	50			50	50	
Link Distance (m)	166.4			377.5	280.1	
Travel Time (s)	12.0			27.2	20.2	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	18%	0%	4%	3%	2%	4%
Adj. Flow (vph)	20	0	183	627	345	293
Shared Lane Traffic (%)						
Lane Group Flow (vph)	20	0	183	627	345	293
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.2			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.60	1.40	1.26	1.26	1.60
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1		1	2	2	1
Detector Template	Left		Left	Thru	Thru	Right
Leading Detector (m)	2.0		2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0		2.0	0.6	0.6	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	8.0		10.0	10.0	10.0	10.0
Minimum Split (s)	38.7		24.1	24.1	24.1	24.1
Total Split (s)	38.7		48.1	48.1	48.1	48.1
Total Split (%)	44.6%		55.4%	55.4%	55.4%	55.4%
Maximum Green (s)	32.0		42.0	42.0	42.0	42.0
Yellow Time (s)	4.1		4.1	4.1	4.1	4.1
All-Red Time (s)	2.6		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7		6.1	6.1	6.1	6.1
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		Max	Max	Max	Max
Walk Time (s)	12.0					
Flash Don't Walk (s)	20.0					
Pedestrian Calls (#/hr)	0					
Act Effct Green (s)	8.0		58.8	58.8	58.8	58.8
Actuated g/C Ratio	0.13		0.93	0.93	0.93	0.93
v/c Ratio	0.07		0.26	0.23	0.13	0.29
Control Delay (s/veh)	24.9		2.9	1.6	1.4	1.2
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay (s/veh)	24.9		2.9	1.6	1.4	1.2
LOS	C		A	A	A	A
Approach Delay (s/veh)	24.9			1.9	1.3	
Approach LOS	C			A	A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 86.8			
Actuated Cycle Length: 63			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.29			
Intersection Signal Delay (s/veh): 1.9		Intersection LOS: A	
Intersection Capacity Utilization 45.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Dorchester Road & Highway 420 North Ramp

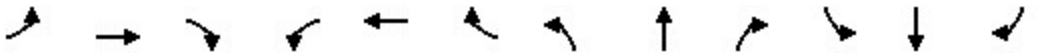


Lane Group	EBL	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	20	183	627	345	293
v/c Ratio	0.07	0.26	0.23	0.13	0.29
Control Delay (s/veh)	24.9	2.9	1.6	1.4	1.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	24.9	2.9	1.6	1.4	1.2
Queue Length 50th (m)	1.1	0.0	0.0	0.0	0.0
Queue Length 95th (m)	3.9	17.4	20.2	10.7	6.1
Internal Link Dist (m)	142.4		353.5	256.1	
Turn Bay Length (m)		160.0			
Base Capacity (vph)	1152	711	2720	2746	1012
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.02	0.26	0.23	0.13	0.29

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	18	0	163	558	307	261
Future Volume (vph)	18	0	163	558	307	261
Ideal Flow (vphpl)	1454	1301	1454	1579	1579	1301
Total Lost time (s)	6.7		6.1	6.1	6.1	6.1
Lane Util. Factor	0.97		1.00	0.95	0.95	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	0.95		0.95	1.00	1.00	1.00
Satd. Flow (prot)	2271		1328	2913	2941	1063
Flt Permitted	0.95		0.54	1.00	1.00	1.00
Satd. Flow (perm)	2271		761	2913	2941	1063
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	20	0	183	627	345	293
RTOR Reduction (vph)	0	0	0	0	0	62
Lane Group Flow (vph)	20	0	183	627	345	231
Heavy Vehicles (%)	18%	0%	4%	3%	2%	4%
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Actuated Green, G (s)	1.6		54.0	54.0	54.0	54.0
Effective Green, g (s)	1.6		54.0	54.0	54.0	54.0
Actuated g/C Ratio	0.02		0.79	0.79	0.79	0.79
Clearance Time (s)	6.7		6.1	6.1	6.1	6.1
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	53		600	2299	2321	839
v/s Ratio Prot	c0.01			0.22	0.12	
v/s Ratio Perm			c0.24			0.22
v/c Ratio	0.38		0.31	0.27	0.15	0.28
Uniform Delay, d1	32.9		2.0	1.9	1.7	1.9
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	4.5		1.3	0.3	0.1	0.8
Delay (s)	37.4		3.3	2.2	1.9	2.8
Level of Service	D		A	A	A	A
Approach Delay (s/veh)	37.4			2.5	2.3	
Approach LOS	D			A	A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	2.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	68.4	Sum of lost time (s)	12.8
Intersection Capacity Utilization	45.6%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

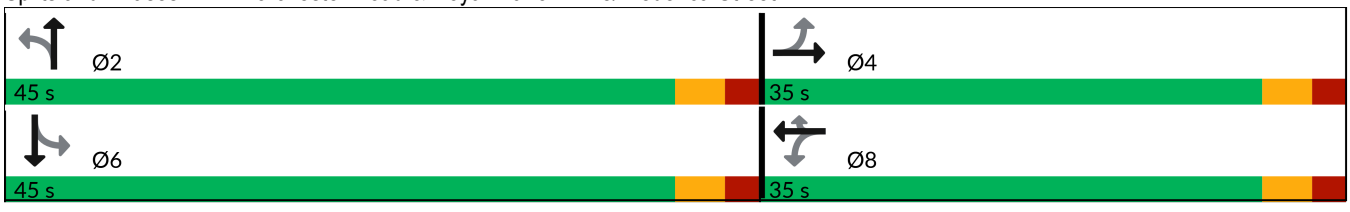


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	19	6	44	5	322	2	380	37	84	218	14
Future Volume (vph)	17	19	6	44	5	322	2	380	37	84	218	14
Ideal Flow (vphpl)	1433	1433	1433	1454	1579	1301	1454	1338	1338	1454	1338	1338
Storage Length (m)	0.0		0.0	45.0		0.0	95.0		0.0	165.0		0.0
Storage Lanes	0		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor								1.00		1.00		
Frt		0.980				0.850		0.987			0.991	
Flt Protected		0.981		0.950			0.950			0.950		
Satd. Flow (prot)	0	1251	0	1354	1579	1074	1381	2427	0	1368	2461	0
Flt Permitted		0.892		0.726			0.589			0.481		
Satd. Flow (perm)	0	1137	0	1035	1579	1074	856	2427	0	692	2461	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7				355		18			12	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		47.8			201.0			125.1			377.5	
Travel Time (s)		3.4			14.5			9.0			27.2	
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	6%	17%	0%	2%	0%	3%	0%	3%	6%	1%	2%	8%
Adj. Flow (vph)	19	22	7	50	6	366	2	432	42	95	248	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	48	0	50	6	366	2	474	0	95	264	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.42	1.42	1.42	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	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	5.0	
Minimum Split (s)	32.0	32.0		32.0	32.0	32.0	41.0	41.0		41.0	41.0	
Total Split (s)	35.0	35.0		35.0	35.0	35.0	45.0	45.0		45.0	45.0	
Total Split (%)	43.8%	43.8%		43.8%	43.8%	43.8%	56.3%	56.3%		56.3%	56.3%	
Maximum Green (s)	30.0	30.0		30.0	30.0	30.0	40.0	40.0		40.0	40.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	Max	Max		Max	Max	
Walk Time (s)	9.0	9.0		9.0	9.0	9.0	12.0	12.0		12.0	12.0	
Flash Don't Walk (s)	18.0	18.0		18.0	18.0	18.0	24.0	24.0		24.0	24.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	
Act Effct Green (s)		10.4		10.4	10.4	10.4	40.4	40.4		40.4	40.4	
Actuated g/C Ratio		0.17		0.17	0.17	0.17	0.66	0.66		0.66	0.66	
v/c Ratio		0.24		0.28	0.02	0.77	0.00	0.29		0.21	0.16	
Control Delay (s/veh)		21.1		24.9	19.0	14.8	6.0	5.8		7.3	5.1	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay (s/veh)		21.1		24.9	19.0	14.8	6.0	5.8		7.3	5.1	
LOS		C		C	B	B	A	A		A	A	
Approach Delay (s/veh)		21.1			16.0			5.8			5.7	
Approach LOS		C			B			A			A	

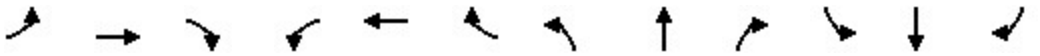
Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 60.9			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay (s/veh): 9.6		Intersection LOS: A	
Intersection Capacity Utilization 75.8%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 4: Dorchester Road & Royal Manor Drive/Frederica Street



Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	48	50	6	366	2	474	95	264
v/c Ratio	0.24	0.28	0.02	0.77	0.00	0.29	0.21	0.16
Control Delay (s/veh)	21.1	24.9	19.0	14.8	6.0	5.8	7.3	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	21.1	24.9	19.0	14.8	6.0	5.8	7.3	5.1
Queue Length 50th (m)	4.2	5.1	0.6	1.1	0.1	8.0	3.0	4.0
Queue Length 95th (m)	11.5	12.8	3.0	21.5	1.0	25.9	14.7	14.2
Internal Link Dist (m)	23.8		177.0			101.1		353.5
Turn Bay Length (m)		45.0			95.0		165.0	
Base Capacity (vph)	568	514	784	712	567	1614	458	1635
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	0.10	0.01	0.51	0.00	0.29	0.21	0.16

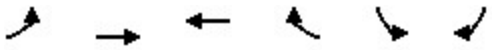
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	19	6	44	5	322	2	380	37	84	218	14
Future Volume (vph)	17	19	6	44	5	322	2	380	37	84	218	14
Ideal Flow (vphpl)	1433	1433	1433	1454	1579	1301	1454	1338	1338	1454	1338	1338
Total Lost time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt		0.98		1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected		0.98		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1250		1354	1579	1074	1381	2426		1367	2461	
Flt Permitted		0.89		0.73	1.00	1.00	0.59	1.00		0.48	1.00	
Satd. Flow (perm)		1137		1035	1579	1074	856	2426		692	2461	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	19	22	7	50	6	366	2	432	42	95	248	16
RTOR Reduction (vph)	0	6	0	0	0	294	0	6	0	0	4	0
Lane Group Flow (vph)	0	42	0	50	6	72	2	468	0	95	260	0
Confl. Peds. (#/hr)									1	1		
Heavy Vehicles (%)	6%	17%	0%	2%	0%	3%	0%	3%	6%	1%	2%	8%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		10.5		10.5	10.5	10.5	40.4	40.4		40.4	40.4	
Effective Green, g (s)		10.5		10.5	10.5	10.5	40.4	40.4		40.4	40.4	
Actuated g/C Ratio		0.17		0.17	0.17	0.17	0.66	0.66		0.66	0.66	
Clearance Time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		196		178	272	185	567	1609		459	1632	
v/s Ratio Prot					0.00			c0.19			0.11	
v/s Ratio Perm		0.04		0.05		c0.07	0.00			0.14		
v/c Ratio		0.22		0.28	0.02	0.39	0.00	0.29		0.21	0.16	
Uniform Delay, d1		21.7		21.9	20.9	22.4	3.5	4.3		4.0	3.9	
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.6		0.9	0.0	1.4	0.0	0.5		1.0	0.2	
Delay (s)		22.2		22.8	21.0	23.7	3.5	4.7		5.0	4.1	
Level of Service		C		C	C	C	A	A		A	A	
Approach Delay (s/veh)		22.2			23.6			4.7			4.3	
Approach LOS		C			C			A			A	

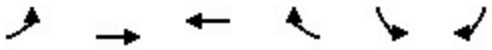
Intersection Summary			
HCM 2000 Control Delay (s/veh)	11.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	60.9	Sum of lost time (s)	10.0
Intersection Capacity Utilization	75.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	56	83	125	2	79	253
Future Volume (vph)	56	83	125	2	79	253
Ideal Flow (vphpl)	1454	1579	1338	1338	1454	1301
Storage Length (m)	85.0			0.0	40.0	0.0
Storage Lanes	1			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.998			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1303	2885	2418	0	1341	1084
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1303	2885	2418	0	1341	1084
Link Speed (k/h)		50	50		50	
Link Distance (m)		201.0	149.3		70.1	
Travel Time (s)		14.5	10.7		5.0	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	6%	4%	5%	0%	3%	2%
Adj. Flow (vph)	67	99	149	2	94	301
Shared Lane Traffic (%)						
Lane Group Flow (vph)	67	99	151	0	94	301
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.26	1.55	1.55	1.40	1.60
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 34.5%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	56	83	125	2	79	253
Future Volume (Veh/h)	56	83	125	2	79	253
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	67	99	149	2	94	301
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		201				
pX, platoon unblocked						
vC, conflicting volume	151				334	76
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	151				334	76
tC, single (s)	4.2				6.9	6.9
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.3
p0 queue free %	95				84	69
cM capacity (veh/h)	1399				603	970

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1	SB 2
Volume Total	67	50	50	99	52	94	301
Volume Left	67	0	0	0	0	94	0
Volume Right	0	0	0	0	2	0	301
cSH	1399	1700	1700	1700	1700	603	970
Volume to Capacity	0.05	0.03	0.03	0.06	0.03	0.16	0.31
Queue Length 95th (m)	1.2	0.0	0.0	0.0	0.0	4.4	10.6
Control Delay (s/veh)	7.7	0.0	0.0	0.0	0.0	12.1	10.4
Lane LOS	A					B	B
Approach Delay (s/veh)	3.1			0.0		10.8	
Approach LOS						B	

Intersection Summary			
Average Delay	6.7		
Intersection Capacity Utilization	34.5%	ICU Level of Service	A
Analysis Period (min)	15		

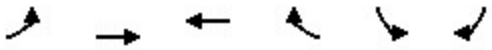
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	625	0	0	397	71	0
Future Volume (vph)	625	0	0	397	71	0
Ideal Flow (vphpl)	1579	1301	1454	1579	1454	1301
Lane Util. Factor	0.95	1.00	1.00	0.91	1.00	1.00
Frt						
Flt Protected					0.950	
Satd. Flow (prot)	2941	0	0	4105	1316	0
Flt Permitted					0.950	
Satd. Flow (perm)	2941	0	0	4105	1316	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	266.5			178.9	263.7	
Travel Time (s)	19.2			12.9	19.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	0%	5%	5%	2%
Adj. Flow (vph)	679	0	0	432	77	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	679	0	0	432	77	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.26	1.60	1.40	1.26	1.40	1.60
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 40.8%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	625	0	0	397	71	0
Future Volume (Veh/h)	625	0	0	397	71	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	679	0	0	432	77	0
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			679		823	340
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			679		823	340
tC, single (s)			4.1		6.9	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			100		75	100
cM capacity (veh/h)			923		306	656

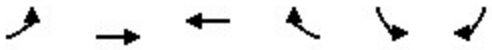
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	340	340	144	144	144	77
Volume Left	0	0	0	0	0	77
Volume Right	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	306
Volume to Capacity	0.20	0.20	0.08	0.08	0.08	0.25
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	7.8
Control Delay (s/veh)	0.0	0.0	0.0	0.0	0.0	20.7
Lane LOS						C
Approach Delay (s/veh)	0.0		0.0			20.7
Approach LOS						C

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	40.8%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	845	394	0	82	174
Future Volume (vph)	0	845	394	0	82	174
Ideal Flow (vphpl)	1454	1579	1579	1301	1433	1433
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	2941	2857	0	1309	1088
Flt Permitted					0.950	
Satd. Flow (perm)	0	2941	2857	0	1309	1088
Link Speed (k/h)		50	50		50	
Link Distance (m)		152.8	266.5		231.4	
Travel Time (s)		11.0	19.2		16.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	5%	3%	4%	12%
Adj. Flow (vph)	0	918	428	0	89	189
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	918	428	0	89	189
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.26	1.26	1.60	1.42	1.42
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

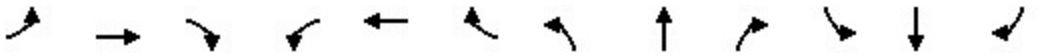
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 40.8%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↰	↱
Traffic Volume (veh/h)	0	845	394	0	82	174
Future Volume (Veh/h)	0	845	394	0	82	174
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	918	428	0	89	189
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	428				887	214
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	428				887	214
tC, single (s)	4.1				6.9	7.1
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.4
p0 queue free %	100				68	75
cM capacity (veh/h)	1142				280	761

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	459	459	214	214	89	189
Volume Left	0	0	0	0	89	0
Volume Right	0	0	0	0	0	189
cSH	1700	1700	1700	1700	280	761
Volume to Capacity	0.27	0.27	0.13	0.13	0.32	0.25
Queue Length 95th (m)	0.0	0.0	0.0	0.0	10.6	7.8
Control Delay (s/veh)	0.0	0.0	0.0	0.0	23.8	11.3
Lane LOS					C	B
Approach Delay (s/veh)	0.0		0.0		15.3	
Approach LOS					C	

Intersection Summary			
Average Delay	2.6		
Intersection Capacity Utilization	40.8%	ICU Level of Service	A
Analysis Period (min)	15		

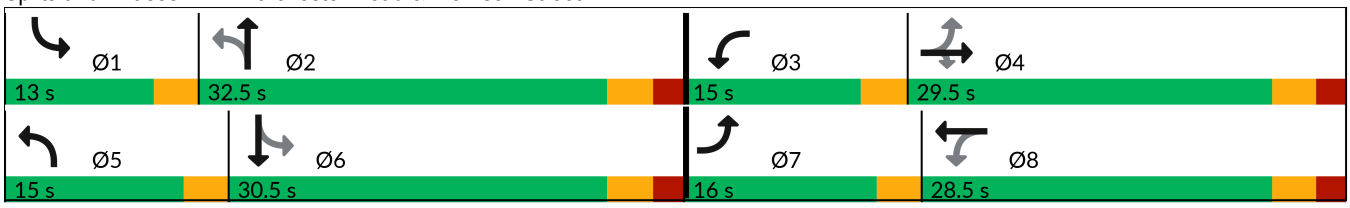


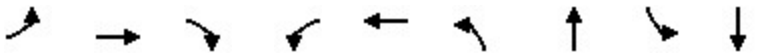
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	235	145	242	280	190	164	278	381	147	166	394	176
Future Volume (vph)	235	145	242	280	190	164	278	381	147	166	394	176
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Storage Length (m)	70.0		0.0	105.0		125.0	90.0		0.0	95.0		41.0
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00		0.98	0.99	0.99		1.00	0.99		1.00	0.99	
Frt			0.850		0.931			0.958			0.954	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1328	1504	1063	1368	2300	0	1341	2397	0	1381	2316	0
Flt Permitted	0.369			0.609			0.295			0.401		
Satd. Flow (perm)	514	1504	1044	872	2300	0	416	2397	0	581	2316	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			260		176			65			79	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		205.0			291.8			454.1			179.9	
Travel Time (s)		14.8			21.0			32.7			13.0	
Confl. Peds. (#/hr)	6		7	7		6	6		11	11		6
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	4%	5%	4%	1%	3%	1%	3%	1%	1%	0%	2%	9%
Adj. Flow (vph)	253	156	260	301	204	176	299	410	158	178	424	189
Shared Lane Traffic (%)												
Lane Group Flow (vph)	253	156	260	301	380	0	299	568	0	178	613	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	9.5	35.0	35.0	9.5	35.0		9.5	35.0		9.5	35.0	
Total Split (s)	16.0	29.5	29.5	15.0	28.5		15.0	32.5		13.0	30.5	
Total Split (%)	17.8%	32.8%	32.8%	16.7%	31.7%		16.7%	36.1%		14.4%	33.9%	
Maximum Green (s)	13.0	24.5	24.5	12.0	23.5		12.0	27.5		10.0	25.5	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)		10.0	10.0		10.0			10.0			10.0	
Flash Don't Walk (s)		20.0	20.0		20.0			20.0			20.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	29.4	14.8	14.8	28.2	14.2		46.5	32.8		41.3	30.1	
Actuated g/C Ratio	0.35	0.17	0.17	0.33	0.17		0.55	0.39		0.49	0.35	
v/c Ratio	0.85	0.60	0.66	0.84	0.72		0.83	0.59		0.48	0.70	
Control Delay (s/veh)	47.8	42.0	12.8	44.5	25.7		35.8	22.1		15.8	26.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	47.8	42.0	12.8	44.5	25.7		35.8	22.1		15.8	26.3	
LOS	D	D	B	D	C		D	C		B	C	
Approach Delay (s/veh)		32.8			34.0			26.8			24.0	
Approach LOS		C			C			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 84.9			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay (s/veh): 29.0		Intersection LOS: C	
Intersection Capacity Utilization 94.1%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 1: Dorchester Road & Morrison Street





Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	253	156	260	301	380	299	568	178	613
v/c Ratio	0.85	0.60	0.66	0.84	0.72	0.83	0.59	0.48	0.70
Control Delay (s/veh)	47.8	42.0	12.8	44.5	25.7	35.8	22.1	15.8	26.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	47.8	42.0	12.8	44.5	25.7	35.8	22.1	15.8	26.3
Queue Length 50th (m)	32.7	24.8	0.0	40.3	17.1	26.8	35.1	14.2	40.3
Queue Length 95th (m)	#56.8	44.1	22.2	#76.0	32.5	#72.3	59.7	30.7	68.1
Internal Link Dist (m)		181.0			267.8		430.1		155.9
Turn Bay Length (m)	70.0			105.0		90.0		95.0	
Base Capacity (vph)	305	435	486	359	765	359	967	382	871
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.36	0.53	0.84	0.50	0.83	0.59	0.47	0.70

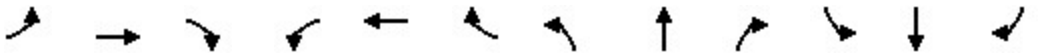
Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	235	145	242	280	190	164	278	381	147	166	394	176
Future Volume (vph)	235	145	242	280	190	164	278	381	147	166	394	176
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Total Lost time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.93		1.00	0.96		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1327	1504	1044	1364	2299		1340	2398		1379	2316	
Flt Permitted	0.37	1.00	1.00	0.61	1.00		0.30	1.00		0.40	1.00	
Satd. Flow (perm)	515	1504	1044	875	2299		416	2398		583	2316	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	253	156	260	301	204	176	299	410	158	178	424	189
RTOR Reduction (vph)	0	0	215	0	147	0	0	40	0	0	51	0
Lane Group Flow (vph)	253	156	45	301	233	0	299	528	0	178	562	0
Confl. Peds. (#/hr)	6		7	7		6	6		11	11		6
Heavy Vehicles (%)	4%	5%	4%	1%	3%	1%	3%	1%	1%	0%	2%	9%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	27.4	14.8	14.8	26.2	14.2		44.9	32.9		39.3	30.1	
Effective Green, g (s)	27.4	14.8	14.8	26.2	14.2		44.9	32.9		39.3	30.1	
Actuated g/C Ratio	0.32	0.17	0.17	0.31	0.17		0.53	0.39		0.46	0.35	
Clearance Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	286	262	181	339	384		350	929		356	821	
v/s Ratio Prot	c0.13	0.10		0.13	0.10		c0.12	0.22		0.05	0.24	
v/s Ratio Perm	c0.15		0.04	0.15			c0.33			0.18		
v/c Ratio	0.88	0.60	0.25	0.89	0.61		0.85	0.57		0.50	0.68	
Uniform Delay, d1	24.6	32.3	30.3	26.6	32.8		13.3	20.4		14.1	23.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	26.0	3.6	0.7	23.3	2.7		18.0	2.5		1.1	4.6	
Delay (s)	50.6	35.9	31.0	49.9	35.5		31.2	22.9		15.2	28.0	
Level of Service	D	D	C	D	D		C	C		B	C	
Approach Delay (s/veh)		39.5			41.9			25.8			25.1	
Approach LOS		D			D			C			C	

Intersection Summary					
HCM 2000 Control Delay (s/veh)	32.3	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.90				
Actuated Cycle Length (s)	84.9	Sum of lost time (s)	16.0		
Intersection Capacity Utilization	94.1%	ICU Level of Service	F		
Analysis Period (min)	15				

c Critical Lane Group

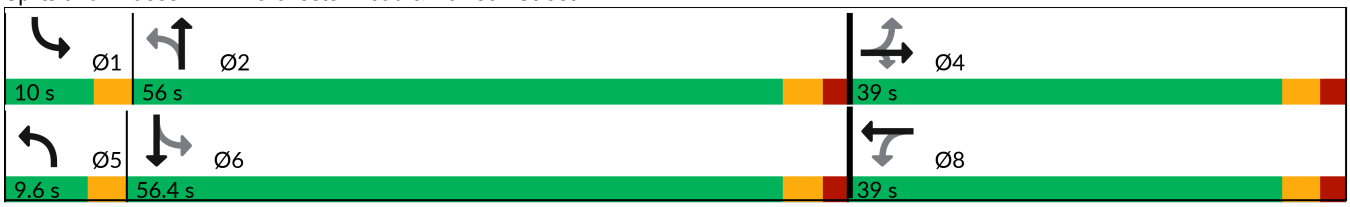


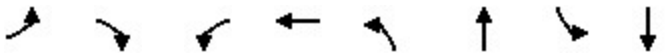
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	0	35	55	1	25	6	836	49	38	921	5
Future Volume (vph)	12	0	35	55	1	25	6	836	49	38	921	5
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Storage Length (m)	30.0		35.0	20.0		0.0	180.0		0.0	30.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.91	0.91
Ped Bike Factor			0.99	1.00			1.00	1.00		1.00	1.00	
Frt			0.850		0.856			0.992			0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1381	1579	1015	1381	1103	0	1381	2495	0	1341	3577	0
Flt Permitted	0.740			0.757			0.290			0.281		
Satd. Flow (perm)	1076	1579	1001	1099	1103	0	421	2495	0	396	3577	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			189		26			8			1	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		106.7			108.0			280.1			454.1	
Travel Time (s)		7.7			7.8			20.2			32.7	
Confl. Peds. (#/hr)			2	2			5		2	2		5
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	9%	0%	0%	4%	0%	1%	0%	3%	2%	0%
Adj. Flow (vph)	12	0	36	56	1	26	6	853	50	39	940	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	0	36	56	27	0	6	903	0	39	945	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	1.0		5.0	5.0	
Minimum Split (s)	39.0	39.0	39.0	39.0	39.0		9.5	52.0		9.5	52.0	
Total Split (s)	39.0	39.0	39.0	39.0	39.0		9.6	56.0		10.0	56.4	
Total Split (%)	37.1%	37.1%	37.1%	37.1%	37.1%		9.1%	53.3%		9.5%	53.7%	
Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		6.6	51.0		7.0	51.4	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)	11.0	11.0	11.0	11.0	11.0			16.0			16.0	
Flash Don't Walk (s)	23.0	23.0	23.0	23.0	23.0			31.0			31.0	
Pedestrian Calls (#/hr)	0	0	0	0	0			0			0	
Act Effct Green (s)	9.4		9.4	9.4	9.4		62.0	57.8		63.8	61.6	
Actuated g/C Ratio	0.12		0.12	0.12	0.12		0.78	0.73		0.81	0.78	
v/c Ratio	0.09		0.13	0.43	0.18		0.02	0.50		0.10	0.34	
Control Delay (s/veh)	32.4		0.9	43.1	15.6		2.7	8.3		3.0	4.7	
Queue Delay	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	32.4		0.9	43.1	15.6		2.7	8.3		3.0	4.7	
LOS	C		A	D	B		A	A		A	A	
Approach Delay (s/veh)		8.8			34.1			8.3			4.6	
Approach LOS		A			C			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 105			
Actuated Cycle Length: 79.2			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.50			
Intersection Signal Delay (s/veh): 7.6		Intersection LOS: A	
Intersection Capacity Utilization 61.6%		ICU Level of Service B	
Analysis Period (min) 15			

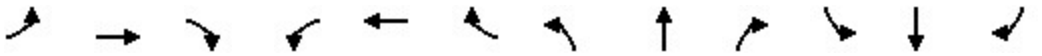
Splits and Phases: 2: Dorchester Road & Dawson Street





Lane Group	EBL	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	12	36	56	27	6	903	39	945
v/c Ratio	0.09	0.13	0.43	0.18	0.02	0.50	0.10	0.34
Control Delay (s/veh)	32.4	0.9	43.1	15.6	2.7	8.3	3.0	4.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	32.4	0.9	43.1	15.6	2.7	8.3	3.0	4.7
Queue Length 50th (m)	1.7	0.0	8.4	0.2	0.2	36.6	1.0	14.0
Queue Length 95th (m)	6.6	0.0	19.8	7.4	1.1	63.6	3.6	36.5
Internal Link Dist (m)				84.0		256.1		430.1
Turn Bay Length (m)	30.0	35.0	20.0		180.0		30.0	
Base Capacity (vph)	463	538	473	489	412	1822	402	2781
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	0.03	0.07	0.12	0.06	0.01	0.50	0.10	0.34

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	0	35	55	1	25	6	836	49	38	921	5
Future Volume (vph)	12	0	35	55	1	25	6	836	49	38	921	5
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Total Lost time (s)	5.0		5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00		1.00	1.00	1.00		1.00	0.95		1.00	0.91	
Frpb, ped/bikes	1.00		0.99	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00		0.85	1.00	0.86		1.00	0.99		1.00	1.00	
Flt Protected	0.95		1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1381		1001	1379	1102		1381	2494		1341	3578	
Flt Permitted	0.74		1.00	0.76	1.00		0.29	1.00		0.28	1.00	
Satd. Flow (perm)	1075		1001	1099	1102		422	2494		397	3578	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	12	0	36	56	1	26	6	853	50	39	940	5
RTOR Reduction (vph)	0	0	32	0	23	0	0	2	0	0	0	0
Lane Group Flow (vph)	12	0	4	56	4	0	6	901	0	39	945	0
Confl. Peds. (#/hr)			2	2			5		2	2		5
Heavy Vehicles (%)	0%	0%	9%	0%	0%	4%	0%	1%	0%	3%	2%	0%
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	8.2		8.2	8.2	8.2		59.0	57.9		64.2	60.5	
Effective Green, g (s)	8.2		8.2	8.2	8.2		59.0	57.9		64.2	60.5	
Actuated g/C Ratio	0.10		0.10	0.10	0.10		0.71	0.70		0.78	0.73	
Clearance Time (s)	5.0		5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	106		99	108	109		313	1743		350	2614	
v/s Ratio Prot					0.00		0.00	c0.36		c0.00	0.26	
v/s Ratio Perm	0.01		0.00	c0.05			0.01			0.08		
v/c Ratio	0.11		0.04	0.52	0.03		0.02	0.52		0.11	0.36	
Uniform Delay, d1	34.0		33.7	35.4	33.7		3.4	5.9		2.4	4.1	
Progression Factor	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5		0.1	4.2	0.1		0.0	1.1		0.1	0.4	
Delay (s)	34.5		33.9	39.6	33.8		3.5	7.0		2.6	4.5	
Level of Service	C		C	D	C		A	A		A	A	
Approach Delay (s/veh)		34.0			37.7			6.9			4.4	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	7.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	82.8	Sum of lost time (s)	13.0
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		

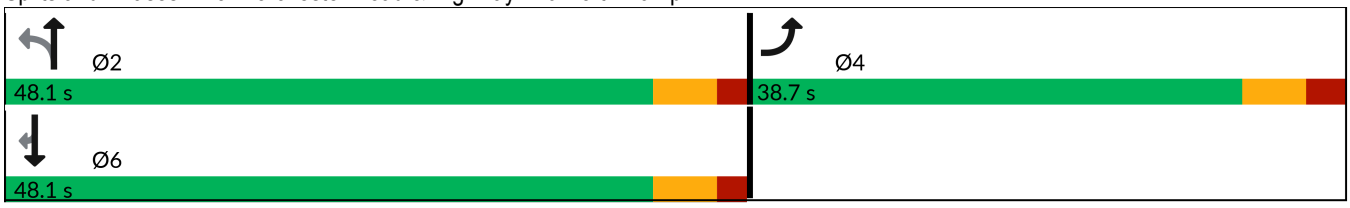
c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	41	0	215	878	517	502
Future Volume (vph)	41	0	215	878	517	502
Ideal Flow (vphpl)	1454	1301	1454	1579	1579	1301
Storage Length (m)	0.0	0.0	160.0			0.0
Storage Lanes	2	0	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor	1.00					
Frt						0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	2602	0	1341	2970	2941	1074
Flt Permitted	0.950		0.446			
Satd. Flow (perm)	2598	0	630	2970	2941	1074
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						534
Link Speed (k/h)	50			50	50	
Link Distance (m)	166.4			377.5	280.1	
Travel Time (s)	12.0			27.2	20.2	
Confl. Peds. (#/hr)	1					
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	3%	3%	3%	1%	2%	3%
Adj. Flow (vph)	44	0	229	934	550	534
Shared Lane Traffic (%)						
Lane Group Flow (vph)	44	0	229	934	550	534
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.2			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.60	1.40	1.26	1.26	1.60
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1		1	2	2	1
Detector Template	Left		Left	Thru	Thru	Right
Leading Detector (m)	2.0		2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0		2.0	0.6	0.6	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	8.0		10.0	10.0	10.0	10.0
Minimum Split (s)	38.7		24.1	24.1	24.1	24.1
Total Split (s)	38.7		48.1	48.1	48.1	48.1
Total Split (%)	44.6%		55.4%	55.4%	55.4%	55.4%
Maximum Green (s)	32.0		42.0	42.0	42.0	42.0
Yellow Time (s)	4.1		4.1	4.1	4.1	4.1
All-Red Time (s)	2.6		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7		6.1	6.1	6.1	6.1
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		Max	Max	Max	Max
Walk Time (s)	12.0					
Flash Don't Walk (s)	20.0					
Pedestrian Calls (#/hr)	0					
Act Effct Green (s)	8.0		54.5	54.5	54.5	54.5
Actuated g/C Ratio	0.13		0.87	0.87	0.87	0.87
v/c Ratio	0.13		0.42	0.36	0.22	0.53
Control Delay (s/veh)	25.4		6.8	3.2	2.5	2.7
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay (s/veh)	25.4		6.8	3.2	2.5	2.7
LOS	C		A	A	A	A
Approach Delay (s/veh)	25.4			3.9	2.6	
Approach LOS	C			A	A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 86.8			
Actuated Cycle Length: 62.8			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.53			
Intersection Signal Delay (s/veh): 3.7		Intersection LOS: A	
Intersection Capacity Utilization 71.1%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Dorchester Road & Highway 420 North Ramp



Lane Group	EBL	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	44	229	934	550	534
v/c Ratio	0.13	0.42	0.36	0.22	0.53
Control Delay (s/veh)	25.4	6.8	3.2	2.5	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	25.4	6.8	3.2	2.5	2.7
Queue Length 50th (m)	2.4	0.0	0.0	0.0	0.0
Queue Length 95th (m)	6.6	30.5	34.1	17.6	8.4
Internal Link Dist (m)	142.4		353.5	256.1	
Turn Bay Length (m)		160.0			
Base Capacity (vph)	1324	546	2576	2551	1002
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.42	0.36	0.22	0.53

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	41	0	215	878	517	502
Future Volume (vph)	41	0	215	878	517	502
Ideal Flow (vphpl)	1454	1301	1454	1579	1579	1301
Total Lost time (s)	6.7		6.1	6.1	6.1	6.1
Lane Util. Factor	0.97		1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	0.95		0.95	1.00	1.00	1.00
Satd. Flow (prot)	2602		1341	2970	2941	1074
Flt Permitted	0.95		0.45	1.00	1.00	1.00
Satd. Flow (perm)	2602		630	2970	2941	1074
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	44	0	229	934	550	534
RTOR Reduction (vph)	0	0	0	0	0	128
Lane Group Flow (vph)	44	0	229	934	550	406
Confl. Peds. (#/hr)	1					
Heavy Vehicles (%)	3%	3%	3%	1%	2%	3%
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Actuated Green, G (s)	3.2		50.9	50.9	50.9	50.9
Effective Green, g (s)	3.2		50.9	50.9	50.9	50.9
Actuated g/C Ratio	0.05		0.76	0.76	0.76	0.76
Clearance Time (s)	6.7		6.1	6.1	6.1	6.1
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	124		479	2259	2237	817
v/s Ratio Prot	c0.02			0.31	0.19	
v/s Ratio Perm			0.36			c0.38
v/c Ratio	0.35		0.48	0.41	0.25	0.50
Uniform Delay, d1	30.9		3.0	2.8	2.4	3.1
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.7		3.4	0.6	0.3	2.2
Delay (s)	32.6		6.4	3.4	2.6	5.2
Level of Service	C		A	A	A	A
Approach Delay (s/veh)	32.6			4.0	3.9	
Approach LOS	C			A	A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	4.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	66.9	Sum of lost time (s)	12.8
Intersection Capacity Utilization	71.1%	ICU Level of Service	C
Analysis Period (min)	15		

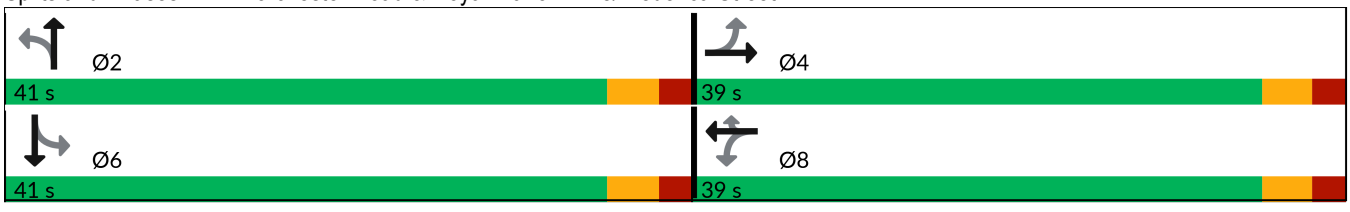
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	12	7	104	27	448	5	600	56	76	436	18
Future Volume (vph)	16	12	7	104	27	448	5	600	56	76	436	18
Ideal Flow (vphpl)	1433	1433	1433	1454	1579	1301	1454	1338	1338	1454	1338	1338
Storage Length (m)	0.0		0.0	45.0		0.0	95.0		0.0	165.0		0.0
Storage Lanes	0		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		1.00		1.00				1.00		1.00		
Frt		0.972				0.850		0.987			0.994	
Flt Protected		0.978		0.950			0.950			0.950		
Satd. Flow (prot)	0	1322	0	1303	1423	1095	1381	2455	0	1368	2474	0
Flt Permitted		0.916		0.732			0.455			0.330		
Satd. Flow (perm)	0	1238	0	1002	1423	1095	662	2455	0	475	2474	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8				161		16			7	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		47.8			201.0			125.1			377.5	
Travel Time (s)		3.4			14.5			9.0			27.2	
Confl. Peds. (#/hr)			3	3					5	5		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	8%	0%	6%	11%	1%	0%	2%	3%	1%	2%	6%
Adj. Flow (vph)	17	13	8	112	29	482	5	645	60	82	469	19
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	38	0	112	29	482	5	705	0	82	488	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.42	1.42	1.42	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	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	5.0	
Minimum Split (s)	32.0	32.0		32.0	32.0	32.0	41.0	41.0		41.0	41.0	
Total Split (s)	39.0	39.0		39.0	39.0	39.0	41.0	41.0		41.0	41.0	
Total Split (%)	48.8%	48.8%		48.8%	48.8%	48.8%	51.3%	51.3%		51.3%	51.3%	
Maximum Green (s)	34.0	34.0		34.0	34.0	34.0	36.0	36.0		36.0	36.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	Max	Max		Max	Max	
Walk Time (s)	9.0	9.0		9.0	9.0	9.0	12.0	12.0		12.0	12.0	
Flash Don't Walk (s)	18.0	18.0		18.0	18.0	18.0	24.0	24.0		24.0	24.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	
Act Effct Green (s)		28.9		28.9	28.9	28.9	36.3	36.3		36.3	36.3	
Actuated g/C Ratio		0.38		0.38	0.38	0.38	0.48	0.48		0.48	0.48	
v/c Ratio		0.08		0.29	0.05	0.93	0.02	0.59		0.36	0.41	
Control Delay (s/veh)		12.1		17.7	14.0	41.4	12.6	17.6		20.3	14.9	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay (s/veh)		12.1		17.7	14.0	41.4	12.6	17.6		20.3	14.9	
LOS		B		B	B	D	B	B		C	B	
Approach Delay (s/veh)		12.1			35.9			17.5			15.6	
Approach LOS		B			D			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 75.3			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay (s/veh): 22.8		Intersection LOS: C	
Intersection Capacity Utilization 88.9%		ICU Level of Service E	
Analysis Period (min) 15			

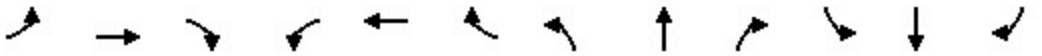
Splits and Phases: 4: Dorchester Road & Royal Manor Drive/Frederica Street



Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	38	112	29	482	5	705	82	488
v/c Ratio	0.08	0.29	0.05	0.93	0.02	0.59	0.36	0.41
Control Delay (s/veh)	12.1	17.7	14.0	41.4	12.6	17.6	20.3	14.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	12.1	17.7	14.0	41.4	12.6	17.6	20.3	14.9
Queue Length 50th (m)	2.8	11.2	2.6	47.2	0.4	42.8	8.4	26.6
Queue Length 95th (m)	8.3	23.1	7.4	#110.5	2.4	61.7	21.2	39.4
Internal Link Dist (m)	23.8		177.0			101.1		353.5
Turn Bay Length (m)		45.0			95.0		165.0	
Base Capacity (vph)	568	456	647	586	319	1192	228	1196
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.25	0.04	0.82	0.02	0.59	0.36	0.41

Intersection Summary

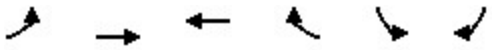
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	12	7	104	27	448	5	600	56	76	436	18
Future Volume (vph)	16	12	7	104	27	448	5	600	56	76	436	18
Ideal Flow (vphpl)	1433	1433	1433	1454	1579	1301	1454	1338	1338	1454	1338	1338
Total Lost time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt		0.97		1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected		0.98		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1321		1300	1423	1095	1381	2455		1366	2474	
Flt Permitted		0.92		0.73	1.00	1.00	0.45	1.00		0.33	1.00	
Satd. Flow (perm)		1237		1002	1423	1095	661	2455		474	2474	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	17	13	8	112	29	482	5	645	60	82	469	19
RTOR Reduction (vph)	0	5	0	0	0	99	0	8	0	0	4	0
Lane Group Flow (vph)	0	33	0	112	29	383	5	697	0	82	484	0
Confl. Peds. (#/hr)			3	3					5	5		
Heavy Vehicles (%)	0%	8%	0%	6%	11%	1%	0%	2%	3%	1%	2%	6%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		28.9		28.9	28.9	28.9	36.3	36.3		36.3	36.3	
Effective Green, g (s)		28.9		28.9	28.9	28.9	36.3	36.3		36.3	36.3	
Actuated g/C Ratio		0.38		0.38	0.38	0.38	0.48	0.48		0.48	0.48	
Clearance Time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		475		385	546	420	319	1185		228	1194	
v/s Ratio Prot					0.02			c0.28			0.20	
v/s Ratio Perm		0.03		0.11		c0.35	0.01			0.17		
v/c Ratio		0.07		0.29	0.05	0.91	0.02	0.59		0.36	0.41	
Uniform Delay, d1		14.6		16.0	14.6	21.9	10.1	14.0		12.2	12.5	
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1		0.4	0.0	23.7	0.1	2.1		4.4	1.0	
Delay (s)		14.7		16.5	14.6	45.6	10.2	16.2		16.5	13.5	
Level of Service		B		B	B	D	B	B		B	B	
Approach Delay (s/veh)		14.7			39.0			16.1			14.0	
Approach LOS		B			D			B			B	

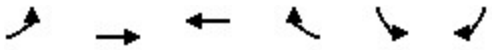
Intersection Summary			
HCM 2000 Control Delay (s/veh)	22.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	75.2	Sum of lost time (s)	10.0
Intersection Capacity Utilization	88.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	45	98	172	1	144	408
Future Volume (vph)	45	98	172	1	144	408
Ideal Flow (vphpl)	1454	1579	1338	1338	1454	1301
Storage Length (m)	85.0			0.0	0.0	40.0
Storage Lanes	1			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1381	2913	2515	0	1341	1074
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1381	2913	2515	0	1341	1074
Link Speed (k/h)		50	50		50	
Link Distance (m)		201.0	149.3		70.1	
Travel Time (s)		14.5	10.7		5.0	
Confl. Peds. (#/hr)	1			1		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	3%	1%	0%	3%	3%
Adj. Flow (vph)	50	109	191	1	160	453
Shared Lane Traffic (%)						
Lane Group Flow (vph)	50	109	192	0	160	453
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.26	1.55	1.55	1.40	1.60
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 50.6%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	45	98	172	1	144	408
Future Volume (Veh/h)	45	98	172	1	144	408
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)	50	109	191	1	160	453
Pedestrians					1	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						5
Median type		None	None			
Median storage veh)						
Upstream signal (m)		201				
pX, platoon unblocked						
vC, conflicting volume	193				347	97
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	193				347	97
tC, single (s)	4.1				6.9	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				73	52
cM capacity (veh/h)	1391				598	936

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	50	55	55	127	65	613
Volume Left	50	0	0	0	0	160
Volume Right	0	0	0	0	1	453
cSH	1391	1700	1700	1700	1700	1267
Volume to Capacity	0.04	0.03	0.03	0.07	0.04	0.48
Queue Length 95th (m)	0.9	0.0	0.0	0.0	0.0	21.8
Control Delay (s/veh)	7.7	0.0	0.0	0.0	0.0	12.6
Lane LOS	A					B
Approach Delay (s/veh)	2.4			0.0		12.6
Approach LOS						B

Intersection Summary			
Average Delay	8.4		
Intersection Capacity Utilization	50.6%	ICU Level of Service	A
Analysis Period (min)	15		

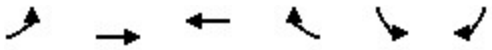
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	670	0	0	897	135	0
Future Volume (vph)	670	0	0	897	135	0
Ideal Flow (vphpl)	1579	1301	1454	1579	1454	1301
Lane Util. Factor	0.95	1.00	1.00	0.91	1.00	1.00
Frt						
Flt Protected					0.950	
Satd. Flow (prot)	2970	0	0	4268	1328	0
Flt Permitted					0.950	
Satd. Flow (perm)	2970	0	0	4268	1328	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	266.5			178.9	263.7	
Travel Time (s)	19.2			12.9	19.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	5%	0%	1%	4%	1%
Adj. Flow (vph)	728	0	0	975	147	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	728	0	0	975	147	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.26	1.60	1.40	1.26	1.40	1.60
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 60.2%		ICU Level of Service B	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	670	0	0	897	135	0
Future Volume (Veh/h)	670	0	0	897	135	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	728	0	0	975	147	0
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			728		1053	364
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			728		1053	364
tC, single (s)			4.1		6.9	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		33	100
cM capacity (veh/h)			885		218	636

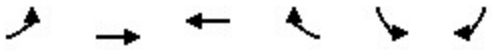
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	364	364	325	325	325	147
Volume Left	0	0	0	0	0	147
Volume Right	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	218
Volume to Capacity	0.21	0.21	0.19	0.19	0.19	0.67
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	33.6
Control Delay (s/veh)	0.0	0.0	0.0	0.0	0.0	50.0
Lane LOS						F
Approach Delay (s/veh)	0.0		0.0			50.0
Approach LOS						F

Intersection Summary			
Average Delay	4.0		
Intersection Capacity Utilization	60.2%	ICU Level of Service	B
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	747	844	0	145	310
Future Volume (vph)	0	747	844	0	145	310
Ideal Flow (vphpl)	1454	1579	1579	1301	1433	1433
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	2941	2941	0	1348	1183
Flt Permitted					0.950	
Satd. Flow (perm)	0	2941	2941	0	1348	1183
Link Speed (k/h)		50	50		50	
Link Distance (m)		152.8	266.5		231.4	
Travel Time (s)		11.0	19.2		16.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	1%	1%	3%
Adj. Flow (vph)	0	812	917	0	158	337
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	812	917	0	158	337
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.26	1.26	1.60	1.42	1.42
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

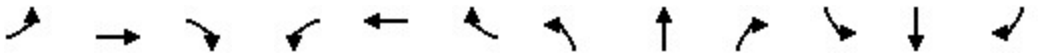
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 60.2%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↰	↱
Traffic Volume (veh/h)	0	747	844	0	145	310
Future Volume (Veh/h)	0	747	844	0	145	310
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	812	917	0	158	337
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	917				1323	459
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	917				1323	459
tC, single (s)	4.1				6.8	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				0	38
cM capacity (veh/h)	752				149	547

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	406	406	459	459	158	337
Volume Left	0	0	0	0	158	0
Volume Right	0	0	0	0	0	337
cSH	1700	1700	1700	1700	149	547
Volume to Capacity	0.24	0.24	0.27	0.27	1.06	0.62
Queue Length 95th (m)	0.0	0.0	0.0	0.0	66.3	33.3
Control Delay (s/veh)	0.0	0.0	0.0	0.0	151.2	21.6
Lane LOS					F	C
Approach Delay (s/veh)	0.0		0.0		63.0	
Approach LOS					F	

Intersection Summary			
Average Delay	14.0		
Intersection Capacity Utilization	60.2%	ICU Level of Service	B
Analysis Period (min)	15		

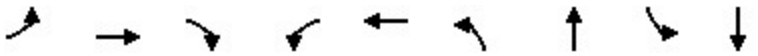


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	305	202	275	211	244	126	387	364	108	149	345	244
Future Volume (vph)	305	202	275	211	244	126	387	364	108	149	345	244
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Storage Length (m)	70.0		0.0	105.0		125.0	90.0		0.0	95.0		41.0
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00		0.98	1.00	0.99		1.00	1.00		1.00	0.99	
Frt			0.850		0.949			0.966			0.938	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1341	1548	1095	1368	2383	0	1368	2427	0	1368	2329	0
Flt Permitted	0.317			0.629			0.274			0.477		
Satd. Flow (perm)	446	1548	1076	902	2383	0	394	2427	0	684	2329	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			281		97			47			184	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		205.0			291.8			454.1			179.9	
Travel Time (s)		14.8			21.0			32.7			13.0	
Confl. Peds. (#/hr)	6		6	6		6	6		7	7		6
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	3%	2%	1%	1%	1%	0%	1%	1%	0%	1%	0%	4%
Adj. Flow (vph)	311	206	281	215	249	129	395	371	110	152	352	249
Shared Lane Traffic (%)												
Lane Group Flow (vph)	311	206	281	215	378	0	395	481	0	152	601	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	9.5	35.0	35.0	9.5	35.0		9.5	35.0		9.5	35.0	
Total Split (s)	18.0	31.5	31.5	13.0	26.5		20.0	36.0		9.5	25.5	
Total Split (%)	20.0%	35.0%	35.0%	14.4%	29.4%		22.2%	40.0%		10.6%	28.3%	
Maximum Green (s)	15.0	26.5	26.5	10.0	21.5		17.0	31.0		6.5	20.5	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)		10.0	10.0		10.0			10.0			10.0	
Flash Don't Walk (s)		20.0	20.0		20.0			20.0			20.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	36.3	21.3	21.3	28.2	16.2		52.1	40.6		38.6	30.1	
Actuated g/C Ratio	0.38	0.23	0.23	0.30	0.17		0.55	0.43		0.41	0.32	
v/c Ratio	0.99	0.59	0.61	0.68	0.77		1.01	0.45		0.47	0.69	
Control Delay (s/veh)	76.5	39.9	10.0	34.7	38.6		66.2	19.3		19.6	24.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	76.5	39.9	10.0	34.7	38.6		66.2	19.3		19.6	24.6	
LOS	E	D	B	C	D		E	B		B	C	
Approach Delay (s/veh)		43.7			37.2			40.4			23.6	
Approach LOS		D			D			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 94.4			
Natural Cycle: 110			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.01			
Intersection Signal Delay (s/veh): 36.4		Intersection LOS: D	
Intersection Capacity Utilization 107.3%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 1: Dorchester Road & Morrison Street



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	311	206	281	215	378	395	481	152	601
v/c Ratio	0.99	0.59	0.61	0.68	0.77	1.01	0.45	0.47	0.69
Control Delay (s/veh)	76.5	39.9	10.0	34.7	38.6	66.2	19.3	19.6	24.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	76.5	39.9	10.0	34.7	38.6	66.2	19.3	19.6	24.6
Queue Length 50th (m)	46.8	35.4	0.0	29.5	27.3	~46.6	30.0	14.0	36.8
Queue Length 95th (m)	#90.8	58.5	22.9	49.1	43.7	#118.1	48.1	27.8	61.6
Internal Link Dist (m)		181.0			267.8		430.1		155.9
Turn Bay Length (m)	70.0			105.0		90.0		95.0	
Base Capacity (vph)	313	435	504	319	618	393	1070	326	867
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.99	0.47	0.56	0.67	0.61	1.01	0.45	0.47	0.69

Intersection Summary

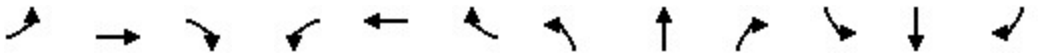
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	305	202	275	211	244	126	387	364	108	149	345	244
Future Volume (vph)	305	202	275	211	244	126	387	364	108	149	345	244
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Total Lost time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.95		1.00	0.97		1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1340	1548	1076	1364	2382		1367	2426		1366	2328	
Flt Permitted	0.32	1.00	1.00	0.63	1.00		0.27	1.00		0.48	1.00	
Satd. Flow (perm)	447	1548	1076	903	2382		395	2426		686	2328	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	311	206	281	215	249	129	395	371	110	152	352	249
RTOR Reduction (vph)	0	0	218	0	80	0	0	27	0	0	125	0
Lane Group Flow (vph)	311	206	63	215	298	0	395	454	0	152	476	0
Confl. Peds. (#/hr)	6		6	6		6	6		7	7		6
Heavy Vehicles (%)	3%	2%	1%	1%	1%	0%	1%	1%	0%	1%	0%	4%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	34.3	21.3	21.3	26.3	16.3		50.1	40.6		36.6	30.1	
Effective Green, g (s)	34.3	21.3	21.3	26.3	16.3		50.1	40.6		36.6	30.1	
Actuated g/C Ratio	0.36	0.23	0.23	0.28	0.17		0.53	0.43		0.39	0.32	
Clearance Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	304	349	242	300	411		384	1043		312	742	
v/s Ratio Prot	c0.16	0.13		0.08	0.13		c0.18	0.19		0.03	0.20	
v/s Ratio Perm	c0.21		0.06	0.12			c0.36			0.15		
v/c Ratio	1.02	0.59	0.26	0.72	0.72		1.03	0.44		0.49	0.64	
Uniform Delay, d1	26.7	32.7	30.1	29.3	36.9		16.7	18.9		19.9	27.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	57.6	2.7	0.6	7.9	6.2		53.5	1.3		1.2	4.2	
Delay (s)	84.3	35.3	30.7	37.2	43.2		70.1	20.2		21.1	31.7	
Level of Service	F	D	C	D	D		E	C		C	C	
Approach Delay (s/veh)		52.8			41.0			42.7			29.6	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	41.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.09		
Actuated Cycle Length (s)	94.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	107.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

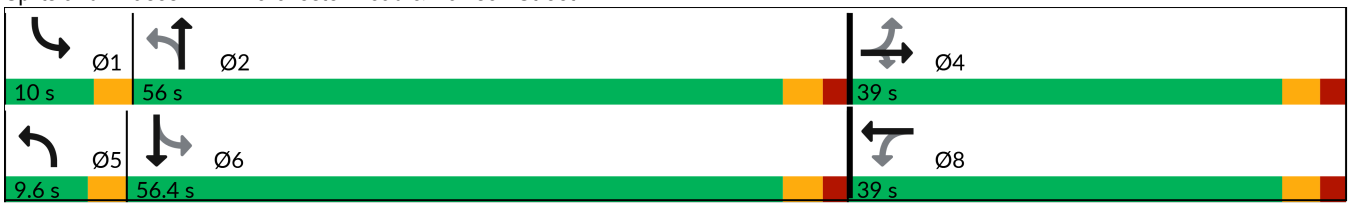


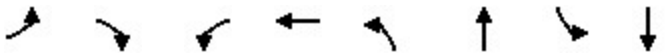
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	0	1	62	0	23	3	852	38	18	985	1
Future Volume (vph)	4	0	1	62	0	23	3	852	38	18	985	1
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Storage Length (m)	30.0		35.0	20.0		0.0	180.0		0.0	30.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.91	0.91
Ped Bike Factor			0.99	1.00			1.00	1.00		1.00	1.00	
Frt			0.850		0.850			0.994				
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1381	1579	1106	1381	1137	0	1381	2525	0	1381	3653	0
Flt Permitted	0.742			0.757			0.269			0.296		
Satd. Flow (perm)	1079	1579	1091	1099	1137	0	391	2525	0	430	3653	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			186		215			6				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		106.7			108.0			280.1			454.1	
Travel Time (s)		7.7			7.8			20.2			32.7	
Confl. Peds. (#/hr)			2	2			3		1	1		3
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	4	0	1	63	0	23	3	869	39	18	1005	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	4	0	1	63	23	0	3	908	0	18	1006	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	1.0		5.0	5.0	
Minimum Split (s)	39.0	39.0	39.0	39.0	39.0		9.5	52.0		9.5	52.0	
Total Split (s)	39.0	39.0	39.0	39.0	39.0		9.6	56.0		10.0	56.4	
Total Split (%)	37.1%	37.1%	37.1%	37.1%	37.1%		9.1%	53.3%		9.5%	53.7%	
Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		6.6	51.0		7.0	51.4	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)	11.0	11.0	11.0	11.0	11.0			16.0			16.0	
Flash Don't Walk (s)	23.0	23.0	23.0	23.0	23.0			31.0			31.0	
Pedestrian Calls (#/hr)	0	0	0	0	0			0			0	
Act Effct Green (s)	9.9		9.9	9.9	9.9		61.1	59.1		61.3	59.2	
Actuated g/C Ratio	0.13		0.13	0.13	0.13		0.79	0.76		0.79	0.76	
v/c Ratio	0.03		0.00	0.45	0.07		0.01	0.47		0.04	0.36	
Control Delay (s/veh)	28.8		0.0	41.2	0.4		3.0	6.5		3.0	5.1	
Queue Delay	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	28.8		0.0	41.2	0.4		3.0	6.5		3.0	5.1	
LOS	C		A	D	A		A	A		A	A	
Approach Delay (s/veh)		23.0			30.3			6.5			5.1	
Approach LOS		C			C			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 105			
Actuated Cycle Length: 77.4			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.47			
Intersection Signal Delay (s/veh): 6.9		Intersection LOS: A	
Intersection Capacity Utilization 61.9%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: Dorchester Road & Dawson Street





Lane Group	EBL	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	4	1	63	23	3	908	18	1006
v/c Ratio	0.03	0.00	0.45	0.07	0.01	0.47	0.04	0.36
Control Delay (s/veh)	28.8	0.0	41.2	0.4	3.0	6.5	3.0	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	28.8	0.0	41.2	0.4	3.0	6.5	3.0	5.1
Queue Length 50th (m)	0.5	0.0	8.5	0.0	0.1	22.1	0.5	15.2
Queue Length 95th (m)	3.4	0.0	21.6	0.0	0.8	64.2	2.2	40.4
Internal Link Dist (m)				84.0		256.1		430.1
Turn Bay Length (m)	30.0	35.0	20.0		180.0		30.0	
Base Capacity (vph)	476	585	485	622	394	1930	427	2795
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	0.01	0.00	0.13	0.04	0.01	0.47	0.04	0.36

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	0	1	62	0	23	3	852	38	18	985	1
Future Volume (vph)	4	0	1	62	0	23	3	852	38	18	985	1
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Total Lost time (s)	5.0		5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00		1.00	1.00	1.00		1.00	0.95		1.00	0.91	
Frpb, ped/bikes	1.00		0.99	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00		0.85	1.00	0.85		1.00	0.99		1.00	1.00	
Flt Protected	0.95		1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1381		1091	1379	1137		1381	2524		1381	3652	
Flt Permitted	0.74		1.00	0.76	1.00		0.27	1.00		0.30	1.00	
Satd. Flow (perm)	1079		1091	1099	1137		391	2524		430	3652	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	4	0	1	63	0	23	3	869	39	18	1005	1
RTOR Reduction (vph)	0	0	1	0	21	0	0	2	0	0	0	0
Lane Group Flow (vph)	4	0	0	63	2	0	3	906	0	18	1006	0
Confl. Peds. (#/hr)			2	2			3		1	1		3
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	8.7		8.7	8.7	8.7		59.0	58.0		59.2	58.1	
Effective Green, g (s)	8.7		8.7	8.7	8.7		59.0	58.0		59.2	58.1	
Actuated g/C Ratio	0.11		0.11	0.11	0.11		0.73	0.72		0.73	0.72	
Clearance Time (s)	5.0		5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	116		117	118	122		297	1811		327	2626	
v/s Ratio Prot					0.00		0.00	c0.36		c0.00	0.28	
v/s Ratio Perm	0.00		0.00	c0.06			0.01			0.04		
v/c Ratio	0.03		0.00	0.53	0.02		0.01	0.50		0.06	0.38	
Uniform Delay, d1	32.3		32.2	34.1	32.2		3.0	5.0		3.0	4.4	
Progression Factor	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1		0.0	4.6	0.1		0.0	1.0		0.1	0.4	
Delay (s)	32.4		32.2	38.7	32.3		3.0	6.0		3.1	4.8	
Level of Service	C		C	D	C		A	A		A	A	
Approach Delay (s/veh)		32.4			37.0			6.0			4.8	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	6.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	80.8	Sum of lost time (s)	13.0
Intersection Capacity Utilization	61.9%	ICU Level of Service	B
Analysis Period (min)	15		

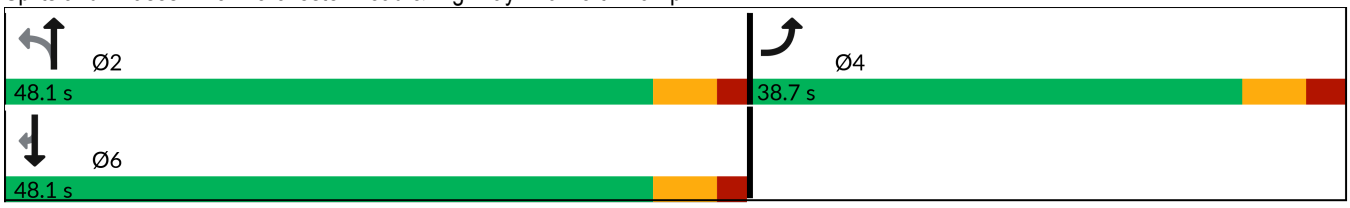
c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	29	0	216	877	553	505
Future Volume (vph)	29	0	216	877	553	505
Ideal Flow (vphpl)	1454	1301	1454	1579	1579	1301
Storage Length (m)	0.0	0.0	160.0			0.0
Storage Lanes	2	0	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor	1.00					
Frt						0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	2680	0	1368	3000	2970	1106
Flt Permitted	0.950		0.440			
Satd. Flow (perm)	2676	0	633	3000	2970	1106
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						515
Link Speed (k/h)	50			50	50	
Link Distance (m)	166.4			377.5	280.1	
Travel Time (s)	12.0			27.2	20.2	
Confl. Peds. (#/hr)	1					
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	1%	0%	1%	0%
Adj. Flow (vph)	30	0	220	895	564	515
Shared Lane Traffic (%)						
Lane Group Flow (vph)	30	0	220	895	564	515
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.2			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.60	1.40	1.26	1.26	1.60
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1		1	2	2	1
Detector Template	Left		Left	Thru	Thru	Right
Leading Detector (m)	2.0		2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0		2.0	0.6	0.6	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	8.0		10.0	10.0	10.0	10.0
Minimum Split (s)	38.7		24.1	24.1	24.1	24.1
Total Split (s)	38.7		48.1	48.1	48.1	48.1
Total Split (%)	44.6%		55.4%	55.4%	55.4%	55.4%
Maximum Green (s)	32.0		42.0	42.0	42.0	42.0
Yellow Time (s)	4.1		4.1	4.1	4.1	4.1
All-Red Time (s)	2.6		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7		6.1	6.1	6.1	6.1
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		Max	Max	Max	Max
Walk Time (s)	12.0					
Flash Don't Walk (s)	20.0					
Pedestrian Calls (#/hr)	0					
Act Effct Green (s)	8.0		55.0	55.0	55.0	55.0
Actuated g/C Ratio	0.13		0.87	0.87	0.87	0.87
v/c Ratio	0.09		0.40	0.34	0.22	0.50
Control Delay (s/veh)	25.3		6.4	3.0	2.5	2.3
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay (s/veh)	25.3		6.4	3.0	2.5	2.3
LOS	C		A	A	A	A
Approach Delay (s/veh)	25.3			3.7	2.4	
Approach LOS	C			A	A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 86.8			
Actuated Cycle Length: 63.3			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.50			
Intersection Signal Delay (s/veh): 3.4		Intersection LOS: A	
Intersection Capacity Utilization 71.5%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 3: Dorchester Road & Highway 420 North Ramp



Lane Group	EBL	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	30	220	895	564	515
v/c Ratio	0.09	0.40	0.34	0.22	0.50
Control Delay (s/veh)	25.3	6.4	3.0	2.5	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	25.3	6.4	3.0	2.5	2.3
Queue Length 50th (m)	1.7	0.0	0.0	0.0	0.0
Queue Length 95th (m)	5.1	28.4	31.8	18.1	8.2
Internal Link Dist (m)	142.4		353.5	256.1	
Turn Bay Length (m)		160.0			
Base Capacity (vph)	1354	550	2608	2582	1029
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.02	0.40	0.34	0.22	0.50

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	29	0	216	877	553	505
Future Volume (vph)	29	0	216	877	553	505
Ideal Flow (vphpl)	1454	1301	1454	1579	1579	1301
Total Lost time (s)	6.7		6.1	6.1	6.1	6.1
Lane Util. Factor	0.97		1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	0.95		0.95	1.00	1.00	1.00
Satd. Flow (prot)	2680		1368	3000	2970	1106
Flt Permitted	0.95		0.44	1.00	1.00	1.00
Satd. Flow (perm)	2680		634	3000	2970	1106
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	30	0	220	895	564	515
RTOR Reduction (vph)	0	0	0	0	0	122
Lane Group Flow (vph)	30	0	220	895	564	393
Confl. Peds. (#/hr)	1					
Heavy Vehicles (%)	0%	0%	1%	0%	1%	0%
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Actuated Green, G (s)	3.2		51.4	51.4	51.4	51.4
Effective Green, g (s)	3.2		51.4	51.4	51.4	51.4
Actuated g/C Ratio	0.05		0.76	0.76	0.76	0.76
Clearance Time (s)	6.7		6.1	6.1	6.1	6.1
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	127		483	2287	2264	843
v/s Ratio Prot	c0.01			0.30	0.19	
v/s Ratio Perm			0.35			c0.36
v/c Ratio	0.24		0.46	0.39	0.25	0.47
Uniform Delay, d1	30.9		2.9	2.7	2.3	2.9
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.0		3.1	0.5	0.3	1.8
Delay (s)	31.9		6.0	3.2	2.6	4.8
Level of Service	C		A	A	A	A
Approach Delay (s/veh)	31.9			3.8	3.7	
Approach LOS	C			A	A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	4.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	67.4	Sum of lost time (s)	12.8
Intersection Capacity Utilization	71.5%	ICU Level of Service	C
Analysis Period (min)	15		

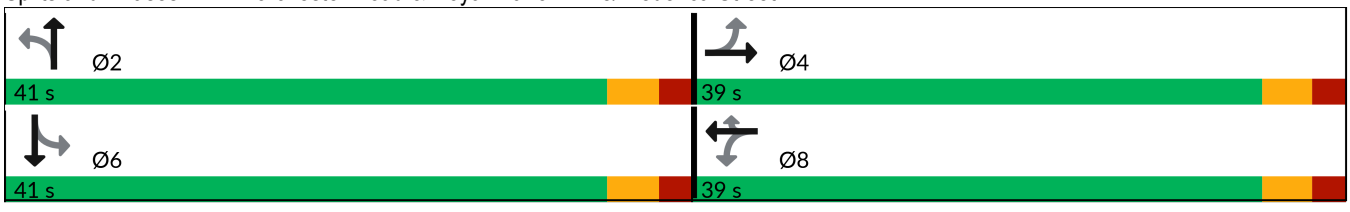
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	7	6	79	24	405	3	672	56	89	454	21
Future Volume (vph)	25	7	6	79	24	405	3	672	56	89	454	21
Ideal Flow (vphpl)	1433	1433	1433	1454	1579	1301	1454	1338	1338	1454	1338	1338
Storage Length (m)	0.0		0.0	45.0		0.0	95.0		0.0	165.0		0.0
Storage Lanes	0		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		1.00		1.00				1.00		1.00		
Frt		0.979				0.850		0.988			0.993	
Flt Protected		0.968		0.950			0.950			0.950		
Satd. Flow (prot)	0	1355	0	1368	1579	1095	1381	2504	0	1381	2501	0
Flt Permitted		0.863		0.732			0.462			0.318		
Satd. Flow (perm)	0	1208	0	1052	1579	1095	672	2504	0	462	2501	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6				136		14			8	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		47.8			201.0			125.1			377.5	
Travel Time (s)		3.4			14.5			9.0			27.2	
Confl. Peds. (#/hr)			2	2					8	8		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	0%	0%	1%	0%	1%	0%	0%	2%	0%	1%	0%
Adj. Flow (vph)	26	7	6	81	25	418	3	693	58	92	468	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	39	0	81	25	418	3	751	0	92	490	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.42	1.42	1.42	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	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	5.0	
Minimum Split (s)	32.0	32.0		32.0	32.0	32.0	41.0	41.0		41.0	41.0	
Total Split (s)	39.0	39.0		39.0	39.0	39.0	41.0	41.0		41.0	41.0	
Total Split (%)	48.8%	48.8%		48.8%	48.8%	48.8%	51.3%	51.3%		51.3%	51.3%	
Maximum Green (s)	34.0	34.0		34.0	34.0	34.0	36.0	36.0		36.0	36.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	Max	Max		Max	Max	
Walk Time (s)	9.0	9.0		9.0	9.0	9.0	12.0	12.0		12.0	12.0	
Flash Don't Walk (s)	18.0	18.0		18.0	18.0	18.0	24.0	24.0		24.0	24.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	
Act Effct Green (s)		25.0		25.0	25.0	25.0	36.5	36.5		36.5	36.5	
Actuated g/C Ratio		0.35		0.35	0.35	0.35	0.51	0.51		0.51	0.51	
v/c Ratio		0.09		0.22	0.05	0.89	0.01	0.59		0.39	0.38	
Control Delay (s/veh)		13.1		16.9	14.1	36.6	12.0	16.2		20.5	13.3	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay (s/veh)		13.1		16.9	14.1	36.6	12.0	16.2		20.5	13.3	
LOS		B		B	B	D	B	B		C	B	
Approach Delay (s/veh)		13.1			32.5			16.2			14.5	
Approach LOS		B			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 71.7			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay (s/veh): 20.1		Intersection LOS: C	
Intersection Capacity Utilization 84.5%		ICU Level of Service E	
Analysis Period (min) 15			

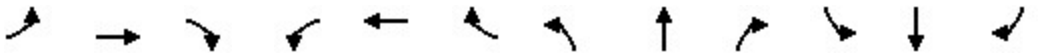
Splits and Phases: 4: Dorchester Road & Royal Manor Drive/Frederica Street



Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	39	81	25	418	3	751	92	490
v/c Ratio	0.09	0.22	0.05	0.89	0.01	0.59	0.39	0.38
Control Delay (s/veh)	13.1	16.9	14.1	36.6	12.0	16.2	20.5	13.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	13.1	16.9	14.1	36.6	12.0	16.2	20.5	13.3
Queue Length 50th (m)	3.0	7.8	2.3	37.7	0.2	38.2	8.0	21.7
Queue Length 95th (m)	8.8	17.0	6.7	#90.6	1.7	66.7	24.5	39.4
Internal Link Dist (m)	23.8		177.0			101.1		353.5
Turn Bay Length (m)		45.0			95.0		165.0	
Base Capacity (vph)	584	506	759	597	342	1282	235	1277
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.16	0.03	0.70	0.01	0.59	0.39	0.38

Intersection Summary

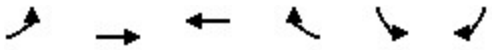
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	7	6	79	24	405	3	672	56	89	454	21
Future Volume (vph)	25	7	6	79	24	405	3	672	56	89	454	21
Ideal Flow (vphpl)	1433	1433	1433	1454	1579	1301	1454	1338	1338	1454	1338	1338
Total Lost time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt		0.98		1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected		0.97		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1355		1366	1579	1095	1381	2506		1379	2501	
Flt Permitted		0.86		0.73	1.00	1.00	0.46	1.00		0.32	1.00	
Satd. Flow (perm)		1209		1052	1579	1095	672	2506		462	2501	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	26	7	6	81	25	418	3	693	58	92	468	22
RTOR Reduction (vph)	0	4	0	0	0	88	0	7	0	0	4	0
Lane Group Flow (vph)	0	35	0	81	25	330	3	744	0	92	486	0
Confl. Peds. (#/hr)			2	2					8	8		
Heavy Vehicles (%)	0%	0%	0%	1%	0%	1%	0%	0%	2%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		25.0		25.0	25.0	25.0	36.5	36.5		36.5	36.5	
Effective Green, g (s)		25.0		25.0	25.0	25.0	36.5	36.5		36.5	36.5	
Actuated g/C Ratio		0.35		0.35	0.35	0.35	0.51	0.51		0.51	0.51	
Clearance Time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		422		367	552	382	343	1279		235	1276	
v/s Ratio Prot					0.02			c0.30			0.19	
v/s Ratio Perm		0.03		0.08		c0.30	0.00			0.20		
v/c Ratio		0.08		0.22	0.05	0.86	0.01	0.58		0.39	0.38	
Uniform Delay, d1		15.6		16.4	15.4	21.7	8.6	12.2		10.7	10.6	
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1		0.3	0.0	17.8	0.0	1.9		4.8	0.9	
Delay (s)		15.7		16.7	15.4	39.5	8.7	14.1		15.5	11.5	
Level of Service		B		B	B	D	A	B		B	B	
Approach Delay (s/veh)		15.7			34.8			14.1			12.1	
Approach LOS		B			C			B			B	

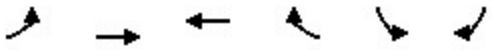
Intersection Summary			
HCM 2000 Control Delay (s/veh)	19.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	71.5	Sum of lost time (s)	10.0
Intersection Capacity Utilization	84.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	57	93	174	3	93	331
Future Volume (vph)	57	93	174	3	93	331
Ideal Flow (vphpl)	1454	1579	1338	1338	1454	1301
Storage Length (m)	85.0			0.0	0.0	40.0
Storage Lanes	1			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.998			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1354	3000	2512	0	1381	1106
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1354	3000	2512	0	1381	1106
Link Speed (k/h)		50	50		50	
Link Distance (m)		201.0	149.3		70.1	
Travel Time (s)		14.5	10.7		5.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	1%	0%	0%	0%
Adj. Flow (vph)	62	101	189	3	101	360
Shared Lane Traffic (%)						
Lane Group Flow (vph)	62	101	192	0	101	360
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.26	1.55	1.55	1.40	1.60
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

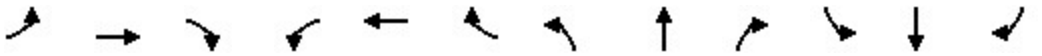
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 43.6%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	57	93	174	3	93	331
Future Volume (Veh/h)	57	93	174	3	93	331
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	62	101	189	3	101	360
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						5
Median type		None	None			
Median storage veh)						
Upstream signal (m)		201				
pX, platoon unblocked						
vC, conflicting volume	192				365	96
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	192				365	96
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				83	62
cM capacity (veh/h)	1379				586	948

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	62	51	51	126	66	461
Volume Left	62	0	0	0	0	101
Volume Right	0	0	0	0	3	360
cSH	1379	1700	1700	1700	1700	1214
Volume to Capacity	0.04	0.03	0.03	0.07	0.04	0.38
Queue Length 95th (m)	1.1	0.0	0.0	0.0	0.0	14.4
Control Delay (s/veh)	7.7	0.0	0.0	0.0	0.0	11.4
Lane LOS	A					B
Approach Delay (s/veh)	2.9			0.0		11.4
Approach LOS						B

Intersection Summary			
Average Delay	7.0		
Intersection Capacity Utilization	43.6%	ICU Level of Service	A
Analysis Period (min)	15		



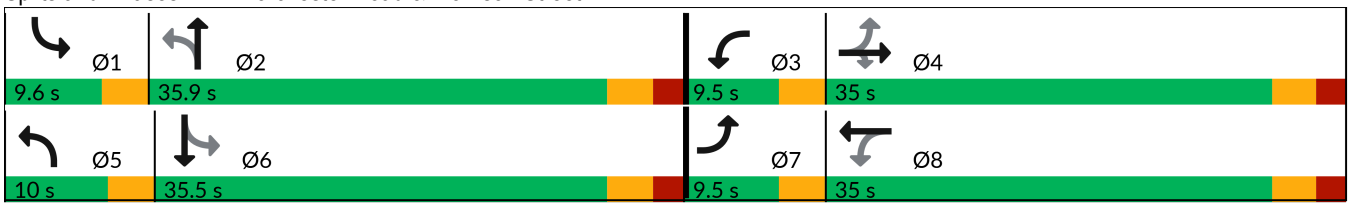
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	131	74	89	106	118	96	164	257	98	178	333	121
Future Volume (vph)	131	74	89	106	118	96	164	257	98	178	333	121
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Storage Length (m)	70.0		0.0	105.0		125.0	90.0		0.0	95.0		41.0
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor			0.98	1.00			1.00	1.00		1.00	1.00	
Frt			0.850		0.933			0.959			0.960	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1267	1410	1005	1368	2250	0	1341	2342	0	1368	2284	0
Flt Permitted	0.538			0.701			0.413			0.506		
Satd. Flow (perm)	718	1410	989	1005	2250	0	583	2342	0	728	2284	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			103		112			67			62	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		205.0			291.8			454.1			179.9	
Travel Time (s)		14.8			21.0			32.7			13.0	
Confl. Peds. (#/hr)			5	5			2		1	1		2
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	9%	12%	10%	1%	9%	1%	3%	4%	3%	1%	3%	16%
Adj. Flow (vph)	152	86	103	123	137	112	191	299	114	207	387	141
Shared Lane Traffic (%)												
Lane Group Flow (vph)	152	86	103	123	249	0	191	413	0	207	528	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

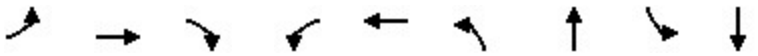
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	9.5	35.0	35.0	9.5	35.0		9.5	35.0		9.5	35.0	
Total Split (s)	9.5	35.0	35.0	9.5	35.0		10.0	35.9		9.6	35.5	
Total Split (%)	10.6%	38.9%	38.9%	10.6%	38.9%		11.1%	39.9%		10.7%	39.4%	
Maximum Green (s)	6.5	30.0	30.0	6.5	30.0		7.0	30.9		6.6	30.5	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)		10.0	10.0		10.0			10.0			10.0	
Flash Don't Walk (s)		20.0	20.0		20.0			20.0			20.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	20.3	13.1	13.1	19.6	11.1		39.9	30.9		39.1	30.5	
Actuated g/C Ratio	0.29	0.18	0.18	0.28	0.16		0.56	0.43		0.55	0.43	
v/c Ratio	0.60	0.33	0.39	0.40	0.56		0.48	0.39		0.45	0.52	
Control Delay (s/veh)	30.6	30.8	11.0	22.7	20.3		11.7	12.9		11.2	15.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	30.6	30.8	11.0	22.7	20.3		11.7	12.9		11.2	15.5	
LOS	C	C	B	C	C		B	B		B	B	
Approach Delay (s/veh)		24.7			21.1			12.5			14.3	
Approach LOS		C			C			B			B	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 71.2
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.60
Intersection Signal Delay (s/veh): 16.7 Intersection LOS: B
Intersection Capacity Utilization 71.5% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 1: Dorchester Road & Morrison Street





Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	152	86	103	123	249	191	413	207	528
v/c Ratio	0.60	0.33	0.39	0.40	0.56	0.48	0.39	0.45	0.52
Control Delay (s/veh)	30.6	30.8	11.0	22.7	20.3	11.7	12.9	11.2	15.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	30.6	30.8	11.0	22.7	20.3	11.7	12.9	11.2	15.5
Queue Length 50th (m)	16.3	11.0	0.0	12.8	9.2	10.6	15.7	11.7	23.1
Queue Length 95th (m)	29.8	22.4	11.2	24.1	18.5	22.2	27.4	24.0	38.3
Internal Link Dist (m)		181.0			267.8		430.1		155.9
Turn Bay Length (m)	70.0			105.0		90.0		95.0	
Base Capacity (vph)	254	594	476	310	1014	401	1055	459	1015
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.14	0.22	0.40	0.25	0.48	0.39	0.45	0.52

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	131	74	89	106	118	96	164	257	98	178	333	121
Future Volume (vph)	131	74	89	106	118	96	164	257	98	178	333	121
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Total Lost time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.93		1.00	0.96		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1267	1410	990	1365	2249		1341	2341		1367	2284	
Flt Permitted	0.54	1.00	1.00	0.70	1.00		0.41	1.00		0.51	1.00	
Satd. Flow (perm)	718	1410	990	1007	2249		582	2341		729	2284	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	152	86	103	123	137	112	191	299	114	207	387	141
RTOR Reduction (vph)	0	0	84	0	94	0	0	38	0	0	36	0
Lane Group Flow (vph)	152	86	19	123	155	0	191	375	0	207	492	0
Confl. Peds. (#/hr)			5	5			2		1	1		2
Heavy Vehicles (%)	9%	12%	10%	1%	9%	1%	3%	4%	3%	1%	3%	16%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	19.6	13.1	13.1	17.0	11.8		37.9	30.9		37.1	30.5	
Effective Green, g (s)	19.6	13.1	13.1	17.0	11.8		37.9	30.9		37.1	30.5	
Actuated g/C Ratio	0.27	0.18	0.18	0.24	0.16		0.53	0.43		0.52	0.42	
Clearance Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	245	257	180	264	369		381	1007		435	970	
v/s Ratio Prot	c0.06	0.06		0.03	0.07		c0.05	0.16		0.04	0.22	
v/s Ratio Perm	c0.11		0.02	0.08			c0.22			0.20		
v/c Ratio	0.62	0.33	0.10	0.47	0.42		0.50	0.37		0.48	0.51	
Uniform Delay, d1	21.7	25.6	24.5	23.0	26.9		9.4	13.9		9.9	15.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.8	0.8	0.3	1.3	0.8		1.0	1.1		0.8	1.9	
Delay (s)	26.5	26.3	24.7	24.3	27.7		10.5	14.9		10.7	17.0	
Level of Service	C	C	C	C	C		B	B		B	B	
Approach Delay (s/veh)		25.9			26.6			13.5			15.3	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	18.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.56		
Actuated Cycle Length (s)	71.8	Sum of lost time (s)	16.0
Intersection Capacity Utilization	71.5%	ICU Level of Service	C
Analysis Period (min)	15		

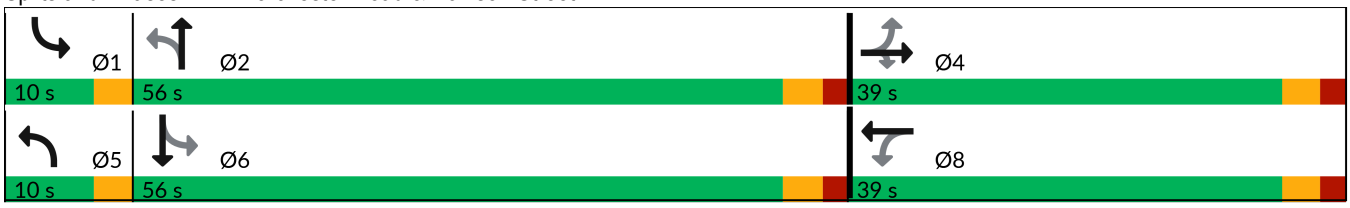
c Critical Lane Group

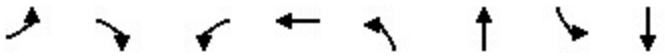
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	6	59	1	23	23	559	21	10	545	9
Future Volume (vph)	1	0	6	59	1	23	23	559	21	10	545	9
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Storage Length (m)	30.0		35.0	20.0		0.0	180.0		0.0	30.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.91	0.91
Ped Bike Factor							1.00	1.00		1.00	1.00	
Frt			0.850		0.856			0.995			0.998	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1381	1579	614	1354	1009	0	1316	2447	0	1244	3566	0
Flt Permitted	0.740			0.757			0.401			0.410		
Satd. Flow (perm)	1076	1579	614	1079	1009	0	555	2447	0	536	3566	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			265		25			5			3	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		106.7			108.0			280.1			454.1	
Travel Time (s)		7.7			7.8			20.2			32.7	
Confl. Peds. (#/hr)							1		3	3		1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	80%	2%	0%	14%	5%	3%	11%	11%	2%	13%
Adj. Flow (vph)	1	0	7	65	1	25	25	614	23	11	599	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	1	0	7	65	26	0	25	637	0	11	609	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	1.0		5.0	5.0	
Minimum Split (s)	39.0	39.0	39.0	39.0	39.0		9.5	52.0		9.5	52.0	
Total Split (s)	39.0	39.0	39.0	39.0	39.0		10.0	56.0		10.0	56.0	
Total Split (%)	37.1%	37.1%	37.1%	37.1%	37.1%		9.5%	53.3%		9.5%	53.3%	
Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		7.0	51.0		7.0	51.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)	11.0	11.0	11.0	11.0	11.0			16.0			16.0	
Flash Don't Walk (s)	23.0	23.0	23.0	23.0	23.0			31.0			31.0	
Pedestrian Calls (#/hr)	0	0	0	0	0			0			0	
Act Effct Green (s)	10.0		10.0	10.1	10.1		62.7	60.6		61.8	58.6	
Actuated g/C Ratio	0.13		0.13	0.13	0.13		0.79	0.77		0.78	0.74	
v/c Ratio	0.01		0.02	0.47	0.17		0.05	0.34		0.02	0.23	
Control Delay (s/veh)	29.0		0.2	43.5	15.5		3.0	5.4		3.0	5.4	
Queue Delay	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	29.0		0.2	43.5	15.5		3.0	5.4		3.0	5.4	
LOS	C		A	D	B		A	A		A	A	
Approach Delay (s/veh)		3.8			35.5			5.3			5.4	
Approach LOS		A			D			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 105			
Actuated Cycle Length: 78.9			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.47			
Intersection Signal Delay (s/veh): 7.3		Intersection LOS: A	
Intersection Capacity Utilization 60.1%		ICU Level of Service B	
Analysis Period (min) 15			

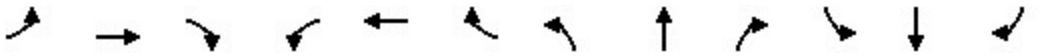
Splits and Phases: 2: Dorchester Road & Dawson Street





Lane Group	EBL	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1	7	65	26	25	637	11	609
v/c Ratio	0.01	0.02	0.47	0.17	0.05	0.34	0.02	0.23
Control Delay (s/veh)	29.0	0.2	43.5	15.5	3.0	5.4	3.0	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	29.0	0.2	43.5	15.5	3.0	5.4	3.0	5.4
Queue Length 50th (m)	0.1	0.0	8.5	0.1	0.7	13.4	0.3	8.0
Queue Length 95th (m)	1.6	0.0	22.4	7.1	2.9	40.1	1.6	23.5
Internal Link Dist (m)				84.0		256.1		430.1
Turn Bay Length (m)	30.0	35.0	20.0		180.0		30.0	
Base Capacity (vph)	467	416	468	452	509	1879	485	2651
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	0.00	0.02	0.14	0.06	0.05	0.34	0.02	0.23

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	6	59	1	23	23	559	21	10	545	9
Future Volume (vph)	1	0	6	59	1	23	23	559	21	10	545	9
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Total Lost time (s)	5.0		5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00		1.00	1.00	1.00		1.00	0.95		1.00	0.91	
Frpb, ped/bikes	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00		0.85	1.00	0.86		1.00	0.99		1.00	1.00	
Flt Protected	0.95		1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1381		614	1354	1009		1315	2446		1244	3565	
Flt Permitted	0.74		1.00	0.76	1.00		0.40	1.00		0.41	1.00	
Satd. Flow (perm)	1076		614	1079	1009		555	2446		537	3565	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	1	0	7	65	1	25	25	614	23	11	599	10
RTOR Reduction (vph)	0	0	6	0	22	0	0	1	0	0	1	0
Lane Group Flow (vph)	1	0	1	65	4	0	25	636	0	11	608	0
Confl. Peds. (#/hr)							1		3	3		1
Heavy Vehicles (%)	0%	0%	80%	2%	0%	14%	5%	3%	11%	11%	2%	13%
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	8.8		8.8	8.8	8.8		61.9	59.4		59.1	58.0	
Effective Green, g (s)	8.8		8.8	8.8	8.8		61.9	59.4		59.1	58.0	
Actuated g/C Ratio	0.11		0.11	0.11	0.11		0.75	0.72		0.72	0.70	
Clearance Time (s)	5.0		5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	115		65	115	107		440	1765		395	2512	
v/s Ratio Prot					0.00		c0.00	c0.26		0.00	0.17	
v/s Ratio Perm	0.00		0.00	c0.06			0.04			0.02		
v/c Ratio	0.01		0.01	0.57	0.03		0.06	0.36		0.03	0.24	
Uniform Delay, d1	32.9		32.9	34.9	32.9		2.6	4.3		3.3	4.3	
Progression Factor	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0		0.1	6.2	0.1		0.1	0.6		0.0	0.2	
Delay (s)	32.9		32.9	41.2	33.1		2.6	4.9		3.3	4.6	
Level of Service	C		C	D	C		A	A		A	A	
Approach Delay (s/veh)		32.9			38.9			4.8			4.5	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	7.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	82.3	Sum of lost time (s)	13.0
Intersection Capacity Utilization	60.1%	ICU Level of Service	B
Analysis Period (min)	15		

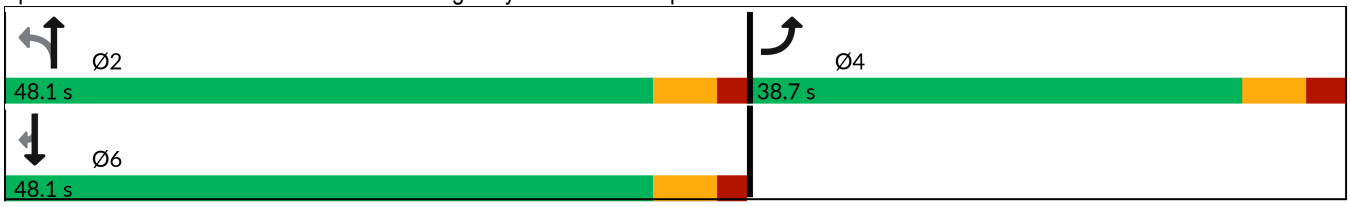
c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	19	0	171	584	321	274
Future Volume (vph)	19	0	171	584	321	274
Ideal Flow (vphpl)	1454	1301	1454	1579	1579	1301
Storage Length (m)	0.0	0.0	160.0			0.0
Storage Lanes	2	0	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt						0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	2271	0	1328	2913	2941	1063
Flt Permitted	0.950		0.536			
Satd. Flow (perm)	2271	0	749	2913	2941	1063
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						308
Link Speed (k/h)	50			50	50	
Link Distance (m)	166.4			377.5	280.1	
Travel Time (s)	12.0			27.2	20.2	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	18%	0%	4%	3%	2%	4%
Adj. Flow (vph)	21	0	192	656	361	308
Shared Lane Traffic (%)						
Lane Group Flow (vph)	21	0	192	656	361	308
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.2			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.60	1.40	1.26	1.26	1.60
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1		1	2	2	1
Detector Template	Left		Left	Thru	Thru	Right
Leading Detector (m)	2.0		2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0		2.0	0.6	0.6	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	8.0		10.0	10.0	10.0	10.0
Minimum Split (s)	38.7		24.1	24.1	24.1	24.1
Total Split (s)	38.7		48.1	48.1	48.1	48.1
Total Split (%)	44.6%		55.4%	55.4%	55.4%	55.4%
Maximum Green (s)	32.0		42.0	42.0	42.0	42.0
Yellow Time (s)	4.1		4.1	4.1	4.1	4.1
All-Red Time (s)	2.6		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7		6.1	6.1	6.1	6.1
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		Max	Max	Max	Max
Walk Time (s)	12.0					
Flash Don't Walk (s)	20.0					
Pedestrian Calls (#/hr)	0					
Act Effct Green (s)	8.0		58.8	58.8	58.8	58.8
Actuated g/C Ratio	0.13		0.93	0.93	0.93	0.93
v/c Ratio	0.07		0.27	0.24	0.13	0.30
Control Delay (s/veh)	25.0		3.0	1.6	1.4	1.3
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay (s/veh)	25.0		3.0	1.6	1.4	1.3
LOS	C		A	A	A	A
Approach Delay (s/veh)	25.0			1.9	1.3	
Approach LOS	C			A	A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 86.8			
Actuated Cycle Length: 63			
Natural Cycle: 65			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.30			
Intersection Signal Delay (s/veh): 2.0		Intersection LOS: A	
Intersection Capacity Utilization 47.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Dorchester Road & Highway 420 North Ramp



Lane Group	EBL	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	21	192	656	361	308
v/c Ratio	0.07	0.27	0.24	0.13	0.30
Control Delay (s/veh)	25.0	3.0	1.6	1.4	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	25.0	3.0	1.6	1.4	1.3
Queue Length 50th (m)	1.1	0.0	0.0	0.0	0.0
Queue Length 95th (m)	3.9	19.0	21.4	11.2	6.3
Internal Link Dist (m)	142.4		353.5	256.1	
Turn Bay Length (m)		160.0			
Base Capacity (vph)	1152	699	2720	2746	1013
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.02	0.27	0.24	0.13	0.30

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	19	0	171	584	321	274
Future Volume (vph)	19	0	171	584	321	274
Ideal Flow (vphpl)	1454	1301	1454	1579	1579	1301
Total Lost time (s)	6.7		6.1	6.1	6.1	6.1
Lane Util. Factor	0.97		1.00	0.95	0.95	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	0.95		0.95	1.00	1.00	1.00
Satd. Flow (prot)	2271		1328	2913	2941	1063
Flt Permitted	0.95		0.54	1.00	1.00	1.00
Satd. Flow (perm)	2271		750	2913	2941	1063
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	21	0	192	656	361	308
RTOR Reduction (vph)	0	0	0	0	0	65
Lane Group Flow (vph)	21	0	192	656	361	243
Heavy Vehicles (%)	18%	0%	4%	3%	2%	4%
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Actuated Green, G (s)	1.6		54.0	54.0	54.0	54.0
Effective Green, g (s)	1.6		54.0	54.0	54.0	54.0
Actuated g/C Ratio	0.02		0.79	0.79	0.79	0.79
Clearance Time (s)	6.7		6.1	6.1	6.1	6.1
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	53		592	2299	2321	839
v/s Ratio Prot	c0.01			0.23	0.12	
v/s Ratio Perm			c0.26			0.23
v/c Ratio	0.40		0.32	0.29	0.16	0.29
Uniform Delay, d1	32.9		2.0	2.0	1.7	2.0
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	4.8		1.5	0.3	0.1	0.9
Delay (s)	37.7		3.5	2.3	1.9	2.8
Level of Service	D		A	A	A	A
Approach Delay (s/veh)	37.7			2.5	2.3	
Approach LOS	D			A	A	

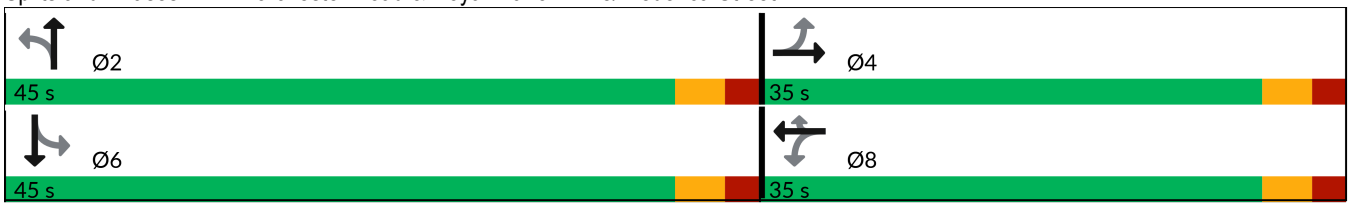
Intersection Summary			
HCM 2000 Control Delay (s/veh)	2.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	68.4	Sum of lost time (s)	12.8
Intersection Capacity Utilization	47.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	20	7	46	6	338	2	398	39	88	229	14
Future Volume (vph)	18	20	7	46	6	338	2	398	39	88	229	14
Ideal Flow (vphpl)	1433	1433	1433	1454	1579	1301	1454	1338	1338	1454	1338	1338
Storage Length (m)	0.0		0.0	45.0		0.0	95.0		0.0	165.0		0.0
Storage Lanes	0		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor								1.00		1.00		
Frt		0.979				0.850		0.987			0.991	
Flt Protected		0.981		0.950			0.950			0.950		
Satd. Flow (prot)	0	1251	0	1354	1579	1074	1381	2427	0	1368	2462	0
Flt Permitted		0.899		0.724			0.582			0.470		
Satd. Flow (perm)	0	1146	0	1032	1579	1074	846	2427	0	676	2462	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8				336		18			11	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		47.8			201.0			125.1			377.5	
Travel Time (s)		3.4			14.5			9.0			27.2	
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	6%	17%	0%	2%	0%	3%	0%	3%	6%	1%	2%	8%
Adj. Flow (vph)	20	23	8	52	7	384	2	452	44	100	260	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	51	0	52	7	384	2	496	0	100	276	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.42	1.42	1.42	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	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	5.0	
Minimum Split (s)	32.0	32.0		32.0	32.0	32.0	41.0	41.0		41.0	41.0	
Total Split (s)	35.0	35.0		35.0	35.0	35.0	45.0	45.0		45.0	45.0	
Total Split (%)	43.8%	43.8%		43.8%	43.8%	43.8%	56.3%	56.3%		56.3%	56.3%	
Maximum Green (s)	30.0	30.0		30.0	30.0	30.0	40.0	40.0		40.0	40.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	Max	Max		Max	Max	
Walk Time (s)	9.0	9.0		9.0	9.0	9.0	12.0	12.0		12.0	12.0	
Flash Don't Walk (s)	18.0	18.0		18.0	18.0	18.0	24.0	24.0		24.0	24.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	
Act Effct Green (s)		12.2		12.2	12.2	12.2	40.6	40.6		40.6	40.6	
Actuated g/C Ratio		0.19		0.19	0.19	0.19	0.64	0.64		0.64	0.64	
v/c Ratio		0.22		0.26	0.02	0.80	0.00	0.32		0.23	0.17	
Control Delay (s/veh)		19.4		23.1	18.0	18.0	7.5	7.1		9.1	6.3	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay (s/veh)		19.4		23.1	18.0	18.0	7.5	7.1		9.1	6.3	
LOS		B		C	B	B	A	A		A	A	
Approach Delay (s/veh)		19.4			18.6			7.1			7.0	
Approach LOS		B			B			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 63			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay (s/veh): 11.2		Intersection LOS: B	
Intersection Capacity Utilization 77.2%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 4: Dorchester Road & Royal Manor Drive/Frederica Street



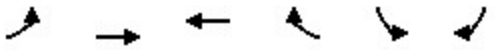
Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	51	52	7	384	2	496	100	276
v/c Ratio	0.22	0.26	0.02	0.80	0.00	0.32	0.23	0.17
Control Delay (s/veh)	19.4	23.1	18.0	18.0	7.5	7.1	9.1	6.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	19.4	23.1	18.0	18.0	7.5	7.1	9.1	6.3
Queue Length 50th (m)	4.4	5.4	0.7	4.9	0.1	9.1	3.4	4.5
Queue Length 95th (m)	11.5	12.8	3.3	28.9	1.2	32.7	18.6	17.7
Internal Link Dist (m)	23.8		177.0			101.1		353.5
Turn Bay Length (m)		45.0			95.0		165.0	
Base Capacity (vph)	558	499	763	692	545	1571	436	1591
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	0.10	0.01	0.55	0.00	0.32	0.23	0.17

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	20	7	46	6	338	2	398	39	88	229	14
Future Volume (vph)	18	20	7	46	6	338	2	398	39	88	229	14
Ideal Flow (vphpl)	1433	1433	1433	1454	1579	1301	1454	1338	1338	1454	1338	1338
Total Lost time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt		0.98		1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected		0.98		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1250		1354	1579	1074	1381	2426		1367	2462	
Flt Permitted		0.90		0.72	1.00	1.00	0.58	1.00		0.47	1.00	
Satd. Flow (perm)		1146		1032	1579	1074	846	2426		677	2462	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	20	23	8	52	7	384	2	452	44	100	260	16
RTOR Reduction (vph)	0	6	0	0	0	271	0	6	0	0	4	0
Lane Group Flow (vph)	0	45	0	52	7	113	2	490	0	100	272	0
Confl. Peds. (#/hr)									1	1		
Heavy Vehicles (%)	6%	17%	0%	2%	0%	3%	0%	3%	6%	1%	2%	8%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		12.2		12.2	12.2	12.2	40.6	40.6		40.6	40.6	
Effective Green, g (s)		12.2		12.2	12.2	12.2	40.6	40.6		40.6	40.6	
Actuated g/C Ratio		0.19		0.19	0.19	0.19	0.65	0.65		0.65	0.65	
Clearance Time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		222		200	306	208	546	1568		437	1591	
v/s Ratio Prot					0.00			c0.20			0.11	
v/s Ratio Perm		0.04		0.05		c0.11	0.00			0.15		
v/c Ratio		0.20		0.26	0.02	0.54	0.00	0.31		0.23	0.17	
Uniform Delay, d1		21.2		21.5	20.5	22.8	3.9	4.9		4.6	4.4	
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.4		0.7	0.0	2.9	0.0	0.5		1.2	0.2	
Delay (s)		21.7		22.2	20.5	25.7	3.9	5.4		5.8	4.6	
Level of Service		C		C	C	C	A	A		A	A	
Approach Delay (s/veh)		21.7			25.2			5.4			5.0	
Approach LOS		C			C			A			A	

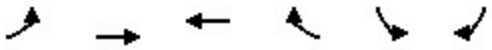
Intersection Summary			
HCM 2000 Control Delay (s/veh)	12.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	62.8	Sum of lost time (s)	10.0
Intersection Capacity Utilization	77.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	58	87	131	2	83	265
Future Volume (vph)	58	87	131	2	83	265
Ideal Flow (vphpl)	1454	1579	1338	1338	1454	1301
Storage Length (m)	85.0			0.0	40.0	0.0
Storage Lanes	1			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.998			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1303	2885	2418	0	1341	1084
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1303	2885	2418	0	1341	1084
Link Speed (k/h)		50	50		50	
Link Distance (m)		201.0	149.3		70.1	
Travel Time (s)		14.5	10.7		5.0	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	6%	4%	5%	0%	3%	2%
Adj. Flow (vph)	69	104	156	2	99	315
Shared Lane Traffic (%)						
Lane Group Flow (vph)	69	104	158	0	99	315
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.26	1.55	1.55	1.40	1.60
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 35.9%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	58	87	131	2	83	265
Future Volume (Veh/h)	58	87	131	2	83	265
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	69	104	156	2	99	315
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		201				
pX, platoon unblocked						
vC, conflicting volume	158				347	79
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	158				347	79
tC, single (s)	4.2				6.9	6.9
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.3
p0 queue free %	95				83	67
cM capacity (veh/h)	1390				590	965

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1	SB 2
Volume Total	69	52	52	104	54	99	315
Volume Left	69	0	0	0	0	99	0
Volume Right	0	0	0	0	2	0	315
cSH	1390	1700	1700	1700	1700	590	965
Volume to Capacity	0.05	0.03	0.03	0.06	0.03	0.17	0.33
Queue Length 95th (m)	1.3	0.0	0.0	0.0	0.0	4.8	11.4
Control Delay (s/veh)	7.7	0.0	0.0	0.0	0.0	12.3	10.5
Lane LOS	A					B	B
Approach Delay (s/veh)	3.1			0.0		11.0	
Approach LOS						B	

Intersection Summary			
Average Delay	6.8		
Intersection Capacity Utilization	35.9%	ICU Level of Service	A
Analysis Period (min)	15		

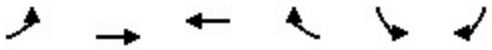
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	655	0	0	416	75	0
Future Volume (vph)	655	0	0	416	75	0
Ideal Flow (vphpl)	1579	1301	1454	1579	1454	1301
Lane Util. Factor	0.95	1.00	1.00	0.91	1.00	1.00
Frt						
Flt Protected					0.950	
Satd. Flow (prot)	2941	0	0	4105	1316	0
Flt Permitted					0.950	
Satd. Flow (perm)	2941	0	0	4105	1316	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	266.5			178.9	263.7	
Travel Time (s)	19.2			12.9	19.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	0%	5%	5%	2%
Adj. Flow (vph)	712	0	0	452	82	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	712	0	0	452	82	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.26	1.60	1.40	1.26	1.40	1.60
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 42.5%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	655	0	0	416	75	0
Future Volume (Veh/h)	655	0	0	416	75	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	712	0	0	452	82	0
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			712		863	356
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			712		863	356
tC, single (s)			4.1		6.9	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			100		72	100
cM capacity (veh/h)			897		288	640

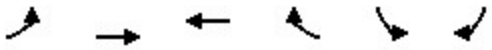
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	356	356	151	151	151	82
Volume Left	0	0	0	0	0	82
Volume Right	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	288
Volume to Capacity	0.21	0.21	0.09	0.09	0.09	0.28
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	9.1
Control Delay (s/veh)	0.0	0.0	0.0	0.0	0.0	22.4
Lane LOS						C
Approach Delay (s/veh)	0.0		0.0			22.4
Approach LOS						C

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	42.5%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	886	413	0	86	183
Future Volume (vph)	0	886	413	0	86	183
Ideal Flow (vphpl)	1454	1579	1579	1301	1433	1433
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	2941	2857	0	1309	1088
Flt Permitted					0.950	
Satd. Flow (perm)	0	2941	2857	0	1309	1088
Link Speed (k/h)		50	50		50	
Link Distance (m)		152.8	266.5		231.4	
Travel Time (s)		11.0	19.2		16.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	5%	3%	4%	12%
Adj. Flow (vph)	0	963	449	0	93	199
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	963	449	0	93	199
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.26	1.26	1.60	1.42	1.42
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

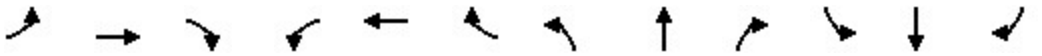
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 42.5%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	886	413	0	86	183
Future Volume (Veh/h)	0	886	413	0	86	183
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	963	449	0	93	199
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	449				931	225
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	449				931	225
tC, single (s)	4.1				6.9	7.1
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.4
p0 queue free %	100				65	73
cM capacity (veh/h)	1122				262	749

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	482	482	225	225	93	199
Volume Left	0	0	0	0	93	0
Volume Right	0	0	0	0	0	199
cSH	1700	1700	1700	1700	262	749
Volume to Capacity	0.28	0.28	0.13	0.13	0.35	0.27
Queue Length 95th (m)	0.0	0.0	0.0	0.0	12.3	8.6
Control Delay (s/veh)	0.0	0.0	0.0	0.0	26.1	11.5
Lane LOS					D	B
Approach Delay (s/veh)	0.0		0.0		16.2	
Approach LOS					C	

Intersection Summary			
Average Delay	2.8		
Intersection Capacity Utilization	42.5%	ICU Level of Service	A
Analysis Period (min)	15		

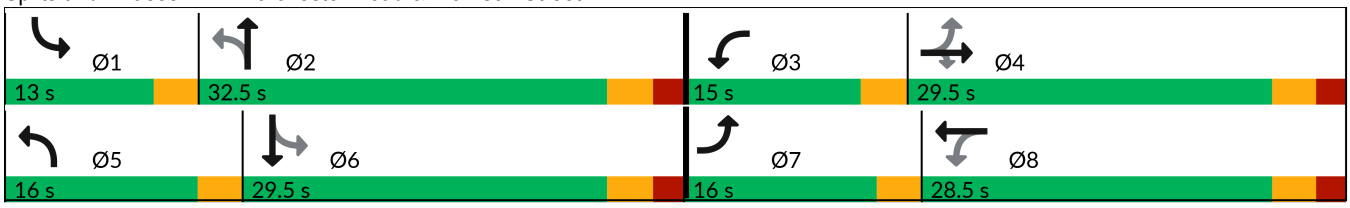


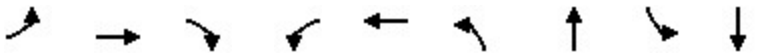
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	246	152	253	294	199	172	292	399	154	174	413	185
Future Volume (vph)	246	152	253	294	199	172	292	399	154	174	413	185
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Storage Length (m)	70.0		0.0	105.0		125.0	90.0		0.0	95.0		41.0
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00		0.98	1.00	0.99		1.00	0.99		1.00	0.99	
Frt			0.850		0.930			0.958			0.954	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1328	1504	1063	1368	2298	0	1341	2397	0	1381	2316	0
Flt Permitted	0.338			0.596			0.272			0.393		
Satd. Flow (perm)	471	1504	1044	854	2298	0	383	2397	0	569	2316	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			272		185			65			79	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		205.0			291.8			454.1			179.9	
Travel Time (s)		14.8			21.0			32.7			13.0	
Confl. Peds. (#/hr)	6		7	7		6	6		11	11		6
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	4%	5%	4%	1%	3%	1%	3%	1%	1%	0%	2%	9%
Adj. Flow (vph)	265	163	272	316	214	185	314	429	166	187	444	199
Shared Lane Traffic (%)												
Lane Group Flow (vph)	265	163	272	316	399	0	314	595	0	187	643	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	9.5	35.0	35.0	9.5	35.0		9.5	35.0		9.5	35.0	
Total Split (s)	16.0	29.5	29.5	15.0	28.5		16.0	32.5		13.0	29.5	
Total Split (%)	17.8%	32.8%	32.8%	16.7%	31.7%		17.8%	36.1%		14.4%	32.8%	
Maximum Green (s)	13.0	24.5	24.5	12.0	23.5		13.0	27.5		10.0	24.5	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)		10.0	10.0		10.0			10.0			10.0	
Flash Don't Walk (s)		20.0	20.0		20.0			20.0			20.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	30.1	15.3	15.3	28.5	14.5		48.1	33.8		41.4	30.1	
Actuated g/C Ratio	0.35	0.18	0.18	0.33	0.17		0.56	0.39		0.48	0.35	
v/c Ratio	0.91	0.62	0.67	0.90	0.74		0.88	0.61		0.52	0.75	
Control Delay (s/veh)	59.0	43.0	12.8	53.1	26.8		41.7	22.8		17.2	29.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	59.0	43.0	12.8	53.1	26.8		41.7	22.8		17.2	29.2	
LOS	E	D	B	D	C		D	C		B	C	
Approach Delay (s/veh)		37.3			38.4			29.3			26.5	
Approach LOS		D			D			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 86.5			
Natural Cycle: 100			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.91			
Intersection Signal Delay (s/veh): 32.4		Intersection LOS: C	
Intersection Capacity Utilization 96.5%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 1: Dorchester Road & Morrison Street





Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	265	163	272	316	399	314	595	187	643
v/c Ratio	0.91	0.62	0.67	0.90	0.74	0.88	0.61	0.52	0.75
Control Delay (s/veh)	59.0	43.0	12.8	53.1	26.8	41.7	22.8	17.2	29.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	59.0	43.0	12.8	53.1	26.8	41.7	22.8	17.2	29.2
Queue Length 50th (m)	35.4	26.4	0.0	43.9	18.4	29.0	38.0	15.3	44.7
Queue Length 95th (m)	#67.3	46.3	23.0	#86.4	34.5	#90.5	64.3	32.9	#78.0
Internal Link Dist (m)		181.0			267.8		430.1		155.9
Turn Bay Length (m)	70.0			105.0		90.0		95.0	
Base Capacity (vph)	294	427	491	353	760	357	975	371	857
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.90	0.38	0.55	0.90	0.53	0.88	0.61	0.50	0.75

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	246	152	253	294	199	172	292	399	154	174	413	185
Future Volume (vph)	246	152	253	294	199	172	292	399	154	174	413	185
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Total Lost time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.93		1.00	0.96		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1327	1504	1044	1364	2299		1341	2397		1379	2315	
Flt Permitted	0.34	1.00	1.00	0.60	1.00		0.27	1.00		0.39	1.00	
Satd. Flow (perm)	472	1504	1044	856	2299		383	2397		571	2315	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	265	163	272	316	214	185	314	429	166	187	444	199
RTOR Reduction (vph)	0	0	224	0	154	0	0	40	0	0	51	0
Lane Group Flow (vph)	265	163	48	316	245	0	314	555	0	187	592	0
Confl. Peds. (#/hr)	6		7	7		6	6		11	11		6
Heavy Vehicles (%)	4%	5%	4%	1%	3%	1%	3%	1%	1%	0%	2%	9%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	28.1	15.3	15.3	26.5	14.5		46.1	33.8		39.4	30.1	
Effective Green, g (s)	28.1	15.3	15.3	26.5	14.5		46.1	33.8		39.4	30.1	
Actuated g/C Ratio	0.33	0.18	0.18	0.31	0.17		0.53	0.39		0.46	0.35	
Clearance Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	280	266	184	333	385		348	937		347	806	
v/s Ratio Prot	c0.14	0.11		0.13	0.11		c0.14	0.23		0.06	0.26	
v/s Ratio Perm	c0.17		0.05	0.16			c0.34			0.19		
v/c Ratio	0.95	0.61	0.26	0.95	0.64		0.90	0.59		0.54	0.73	
Uniform Delay, d1	25.6	32.8	30.7	28.0	33.5		13.8	20.8		14.8	24.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	39.1	4.1	0.8	35.6	3.4		25.4	2.8		1.6	5.9	
Delay (s)	64.7	37.0	31.4	63.6	36.9		39.2	23.6		16.4	30.5	
Level of Service	E	D	C	E	D		D	C		B	C	
Approach Delay (s/veh)		45.3			48.7			29.0			27.3	
Approach LOS		D			D			C			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	36.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	86.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	96.5%	ICU Level of Service	F
Analysis Period (min)	15		

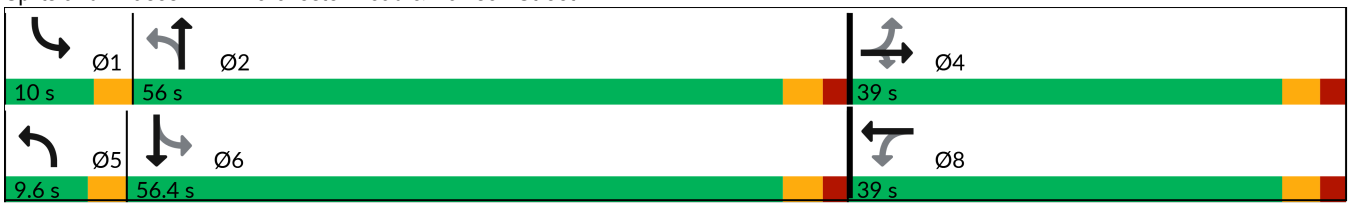
c Critical Lane Group

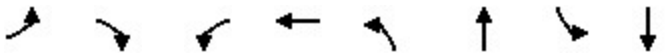
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	0	36	57	1	26	7	876	52	40	965	6
Future Volume (vph)	12	0	36	57	1	26	7	876	52	40	965	6
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Storage Length (m)	30.0		35.0	20.0		0.0	180.0		0.0	30.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.91	0.91
Ped Bike Factor			0.99	1.00			1.00	1.00		1.00	1.00	
Frt			0.850		0.855			0.992			0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1381	1579	1015	1381	1102	0	1381	2495	0	1341	3577	0
Flt Permitted	0.739			0.757			0.277			0.266		
Satd. Flow (perm)	1075	1579	1001	1099	1102	0	402	2495	0	375	3577	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			181		27			8			1	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		106.7			108.0			280.1			454.1	
Travel Time (s)		7.7			7.8			20.2			32.7	
Confl. Peds. (#/hr)			2	2			5		2	2		5
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	9%	0%	0%	4%	0%	1%	0%	3%	2%	0%
Adj. Flow (vph)	12	0	37	58	1	27	7	894	53	41	985	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	0	37	58	28	0	7	947	0	41	991	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	1.0		5.0	5.0	
Minimum Split (s)	39.0	39.0	39.0	39.0	39.0		9.5	52.0		9.5	52.0	
Total Split (s)	39.0	39.0	39.0	39.0	39.0		9.6	56.0		10.0	56.4	
Total Split (%)	37.1%	37.1%	37.1%	37.1%	37.1%		9.1%	53.3%		9.5%	53.7%	
Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		6.6	51.0		7.0	51.4	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)	11.0	11.0	11.0	11.0	11.0			16.0			16.0	
Flash Don't Walk (s)	23.0	23.0	23.0	23.0	23.0			31.0			31.0	
Pedestrian Calls (#/hr)	0	0	0	0	0			0			0	
Act Effct Green (s)	9.5		9.5	9.5	9.5		61.7	57.5		63.6	61.3	
Actuated g/C Ratio	0.12		0.12	0.12	0.12		0.78	0.73		0.80	0.77	
v/c Ratio	0.09		0.13	0.44	0.18		0.02	0.52		0.11	0.36	
Control Delay (s/veh)	32.4		1.0	43.3	15.5		2.7	8.8		3.1	4.9	
Queue Delay	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	32.4		1.0	43.3	15.5		2.7	8.8		3.1	4.9	
LOS	C		A	D	B		A	A		A	A	
Approach Delay (s/veh)		8.7			34.2			8.7			4.8	
Approach LOS		A			C			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 105			
Actuated Cycle Length: 79.1			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.52			
Intersection Signal Delay (s/veh): 7.9		Intersection LOS: A	
Intersection Capacity Utilization 62.6%		ICU Level of Service B	
Analysis Period (min) 15			

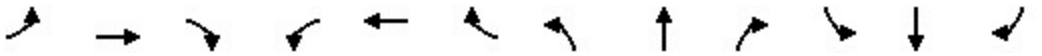
Splits and Phases: 2: Dorchester Road & Dawson Street





Lane Group	EBL	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	12	37	58	28	7	947	41	991
v/c Ratio	0.09	0.13	0.44	0.18	0.02	0.52	0.11	0.36
Control Delay (s/veh)	32.4	1.0	43.3	15.5	2.7	8.8	3.1	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	32.4	1.0	43.3	15.5	2.7	8.8	3.1	4.9
Queue Length 50th (m)	1.7	0.0	8.7	0.2	0.3	39.7	1.1	15.0
Queue Length 95th (m)	6.6	0.0	20.5	7.6	1.2	69.1	3.8	39.2
Internal Link Dist (m)				84.0		256.1		430.1
Turn Bay Length (m)	30.0	35.0	20.0		180.0		30.0	
Base Capacity (vph)	463	534	474	490	398	1817	387	2774
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	0.03	0.07	0.12	0.06	0.02	0.52	0.11	0.36

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	0	36	57	1	26	7	876	52	40	965	6
Future Volume (vph)	12	0	36	57	1	26	7	876	52	40	965	6
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Total Lost time (s)	5.0		5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00		1.00	1.00	1.00		1.00	0.95		1.00	0.91	
Frpb, ped/bikes	1.00		0.99	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00		0.85	1.00	0.86		1.00	0.99		1.00	1.00	
Flt Protected	0.95		1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1381		1001	1379	1102		1381	2494		1341	3578	
Flt Permitted	0.74		1.00	0.76	1.00		0.28	1.00		0.27	1.00	
Satd. Flow (perm)	1074		1001	1099	1102		403	2494		376	3578	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	12	0	37	58	1	27	7	894	53	41	985	6
RTOR Reduction (vph)	0	0	33	0	24	0	0	2	0	0	0	0
Lane Group Flow (vph)	12	0	4	58	4	0	7	945	0	41	991	0
Confl. Peds. (#/hr)			2	2			5		2	2		5
Heavy Vehicles (%)	0%	0%	9%	0%	0%	4%	0%	1%	0%	3%	2%	0%
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	8.3		8.3	8.3	8.3		58.7	57.6		63.9	60.2	
Effective Green, g (s)	8.3		8.3	8.3	8.3		58.7	57.6		63.9	60.2	
Actuated g/C Ratio	0.10		0.10	0.10	0.10		0.71	0.70		0.77	0.73	
Clearance Time (s)	5.0		5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	107		100	110	110		299	1739		334	2607	
v/s Ratio Prot					0.00		0.00	c0.38		c0.01	0.28	
v/s Ratio Perm	0.01		0.00	c0.05			0.02			0.09		
v/c Ratio	0.11		0.04	0.53	0.03		0.02	0.54		0.12	0.38	
Uniform Delay, d1	33.8		33.5	35.3	33.5		3.5	6.1		2.5	4.2	
Progression Factor	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5		0.2	4.5	0.1		0.0	1.2		0.2	0.4	
Delay (s)	34.3		33.7	39.8	33.7		3.5	7.3		2.7	4.6	
Level of Service	C		C	D	C		A	A		A	A	
Approach Delay (s/veh)		33.8			37.8			7.3			4.5	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	7.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	82.6	Sum of lost time (s)	13.0
Intersection Capacity Utilization	62.6%	ICU Level of Service	B
Analysis Period (min)	15		

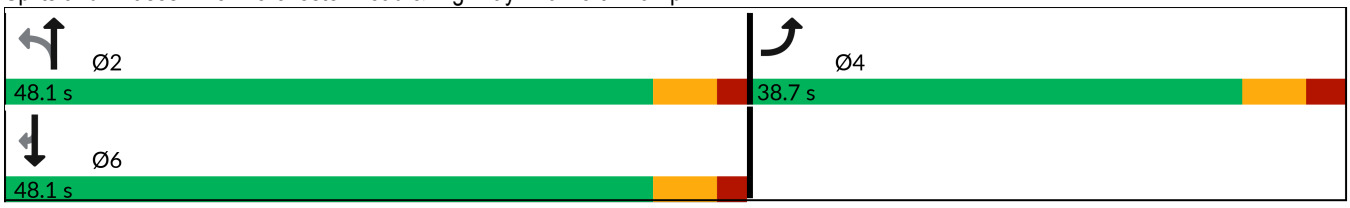
c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	43	0	226	920	541	526
Future Volume (vph)	43	0	226	920	541	526
Ideal Flow (vphpl)	1454	1301	1454	1579	1579	1301
Storage Length (m)	0.0	0.0	160.0			0.0
Storage Lanes	2	0	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor	1.00					
Frt						0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	2602	0	1341	2970	2941	1074
Flt Permitted	0.950		0.435			
Satd. Flow (perm)	2598	0	614	2970	2941	1074
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						560
Link Speed (k/h)	50			50	50	
Link Distance (m)	166.4			377.5	280.1	
Travel Time (s)	12.0			27.2	20.2	
Confl. Peds. (#/hr)	1					
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	3%	3%	3%	1%	2%	3%
Adj. Flow (vph)	46	0	240	979	576	560
Shared Lane Traffic (%)						
Lane Group Flow (vph)	46	0	240	979	576	560
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.2			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.60	1.40	1.26	1.26	1.60
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1		1	2	2	1
Detector Template	Left		Left	Thru	Thru	Right
Leading Detector (m)	2.0		2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0		2.0	0.6	0.6	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	8.0		10.0	10.0	10.0	10.0
Minimum Split (s)	38.7		24.1	24.1	24.1	24.1
Total Split (s)	38.7		48.1	48.1	48.1	48.1
Total Split (%)	44.6%		55.4%	55.4%	55.4%	55.4%
Maximum Green (s)	32.0		42.0	42.0	42.0	42.0
Yellow Time (s)	4.1		4.1	4.1	4.1	4.1
All-Red Time (s)	2.6		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7		6.1	6.1	6.1	6.1
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		Max	Max	Max	Max
Walk Time (s)	12.0					
Flash Don't Walk (s)	20.0					
Pedestrian Calls (#/hr)	0					
Act Effct Green (s)	8.0		51.6	51.6	51.6	51.6
Actuated g/C Ratio	0.13		0.81	0.81	0.81	0.81
v/c Ratio	0.14		0.48	0.41	0.24	0.57
Control Delay (s/veh)	26.0		9.2	4.3	3.4	3.1
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay (s/veh)	26.0		9.2	4.3	3.4	3.1
LOS	C		A	A	A	A
Approach Delay (s/veh)	26.0			5.3	3.3	
Approach LOS	C			A	A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 86.8			
Actuated Cycle Length: 64			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay (s/veh): 4.7		Intersection LOS: A	
Intersection Capacity Utilization 74.1%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Dorchester Road & Highway 420 North Ramp



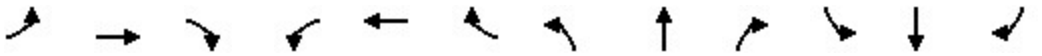
Lane Group	EBL	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	46	240	979	576	560
v/c Ratio	0.14	0.48	0.41	0.24	0.57
Control Delay (s/veh)	26.0	9.2	4.3	3.4	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	26.0	9.2	4.3	3.4	3.1
Queue Length 50th (m)	2.8	13.0	25.3	12.4	0.0
Queue Length 95th (m)	6.8	35.3	36.5	18.6	8.6
Internal Link Dist (m)	142.4		353.5	256.1	
Turn Bay Length (m)		160.0			
Base Capacity (vph)	1302	495	2395	2371	974
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.04	0.48	0.41	0.24	0.57

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	43	0	226	920	541	526
Future Volume (vph)	43	0	226	920	541	526
Ideal Flow (vphpl)	1454	1301	1454	1579	1579	1301
Total Lost time (s)	6.7		6.1	6.1	6.1	6.1
Lane Util. Factor	0.97		1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	0.95		0.95	1.00	1.00	1.00
Satd. Flow (prot)	2602		1341	2970	2941	1074
Flt Permitted	0.95		0.44	1.00	1.00	1.00
Satd. Flow (perm)	2602		614	2970	2941	1074
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	46	0	240	979	576	560
RTOR Reduction (vph)	0	0	0	0	0	148
Lane Group Flow (vph)	46	0	240	979	576	412
Confl. Peds. (#/hr)	1					
Heavy Vehicles (%)	3%	3%	3%	1%	2%	3%
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Actuated Green, G (s)	4.8		49.1	49.1	49.1	49.1
Effective Green, g (s)	4.8		49.1	49.1	49.1	49.1
Actuated g/C Ratio	0.07		0.74	0.74	0.74	0.74
Clearance Time (s)	6.7		6.1	6.1	6.1	6.1
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	187		451	2186	2164	790
v/s Ratio Prot	c0.02			0.33	0.20	
v/s Ratio Perm			c0.39			0.38
v/c Ratio	0.25		0.53	0.45	0.27	0.52
Uniform Delay, d1	29.2		3.8	3.5	2.9	3.8
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7		4.4	0.7	0.3	2.5
Delay (s)	29.9		8.3	4.1	3.2	6.2
Level of Service	C		A	A	A	A
Approach Delay (s/veh)	29.9			4.9	4.7	
Approach LOS	C			A	A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	5.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	66.7	Sum of lost time (s)	12.8
Intersection Capacity Utilization	74.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

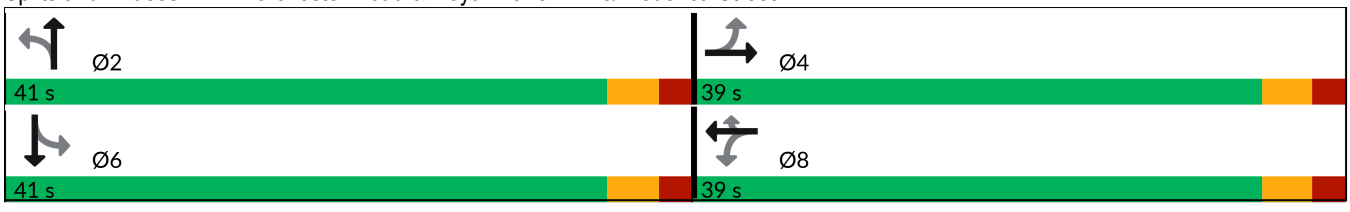


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	12	8	109	29	470	6	628	58	79	457	19
Future Volume (vph)	17	12	8	109	29	470	6	628	58	79	457	19
Ideal Flow (vphpl)	1433	1433	1433	1454	1579	1301	1454	1338	1338	1454	1338	1338
Storage Length (m)	0.0		0.0	45.0		0.0	95.0		0.0	165.0		0.0
Storage Lanes	0		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		1.00		1.00				1.00		1.00		
Frt		0.970				0.850		0.987			0.994	
Flt Protected		0.978		0.950			0.950			0.950		
Satd. Flow (prot)	0	1321	0	1303	1423	1095	1381	2455	0	1368	2474	0
Flt Permitted		0.915		0.731			0.434			0.306		
Satd. Flow (perm)	0	1236	0	1000	1423	1095	631	2455	0	440	2474	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9				147		16			7	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		47.8			201.0			125.1			377.5	
Travel Time (s)		3.4			14.5			9.0			27.2	
Confl. Peds. (#/hr)			3	3					5	5		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	8%	0%	6%	11%	1%	0%	2%	3%	1%	2%	6%
Adj. Flow (vph)	18	13	9	117	31	505	6	675	62	85	491	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	40	0	117	31	505	6	737	0	85	511	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.42	1.42	1.42	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	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	5.0	
Minimum Split (s)	32.0	32.0		32.0	32.0	32.0	41.0	41.0		41.0	41.0	
Total Split (s)	39.0	39.0		39.0	39.0	39.0	41.0	41.0		41.0	41.0	
Total Split (%)	48.8%	48.8%		48.8%	48.8%	48.8%	51.3%	51.3%		51.3%	51.3%	
Maximum Green (s)	34.0	34.0		34.0	34.0	34.0	36.0	36.0		36.0	36.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	Max	Max		Max	Max	
Walk Time (s)	9.0	9.0		9.0	9.0	9.0	12.0	12.0		12.0	12.0	
Flash Don't Walk (s)	18.0	18.0		18.0	18.0	18.0	24.0	24.0		24.0	24.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	
Act Effct Green (s)		31.6		31.6	31.6	31.6	36.1	36.1		36.1	36.1	
Actuated g/C Ratio		0.41		0.41	0.41	0.41	0.46	0.46		0.46	0.46	
v/c Ratio		0.08		0.29	0.05	0.95	0.02	0.64		0.42	0.44	
Control Delay (s/veh)		11.9		17.5	14.0	46.4	12.7	19.4		23.1	16.0	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay (s/veh)		11.9		17.5	14.0	46.4	12.7	19.4		23.1	16.0	
LOS		B		B	B	D	B	B		C	B	
Approach Delay (s/veh)		11.9			39.7			19.3			17.0	
Approach LOS		B			D			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 77.8			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.95			
Intersection Signal Delay (s/veh): 25.0		Intersection LOS: C	
Intersection Capacity Utilization 90.9%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 4: Dorchester Road & Royal Manor Drive/Frederica Street



Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	40	117	31	505	6	737	85	511
v/c Ratio	0.08	0.29	0.05	0.95	0.02	0.64	0.42	0.44
Control Delay (s/veh)	11.9	17.5	14.0	46.4	12.7	19.4	23.1	16.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	11.9	17.5	14.0	46.4	12.7	19.4	23.1	16.0
Queue Length 50th (m)	2.8	11.8	2.8	55.5	0.5	45.6	8.9	28.2
Queue Length 95th (m)	8.6	23.9	7.8	#122.3	2.7	65.5	22.9	41.5
Internal Link Dist (m)	23.8		177.0			101.1		353.5
Turn Bay Length (m)		45.0			95.0		165.0	
Base Capacity (vph)	547	439	624	562	292	1149	204	1153
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.27	0.05	0.90	0.02	0.64	0.42	0.44

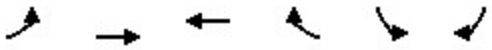
Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	12	8	109	29	470	6	628	58	79	457	19
Future Volume (vph)	17	12	8	109	29	470	6	628	58	79	457	19
Ideal Flow (vphpl)	1433	1433	1433	1454	1579	1301	1454	1338	1338	1454	1338	1338
Total Lost time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt		0.97		1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected		0.98		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1320		1300	1423	1095	1381	2456		1366	2474	
Flt Permitted		0.91		0.73	1.00	1.00	0.43	1.00		0.31	1.00	
Satd. Flow (perm)		1234		1000	1423	1095	631	2456		439	2474	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	18	13	9	117	31	505	6	675	62	85	491	20
RTOR Reduction (vph)	0	5	0	0	0	87	0	9	0	0	4	0
Lane Group Flow (vph)	0	35	0	117	31	418	6	728	0	85	507	0
Confl. Peds. (#/hr)			3	3					5	5		
Heavy Vehicles (%)	0%	8%	0%	6%	11%	1%	0%	2%	3%	1%	2%	6%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		31.6		31.6	31.6	31.6	36.1	36.1		36.1	36.1	
Effective Green, g (s)		31.6		31.6	31.6	31.6	36.1	36.1		36.1	36.1	
Actuated g/C Ratio		0.41		0.41	0.41	0.41	0.46	0.46		0.46	0.46	
Clearance Time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		501		406	578	445	293	1141		203	1149	
v/s Ratio Prot					0.02			c0.30			0.21	
v/s Ratio Perm		0.03		0.12		c0.38	0.01			0.19		
v/c Ratio		0.07		0.29	0.05	0.94	0.02	0.64		0.42	0.44	
Uniform Delay, d1		14.1		15.5	14.0	22.1	11.2	15.8		13.8	14.0	
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1		0.4	0.0	27.6	0.1	2.7		6.2	1.2	
Delay (s)		14.1		15.9	14.0	49.7	11.4	18.6		20.1	15.2	
Level of Service		B		B	B	D	B	B		C	B	
Approach Delay (s/veh)		14.1			41.9			18.5			15.9	
Approach LOS		B			D			B			B	

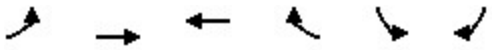
Intersection Summary			
HCM 2000 Control Delay (s/veh)	25.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	77.7	Sum of lost time (s)	10.0
Intersection Capacity Utilization	90.9%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	47	102	180	1	151	428
Future Volume (vph)	47	102	180	1	151	428
Ideal Flow (vphpl)	1454	1579	1338	1338	1454	1301
Storage Length (m)	85.0			0.0	0.0	40.0
Storage Lanes	1			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1381	2913	2515	0	1341	1074
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1381	2913	2515	0	1341	1074
Link Speed (k/h)		50	50		50	
Link Distance (m)		201.0	149.3		70.1	
Travel Time (s)		14.5	10.7		5.0	
Confl. Peds. (#/hr)	1			1		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	3%	1%	0%	3%	3%
Adj. Flow (vph)	52	113	200	1	168	476
Shared Lane Traffic (%)						
Lane Group Flow (vph)	52	113	201	0	168	476
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.26	1.55	1.55	1.40	1.60
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 52.7%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	47	102	180	1	151	428
Future Volume (Veh/h)	47	102	180	1	151	428
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)	52	113	200	1	168	476
Pedestrians					1	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						5
Median type		None	None			
Median storage veh)						
Upstream signal (m)		201				
pX, platoon unblocked						
vC, conflicting volume	202				362	102
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	202				362	102
tC, single (s)	4.1				6.9	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				71	49
cM capacity (veh/h)	1381				584	930

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	52	57	57	133	68	644
Volume Left	52	0	0	0	0	168
Volume Right	0	0	0	0	1	476
cSH	1381	1700	1700	1700	1700	1258
Volume to Capacity	0.04	0.03	0.03	0.08	0.04	0.51
Queue Length 95th (m)	0.9	0.0	0.0	0.0	0.0	24.2
Control Delay (s/veh)	7.7	0.0	0.0	0.0	0.0	13.1
Lane LOS	A					B
Approach Delay (s/veh)	2.4			0.0		13.1
Approach LOS						B

Intersection Summary			
Average Delay	8.7		
Intersection Capacity Utilization	52.7%	ICU Level of Service	A
Analysis Period (min)	15		

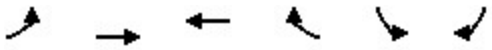
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	702	0	0	939	142	0
Future Volume (vph)	702	0	0	939	142	0
Ideal Flow (vphpl)	1579	1301	1454	1579	1454	1301
Lane Util. Factor	0.95	1.00	1.00	0.91	1.00	1.00
Frt						
Flt Protected					0.950	
Satd. Flow (prot)	2970	0	0	4268	1328	0
Flt Permitted					0.950	
Satd. Flow (perm)	2970	0	0	4268	1328	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	266.5			178.9	263.7	
Travel Time (s)	19.2			12.9	19.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	5%	0%	1%	4%	1%
Adj. Flow (vph)	763	0	0	1021	154	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	763	0	0	1021	154	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.26	1.60	1.40	1.26	1.40	1.60
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 62.8%		ICU Level of Service B	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	702	0	0	939	142	0
Future Volume (Veh/h)	702	0	0	939	142	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	763	0	0	1021	154	0
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			763		1103	382
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			763		1103	382
tC, single (s)			4.1		6.9	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		24	100
cM capacity (veh/h)			859		202	619

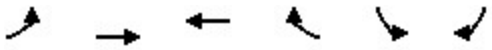
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	382	382	340	340	340	154
Volume Left	0	0	0	0	0	154
Volume Right	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	202
Volume to Capacity	0.22	0.22	0.20	0.20	0.20	0.76
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	41.3
Control Delay (s/veh)	0.0	0.0	0.0	0.0	0.0	63.8
Lane LOS						F
Approach Delay (s/veh)	0.0		0.0			63.8
Approach LOS						F

Intersection Summary			
Average Delay	5.1		
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	782	884	0	152	325
Future Volume (vph)	0	782	884	0	152	325
Ideal Flow (vphpl)	1454	1579	1579	1301	1433	1433
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	2941	2941	0	1348	1183
Flt Permitted					0.950	
Satd. Flow (perm)	0	2941	2941	0	1348	1183
Link Speed (k/h)		50	50		50	
Link Distance (m)		152.8	266.5		231.4	
Travel Time (s)		11.0	19.2		16.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	1%	1%	3%
Adj. Flow (vph)	0	850	961	0	165	353
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	850	961	0	165	353
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.26	1.26	1.60	1.42	1.42
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

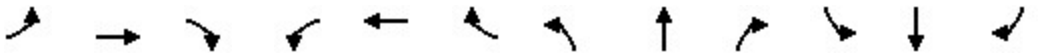
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 62.8%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↰	↱
Traffic Volume (veh/h)	0	782	884	0	152	325
Future Volume (Veh/h)	0	782	884	0	152	325
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	850	961	0	165	353
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	961				1386	481
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	961				1386	481
tC, single (s)	4.1				6.8	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				0	33
cM capacity (veh/h)	724				135	529

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	425	425	481	481	165	353
Volume Left	0	0	0	0	165	0
Volume Right	0	0	0	0	0	353
cSH	1700	1700	1700	1700	135	529
Volume to Capacity	0.25	0.25	0.28	0.28	1.22	0.67
Queue Length 95th (m)	0.0	0.0	0.0	0.0	79.5	39.4
Control Delay (s/veh)	0.0	0.0	0.0	0.0	211.2	24.4
Lane LOS					F	C
Approach Delay (s/veh)	0.0		0.0		83.9	
Approach LOS					F	

Intersection Summary			
Average Delay	18.7		
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		



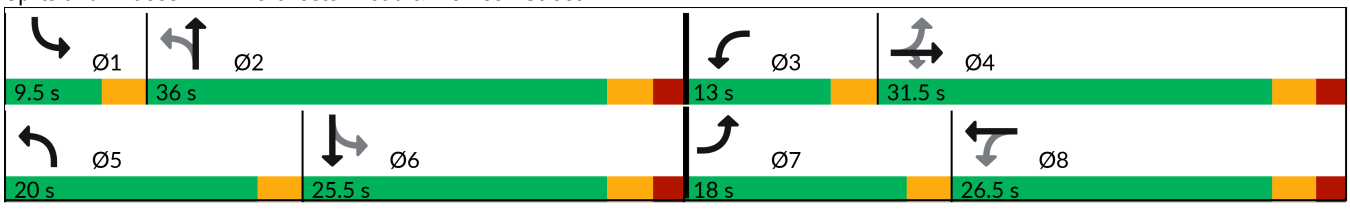
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	319	211	288	221	255	132	406	382	113	156	362	255
Future Volume (vph)	319	211	288	221	255	132	406	382	113	156	362	255
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Storage Length (m)	70.0		0.0	105.0		125.0	90.0		0.0	95.0		41.0
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00		0.98	1.00	0.99		1.00	1.00		1.00	0.99	
Frt			0.850		0.949			0.966			0.938	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1341	1548	1095	1368	2383	0	1368	2427	0	1368	2329	0
Flt Permitted	0.304			0.624			0.256			0.466		
Satd. Flow (perm)	428	1548	1076	895	2383	0	368	2427	0	669	2329	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			294		97			46			184	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		205.0			291.8			454.1			179.9	
Travel Time (s)		14.8			21.0			32.7			13.0	
Confl. Peds. (#/hr)	6		6	6		6	6		7	7		6
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	3%	2%	1%	1%	1%	0%	1%	1%	0%	1%	0%	4%
Adj. Flow (vph)	326	215	294	226	260	135	414	390	115	159	369	260
Shared Lane Traffic (%)												
Lane Group Flow (vph)	326	215	294	226	395	0	414	505	0	159	629	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

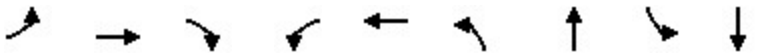
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	9.5	35.0	35.0	9.5	35.0		9.5	35.0		9.5	35.0	
Total Split (s)	18.0	31.5	31.5	13.0	26.5		20.0	36.0		9.5	25.5	
Total Split (%)	20.0%	35.0%	35.0%	14.4%	29.4%		22.2%	40.0%		10.6%	28.3%	
Maximum Green (s)	15.0	26.5	26.5	10.0	21.5		17.0	31.0		6.5	20.5	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)		10.0	10.0		10.0			10.0			10.0	
Flash Don't Walk (s)		20.0	20.0		20.0			20.0			20.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	36.9	21.8	21.8	28.9	16.8		52.1	40.6		38.6	30.1	
Actuated g/C Ratio	0.39	0.23	0.23	0.30	0.18		0.55	0.43		0.41	0.32	
v/c Ratio	1.05	0.61	0.62	0.70	0.79		1.09	0.48		0.50	0.73	
Control Delay (s/veh)	92.1	40.3	10.0	36.4	39.8		91.4	20.0		20.9	26.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	92.1	40.3	10.0	36.4	39.8		91.4	20.0		20.9	26.4	
LOS	F	D	B	D	D		F	C		C	C	
Approach Delay (s/veh)		49.9			38.5			52.2			25.3	
Approach LOS		D			D			D			C	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 95
Natural Cycle: 110
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.09
Intersection Signal Delay (s/veh): 42.2 Intersection LOS: D
Intersection Capacity Utilization 111.4% ICU Level of Service H
Analysis Period (min) 15

Splits and Phases: 1: Dorchester Road & Morrison Street





Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	326	215	294	226	395	414	505	159	629
v/c Ratio	1.05	0.61	0.62	0.70	0.79	1.09	0.48	0.50	0.73
Control Delay (s/veh)	92.1	40.3	10.0	36.4	39.8	91.4	20.0	20.9	26.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	92.1	40.3	10.0	36.4	39.8	91.4	20.0	20.9	26.4
Queue Length 50th (m)	~53.5	37.2	0.0	31.3	29.2	~63.2	32.7	15.0	40.6
Queue Length 95th (m)	#102.1	61.0	23.8	51.9	46.4	#131.2	51.1	29.0	66.1
Internal Link Dist (m)		181.0			267.8		430.1		155.9
Turn Bay Length (m)	70.0			105.0		90.0		95.0	
Base Capacity (vph)	310	432	512	321	615	381	1063	319	862
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.05	0.50	0.57	0.70	0.64	1.09	0.48	0.50	0.73

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	319	211	288	221	255	132	406	382	113	156	362	255
Future Volume (vph)	319	211	288	221	255	132	406	382	113	156	362	255
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Total Lost time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.95		1.00	0.97		1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1340	1548	1076	1364	2382		1367	2426		1366	2329	
Flt Permitted	0.30	1.00	1.00	0.62	1.00		0.26	1.00		0.47	1.00	
Satd. Flow (perm)	429	1548	1076	895	2382		368	2426		670	2329	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	326	215	294	226	260	135	414	390	115	159	369	260
RTOR Reduction (vph)	0	0	226	0	80	0	0	26	0	0	126	0
Lane Group Flow (vph)	326	215	68	226	315	0	414	479	0	159	503	0
Confl. Peds. (#/hr)	6		6	6		6	6		7	7		6
Heavy Vehicles (%)	3%	2%	1%	1%	1%	0%	1%	1%	0%	1%	0%	4%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	34.8	21.8	21.8	26.8	16.8		50.1	40.6		36.6	30.1	
Effective Green, g (s)	34.8	21.8	21.8	26.8	16.8		50.1	40.6		36.6	30.1	
Actuated g/C Ratio	0.37	0.23	0.23	0.28	0.18		0.53	0.43		0.39	0.32	
Clearance Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	301	355	247	302	421		373	1037		306	738	
v/s Ratio Prot	c0.17	0.14		0.08	0.13		c0.20	0.20		0.04	0.22	
v/s Ratio Perm	c0.23		0.06	0.13			c0.39			0.16		
v/c Ratio	1.08	0.61	0.27	0.75	0.75		1.11	0.46		0.52	0.68	
Uniform Delay, d1	26.5	32.7	30.0	29.5	37.0		17.1	19.4		20.3	28.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	75.8	2.9	0.6	9.7	7.1		79.7	1.5		1.5	5.1	
Delay (s)	102.3	35.6	30.6	39.2	44.2		96.8	20.8		21.8	33.3	
Level of Service	F	D	C	D	D		F	C		C	C	
Approach Delay (s/veh)		59.9			42.4			55.0			31.0	
Approach LOS		E			D			E			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	47.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.17		
Actuated Cycle Length (s)	94.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	111.4%	ICU Level of Service	H
Analysis Period (min)	15		

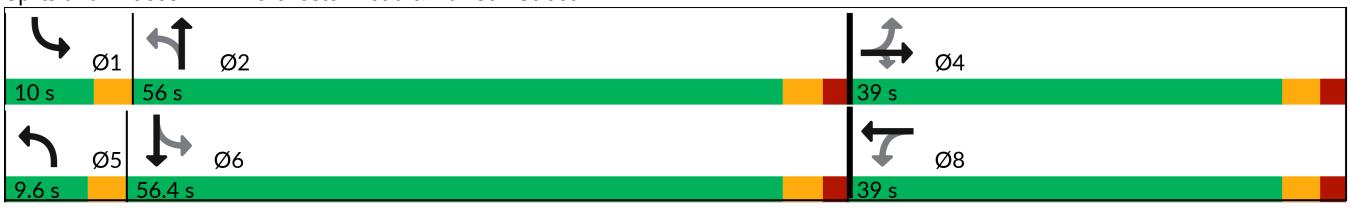
c Critical Lane Group

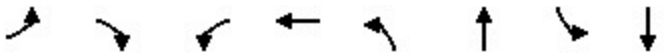
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	0	1	65	0	24	3	892	40	19	1032	1
Future Volume (vph)	4	0	1	65	0	24	3	892	40	19	1032	1
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Storage Length (m)	30.0		35.0	20.0		0.0	180.0		0.0	30.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.91	0.91
Ped Bike Factor			0.99	1.00			1.00	1.00		1.00	1.00	
Frt			0.850		0.850			0.994				
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1381	1579	1106	1381	1137	0	1381	2525	0	1381	3653	0
Flt Permitted	0.742			0.757			0.255			0.280		
Satd. Flow (perm)	1079	1579	1091	1099	1137	0	370	2525	0	407	3653	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			179		205			6				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		106.7			108.0			280.1			454.1	
Travel Time (s)		7.7			7.8			20.2			32.7	
Confl. Peds. (#/hr)			2	2			3		1	1		3
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	4	0	1	66	0	24	3	910	41	19	1053	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	4	0	1	66	24	0	3	951	0	19	1054	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	1.0		5.0	5.0	
Minimum Split (s)	39.0	39.0	39.0	39.0	39.0		9.5	52.0		9.5	52.0	
Total Split (s)	39.0	39.0	39.0	39.0	39.0		9.6	56.0		10.0	56.4	
Total Split (%)	37.1%	37.1%	37.1%	37.1%	37.1%		9.1%	53.3%		9.5%	53.7%	
Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		6.6	51.0		7.0	51.4	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)	11.0	11.0	11.0	11.0	11.0			16.0			16.0	
Flash Don't Walk (s)	23.0	23.0	23.0	23.0	23.0			31.0			31.0	
Pedestrian Calls (#/hr)	0	0	0	0	0			0			0	
Act Effct Green (s)	10.1		10.1	10.1	10.1		60.9	58.9		61.1	59.0	
Actuated g/C Ratio	0.13		0.13	0.13	0.13		0.79	0.76		0.79	0.76	
v/c Ratio	0.03		0.00	0.46	0.07		0.01	0.49		0.05	0.38	
Control Delay (s/veh)	28.5		0.0	41.3	0.4		3.0	6.9		3.1	5.4	
Queue Delay	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	28.5		0.0	41.3	0.4		3.0	6.9		3.1	5.4	
LOS	C		A	D	A		A	A		A	A	
Approach Delay (s/veh)		22.8			30.4			6.9			5.3	
Approach LOS		C			C			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 105			
Actuated Cycle Length: 77.4			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.49			
Intersection Signal Delay (s/veh): 7.1		Intersection LOS: A	
Intersection Capacity Utilization 62.1%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: Dorchester Road & Dawson Street





Lane Group	EBL	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	4	1	66	24	3	951	19	1054
v/c Ratio	0.03	0.00	0.46	0.07	0.01	0.49	0.05	0.38
Control Delay (s/veh)	28.5	0.0	41.3	0.4	3.0	6.9	3.1	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	28.5	0.0	41.3	0.4	3.0	6.9	3.1	5.4
Queue Length 50th (m)	0.5	0.0	8.8	0.0	0.1	24.0	0.5	16.4
Queue Length 95th (m)	3.4	0.0	22.6	0.0	0.7	70.1	2.4	43.6
Internal Link Dist (m)				84.0		256.1		430.1
Turn Bay Length (m)	30.0	35.0	20.0		180.0		30.0	
Base Capacity (vph)	477	582	486	616	378	1923	410	2786
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	0.01	0.00	0.14	0.04	0.01	0.49	0.05	0.38

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	0	1	65	0	24	3	892	40	19	1032	1
Future Volume (vph)	4	0	1	65	0	24	3	892	40	19	1032	1
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Total Lost time (s)	5.0		5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00		1.00	1.00	1.00		1.00	0.95		1.00	0.91	
Frpb, ped/bikes	1.00		0.99	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00		0.85	1.00	0.85		1.00	0.99		1.00	1.00	
Flt Protected	0.95		1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1381		1091	1379	1137		1381	2523		1381	3652	
Flt Permitted	0.74		1.00	0.76	1.00		0.25	1.00		0.28	1.00	
Satd. Flow (perm)	1078		1091	1099	1137		370	2523		407	3652	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	4	0	1	66	0	24	3	910	41	19	1053	1
RTOR Reduction (vph)	0	0	1	0	21	0	0	2	0	0	0	0
Lane Group Flow (vph)	4	0	0	66	3	0	3	949	0	19	1054	0
Confl. Peds. (#/hr)			2	2			3		1	1		3
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	8.9		8.9	8.9	8.9		58.9	57.9		59.3	58.1	
Effective Green, g (s)	8.9		8.9	8.9	8.9		58.9	57.9		59.3	58.1	
Actuated g/C Ratio	0.11		0.11	0.11	0.11		0.73	0.71		0.73	0.72	
Clearance Time (s)	5.0		5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	118		119	120	124		281	1803		312	2619	
v/s Ratio Prot					0.00		0.00	c0.38		c0.00	0.29	
v/s Ratio Perm	0.00		0.00	c0.06			0.01			0.04		
v/c Ratio	0.03		0.00	0.55	0.02		0.01	0.53		0.06	0.40	
Uniform Delay, d1	32.2		32.1	34.2	32.2		3.0	5.3		3.1	4.6	
Progression Factor	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.1		0.0	5.4	0.1		0.0	1.1		0.1	0.5	
Delay (s)	32.3		32.1	39.5	32.2		3.0	6.4		3.1	5.0	
Level of Service	C		C	D	C		A	A		A	A	
Approach Delay (s/veh)		32.3			37.6			6.4			5.0	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	7.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	81.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	62.1%	ICU Level of Service	B
Analysis Period (min)	15		

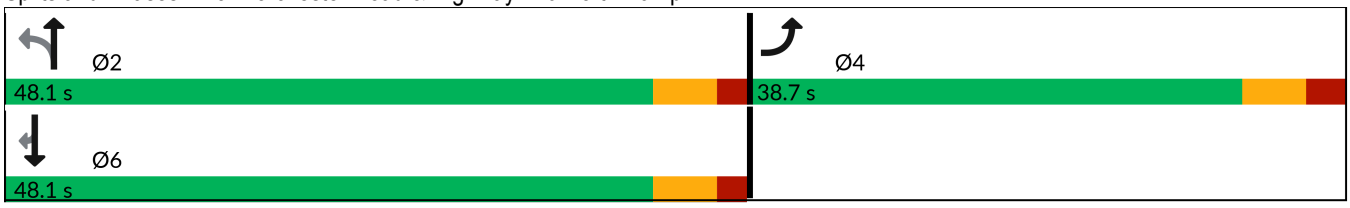
c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	31	0	227	919	580	529
Future Volume (vph)	31	0	227	919	580	529
Ideal Flow (vphpl)	1454	1301	1454	1579	1579	1301
Storage Length (m)	0.0	0.0	160.0			0.0
Storage Lanes	2	0	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor	1.00					
Frt						0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	2680	0	1368	3000	2970	1106
Flt Permitted	0.950		0.428			
Satd. Flow (perm)	2676	0	616	3000	2970	1106
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						540
Link Speed (k/h)	50			50	50	
Link Distance (m)	166.4			377.5	280.1	
Travel Time (s)	12.0			27.2	20.2	
Confl. Peds. (#/hr)	1					
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	1%	0%	1%	0%
Adj. Flow (vph)	32	0	232	938	592	540
Shared Lane Traffic (%)						
Lane Group Flow (vph)	32	0	232	938	592	540
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.2			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.60	1.40	1.26	1.26	1.60
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1		1	2	2	1
Detector Template	Left		Left	Thru	Thru	Right
Leading Detector (m)	2.0		2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0		2.0	0.6	0.6	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	8.0		10.0	10.0	10.0	10.0
Minimum Split (s)	38.7		24.1	24.1	24.1	24.1
Total Split (s)	38.7		48.1	48.1	48.1	48.1
Total Split (%)	44.6%		55.4%	55.4%	55.4%	55.4%
Maximum Green (s)	32.0		42.0	42.0	42.0	42.0
Yellow Time (s)	4.1		4.1	4.1	4.1	4.1
All-Red Time (s)	2.6		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7		6.1	6.1	6.1	6.1
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		Max	Max	Max	Max
Walk Time (s)	12.0					
Flash Don't Walk (s)	20.0					
Pedestrian Calls (#/hr)	0					
Act Effct Green (s)	8.0		54.7	54.7	54.7	54.7
Actuated g/C Ratio	0.13		0.87	0.87	0.87	0.87
v/c Ratio	0.09		0.43	0.36	0.23	0.52
Control Delay (s/veh)	25.1		7.2	3.1	2.6	2.5
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay (s/veh)	25.1		7.2	3.1	2.6	2.5
LOS	C		A	A	A	A
Approach Delay (s/veh)	25.1			3.9	2.6	
Approach LOS	C			A	A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 86.8			
Actuated Cycle Length: 63			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.52			
Intersection Signal Delay (s/veh): 3.6		Intersection LOS: A	
Intersection Capacity Utilization 74.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Dorchester Road & Highway 420 North Ramp



Lane Group	EBL	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	32	232	938	592	540
v/c Ratio	0.09	0.43	0.36	0.23	0.52
Control Delay (s/veh)	25.1	7.2	3.1	2.6	2.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	25.1	7.2	3.1	2.6	2.5
Queue Length 50th (m)	1.8	0.0	0.0	0.0	0.0
Queue Length 95th (m)	5.3	32.7	34.1	19.2	8.4
Internal Link Dist (m)	142.4		353.5	256.1	
Turn Bay Length (m)		160.0			
Base Capacity (vph)	1361	534	2602	2576	1031
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.02	0.43	0.36	0.23	0.52

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	31	0	227	919	580	529
Future Volume (vph)	31	0	227	919	580	529
Ideal Flow (vphpl)	1454	1301	1454	1579	1579	1301
Total Lost time (s)	6.7		6.1	6.1	6.1	6.1
Lane Util. Factor	0.97		1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	0.95		0.95	1.00	1.00	1.00
Satd. Flow (prot)	2680		1368	3000	2970	1106
Flt Permitted	0.95		0.43	1.00	1.00	1.00
Satd. Flow (perm)	2680		617	3000	2970	1106
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	32	0	232	938	592	540
RTOR Reduction (vph)	0	0	0	0	0	129
Lane Group Flow (vph)	32	0	232	938	592	411
Confl. Peds. (#/hr)	1					
Heavy Vehicles (%)	0%	0%	1%	0%	1%	0%
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Actuated Green, G (s)	3.2		51.0	51.0	51.0	51.0
Effective Green, g (s)	3.2		51.0	51.0	51.0	51.0
Actuated g/C Ratio	0.05		0.76	0.76	0.76	0.76
Clearance Time (s)	6.7		6.1	6.1	6.1	6.1
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	128		469	2283	2260	841
v/s Ratio Prot	c0.01			0.31	0.20	
v/s Ratio Perm			c0.38			0.37
v/c Ratio	0.25		0.49	0.41	0.26	0.49
Uniform Delay, d1	30.7		3.1	2.8	2.4	3.0
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.0		3.7	0.5	0.3	2.0
Delay (s)	31.8		6.8	3.3	2.7	5.1
Level of Service	C		A	A	A	A
Approach Delay (s/veh)	31.8			4.0	3.8	
Approach LOS	C			A	A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	4.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	67.0	Sum of lost time (s)	12.8
Intersection Capacity Utilization	74.4%	ICU Level of Service	D
Analysis Period (min)	15		

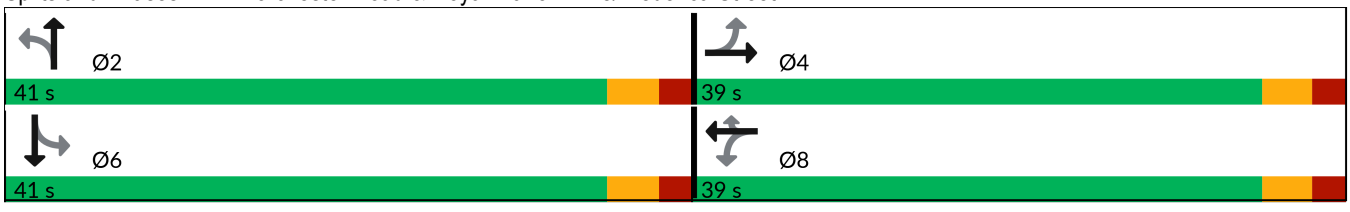
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	8	7	83	25	425	3	704	58	94	475	22
Future Volume (vph)	26	8	7	83	25	425	3	704	58	94	475	22
Ideal Flow (vphpl)	1433	1433	1433	1454	1579	1301	1454	1338	1338	1454	1338	1338
Storage Length (m)	0.0		0.0	45.0		0.0	95.0		0.0	165.0		0.0
Storage Lanes	0		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		1.00		1.00				1.00		1.00		
Frt		0.977				0.850		0.989			0.993	
Flt Protected		0.969		0.950			0.950			0.950		
Satd. Flow (prot)	0	1354	0	1368	1579	1095	1381	2507	0	1381	2501	0
Flt Permitted		0.867		0.730			0.443			0.295		
Satd. Flow (perm)	0	1211	0	1049	1579	1095	644	2507	0	428	2501	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7				123		14			8	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		47.8			201.0			125.1			377.5	
Travel Time (s)		3.4			14.5			9.0			27.2	
Confl. Peds. (#/hr)			2	2					8	8		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	0%	0%	1%	0%	1%	0%	0%	2%	0%	1%	0%
Adj. Flow (vph)	27	8	7	86	26	438	3	726	60	97	490	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	42	0	86	26	438	3	786	0	97	513	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.42	1.42	1.42	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	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	5.0	
Minimum Split (s)	32.0	32.0		32.0	32.0	32.0	41.0	41.0		41.0	41.0	
Total Split (s)	39.0	39.0		39.0	39.0	39.0	41.0	41.0		41.0	41.0	
Total Split (%)	48.8%	48.8%		48.8%	48.8%	48.8%	51.3%	51.3%		51.3%	51.3%	
Maximum Green (s)	34.0	34.0		34.0	34.0	34.0	36.0	36.0		36.0	36.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	Max	Max		Max	Max	
Walk Time (s)	9.0	9.0		9.0	9.0	9.0	12.0	12.0		12.0	12.0	
Flash Don't Walk (s)	18.0	18.0		18.0	18.0	18.0	24.0	24.0		24.0	24.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	
Act Effct Green (s)		27.1		27.1	27.1	27.1	36.4	36.4		36.4	36.4	
Actuated g/C Ratio		0.37		0.37	0.37	0.37	0.49	0.49		0.49	0.49	
v/c Ratio		0.09		0.22	0.04	0.91	0.01	0.63		0.46	0.41	
Control Delay (s/veh)		12.8		16.7	14.0	40.7	12.3	17.8		24.2	14.3	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay (s/veh)		12.8		16.7	14.0	40.7	12.3	17.8		24.2	14.3	
LOS		B		B	B	D	B	B		C	B	
Approach Delay (s/veh)		12.8			35.7			17.8			15.9	
Approach LOS		B			D			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 73.6			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.91			
Intersection Signal Delay (s/veh): 22.1		Intersection LOS: C	
Intersection Capacity Utilization 86.6%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 4: Dorchester Road & Royal Manor Drive/Frederica Street



Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	42	86	26	438	3	786	97	513
v/c Ratio	0.09	0.22	0.04	0.91	0.01	0.63	0.46	0.41
Control Delay (s/veh)	12.8	16.7	14.0	40.7	12.3	17.8	24.2	14.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	12.8	16.7	14.0	40.7	12.3	17.8	24.2	14.3
Queue Length 50th (m)	3.2	8.4	2.4	43.9	0.3	46.1	9.8	26.1
Queue Length 95th (m)	9.3	17.9	6.9	#100.9	1.8	71.2	27.5	41.5
Internal Link Dist (m)	23.8		177.0			101.1		353.5
Turn Bay Length (m)		45.0			95.0		165.0	
Base Capacity (vph)	568	489	737	577	318	1245	211	1239
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.18	0.04	0.76	0.01	0.63	0.46	0.41

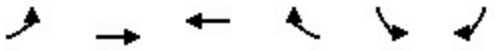
Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	8	7	83	25	425	3	704	58	94	475	22
Future Volume (vph)	26	8	7	83	25	425	3	704	58	94	475	22
Ideal Flow (vphpl)	1433	1433	1433	1454	1579	1301	1454	1338	1338	1454	1338	1338
Total Lost time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt		0.98		1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected		0.97		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1354		1366	1579	1095	1381	2506		1379	2501	
Flt Permitted		0.87		0.73	1.00	1.00	0.44	1.00		0.30	1.00	
Satd. Flow (perm)		1212		1049	1579	1095	644	2506		428	2501	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	27	8	7	86	26	438	3	726	60	97	490	23
RTOR Reduction (vph)	0	4	0	0	0	78	0	7	0	0	4	0
Lane Group Flow (vph)	0	38	0	86	26	360	3	779	0	97	509	0
Confl. Peds. (#/hr)			2	2					8	8		
Heavy Vehicles (%)	0%	0%	0%	1%	0%	1%	0%	0%	2%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		27.1		27.1	27.1	27.1	36.4	36.4		36.4	36.4	
Effective Green, g (s)		27.1		27.1	27.1	27.1	36.4	36.4		36.4	36.4	
Actuated g/C Ratio		0.37		0.37	0.37	0.37	0.50	0.50		0.50	0.50	
Clearance Time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		446		386	582	403	318	1241		211	1238	
v/s Ratio Prot					0.02			c0.31			0.20	
v/s Ratio Perm		0.03		0.08		c0.33	0.00			0.23		
v/c Ratio		0.08		0.22	0.04	0.89	0.01	0.63		0.46	0.41	
Uniform Delay, d1		15.1		16.0	14.9	21.8	9.4	13.6		12.1	11.8	
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1		0.3	0.0	21.4	0.1	2.4		7.1	1.0	
Delay (s)		15.2		16.3	14.9	43.3	9.5	16.0		19.2	12.8	
Level of Service		B		B	B	D	A	B		B	B	
Approach Delay (s/veh)		15.2			37.7			16.0			13.8	
Approach LOS		B			D			B			B	

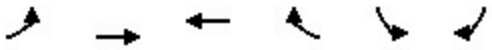
Intersection Summary			
HCM 2000 Control Delay (s/veh)	21.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	73.5	Sum of lost time (s)	10.0
Intersection Capacity Utilization	86.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	59	98	183	3	98	347
Future Volume (vph)	59	98	183	3	98	347
Ideal Flow (vphpl)	1454	1579	1338	1338	1454	1301
Storage Length (m)	85.0			0.0	0.0	40.0
Storage Lanes	1			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.998			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1354	3000	2512	0	1381	1106
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1354	3000	2512	0	1381	1106
Link Speed (k/h)		50	50		50	
Link Distance (m)		201.0	149.3		70.1	
Travel Time (s)		14.5	10.7		5.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	1%	0%	0%	0%
Adj. Flow (vph)	64	107	199	3	107	377
Shared Lane Traffic (%)						
Lane Group Flow (vph)	64	107	202	0	107	377
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.26	1.55	1.55	1.40	1.60
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

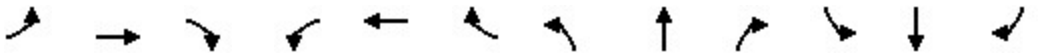
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 45.4%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	59	98	183	3	98	347
Future Volume (Veh/h)	59	98	183	3	98	347
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	64	107	199	3	107	377
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						5
Median type		None	None			
Median storage veh)						
Upstream signal (m)		201				
pX, platoon unblocked						
vC, conflicting volume	202				382	101
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	202				382	101
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	95				81	60
cM capacity (veh/h)	1367				570	941

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	64	54	54	133	69	484
Volume Left	64	0	0	0	0	107
Volume Right	0	0	0	0	3	377
cSH	1367	1700	1700	1700	1700	1208
Volume to Capacity	0.05	0.03	0.03	0.08	0.04	0.40
Queue Length 95th (m)	1.2	0.0	0.0	0.0	0.0	15.7
Control Delay (s/veh)	7.8	0.0	0.0	0.0	0.0	11.7
Lane LOS	A					B
Approach Delay (s/veh)	2.9			0.0		11.7
Approach LOS						B

Intersection Summary			
Average Delay	7.2		
Intersection Capacity Utilization	45.4%	ICU Level of Service	A
Analysis Period (min)	15		

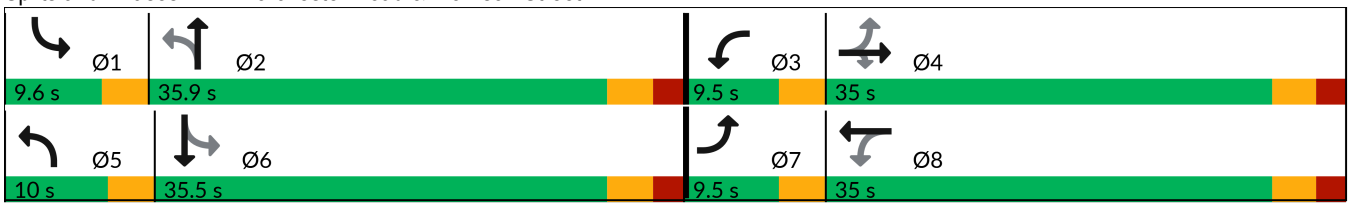


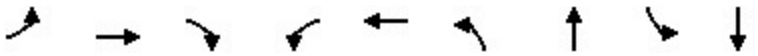
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	138	78	94	111	124	101	173	271	103	188	351	128
Future Volume (vph)	138	78	94	111	124	101	173	271	103	188	351	128
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Storage Length (m)	70.0		0.0	105.0		125.0	90.0		0.0	95.0		41.0
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor			0.98	1.00			1.00	1.00		1.00	1.00	
Frt			0.850		0.933			0.959			0.960	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1267	1410	1005	1368	2250	0	1341	2342	0	1368	2284	0
Flt Permitted	0.532			0.698			0.394			0.490		
Satd. Flow (perm)	710	1410	989	1001	2250	0	556	2342	0	705	2284	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109		117			67			63	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		205.0			291.8			454.1			179.9	
Travel Time (s)		14.8			21.0			32.7			13.0	
Confl. Peds. (#/hr)			5	5			2		1	1		2
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	9%	12%	10%	1%	9%	1%	3%	4%	3%	1%	3%	16%
Adj. Flow (vph)	160	91	109	129	144	117	201	315	120	219	408	149
Shared Lane Traffic (%)												
Lane Group Flow (vph)	160	91	109	129	261	0	201	435	0	219	557	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	9.5	35.0	35.0	9.5	35.0		9.5	35.0		9.5	35.0	
Total Split (s)	9.5	35.0	35.0	9.5	35.0		10.0	35.9		9.6	35.5	
Total Split (%)	10.6%	38.9%	38.9%	10.6%	38.9%		11.1%	39.9%		10.7%	39.4%	
Maximum Green (s)	6.5	30.0	30.0	6.5	30.0		7.0	30.9		6.6	30.5	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)		10.0	10.0		10.0			10.0			10.0	
Flash Don't Walk (s)		20.0	20.0		20.0			20.0			20.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	20.4	13.2	13.2	19.8	11.3		39.9	30.9		39.1	30.5	
Actuated g/C Ratio	0.29	0.19	0.19	0.28	0.16		0.56	0.43		0.55	0.43	
v/c Ratio	0.63	0.35	0.40	0.42	0.58		0.52	0.41		0.49	0.55	
Control Delay (s/veh)	32.4	31.0	10.9	23.1	20.5		13.0	13.3		12.1	16.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	32.4	31.0	10.9	23.1	20.5		13.0	13.3		12.1	16.2	
LOS	C	C	B	C	C		B	B		B	B	
Approach Delay (s/veh)		25.6			21.4			13.2			15.0	
Approach LOS		C			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 71.3			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.63			
Intersection Signal Delay (s/veh): 17.4		Intersection LOS: B	
Intersection Capacity Utilization 73.1%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 1: Dorchester Road & Morrison Street





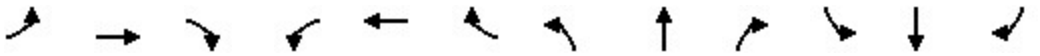
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	160	91	109	129	261	201	435	219	557
v/c Ratio	0.63	0.35	0.40	0.42	0.58	0.52	0.41	0.49	0.55
Control Delay (s/veh)	32.4	31.0	10.9	23.1	20.5	13.0	13.3	12.1	16.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	32.4	31.0	10.9	23.1	20.5	13.0	13.3	12.1	16.2
Queue Length 50th (m)	17.3	11.7	0.0	13.5	9.7	11.3	16.9	12.5	25.0
Queue Length 95th (m)	31.1	23.5	11.5	25.2	19.2	23.8	29.4	25.8	41.4
Internal Link Dist (m)		181.0			267.8		430.1		155.9
Turn Bay Length (m)	70.0			105.0		90.0		95.0	
Base Capacity (vph)	253	593	479	310	1015	388	1053	448	1013
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.15	0.23	0.42	0.26	0.52	0.41	0.49	0.55

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	138	78	94	111	124	101	173	271	103	188	351	128
Future Volume (vph)	138	78	94	111	124	101	173	271	103	188	351	128
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Total Lost time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.93		1.00	0.96		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1267	1410	990	1365	2249		1341	2341		1367	2284	
Flt Permitted	0.53	1.00	1.00	0.70	1.00		0.39	1.00		0.49	1.00	
Satd. Flow (perm)	710	1410	990	1003	2249		556	2341		705	2284	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	160	91	109	129	144	117	201	315	120	219	408	149
RTOR Reduction (vph)	0	0	89	0	98	0	0	38	0	0	36	0
Lane Group Flow (vph)	160	91	20	129	163	0	201	397	0	219	521	0
Confl. Peds. (#/hr)			5	5			2		1	1		2
Heavy Vehicles (%)	9%	12%	10%	1%	9%	1%	3%	4%	3%	1%	3%	16%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	19.7	13.2	13.2	17.1	11.9		37.9	30.9		37.1	30.5	
Effective Green, g (s)	19.7	13.2	13.2	17.1	11.9		37.9	30.9		37.1	30.5	
Actuated g/C Ratio	0.27	0.18	0.18	0.24	0.17		0.53	0.43		0.52	0.42	
Clearance Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	244	258	181	264	372		369	1006		424	968	
v/s Ratio Prot	c0.06	0.06		0.04	0.07		c0.05	0.17		0.05	0.23	
v/s Ratio Perm	c0.12		0.02	0.08			c0.23			0.22		
v/c Ratio	0.66	0.35	0.11	0.49	0.44		0.54	0.39		0.52	0.54	
Uniform Delay, d1	21.9	25.6	24.5	23.1	27.0		9.6	14.1		10.0	15.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.2	0.8	0.3	1.4	0.8		1.6	1.2		1.1	2.1	
Delay (s)	28.1	26.5	24.7	24.5	27.8		11.2	15.2		11.1	17.6	
Level of Service	C	C	C	C	C		B	B		B	B	
Approach Delay (s/veh)		26.7			26.7			14.0			15.8	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	19.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	71.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	73.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

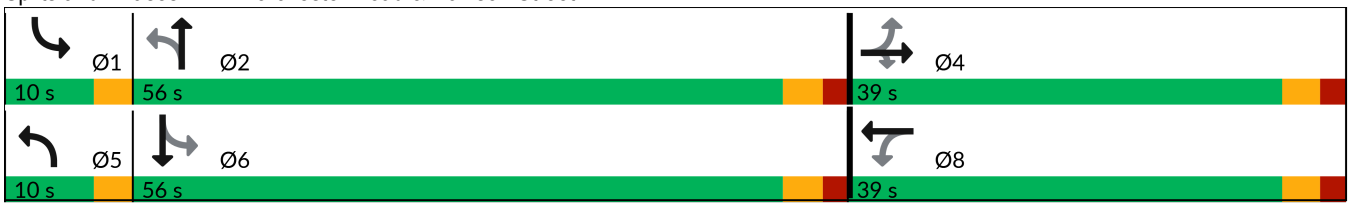


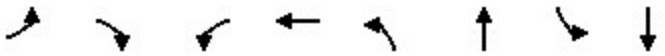
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	6	63	1	24	24	589	22	10	574	9
Future Volume (vph)	1	0	6	63	1	24	24	589	22	10	574	9
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Storage Length (m)	30.0		35.0	20.0		0.0	180.0		0.0	30.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.91	0.91
Ped Bike Factor							1.00	1.00		1.00	1.00	
Frt			0.850		0.856			0.995			0.998	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1381	1579	614	1354	1009	0	1316	2447	0	1244	3567	0
Flt Permitted	0.740			0.757			0.388			0.397		
Satd. Flow (perm)	1076	1579	614	1079	1009	0	537	2447	0	519	3567	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			248		26			5			3	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		106.7			108.0			280.1			454.1	
Travel Time (s)		7.7			7.8			20.2			32.7	
Confl. Peds. (#/hr)							1		3	3		1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	80%	2%	0%	14%	5%	3%	11%	11%	2%	13%
Adj. Flow (vph)	1	0	7	69	1	26	26	647	24	11	631	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	1	0	7	69	27	0	26	671	0	11	641	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	1.0		5.0	5.0	
Minimum Split (s)	39.0	39.0	39.0	39.0	39.0		9.5	52.0		9.5	52.0	
Total Split (s)	39.0	39.0	39.0	39.0	39.0		10.0	56.0		10.0	56.0	
Total Split (%)	37.1%	37.1%	37.1%	37.1%	37.1%		9.5%	53.3%		9.5%	53.3%	
Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		7.0	51.0		7.0	51.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)	11.0	11.0	11.0	11.0	11.0			16.0			16.0	
Flash Don't Walk (s)	23.0	23.0	23.0	23.0	23.0			31.0			31.0	
Pedestrian Calls (#/hr)	0	0	0	0	0			0			0	
Act Effct Green (s)	10.4		10.4	10.5	10.5		62.7	60.6		61.8	58.7	
Actuated g/C Ratio	0.13		0.13	0.13	0.13		0.79	0.76		0.78	0.74	
v/c Ratio	0.01		0.02	0.48	0.17		0.05	0.36		0.02	0.24	
Control Delay (s/veh)	29.0		0.2	43.6	15.2		3.1	5.7		3.1	5.6	
Queue Delay	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	29.0		0.2	43.6	15.2		3.1	5.7		3.1	5.6	
LOS	C		A	D	B		A	A		A	A	
Approach Delay (s/veh)		3.8			35.6			5.6			5.6	
Approach LOS		A			D			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 105			
Actuated Cycle Length: 79.3			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.48			
Intersection Signal Delay (s/veh): 7.6		Intersection LOS: A	
Intersection Capacity Utilization 60.4%		ICU Level of Service B	
Analysis Period (min) 15			

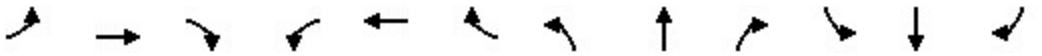
Splits and Phases: 2: Dorchester Road & Dawson Street





Lane Group	EBL	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1	7	69	27	26	671	11	641
v/c Ratio	0.01	0.02	0.48	0.17	0.05	0.36	0.02	0.24
Control Delay (s/veh)	29.0	0.2	43.6	15.2	3.1	5.7	3.1	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	29.0	0.2	43.6	15.2	3.1	5.7	3.1	5.6
Queue Length 50th (m)	0.1	0.0	9.0	0.1	0.7	15.4	0.3	9.1
Queue Length 95th (m)	1.6	0.0	23.3	7.3	3.0	43.6	1.7	25.2
Internal Link Dist (m)				84.0		256.1		430.1
Turn Bay Length (m)	30.0	35.0	20.0		180.0		30.0	
Base Capacity (vph)	464	406	466	450	494	1870	471	2640
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	0.00	0.02	0.15	0.06	0.05	0.36	0.02	0.24

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	0	6	63	1	24	24	589	22	10	574	9
Future Volume (vph)	1	0	6	63	1	24	24	589	22	10	574	9
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Total Lost time (s)	5.0		5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00		1.00	1.00	1.00		1.00	0.95		1.00	0.91	
Frpb, ped/bikes	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00		0.85	1.00	0.86		1.00	0.99		1.00	1.00	
Flt Protected	0.95		1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1381		614	1354	1009		1315	2446		1244	3566	
Flt Permitted	0.74		1.00	0.76	1.00		0.39	1.00		0.40	1.00	
Satd. Flow (perm)	1075		614	1079	1009		537	2446		519	3566	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	1	0	7	69	1	26	26	647	24	11	631	10
RTOR Reduction (vph)	0	0	6	0	23	0	0	1	0	0	1	0
Lane Group Flow (vph)	1	0	1	69	4	0	26	670	0	11	640	0
Confl. Peds. (#/hr)							1		3	3		1
Heavy Vehicles (%)	0%	0%	80%	2%	0%	14%	5%	3%	11%	11%	2%	13%
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	9.2		9.2	9.2	9.2		61.9	59.4		59.1	58.0	
Effective Green, g (s)	9.2		9.2	9.2	9.2		61.9	59.4		59.1	58.0	
Actuated g/C Ratio	0.11		0.11	0.11	0.11		0.75	0.72		0.71	0.70	
Clearance Time (s)	5.0		5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	119		68	120	112		425	1756		380	2500	
v/s Ratio Prot					0.00		c0.00	c0.27		0.00	0.18	
v/s Ratio Perm	0.00		0.00	c0.06			0.04			0.02		
v/c Ratio	0.01		0.01	0.57	0.03		0.06	0.38		0.03	0.26	
Uniform Delay, d1	32.7		32.7	34.9	32.8		2.7	4.5		3.4	4.5	
Progression Factor	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0		0.1	6.5	0.1		0.1	0.6		0.0	0.2	
Delay (s)	32.7		32.8	41.4	32.9		2.7	5.2		3.4	4.7	
Level of Service	C		C	D	C		A	A		A	A	
Approach Delay (s/veh)		32.8			39.0			5.1			4.7	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	7.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	82.7	Sum of lost time (s)	13.0
Intersection Capacity Utilization	60.4%	ICU Level of Service	B
Analysis Period (min)	15		

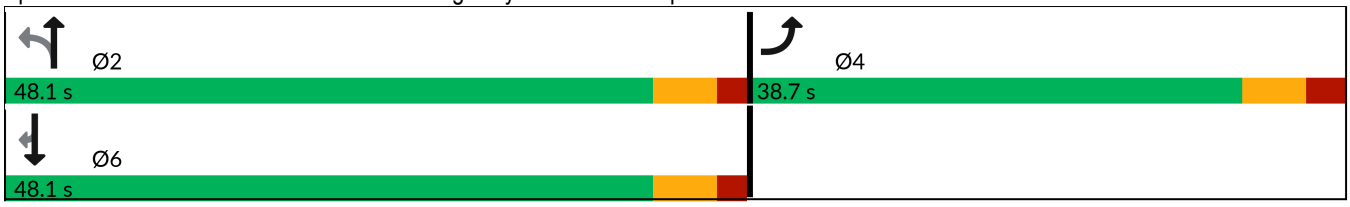
c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	20	0	180	616	339	289
Future Volume (vph)	20	0	180	616	339	289
Ideal Flow (vphpl)	1454	1301	1454	1579	1579	1301
Storage Length (m)	0.0	0.0	160.0			0.0
Storage Lanes	2	0	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt						0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	2271	0	1328	2913	2941	1063
Flt Permitted	0.950		0.526			
Satd. Flow (perm)	2271	0	735	2913	2941	1063
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						325
Link Speed (k/h)	50			50	50	
Link Distance (m)	166.4			377.5	280.1	
Travel Time (s)	12.0			27.2	20.2	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	18%	0%	4%	3%	2%	4%
Adj. Flow (vph)	22	0	202	692	381	325
Shared Lane Traffic (%)						
Lane Group Flow (vph)	22	0	202	692	381	325
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.2			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.60	1.40	1.26	1.26	1.60
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1		1	2	2	1
Detector Template	Left		Left	Thru	Thru	Right
Leading Detector (m)	2.0		2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0		2.0	0.6	0.6	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	8.0		10.0	10.0	10.0	10.0
Minimum Split (s)	38.7		24.1	24.1	24.1	24.1
Total Split (s)	38.7		48.1	48.1	48.1	48.1
Total Split (%)	44.6%		55.4%	55.4%	55.4%	55.4%
Maximum Green (s)	32.0		42.0	42.0	42.0	42.0
Yellow Time (s)	4.1		4.1	4.1	4.1	4.1
All-Red Time (s)	2.6		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7		6.1	6.1	6.1	6.1
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		Max	Max	Max	Max
Walk Time (s)	12.0					
Flash Don't Walk (s)	20.0					
Pedestrian Calls (#/hr)	0					
Act Effct Green (s)	8.0		58.8	58.8	58.8	58.8
Actuated g/C Ratio	0.13		0.93	0.93	0.93	0.93
v/c Ratio	0.08		0.29	0.25	0.14	0.32
Control Delay (s/veh)	25.0		3.3	1.6	1.4	1.3
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay (s/veh)	25.0		3.3	1.6	1.4	1.3
LOS	C		A	A	A	A
Approach Delay (s/veh)	25.0			2.0	1.4	
Approach LOS	C			A	A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 86.8			
Actuated Cycle Length: 63			
Natural Cycle: 70			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.32			
Intersection Signal Delay (s/veh): 2.0		Intersection LOS: A	
Intersection Capacity Utilization 49.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Dorchester Road & Highway 420 North Ramp

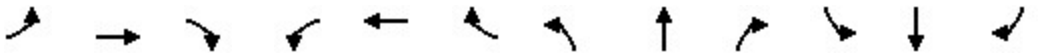


Lane Group	EBL	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	22	202	692	381	325
v/c Ratio	0.08	0.29	0.25	0.14	0.32
Control Delay (s/veh)	25.0	3.3	1.6	1.4	1.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	25.0	3.3	1.6	1.4	1.3
Queue Length 50th (m)	1.2	0.0	0.0	0.0	0.0
Queue Length 95th (m)	4.1	20.6	22.8	11.8	6.5
Internal Link Dist (m)	142.4		353.5	256.1	
Turn Bay Length (m)		160.0			
Base Capacity (vph)	1152	686	2720	2746	1014
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.02	0.29	0.25	0.14	0.32

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	20	0	180	616	339	289
Future Volume (vph)	20	0	180	616	339	289
Ideal Flow (vphpl)	1454	1301	1454	1579	1579	1301
Total Lost time (s)	6.7		6.1	6.1	6.1	6.1
Lane Util. Factor	0.97		1.00	0.95	0.95	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	0.95		0.95	1.00	1.00	1.00
Satd. Flow (prot)	2271		1328	2913	2941	1063
Flt Permitted	0.95		0.53	1.00	1.00	1.00
Satd. Flow (perm)	2271		735	2913	2941	1063
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	22	0	202	692	381	325
RTOR Reduction (vph)	0	0	0	0	0	68
Lane Group Flow (vph)	22	0	202	692	381	257
Heavy Vehicles (%)	18%	0%	4%	3%	2%	4%
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Actuated Green, G (s)	1.6		54.0	54.0	54.0	54.0
Effective Green, g (s)	1.6		54.0	54.0	54.0	54.0
Actuated g/C Ratio	0.02		0.79	0.79	0.79	0.79
Clearance Time (s)	6.7		6.1	6.1	6.1	6.1
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	53		580	2299	2321	839
v/s Ratio Prot	c0.01			0.24	0.13	
v/s Ratio Perm			c0.27			0.24
v/c Ratio	0.42		0.35	0.30	0.16	0.31
Uniform Delay, d1	32.9		2.1	2.0	1.7	2.0
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	5.2		1.6	0.3	0.2	0.9
Delay (s)	38.1		3.7	2.3	1.9	2.9
Level of Service	D		A	A	A	A
Approach Delay (s/veh)	38.1			2.6	2.4	
Approach LOS	D			A	A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	3.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	68.4	Sum of lost time (s)	12.8
Intersection Capacity Utilization	49.3%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

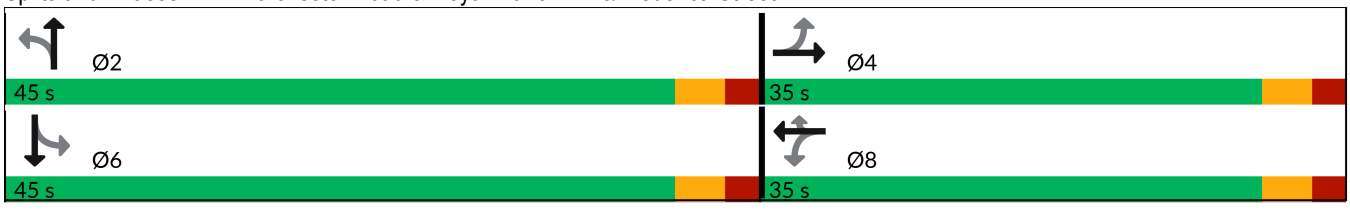


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	21	7	49	6	356	2	420	41	93	241	15
Future Volume (vph)	19	21	7	49	6	356	2	420	41	93	241	15
Ideal Flow (vphpl)	1433	1433	1433	1454	1579	1301	1454	1338	1338	1454	1338	1338
Storage Length (m)	0.0		0.0	45.0		0.0	95.0		0.0	165.0		0.0
Storage Lanes	0		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor								1.00		1.00		
Frt		0.980				0.850		0.987			0.991	
Flt Protected		0.980		0.950			0.950			0.950		
Satd. Flow (prot)	0	1251	0	1354	1579	1074	1381	2427	0	1368	2461	0
Flt Permitted		0.900		0.722			0.574			0.458		
Satd. Flow (perm)	0	1149	0	1029	1579	1074	835	2427	0	659	2461	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8				315		18			11	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		47.8			201.0			125.1			377.5	
Travel Time (s)		3.4			14.5			9.0			27.2	
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	6%	17%	0%	2%	0%	3%	0%	3%	6%	1%	2%	8%
Adj. Flow (vph)	22	24	8	56	7	405	2	477	47	106	274	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	54	0	56	7	405	2	524	0	106	291	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.42	1.42	1.42	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	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	5.0	
Minimum Split (s)	32.0	32.0		32.0	32.0	32.0	41.0	41.0		41.0	41.0	
Total Split (s)	35.0	35.0		35.0	35.0	35.0	45.0	45.0		45.0	45.0	
Total Split (%)	43.8%	43.8%		43.8%	43.8%	43.8%	56.3%	56.3%		56.3%	56.3%	
Maximum Green (s)	30.0	30.0		30.0	30.0	30.0	40.0	40.0		40.0	40.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	Max	Max		Max	Max	
Walk Time (s)	9.0	9.0		9.0	9.0	9.0	12.0	12.0		12.0	12.0	
Flash Don't Walk (s)	18.0	18.0		18.0	18.0	18.0	24.0	24.0		24.0	24.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	
Act Effct Green (s)		14.0		14.0	14.0	14.0	40.7	40.7		40.7	40.7	
Actuated g/C Ratio		0.22		0.22	0.22	0.22	0.63	0.63		0.63	0.63	
v/c Ratio		0.21		0.25	0.02	0.85	0.00	0.34		0.26	0.19	
Control Delay (s/veh)		18.5		22.1	17.3	22.9	8.5	8.1		10.6	7.2	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay (s/veh)		18.5		22.1	17.3	22.9	8.5	8.1		10.6	7.2	
LOS		B		C	B	C	A	A		B	A	
Approach Delay (s/veh)		18.5			22.8			8.1			8.1	
Approach LOS		B			C			A			A	

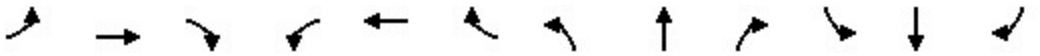
Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 64.9			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay (s/veh): 13.2		Intersection LOS: B	
Intersection Capacity Utilization 78.9%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 4: Dorchester Road & Royal Manor Drive/Frederica Street



Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	54	56	7	405	2	524	106	291
v/c Ratio	0.21	0.25	0.02	0.85	0.00	0.34	0.26	0.19
Control Delay (s/veh)	18.5	22.1	17.3	22.9	8.5	8.1	10.6	7.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	18.5	22.1	17.3	22.9	8.5	8.1	10.6	7.2
Queue Length 50th (m)	4.7	5.8	0.7	9.6	0.1	12.3	4.7	6.1
Queue Length 95th (m)	12.0	13.5	3.2	39.2	1.2	36.7	20.8	19.6
Internal Link Dist (m)	23.8		177.0			101.1		353.5
Turn Bay Length (m)		45.0			95.0		165.0	
Base Capacity (vph)	544	484	743	672	523	1529	413	1548
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	0.10	0.12	0.01	0.60	0.00	0.34	0.26	0.19

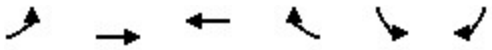
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	21	7	49	6	356	2	420	41	93	241	15
Future Volume (vph)	19	21	7	49	6	356	2	420	41	93	241	15
Ideal Flow (vphpl)	1433	1433	1433	1454	1579	1301	1454	1338	1338	1454	1338	1338
Total Lost time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt		0.98		1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected		0.98		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1251		1354	1579	1074	1381	2426		1367	2462	
Flt Permitted		0.90		0.72	1.00	1.00	0.57	1.00		0.46	1.00	
Satd. Flow (perm)		1149		1029	1579	1074	834	2426		659	2462	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	22	24	8	56	7	405	2	477	47	106	274	17
RTOR Reduction (vph)	0	6	0	0	0	247	0	7	0	0	4	0
Lane Group Flow (vph)	0	48	0	56	7	158	2	517	0	106	287	0
Confl. Peds. (#/hr)									1	1		
Heavy Vehicles (%)	6%	17%	0%	2%	0%	3%	0%	3%	6%	1%	2%	8%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		14.0		14.0	14.0	14.0	40.7	40.7		40.7	40.7	
Effective Green, g (s)		14.0		14.0	14.0	14.0	40.7	40.7		40.7	40.7	
Actuated g/C Ratio		0.22		0.22	0.22	0.22	0.63	0.63		0.63	0.63	
Clearance Time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		248		222	341	232	524	1526		414	1548	
v/s Ratio Prot					0.00			c0.21			0.12	
v/s Ratio Perm		0.04		0.05		c0.15	0.00			0.16		
v/c Ratio		0.19		0.25	0.02	0.68	0.00	0.34		0.26	0.19	
Uniform Delay, d1		20.7		21.0	20.0	23.3	4.5	5.7		5.3	5.0	
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.4		0.6	0.0	8.0	0.0	0.6		1.5	0.3	
Delay (s)		21.1		21.6	20.0	31.3	4.5	6.3		6.8	5.3	
Level of Service		C		C	B	C	A	A		A	A	
Approach Delay (s/veh)		21.1			30.0			6.3			5.7	
Approach LOS		C			C			A			A	

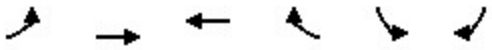
Intersection Summary			
HCM 2000 Control Delay (s/veh)	14.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	64.7	Sum of lost time (s)	10.0
Intersection Capacity Utilization	78.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	61	92	138	2	87	280
Future Volume (vph)	61	92	138	2	87	280
Ideal Flow (vphpl)	1454	1579	1338	1338	1454	1301
Storage Length (m)	85.0			0.0	40.0	0.0
Storage Lanes	1			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.998			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1303	2885	2418	0	1341	1084
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1303	2885	2418	0	1341	1084
Link Speed (k/h)		50	50		50	
Link Distance (m)		201.0	149.3		70.1	
Travel Time (s)		14.5	10.7		5.0	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	6%	4%	5%	0%	3%	2%
Adj. Flow (vph)	73	110	164	2	104	333
Shared Lane Traffic (%)						
Lane Group Flow (vph)	73	110	166	0	104	333
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.26	1.55	1.55	1.40	1.60
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

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



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	61	92	138	2	87	280
Future Volume (Veh/h)	61	92	138	2	87	280
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	73	110	164	2	104	333
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		201				
pX, platoon unblocked						
vC, conflicting volume	166				366	83
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	166				366	83
tC, single (s)	4.2				6.9	6.9
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.3
p0 queue free %	95				82	65
cM capacity (veh/h)	1381				572	960

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1	SB 2
Volume Total	73	55	55	109	57	104	333
Volume Left	73	0	0	0	0	104	0
Volume Right	0	0	0	0	2	0	333
cSH	1381	1700	1700	1700	1700	572	960
Volume to Capacity	0.05	0.03	0.03	0.06	0.03	0.18	0.35
Queue Length 95th (m)	1.3	0.0	0.0	0.0	0.0	5.3	12.5
Control Delay (s/veh)	7.8	0.0	0.0	0.0	0.0	12.7	10.7
Lane LOS	A					B	B
Approach Delay (s/veh)	3.1			0.0		11.2	
Approach LOS						B	

Intersection Summary			
Average Delay	6.9		
Intersection Capacity Utilization	37.5%	ICU Level of Service	A
Analysis Period (min)	15		

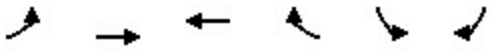
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	690	0	0	438	79	0
Future Volume (vph)	690	0	0	438	79	0
Ideal Flow (vphpl)	1579	1301	1454	1579	1454	1301
Lane Util. Factor	0.95	1.00	1.00	0.91	1.00	1.00
Frt						
Flt Protected					0.950	
Satd. Flow (prot)	2941	0	0	4105	1316	0
Flt Permitted					0.950	
Satd. Flow (perm)	2941	0	0	4105	1316	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	266.5			178.9	263.7	
Travel Time (s)	19.2			12.9	19.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	0%	5%	5%	2%
Adj. Flow (vph)	750	0	0	476	86	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	750	0	0	476	86	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.26	1.60	1.40	1.26	1.40	1.60
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 44.3%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	690	0	0	438	79	0
Future Volume (Veh/h)	690	0	0	438	79	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	750	0	0	476	86	0
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			750		909	375
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			750		909	375
tC, single (s)			4.1		6.9	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			100		68	100
cM capacity (veh/h)			868		269	623

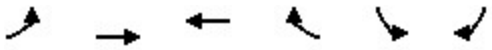
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	375	375	159	159	159	86
Volume Left	0	0	0	0	0	86
Volume Right	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	269
Volume to Capacity	0.22	0.22	0.09	0.09	0.09	0.32
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	10.7
Control Delay (s/veh)	0.0	0.0	0.0	0.0	0.0	24.5
Lane LOS						C
Approach Delay (s/veh)	0.0		0.0			24.5
Approach LOS						C

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	44.3%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	934	435	0	90	193
Future Volume (vph)	0	934	435	0	90	193
Ideal Flow (vphpl)	1454	1579	1579	1301	1433	1433
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	2941	2857	0	1309	1088
Flt Permitted					0.950	
Satd. Flow (perm)	0	2941	2857	0	1309	1088
Link Speed (k/h)		50	50		50	
Link Distance (m)		152.8	266.5		231.4	
Travel Time (s)		11.0	19.2		16.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	5%	3%	4%	12%
Adj. Flow (vph)	0	1015	473	0	98	210
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1015	473	0	98	210
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.26	1.26	1.60	1.42	1.42
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

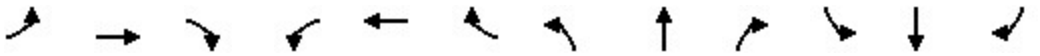
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 44.3%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	934	435	0	90	193
Future Volume (Veh/h)	0	934	435	0	90	193
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1015	473	0	98	210
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	473				981	237
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	473				981	237
tC, single (s)	4.1				6.9	7.1
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.4
p0 queue free %	100				60	71
cM capacity (veh/h)	1099				243	735

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	508	508	237	237	98	210
Volume Left	0	0	0	0	98	0
Volume Right	0	0	0	0	0	210
cSH	1700	1700	1700	1700	243	735
Volume to Capacity	0.30	0.30	0.14	0.14	0.40	0.29
Queue Length 95th (m)	0.0	0.0	0.0	0.0	14.7	9.4
Control Delay (s/veh)	0.0	0.0	0.0	0.0	29.4	11.8
Lane LOS					D	B
Approach Delay (s/veh)	0.0		0.0		17.4	
Approach LOS					C	

Intersection Summary			
Average Delay	3.0		
Intersection Capacity Utilization	44.3%	ICU Level of Service	A
Analysis Period (min)	15		

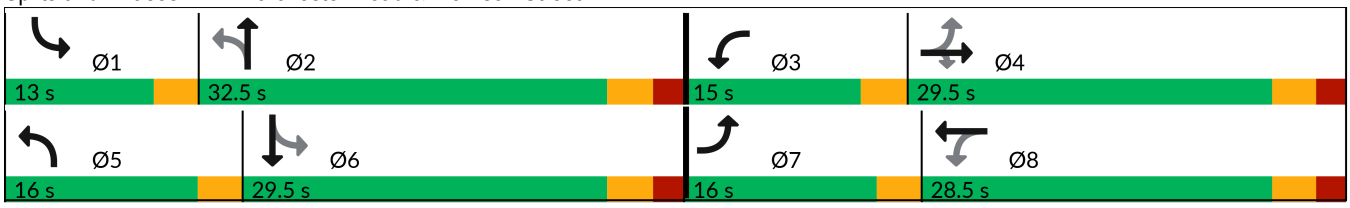


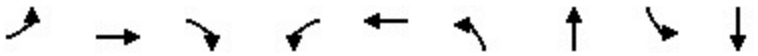
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	260	160	267	310	210	181	307	421	162	183	435	195
Future Volume (vph)	260	160	267	310	210	181	307	421	162	183	435	195
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Storage Length (m)	70.0		0.0	105.0		125.0	90.0		0.0	95.0		41.0
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00		0.98	1.00	0.99		1.00	0.99		1.00	0.99	
Frt			0.850		0.931			0.958			0.954	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1328	1504	1063	1368	2300	0	1341	2397	0	1381	2316	0
Flt Permitted	0.312			0.583			0.250			0.364		
Satd. Flow (perm)	435	1504	1044	835	2300	0	352	2397	0	527	2316	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			287		195			64			79	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		205.0			291.8			454.1			179.9	
Travel Time (s)		14.8			21.0			32.7			13.0	
Confl. Peds. (#/hr)	6		7	7		6	6		11	11		6
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	4%	5%	4%	1%	3%	1%	3%	1%	1%	0%	2%	9%
Adj. Flow (vph)	280	172	287	333	226	195	330	453	174	197	468	210
Shared Lane Traffic (%)												
Lane Group Flow (vph)	280	172	287	333	421	0	330	627	0	197	678	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	9.5	35.0	35.0	9.5	35.0		9.5	35.0		9.5	35.0	
Total Split (s)	16.0	29.5	29.5	15.0	28.5		16.0	32.5		13.0	29.5	
Total Split (%)	17.8%	32.8%	32.8%	16.7%	31.7%		17.8%	36.1%		14.4%	32.8%	
Maximum Green (s)	13.0	24.5	24.5	12.0	23.5		13.0	27.5		10.0	24.5	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)		10.0	10.0		10.0			10.0			10.0	
Flash Don't Walk (s)		20.0	20.0		20.0			20.0			20.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	31.0	16.0	16.0	29.0	15.0		48.1	33.5		41.7	30.1	
Actuated g/C Ratio	0.36	0.18	0.18	0.33	0.17		0.55	0.38		0.48	0.35	
v/c Ratio	0.97	0.62	0.68	0.95	0.76		0.96	0.65		0.57	0.80	
Control Delay (s/veh)	72.2	43.0	12.5	63.0	27.2		59.2	24.5		19.3	32.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	72.2	43.0	12.5	63.0	27.2		59.2	24.5		19.3	32.0	
LOS	E	D	B	E	C		E	C		B	C	
Approach Delay (s/veh)		42.2			43.0			36.4			29.1	
Approach LOS		D			D			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 87.2			
Natural Cycle: 100			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.97			
Intersection Signal Delay (s/veh): 37.3		Intersection LOS: D	
Intersection Capacity Utilization 100.5%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 1: Dorchester Road & Morrison Street

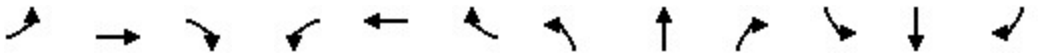




Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	280	172	287	333	421	330	627	197	678
v/c Ratio	0.97	0.62	0.68	0.95	0.76	0.96	0.65	0.57	0.80
Control Delay (s/veh)	72.2	43.0	12.5	63.0	27.2	59.2	24.5	19.3	32.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	72.2	43.0	12.5	63.0	27.2	59.2	24.5	19.3	32.0
Queue Length 50th (m)	37.9	28.0	0.0	47.0	19.6	31.6	41.6	16.5	49.1
Queue Length 95th (m)	#77.6	48.6	23.8	#97.0	36.2	#96.9	70.1	35.4	#90.3
Internal Link Dist (m)		181.0			267.8		430.1		155.9
Turn Bay Length (m)	70.0			105.0		90.0		95.0	
Base Capacity (vph)	288	423	500	351	763	342	960	352	850
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.97	0.41	0.57	0.95	0.55	0.96	0.65	0.56	0.80

Intersection Summary

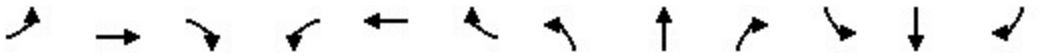
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	260	160	267	310	210	181	307	421	162	183	435	195
Future Volume (vph)	260	160	267	310	210	181	307	421	162	183	435	195
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Total Lost time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.93		1.00	0.96		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1327	1504	1044	1364	2299		1341	2398		1380	2315	
Flt Permitted	0.31	1.00	1.00	0.58	1.00		0.25	1.00		0.36	1.00	
Satd. Flow (perm)	436	1504	1044	837	2299		353	2398		529	2315	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	280	172	287	333	226	195	330	453	174	197	468	210
RTOR Reduction (vph)	0	0	234	0	161	0	0	39	0	0	52	0
Lane Group Flow (vph)	280	172	53	333	260	0	330	588	0	197	626	0
Confl. Peds. (#/hr)	6		7	7		6	6		11	11		6
Heavy Vehicles (%)	4%	5%	4%	1%	3%	1%	3%	1%	1%	0%	2%	9%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	29.0	16.0	16.0	27.0	15.0		46.1	33.5		39.7	30.1	
Effective Green, g (s)	29.0	16.0	16.0	27.0	15.0		46.1	33.5		39.7	30.1	
Actuated g/C Ratio	0.33	0.18	0.18	0.31	0.17		0.53	0.38		0.46	0.35	
Clearance Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	278	276	191	332	395		334	922		334	800	
v/s Ratio Prot	c0.15	0.11		0.14	0.11		c0.15	0.25		0.06	0.27	
v/s Ratio Perm	c0.18		0.05	0.17			c0.38			0.20		
v/c Ratio	1.01	0.62	0.28	1.00	0.66		0.99	0.64		0.59	0.78	
Uniform Delay, d1	26.1	32.8	30.6	28.7	33.6		15.3	21.8		15.2	25.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	55.8	4.3	0.8	50.2	3.9		45.5	3.4		2.7	7.5	
Delay (s)	81.9	37.1	31.4	78.9	37.6		60.8	25.2		17.8	33.1	
Level of Service	F	D	C	E	D		E	C		B	C	
Approach Delay (s/veh)		51.8			55.8			37.5			29.7	
Approach LOS		D			E			D			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	42.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.05		
Actuated Cycle Length (s)	87.1	Sum of lost time (s)	16.0
Intersection Capacity Utilization	100.5%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

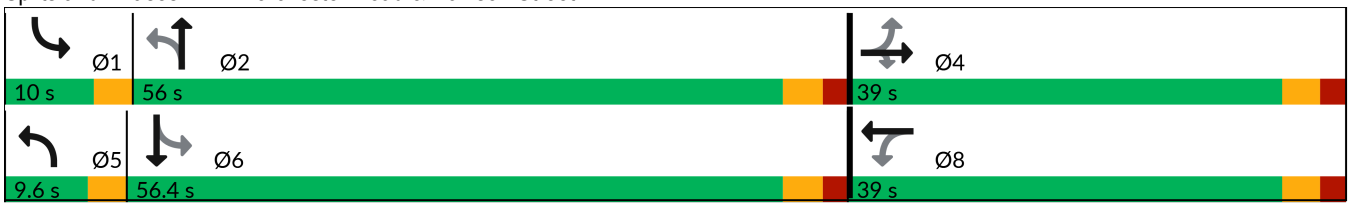


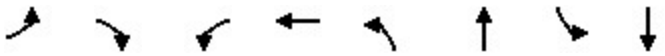
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	0	38	60	1	28	7	923	55	42	1017	6
Future Volume (vph)	13	0	38	60	1	28	7	923	55	42	1017	6
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Storage Length (m)	30.0		35.0	20.0		0.0	180.0		0.0	30.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.91	0.91
Ped Bike Factor			0.99	1.00			1.00	1.00		1.00	1.00	
Frt			0.850		0.855			0.992			0.999	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1381	1579	1015	1381	1101	0	1381	2495	0	1341	3577	0
Flt Permitted	0.738			0.757			0.262			0.249		
Satd. Flow (perm)	1073	1579	1001	1099	1101	0	380	2495	0	351	3577	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			172		29			8			1	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		106.7			108.0			280.1			454.1	
Travel Time (s)		7.7			7.8			20.2			32.7	
Confl. Peds. (#/hr)			2	2			5		2	2		5
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	9%	0%	0%	4%	0%	1%	0%	3%	2%	0%
Adj. Flow (vph)	13	0	39	61	1	29	7	942	56	43	1038	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	13	0	39	61	30	0	7	998	0	43	1044	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	1.0		5.0	5.0	
Minimum Split (s)	39.0	39.0	39.0	39.0	39.0		9.5	52.0		9.5	52.0	
Total Split (s)	39.0	39.0	39.0	39.0	39.0		9.6	56.0		10.0	56.4	
Total Split (%)	37.1%	37.1%	37.1%	37.1%	37.1%		9.1%	53.3%		9.5%	53.7%	
Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		6.6	51.0		7.0	51.4	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)	11.0	11.0	11.0	11.0	11.0			16.0			16.0	
Flash Don't Walk (s)	23.0	23.0	23.0	23.0	23.0			31.0			31.0	
Pedestrian Calls (#/hr)	0	0	0	0	0			0			0	
Act Effct Green (s)	9.7		9.7	9.7	9.7		61.2	57.1		63.0	60.8	
Actuated g/C Ratio	0.12		0.12	0.12	0.12		0.78	0.72		0.80	0.77	
v/c Ratio	0.10		0.14	0.45	0.19		0.02	0.55		0.12	0.38	
Control Delay (s/veh)	32.3		1.1	43.3	15.2		2.9	9.4		3.3	5.1	
Queue Delay	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	32.3		1.1	43.3	15.2		2.9	9.4		3.3	5.1	
LOS	C		A	D	B		A	A		A	A	
Approach Delay (s/veh)		8.9			34.0			9.3			5.1	
Approach LOS		A			C			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 105			
Actuated Cycle Length: 78.8			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay (s/veh): 8.3		Intersection LOS: A	
Intersection Capacity Utilization 65.0%		ICU Level of Service C	
Analysis Period (min) 15			

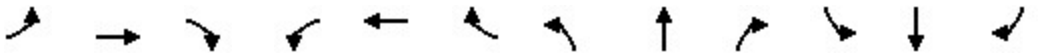
Splits and Phases: 2: Dorchester Road & Dawson Street





Lane Group	EBL	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	13	39	61	30	7	998	43	1044
v/c Ratio	0.10	0.14	0.45	0.19	0.02	0.55	0.12	0.38
Control Delay (s/veh)	32.3	1.1	43.3	15.2	2.9	9.4	3.3	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	32.3	1.1	43.3	15.2	2.9	9.4	3.3	5.1
Queue Length 50th (m)	1.9	0.0	9.2	0.2	0.3	44.0	1.2	16.5
Queue Length 95th (m)	7.0	0.0	21.3	7.6	1.2	76.7	4.1	42.8
Internal Link Dist (m)				84.0		256.1		430.1
Turn Bay Length (m)	30.0	35.0	20.0		180.0		30.0	
Base Capacity (vph)	464	530	476	493	381	1808	368	2762
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	0.03	0.07	0.13	0.06	0.02	0.55	0.12	0.38

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	0	38	60	1	28	7	923	55	42	1017	6
Future Volume (vph)	13	0	38	60	1	28	7	923	55	42	1017	6
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Total Lost time (s)	5.0		5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00		1.00	1.00	1.00		1.00	0.95		1.00	0.91	
Frpb, ped/bikes	1.00		0.99	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00		0.85	1.00	0.86		1.00	0.99		1.00	1.00	
Flt Protected	0.95		1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1381		1001	1379	1101		1381	2494		1341	3578	
Flt Permitted	0.74		1.00	0.76	1.00		0.26	1.00		0.25	1.00	
Satd. Flow (perm)	1073		1001	1099	1101		381	2494		351	3578	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	13	0	39	61	1	29	7	942	56	43	1038	6
RTOR Reduction (vph)	0	0	35	0	26	0	0	2	0	0	0	0
Lane Group Flow (vph)	13	0	4	61	4	0	7	996	0	43	1044	0
Confl. Peds. (#/hr)			2	2			5		2	2		5
Heavy Vehicles (%)	0%	0%	9%	0%	0%	4%	0%	1%	0%	3%	2%	0%
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	8.5		8.5	8.5	8.5		58.3	57.2		63.5	59.8	
Effective Green, g (s)	8.5		8.5	8.5	8.5		58.3	57.2		63.5	59.8	
Actuated g/C Ratio	0.10		0.10	0.10	0.10		0.71	0.69		0.77	0.73	
Clearance Time (s)	5.0		5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	110		103	113	113		282	1731		314	2596	
v/s Ratio Prot					0.00		0.00	c0.40		c0.01	0.29	
v/s Ratio Perm	0.01		0.00	c0.06			0.02			0.10		
v/c Ratio	0.12		0.04	0.54	0.04		0.02	0.58		0.14	0.40	
Uniform Delay, d1	33.5		33.3	35.1	33.3		3.5	6.4		2.7	4.4	
Progression Factor	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.5		0.2	4.9	0.1		0.0	1.4		0.2	0.5	
Delay (s)	34.0		33.4	40.0	33.4		3.6	7.8		2.9	4.8	
Level of Service	C		C	D	C		A	A		A	A	
Approach Delay (s/veh)		33.6			37.8			7.8			4.8	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	8.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	82.4	Sum of lost time (s)	13.0
Intersection Capacity Utilization	65.0%	ICU Level of Service	C
Analysis Period (min)	15		

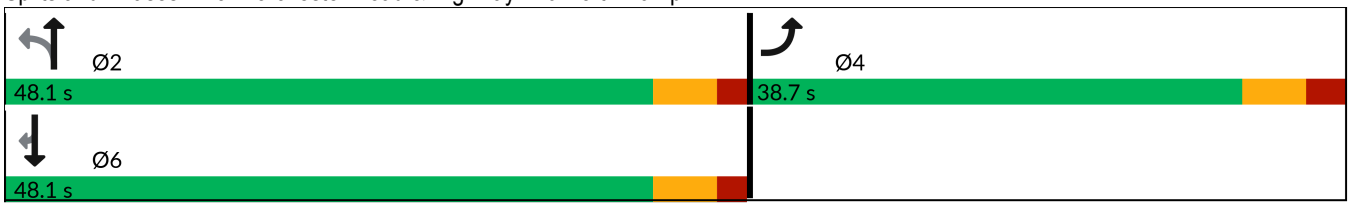
c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	45	0	238	970	571	554
Future Volume (vph)	45	0	238	970	571	554
Ideal Flow (vphpl)	1454	1301	1454	1579	1579	1301
Storage Length (m)	0.0	0.0	160.0			0.0
Storage Lanes	2	0	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor	1.00					
Frt						0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	2602	0	1341	2970	2941	1074
Flt Permitted	0.950		0.422			
Satd. Flow (perm)	2598	0	596	2970	2941	1074
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						589
Link Speed (k/h)	50			50	50	
Link Distance (m)	166.4			377.5	280.1	
Travel Time (s)	12.0			27.2	20.2	
Confl. Peds. (#/hr)	1					
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	3%	3%	3%	1%	2%	3%
Adj. Flow (vph)	48	0	253	1032	607	589
Shared Lane Traffic (%)						
Lane Group Flow (vph)	48	0	253	1032	607	589
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.2			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.60	1.40	1.26	1.26	1.60
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1		1	2	2	1
Detector Template	Left		Left	Thru	Thru	Right
Leading Detector (m)	2.0		2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0		2.0	0.6	0.6	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	8.0		10.0	10.0	10.0	10.0
Minimum Split (s)	38.7		24.1	24.1	24.1	24.1
Total Split (s)	38.7		48.1	48.1	48.1	48.1
Total Split (%)	44.6%		55.4%	55.4%	55.4%	55.4%
Maximum Green (s)	32.0		42.0	42.0	42.0	42.0
Yellow Time (s)	4.1		4.1	4.1	4.1	4.1
All-Red Time (s)	2.6		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7		6.1	6.1	6.1	6.1
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		Max	Max	Max	Max
Walk Time (s)	12.0					
Flash Don't Walk (s)	20.0					
Pedestrian Calls (#/hr)	0					
Act Effct Green (s)	8.0		51.1	51.1	51.1	51.1
Actuated g/C Ratio	0.13		0.80	0.80	0.80	0.80
v/c Ratio	0.15		0.53	0.43	0.26	0.60
Control Delay (s/veh)	25.9		10.8	4.5	3.5	3.4
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay (s/veh)	25.9		10.8	4.5	3.5	3.4
LOS	C		B	A	A	A
Approach Delay (s/veh)	25.9			5.7	3.4	
Approach LOS	C			A	A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 86.8			
Actuated Cycle Length: 63.5			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay (s/veh): 5.0		Intersection LOS: A	
Intersection Capacity Utilization 77.5%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Dorchester Road & Highway 420 North Ramp



Lane Group	EBL	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	48	253	1032	607	589
v/c Ratio	0.15	0.53	0.43	0.26	0.60
Control Delay (s/veh)	25.9	10.8	4.5	3.5	3.4
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	25.9	10.8	4.5	3.5	3.4
Queue Length 50th (m)	2.8	14.5	27.3	13.3	0.0
Queue Length 95th (m)	7.1	#44.6	39.5	19.7	8.8
Internal Link Dist (m)	142.4		353.5	256.1	
Turn Bay Length (m)		160.0			
Base Capacity (vph)	1311	479	2388	2365	979
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.04	0.53	0.43	0.26	0.60

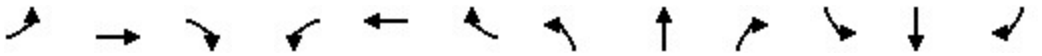
Intersection Summary

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

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	45	0	238	970	571	554
Future Volume (vph)	45	0	238	970	571	554
Ideal Flow (vphpl)	1454	1301	1454	1579	1579	1301
Total Lost time (s)	6.7		6.1	6.1	6.1	6.1
Lane Util. Factor	0.97		1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	0.95		0.95	1.00	1.00	1.00
Satd. Flow (prot)	2602		1341	2970	2941	1074
Flt Permitted	0.95		0.42	1.00	1.00	1.00
Satd. Flow (perm)	2602		596	2970	2941	1074
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	48	0	253	1032	607	589
RTOR Reduction (vph)	0	0	0	0	0	157
Lane Group Flow (vph)	48	0	253	1032	607	432
Confl. Peds. (#/hr)	1					
Heavy Vehicles (%)	3%	3%	3%	1%	2%	3%
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Actuated Green, G (s)	4.8		48.6	48.6	48.6	48.6
Effective Green, g (s)	4.8		48.6	48.6	48.6	48.6
Actuated g/C Ratio	0.07		0.73	0.73	0.73	0.73
Clearance Time (s)	6.7		6.1	6.1	6.1	6.1
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	188		437	2180	2159	788
v/s Ratio Prot	c0.02			0.35	0.21	
v/s Ratio Perm			c0.42			0.40
v/c Ratio	0.26		0.58	0.47	0.28	0.55
Uniform Delay, d1	29.0		4.1	3.6	2.9	3.9
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7		5.5	0.7	0.3	2.7
Delay (s)	29.7		9.6	4.3	3.3	6.7
Level of Service	C		A	A	A	A
Approach Delay (s/veh)	29.7			5.4	4.9	
Approach LOS	C			A	A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	5.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	66.2	Sum of lost time (s)	12.8
Intersection Capacity Utilization	77.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

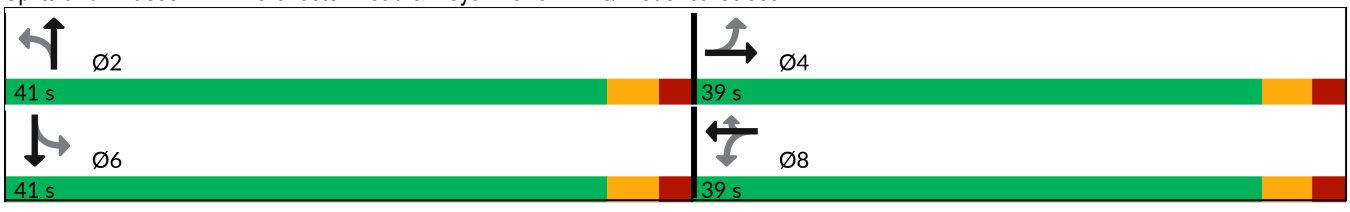


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	13	8	115	30	495	6	662	61	84	481	20
Future Volume (vph)	17	13	8	115	30	495	6	662	61	84	481	20
Ideal Flow (vphpl)	1433	1433	1433	1454	1579	1301	1454	1338	1338	1454	1338	1338
Storage Length (m)	0.0		0.0	45.0		0.0	95.0		0.0	165.0		0.0
Storage Lanes	0		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		1.00		1.00				1.00		1.00		
Frt		0.970				0.850		0.987			0.994	
Flt Protected		0.979		0.950			0.950			0.950		
Satd. Flow (prot)	0	1320	0	1303	1423	1095	1381	2455	0	1368	2473	0
Flt Permitted		0.917		0.730			0.411			0.278		
Satd. Flow (perm)	0	1237	0	999	1423	1095	598	2455	0	400	2473	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9				131		16			7	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		47.8			201.0			125.1			377.5	
Travel Time (s)		3.4			14.5			9.0			27.2	
Confl. Peds. (#/hr)			3	3					5	5		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	8%	0%	6%	11%	1%	0%	2%	3%	1%	2%	6%
Adj. Flow (vph)	18	14	9	124	32	532	6	712	66	90	517	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	41	0	124	32	532	6	778	0	90	539	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.42	1.42	1.42	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	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	5.0	
Minimum Split (s)	32.0	32.0		32.0	32.0	32.0	41.0	41.0		41.0	41.0	
Total Split (s)	39.0	39.0		39.0	39.0	39.0	41.0	41.0		41.0	41.0	
Total Split (%)	48.8%	48.8%		48.8%	48.8%	48.8%	51.3%	51.3%		51.3%	51.3%	
Maximum Green (s)	34.0	34.0		34.0	34.0	34.0	36.0	36.0		36.0	36.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	Max	Max		Max	Max	
Walk Time (s)	9.0	9.0		9.0	9.0	9.0	12.0	12.0		12.0	12.0	
Flash Don't Walk (s)	18.0	18.0		18.0	18.0	18.0	24.0	24.0		24.0	24.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	
Act Effct Green (s)		34.0		34.0	34.0	34.0	36.0	36.0		36.0	36.0	
Actuated g/C Ratio		0.43		0.43	0.43	0.43	0.45	0.45		0.45	0.45	
v/c Ratio		0.08		0.29	0.05	0.99	0.02	0.70		0.50	0.48	
Control Delay (s/veh)		11.9		17.5	13.9	55.3	12.7	21.4		27.6	17.1	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay (s/veh)		11.9		17.5	13.9	55.3	12.7	21.4		27.6	17.1	
LOS		B		B	B	E	B	C		C	B	
Approach Delay (s/veh)		11.9			46.6			21.3			18.6	
Approach LOS		B			D			C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.99			
Intersection Signal Delay (s/veh): 28.5		Intersection LOS: C	
Intersection Capacity Utilization 93.2%		ICU Level of Service F	
Analysis Period (min) 15			

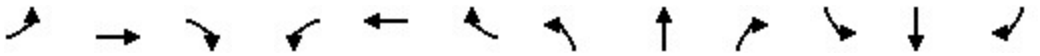
Splits and Phases: 4: Dorchester Road & Royal Manor Drive/Frederica Street



Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	41	124	32	532	6	778	90	539
v/c Ratio	0.08	0.29	0.05	0.99	0.02	0.70	0.50	0.48
Control Delay (s/veh)	11.9	17.5	13.9	55.3	12.7	21.4	27.6	17.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	11.9	17.5	13.9	55.3	12.7	21.4	27.6	17.1
Queue Length 50th (m)	2.9	12.6	2.9	66.0	0.5	49.3	9.8	30.2
Queue Length 95th (m)	8.9	25.4	8.1	#136.0	2.7	70.8	26.6	44.3
Internal Link Dist (m)	23.8		177.0			101.1		353.5
Turn Bay Length (m)		45.0			95.0		165.0	
Base Capacity (vph)	530	424	604	540	269	1113	180	1116
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	0.29	0.05	0.99	0.02	0.70	0.50	0.48

Intersection Summary

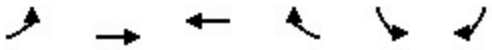
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	13	8	115	30	495	6	662	61	84	481	20
Future Volume (vph)	17	13	8	115	30	495	6	662	61	84	481	20
Ideal Flow (vphpl)	1433	1433	1433	1454	1579	1301	1454	1338	1338	1454	1338	1338
Total Lost time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt		0.97		1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected		0.98		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1320		1300	1423	1095	1381	2455		1366	2473	
Flt Permitted		0.92		0.73	1.00	1.00	0.41	1.00		0.28	1.00	
Satd. Flow (perm)		1237		999	1423	1095	597	2455		400	2473	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	18	14	9	124	32	532	6	712	66	90	517	22
RTOR Reduction (vph)	0	5	0	0	0	75	0	9	0	0	4	0
Lane Group Flow (vph)	0	36	0	124	32	457	6	769	0	90	535	0
Confl. Peds. (#/hr)			3	3					5	5		
Heavy Vehicles (%)	0%	8%	0%	6%	11%	1%	0%	2%	3%	1%	2%	6%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		34.0		34.0	34.0	34.0	36.0	36.0		36.0	36.0	
Effective Green, g (s)		34.0		34.0	34.0	34.0	36.0	36.0		36.0	36.0	
Actuated g/C Ratio		0.43		0.43	0.43	0.43	0.45	0.45		0.45	0.45	
Clearance Time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		525		424	604	465	268	1104		180	1112	
v/s Ratio Prot					0.02			c0.31			0.22	
v/s Ratio Perm		0.03		0.12		c0.42	0.01			0.23		
v/c Ratio		0.07		0.29	0.05	0.98	0.02	0.70		0.50	0.48	
Uniform Delay, d1		13.6		15.1	13.5	22.7	12.2	17.6		15.6	15.4	
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1		0.4	0.0	36.9	0.2	3.6		9.6	1.5	
Delay (s)		13.7		15.5	13.6	59.6	12.4	21.3		25.2	16.9	
Level of Service		B		B	B	E	B	C		C	B	
Approach Delay (s/veh)		13.7			49.5			21.2			18.1	
Approach LOS		B			D			C			B	

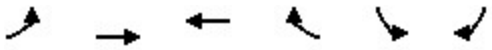
Intersection Summary			
HCM 2000 Control Delay (s/veh)	29.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	93.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	50	108	190	1	159	451
Future Volume (vph)	50	108	190	1	159	451
Ideal Flow (vphpl)	1454	1579	1338	1338	1454	1301
Storage Length (m)	85.0			0.0	0.0	40.0
Storage Lanes	1			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1381	2913	2515	0	1341	1074
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1381	2913	2515	0	1341	1074
Link Speed (k/h)		50	50		50	
Link Distance (m)		201.0	149.3		70.1	
Travel Time (s)		14.5	10.7		5.0	
Confl. Peds. (#/hr)	1			1		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	3%	1%	0%	3%	3%
Adj. Flow (vph)	56	120	211	1	177	501
Shared Lane Traffic (%)						
Lane Group Flow (vph)	56	120	212	0	177	501
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.26	1.55	1.55	1.40	1.60
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 55.1%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	50	108	190	1	159	451
Future Volume (Veh/h)	50	108	190	1	159	451
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)	56	120	211	1	177	501
Pedestrians					1	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						5
Median type		None	None			
Median storage veh)						
Upstream signal (m)		201				
pX, platoon unblocked						
vC, conflicting volume	213				385	107
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	213				385	107
tC, single (s)	4.1				6.9	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				69	46
cM capacity (veh/h)	1368				564	923

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	56	60	60	141	71	678
Volume Left	56	0	0	0	0	177
Volume Right	0	0	0	0	1	501
cSH	1368	1700	1700	1700	1700	1248
Volume to Capacity	0.04	0.04	0.04	0.08	0.04	0.54
Queue Length 95th (m)	1.0	0.0	0.0	0.0	0.0	27.2
Control Delay (s/veh)	7.7	0.0	0.0	0.0	0.0	13.7
Lane LOS	A					B
Approach Delay (s/veh)	2.5			0.0		13.7
Approach LOS						B

Intersection Summary			
Average Delay	9.1		
Intersection Capacity Utilization	55.1%	ICU Level of Service	B
Analysis Period (min)	15		

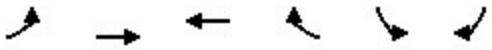
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	740	0	0	991	150	0
Future Volume (vph)	740	0	0	991	150	0
Ideal Flow (vphpl)	1579	1301	1454	1579	1454	1301
Lane Util. Factor	0.95	1.00	1.00	0.91	1.00	1.00
Frt						
Flt Protected					0.950	
Satd. Flow (prot)	2970	0	0	4268	1328	0
Flt Permitted					0.950	
Satd. Flow (perm)	2970	0	0	4268	1328	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	266.5			178.9	263.7	
Travel Time (s)	19.2			12.9	19.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	5%	0%	1%	4%	1%
Adj. Flow (vph)	804	0	0	1077	163	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	804	0	0	1077	163	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.26	1.60	1.40	1.26	1.40	1.60
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 65.8%		ICU Level of Service C	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	740	0	0	991	150	0
Future Volume (Veh/h)	740	0	0	991	150	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	804	0	0	1077	163	0
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			804		1163	402
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			804		1163	402
tC, single (s)			4.1		6.9	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		12	100
cM capacity (veh/h)			829		185	601

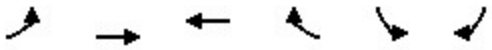
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	402	402	359	359	359	163
Volume Left	0	0	0	0	0	163
Volume Right	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	185
Volume to Capacity	0.24	0.24	0.21	0.21	0.21	0.88
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	52.5
Control Delay (s/veh)	0.0	0.0	0.0	0.0	0.0	89.7
Lane LOS						F
Approach Delay (s/veh)	0.0		0.0			89.7
Approach LOS						F

Intersection Summary			
Average Delay	7.1		
Intersection Capacity Utilization	65.8%	ICU Level of Service	C
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	825	933	0	160	342
Future Volume (vph)	0	825	933	0	160	342
Ideal Flow (vphpl)	1454	1579	1579	1301	1433	1433
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	2941	2941	0	1348	1183
Flt Permitted					0.950	
Satd. Flow (perm)	0	2941	2941	0	1348	1183
Link Speed (k/h)		50	50		50	
Link Distance (m)		152.8	266.5		231.4	
Travel Time (s)		11.0	19.2		16.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	1%	1%	3%
Adj. Flow (vph)	0	897	1014	0	174	372
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	897	1014	0	174	372
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.26	1.26	1.60	1.42	1.42
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

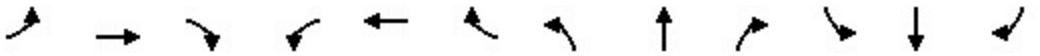
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 65.8%		ICU Level of Service C	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↰	↱
Traffic Volume (veh/h)	0	825	933	0	160	342
Future Volume (Veh/h)	0	825	933	0	160	342
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	897	1014	0	174	372
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	1014				1463	507
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1014				1463	507
tC, single (s)	4.1				6.8	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				0	27
cM capacity (veh/h)	692				121	508

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	449	449	507	507	174	372
Volume Left	0	0	0	0	174	0
Volume Right	0	0	0	0	0	372
cSH	1700	1700	1700	1700	121	508
Volume to Capacity	0.26	0.26	0.30	0.30	1.44	0.73
Queue Length 95th (m)	0.0	0.0	0.0	0.0	96.7	48.4
Control Delay (s/veh)	0.0	0.0	0.0	0.0	305.9	29.0
Lane LOS					F	D
Approach Delay (s/veh)	0.0		0.0		117.3	
Approach LOS					F	

Intersection Summary			
Average Delay	26.1		
Intersection Capacity Utilization	65.8%	ICU Level of Service	C
Analysis Period (min)	15		

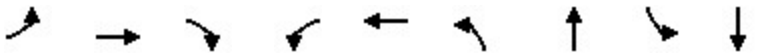


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	336	223	304	233	269	139	428	403	119	165	382	269
Future Volume (vph)	336	223	304	233	269	139	428	403	119	165	382	269
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Storage Length (m)	70.0		0.0	105.0		125.0	90.0		0.0	95.0		41.0
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00		0.98	1.00	0.99		1.00	1.00		1.00	0.99	
Frt			0.850		0.949			0.966			0.938	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1341	1548	1095	1368	2383	0	1368	2427	0	1368	2329	0
Flt Permitted	0.290			0.595			0.233			0.454		
Satd. Flow (perm)	408	1548	1076	853	2383	0	335	2427	0	652	2329	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			310		97			46			182	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		205.0			291.8			454.1			179.9	
Travel Time (s)		14.8			21.0			32.7			13.0	
Confl. Peds. (#/hr)	6		6	6		6	6		7	7		6
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	3%	2%	1%	1%	1%	0%	1%	1%	0%	1%	0%	4%
Adj. Flow (vph)	343	228	310	238	274	142	437	411	121	168	390	274
Shared Lane Traffic (%)												
Lane Group Flow (vph)	343	228	310	238	416	0	437	532	0	168	664	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	9.5	35.0	35.0	9.5	35.0		9.5	35.0		9.5	35.0	
Total Split (s)	18.0	31.5	31.5	13.0	26.5		20.0	36.0		9.5	25.5	
Total Split (%)	20.0%	35.0%	35.0%	14.4%	29.4%		22.2%	40.0%		10.6%	28.3%	
Maximum Green (s)	15.0	26.5	26.5	10.0	21.5		17.0	31.0		6.5	20.5	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)		10.0	10.0		10.0			10.0			10.0	
Flash Don't Walk (s)		20.0	20.0		20.0			20.0			20.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	37.5	22.5	22.5	29.5	17.5		52.1	40.6		38.5	30.0	
Actuated g/C Ratio	0.39	0.24	0.24	0.31	0.18		0.54	0.42		0.40	0.31	
v/c Ratio	1.12	0.63	0.63	0.75	0.81		1.19	0.50		0.54	0.78	
Control Delay (s/veh)	114.4	40.9	10.0	40.1	41.3		132.2	20.9		22.8	29.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	114.4	40.9	10.0	40.1	41.3		132.2	20.9		22.8	29.2	
LOS	F	D	B	D	D		F	C		C	C	
Approach Delay (s/veh)		58.6			40.9			71.1			27.9	
Approach LOS		E			D			E			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 95.6			
Natural Cycle: 120			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.19			
Intersection Signal Delay (s/veh): 51.1		Intersection LOS: D	
Intersection Capacity Utilization 116.3%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 1: Dorchester Road & Morrison Street



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	343	228	310	238	416	437	532	168	664
v/c Ratio	1.12	0.63	0.63	0.75	0.81	1.19	0.50	0.54	0.78
Control Delay (s/veh)	114.4	40.9	10.0	40.1	41.3	132.2	20.9	22.8	29.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	114.4	40.9	10.0	40.1	41.3	132.2	20.9	22.8	29.2
Queue Length 50th (m)	~56.6	39.9	0.0	33.3	31.7	~79.8	36.0	16.4	45.8
Queue Length 95th (m)	#112.3	64.7	24.7	#58.2	49.5	#147.6	54.6	30.5	72.3
Internal Link Dist (m)		181.0			267.8		430.1		155.9
Turn Bay Length (m)	70.0			105.0		90.0		95.0	
Base Capacity (vph)	306	429	522	317	611	366	1056	311	856
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.12	0.53	0.59	0.75	0.68	1.19	0.50	0.54	0.78

Intersection Summary

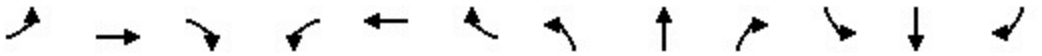
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	336	223	304	233	269	139	428	403	119	165	382	269
Future Volume (vph)	336	223	304	233	269	139	428	403	119	165	382	269
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Total Lost time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.95		1.00	0.97		1.00	0.94	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1340	1548	1076	1364	2382		1367	2426		1366	2329	
Flt Permitted	0.29	1.00	1.00	0.60	1.00		0.23	1.00		0.45	1.00	
Satd. Flow (perm)	409	1548	1076	855	2382		335	2426		653	2329	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	343	228	310	238	274	142	437	411	121	168	390	274
RTOR Reduction (vph)	0	0	237	0	79	0	0	26	0	0	125	0
Lane Group Flow (vph)	343	228	73	238	337	0	437	506	0	168	539	0
Confl. Peds. (#/hr)	6		6	6		6	6		7	7		6
Heavy Vehicles (%)	3%	2%	1%	1%	1%	0%	1%	1%	0%	1%	0%	4%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	35.5	22.5	22.5	27.5	17.5		50.1	40.6		36.6	30.1	
Effective Green, g (s)	35.5	22.5	22.5	27.5	17.5		50.1	40.6		36.6	30.1	
Actuated g/C Ratio	0.37	0.24	0.24	0.29	0.18		0.52	0.42		0.38	0.31	
Clearance Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	297	364	253	299	436		359	1030		298	733	
v/s Ratio Prot	c0.18	0.15		0.08	0.14		c0.22	0.21		0.04	0.23	
v/s Ratio Perm	c0.25		0.07	0.15			c0.42			0.18		
v/c Ratio	1.15	0.63	0.29	0.80	0.77		1.22	0.49		0.56	0.74	
Uniform Delay, d1	26.3	32.8	30.0	29.9	37.2		18.7	20.0		20.9	29.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	100.9	3.3	0.6	13.6	8.3		120.6	1.7		2.4	6.5	
Delay (s)	127.2	36.1	30.6	43.5	45.4		139.3	21.7		23.4	35.7	
Level of Service	F	D	C	D	D		F	C		C	D	
Approach Delay (s/veh)		69.6			44.7			74.7			33.2	
Approach LOS		E			D			E			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	57.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.27		
Actuated Cycle Length (s)	95.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	116.3%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

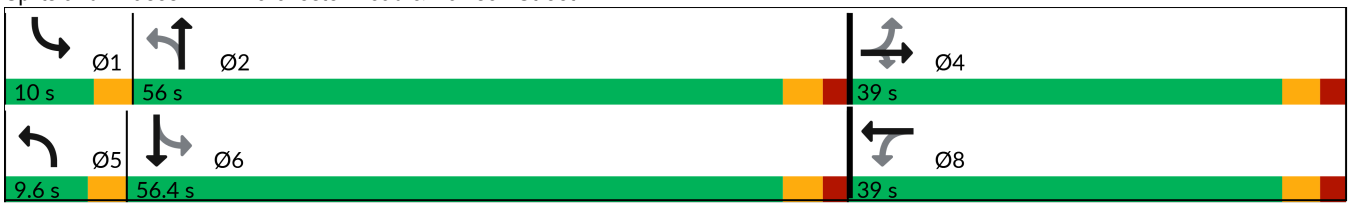


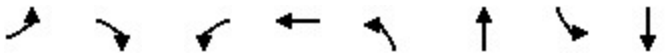
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	0	1	68	0	26	3	941	42	20	1088	1
Future Volume (vph)	5	0	1	68	0	26	3	941	42	20	1088	1
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Storage Length (m)	30.0		35.0	20.0		0.0	180.0		0.0	30.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.91	0.91
Ped Bike Factor			0.99	1.00			1.00	1.00		1.00	1.00	
Frt			0.850		0.850			0.994				
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1381	1579	1106	1381	1137	0	1381	2525	0	1381	3653	0
Flt Permitted	0.740			0.757			0.242			0.256		
Satd. Flow (perm)	1076	1579	1091	1099	1137	0	352	2525	0	372	3653	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			170		194			6				
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		106.7			108.0			280.1			454.1	
Travel Time (s)		7.7			7.8			20.2			32.7	
Confl. Peds. (#/hr)			2	2			3		1	1		3
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	5	0	1	69	0	27	3	960	43	20	1110	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	5	0	1	69	27	0	3	1003	0	20	1111	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	1.0		5.0	5.0	
Minimum Split (s)	39.0	39.0	39.0	39.0	39.0		9.5	52.0		9.5	52.0	
Total Split (s)	39.0	39.0	39.0	39.0	39.0		9.6	56.0		10.0	56.4	
Total Split (%)	37.1%	37.1%	37.1%	37.1%	37.1%		9.1%	53.3%		9.5%	53.7%	
Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		6.6	51.0		7.0	51.4	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)	11.0	11.0	11.0	11.0	11.0			16.0			16.0	
Flash Don't Walk (s)	23.0	23.0	23.0	23.0	23.0			31.0			31.0	
Pedestrian Calls (#/hr)	0	0	0	0	0			0			0	
Act Effct Green (s)	10.2		10.2	10.3	10.3		61.9	58.9		62.8	60.7	
Actuated g/C Ratio	0.13		0.13	0.13	0.13		0.78	0.74		0.79	0.77	
v/c Ratio	0.04		0.00	0.48	0.09		0.01	0.53		0.05	0.40	
Control Delay (s/veh)	29.8		0.0	43.6	0.5		3.0	8.5		3.2	5.5	
Queue Delay	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	29.8		0.0	43.6	0.5		3.0	8.5		3.2	5.5	
LOS	C		A	D	A		A	A		A	A	
Approach Delay (s/veh)		24.8			31.5			8.5			5.4	
Approach LOS		C			C			A			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 105			
Actuated Cycle Length: 79.2			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.53			
Intersection Signal Delay (s/veh): 8.0		Intersection LOS: A	
Intersection Capacity Utilization 62.3%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: Dorchester Road & Dawson Street





Lane Group	EBL	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	5	1	69	27	3	1003	20	1111
v/c Ratio	0.04	0.00	0.48	0.09	0.01	0.53	0.05	0.40
Control Delay (s/veh)	29.8	0.0	43.6	0.5	3.0	8.5	3.2	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	29.8	0.0	43.6	0.5	3.0	8.5	3.2	5.5
Queue Length 50th (m)	0.6	0.0	9.1	0.0	0.1	26.5	0.5	17.8
Queue Length 95th (m)	3.8	0.0	23.3	0.0	0.8	77.2	2.5	47.2
Internal Link Dist (m)				84.0		256.1		430.1
Turn Bay Length (m)	30.0	35.0	20.0		180.0		30.0	
Base Capacity (vph)	465	568	475	601	363	1878	385	2801
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	0.01	0.00	0.15	0.04	0.01	0.53	0.05	0.40

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	0	1	68	0	26	3	941	42	20	1088	1
Future Volume (vph)	5	0	1	68	0	26	3	941	42	20	1088	1
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Total Lost time (s)	5.0		5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00		1.00	1.00	1.00		1.00	0.95		1.00	0.91	
Frpb, ped/bikes	1.00		0.99	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00		0.85	1.00	0.85		1.00	0.99		1.00	1.00	
Flt Protected	0.95		1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1381		1091	1379	1137		1381	2524		1381	3652	
Flt Permitted	0.74		1.00	0.76	1.00		0.24	1.00		0.26	1.00	
Satd. Flow (perm)	1075		1091	1099	1137		352	2524		372	3652	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	5	0	1	69	0	27	3	960	43	20	1110	1
RTOR Reduction (vph)	0	0	1	0	24	0	0	2	0	0	0	0
Lane Group Flow (vph)	5	0	0	69	3	0	3	1001	0	20	1111	0
Confl. Peds. (#/hr)			2	2			3		1	1		3
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	9.0		9.0	9.0	9.0		59.5	58.4		61.9	59.6	
Effective Green, g (s)	9.0		9.0	9.0	9.0		59.5	58.4		61.9	59.6	
Actuated g/C Ratio	0.11		0.11	0.11	0.11		0.72	0.71		0.75	0.72	
Clearance Time (s)	5.0		5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	116		118	119	123		266	1782		306	2631	
v/s Ratio Prot					0.00		0.00	c0.40		c0.00	0.30	
v/s Ratio Perm	0.00		0.00	c0.06			0.01			0.05		
v/c Ratio	0.04		0.00	0.58	0.02		0.01	0.56		0.07	0.42	
Uniform Delay, d1	33.0		32.8	35.1	32.9		3.3	5.9		2.9	4.6	
Progression Factor	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.2		0.0	6.7	0.1		0.0	1.3		0.1	0.5	
Delay (s)	33.1		32.8	41.7	33.0		3.3	7.2		3.0	5.1	
Level of Service	C		C	D	C		A	A		A	A	
Approach Delay (s/veh)		33.1			39.3			7.2			5.1	
Approach LOS		C			D			A			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	7.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	82.7	Sum of lost time (s)	13.0
Intersection Capacity Utilization	62.3%	ICU Level of Service	B
Analysis Period (min)	15		

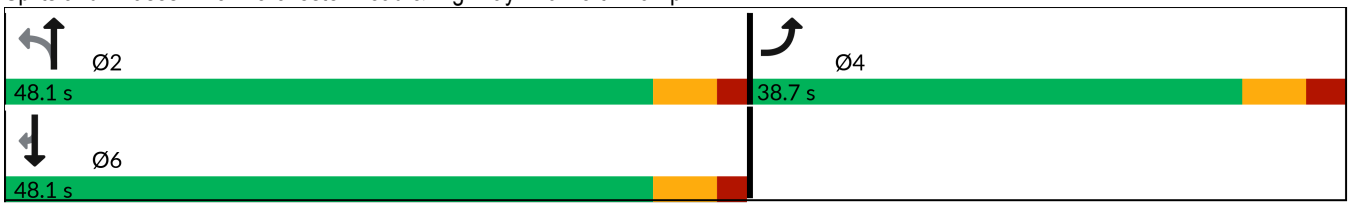
c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	32	0	239	969	611	558
Future Volume (vph)	32	0	239	969	611	558
Ideal Flow (vphpl)	1454	1301	1454	1579	1579	1301
Storage Length (m)	0.0	0.0	160.0			0.0
Storage Lanes	2	0	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor	1.00					
Frt						0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	2680	0	1368	3000	2970	1106
Flt Permitted	0.950		0.416			
Satd. Flow (perm)	2676	0	599	3000	2970	1106
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						569
Link Speed (k/h)	50			50	50	
Link Distance (m)	166.4			377.5	280.1	
Travel Time (s)	12.0			27.2	20.2	
Confl. Peds. (#/hr)	1					
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	1%	0%	1%	0%
Adj. Flow (vph)	33	0	244	989	623	569
Shared Lane Traffic (%)						
Lane Group Flow (vph)	33	0	244	989	623	569
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.2			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.60	1.40	1.26	1.26	1.60
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1		1	2	2	1
Detector Template	Left		Left	Thru	Thru	Right
Leading Detector (m)	2.0		2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0		2.0	0.6	0.6	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	8.0		10.0	10.0	10.0	10.0
Minimum Split (s)	38.7		24.1	24.1	24.1	24.1
Total Split (s)	38.7		48.1	48.1	48.1	48.1
Total Split (%)	44.6%		55.4%	55.4%	55.4%	55.4%
Maximum Green (s)	32.0		42.0	42.0	42.0	42.0
Yellow Time (s)	4.1		4.1	4.1	4.1	4.1
All-Red Time (s)	2.6		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7		6.1	6.1	6.1	6.1
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		Max	Max	Max	Max
Walk Time (s)	12.0					
Flash Don't Walk (s)	20.0					
Pedestrian Calls (#/hr)	0					
Act Effct Green (s)	8.0		54.7	54.7	54.7	54.7
Actuated g/C Ratio	0.13		0.87	0.87	0.87	0.87
v/c Ratio	0.10		0.47	0.38	0.24	0.55
Control Delay (s/veh)	25.1		8.1	3.2	2.6	2.7
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay (s/veh)	25.1		8.1	3.2	2.6	2.7
LOS	C		A	A	A	A
Approach Delay (s/veh)	25.1			4.2	2.7	
Approach LOS	C			A	A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 86.8			
Actuated Cycle Length: 63			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay (s/veh): 3.7		Intersection LOS: A	
Intersection Capacity Utilization 77.9%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Dorchester Road & Highway 420 North Ramp



Lane Group	EBL	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	33	244	989	623	569
v/c Ratio	0.10	0.47	0.38	0.24	0.55
Control Delay (s/veh)	25.1	8.1	3.2	2.6	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	25.1	8.1	3.2	2.6	2.7
Queue Length 50th (m)	1.9	0.0	0.0	0.0	0.0
Queue Length 95th (m)	5.5	38.3	36.8	20.3	8.6
Internal Link Dist (m)	142.4		353.5	256.1	
Turn Bay Length (m)		160.0			
Base Capacity (vph)	1361	519	2602	2576	1035
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.02	0.47	0.38	0.24	0.55

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	32	0	239	969	611	558
Future Volume (vph)	32	0	239	969	611	558
Ideal Flow (vphpl)	1454	1301	1454	1579	1579	1301
Total Lost time (s)	6.7		6.1	6.1	6.1	6.1
Lane Util. Factor	0.97		1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	0.95		0.95	1.00	1.00	1.00
Satd. Flow (prot)	2680		1368	3000	2970	1106
Flt Permitted	0.95		0.42	1.00	1.00	1.00
Satd. Flow (perm)	2680		598	3000	2970	1106
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	33	0	244	989	623	569
RTOR Reduction (vph)	0	0	0	0	0	136
Lane Group Flow (vph)	33	0	244	989	623	433
Confl. Peds. (#/hr)	1					
Heavy Vehicles (%)	0%	0%	1%	0%	1%	0%
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Actuated Green, G (s)	3.2		51.0	51.0	51.0	51.0
Effective Green, g (s)	3.2		51.0	51.0	51.0	51.0
Actuated g/C Ratio	0.05		0.76	0.76	0.76	0.76
Clearance Time (s)	6.7		6.1	6.1	6.1	6.1
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	128		455	2283	2260	841
v/s Ratio Prot	c0.01			0.33	0.21	
v/s Ratio Perm			c0.41			0.39
v/c Ratio	0.26		0.54	0.43	0.28	0.52
Uniform Delay, d1	30.8		3.2	2.9	2.4	3.1
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.1		4.5	0.6	0.3	2.2
Delay (s)	31.8		7.7	3.5	2.7	5.4
Level of Service	C		A	A	A	A
Approach Delay (s/veh)	31.8			4.3	4.0	
Approach LOS	C			A	A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	4.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	67.0	Sum of lost time (s)	12.8
Intersection Capacity Utilization	77.9%	ICU Level of Service	D
Analysis Period (min)	15		

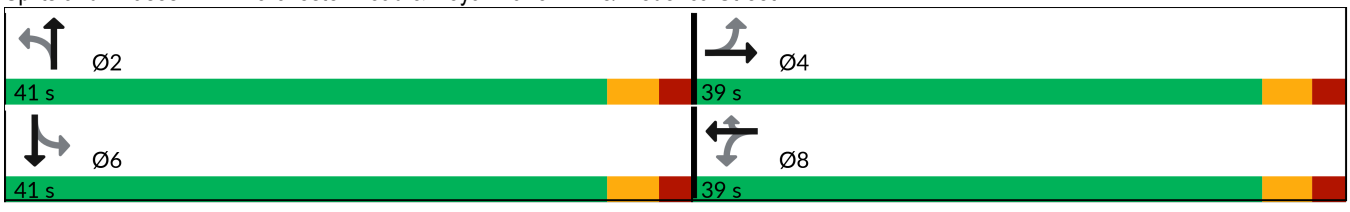
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	8	7	87	27	448	3	742	61	99	501	23
Future Volume (vph)	28	8	7	87	27	448	3	742	61	99	501	23
Ideal Flow (vphpl)	1433	1433	1433	1454	1579	1301	1454	1338	1338	1454	1338	1338
Storage Length (m)	0.0		0.0	45.0		0.0	95.0		0.0	165.0		0.0
Storage Lanes	0		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		1.00		1.00				1.00		1.00		
Frt		0.979				0.850		0.989			0.993	
Flt Protected		0.968		0.950			0.950			0.950		
Satd. Flow (prot)	0	1355	0	1368	1579	1095	1381	2507	0	1381	2501	0
Flt Permitted		0.863		0.728			0.420			0.267		
Satd. Flow (perm)	0	1208	0	1046	1579	1095	611	2507	0	388	2501	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7				110		14			8	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		47.8			201.0			125.1			377.5	
Travel Time (s)		3.4			14.5			9.0			27.2	
Confl. Peds. (#/hr)			2	2					8	8		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	0%	0%	1%	0%	1%	0%	0%	2%	0%	1%	0%
Adj. Flow (vph)	29	8	7	90	28	462	3	765	63	102	516	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	44	0	90	28	462	3	828	0	102	540	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.42	1.42	1.42	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	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	5.0	
Minimum Split (s)	32.0	32.0		32.0	32.0	32.0	41.0	41.0		41.0	41.0	
Total Split (s)	39.0	39.0		39.0	39.0	39.0	41.0	41.0		41.0	41.0	
Total Split (%)	48.8%	48.8%		48.8%	48.8%	48.8%	51.3%	51.3%		51.3%	51.3%	
Maximum Green (s)	34.0	34.0		34.0	34.0	34.0	36.0	36.0		36.0	36.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	Max	Max		Max	Max	
Walk Time (s)	9.0	9.0		9.0	9.0	9.0	12.0	12.0		12.0	12.0	
Flash Don't Walk (s)	18.0	18.0		18.0	18.0	18.0	24.0	24.0		24.0	24.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	
Act Effct Green (s)		29.9		29.9	29.9	29.9	36.2	36.2		36.2	36.2	
Actuated g/C Ratio		0.39		0.39	0.39	0.39	0.48	0.48		0.48	0.48	
v/c Ratio		0.09		0.22	0.05	0.93	0.01	0.69		0.55	0.45	
Control Delay (s/veh)		12.8		16.4	13.9	45.0	12.3	20.1		31.2	15.6	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay (s/veh)		12.8		16.4	13.9	45.0	12.3	20.1		31.2	15.6	
LOS		B		B	B	D	B	C		C	B	
Approach Delay (s/veh)		12.8			39.1			20.1			18.1	
Approach LOS		B			D			C			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 76.2			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay (s/veh): 24.6		Intersection LOS: C	
Intersection Capacity Utilization 90.3%		ICU Level of Service E	
Analysis Period (min) 15			

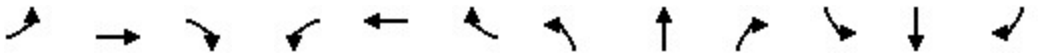
Splits and Phases: 4: Dorchester Road & Royal Manor Drive/Frederica Street



Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	44	90	28	462	3	828	102	540
v/c Ratio	0.09	0.22	0.05	0.93	0.01	0.69	0.55	0.45
Control Delay (s/veh)	12.8	16.4	13.9	45.0	12.3	20.1	31.2	15.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	12.8	16.4	13.9	45.0	12.3	20.1	31.2	15.6
Queue Length 50th (m)	3.4	8.8	2.6	51.7	0.3	53.9	11.7	30.1
Queue Length 95th (m)	9.5	18.8	7.2	#112.9	1.8	76.7	#35.4	44.0
Internal Link Dist (m)	23.8		177.0			101.1		353.5
Turn Bay Length (m)		45.0			95.0		165.0	
Base Capacity (vph)	546	469	709	552	290	1199	184	1193
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	0.19	0.04	0.84	0.01	0.69	0.55	0.45

Intersection Summary

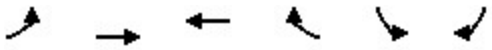
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	8	7	87	27	448	3	742	61	99	501	23
Future Volume (vph)	28	8	7	87	27	448	3	742	61	99	501	23
Ideal Flow (vphpl)	1433	1433	1433	1454	1579	1301	1454	1338	1338	1454	1338	1338
Total Lost time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt		0.98		1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected		0.97		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1355		1365	1579	1095	1381	2506		1379	2501	
Flt Permitted		0.86		0.73	1.00	1.00	0.42	1.00		0.27	1.00	
Satd. Flow (perm)		1207		1047	1579	1095	610	2506		388	2501	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	29	8	7	90	28	462	3	765	63	102	516	24
RTOR Reduction (vph)	0	4	0	0	0	67	0	7	0	0	4	0
Lane Group Flow (vph)	0	40	0	90	28	395	3	821	0	102	536	0
Confl. Peds. (#/hr)			2	2					8	8		
Heavy Vehicles (%)	0%	0%	0%	1%	0%	1%	0%	0%	2%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		29.9		29.9	29.9	29.9	36.2	36.2		36.2	36.2	
Effective Green, g (s)		29.9		29.9	29.9	29.9	36.2	36.2		36.2	36.2	
Actuated g/C Ratio		0.39		0.39	0.39	0.39	0.48	0.48		0.48	0.48	
Clearance Time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		474		411	620	430	290	1192		184	1189	
v/s Ratio Prot					0.02			c0.33			0.21	
v/s Ratio Perm		0.03		0.09		c0.36	0.00			0.26		
v/c Ratio		0.08		0.22	0.05	0.92	0.01	0.69		0.55	0.45	
Uniform Delay, d1		14.5		15.3	14.3	22.0	10.5	15.6		14.2	13.3	
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1		0.3	0.0	24.4	0.1	3.3		11.5	1.2	
Delay (s)		14.6		15.6	14.3	46.3	10.6	18.8		25.7	14.5	
Level of Service		B		B	B	D	B	B		C	B	
Approach Delay (s/veh)		14.6			40.0			18.8			16.3	
Approach LOS		B			D			B			B	

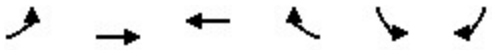
Intersection Summary			
HCM 2000 Control Delay (s/veh)	23.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	76.1	Sum of lost time (s)	10.0
Intersection Capacity Utilization	90.3%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	63	103	193	3	103	365
Future Volume (vph)	63	103	193	3	103	365
Ideal Flow (vphpl)	1454	1579	1338	1338	1454	1301
Storage Length (m)	85.0			0.0	0.0	40.0
Storage Lanes	1			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.998			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1354	3000	2512	0	1381	1106
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1354	3000	2512	0	1381	1106
Link Speed (k/h)		50	50		50	
Link Distance (m)		201.0	149.3		70.1	
Travel Time (s)		14.5	10.7		5.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	1%	0%	0%	0%
Adj. Flow (vph)	68	112	210	3	112	397
Shared Lane Traffic (%)						
Lane Group Flow (vph)	68	112	213	0	112	397
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.26	1.55	1.55	1.40	1.60
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	47.4%	ICU Level of Service	A
Analysis Period (min)	15		



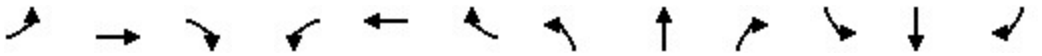
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	63	103	193	3	103	365
Future Volume (Veh/h)	63	103	193	3	103	365
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	68	112	210	3	112	397
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						5
Median type		None	None			
Median storage veh)						
Upstream signal (m)		201				
pX, platoon unblocked						
vC, conflicting volume	213				404	107
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	213				404	107
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	95				80	57
cM capacity (veh/h)	1355				551	934

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	68	56	56	140	73	509
Volume Left	68	0	0	0	0	112
Volume Right	0	0	0	0	3	397
cSH	1355	1700	1700	1700	1700	1197
Volume to Capacity	0.05	0.03	0.03	0.08	0.04	0.43
Queue Length 95th (m)	1.3	0.0	0.0	0.0	0.0	17.3
Control Delay (s/veh)	7.8	0.0	0.0	0.0	0.0	12.0
Lane LOS	A					B
Approach Delay (s/veh)	2.9			0.0		12.0
Approach LOS						B

Intersection Summary			
Average Delay	7.4		
Intersection Capacity Utilization	47.4%	ICU Level of Service	A
Analysis Period (min)	15		

Appendix E

Total Traffic Operations



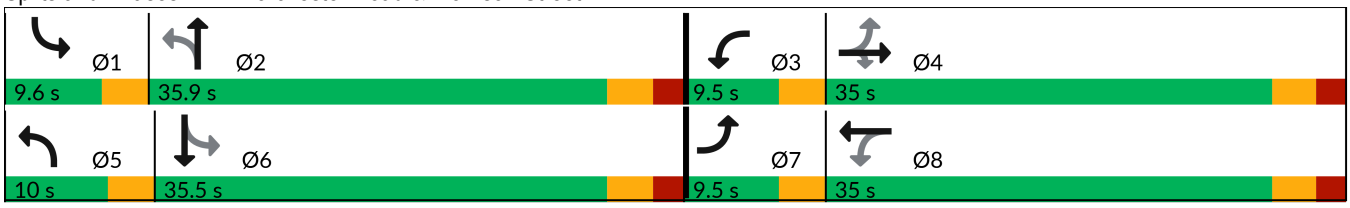
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	70	85	119	112	91	156	313	129	170	353	116
Future Volume (vph)	125	70	85	119	112	91	156	313	129	170	353	116
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Storage Length (m)	70.0		0.0	105.0		125.0	90.0		0.0	95.0		41.0
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor			0.98	1.00			1.00	1.00		1.00	1.00	
Frt			0.850		0.933			0.956			0.963	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1267	1410	1005	1368	2250	0	1341	2335	0	1368	2297	0
Flt Permitted	0.544			0.704			0.402			0.435		
Satd. Flow (perm)	726	1410	989	1009	2250	0	567	2335	0	626	2297	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			99		106			76			54	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		205.0			291.8			454.1			179.9	
Travel Time (s)		14.8			21.0			32.7			13.0	
Confl. Peds. (#/hr)			5	5			2		1	1		2
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	9%	12%	10%	1%	9%	1%	3%	4%	3%	1%	3%	16%
Adj. Flow (vph)	145	81	99	138	130	106	181	364	150	198	410	135
Shared Lane Traffic (%)												
Lane Group Flow (vph)	145	81	99	138	236	0	181	514	0	198	545	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

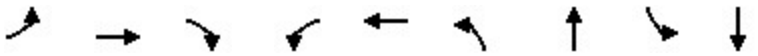
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	9.5	35.0	35.0	9.5	35.0		9.5	35.0		9.5	35.0	
Total Split (s)	9.5	35.0	35.0	9.5	35.0		10.0	35.9		9.6	35.5	
Total Split (%)	10.6%	38.9%	38.9%	10.6%	38.9%		11.1%	39.9%		10.7%	39.4%	
Maximum Green (s)	6.5	30.0	30.0	6.5	30.0		7.0	30.9		6.6	30.5	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)		10.0	10.0		10.0			10.0			10.0	
Flash Don't Walk (s)		20.0	20.0		20.0			20.0			20.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	20.1	12.9	12.9	19.5	11.0		39.9	30.9		39.1	30.5	
Actuated g/C Ratio	0.28	0.18	0.18	0.27	0.15		0.56	0.44		0.55	0.43	
v/c Ratio	0.57	0.32	0.38	0.45	0.54		0.46	0.49		0.48	0.54	
Control Delay (s/veh)	29.3	30.6	11.0	24.0	20.1		11.3	14.2		11.8	16.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	29.3	30.6	11.0	24.0	20.1		11.3	14.2		11.8	16.0	
LOS	C	C	B	C	C		B	B		B	B	
Approach Delay (s/veh)		24.0			21.5			13.4			14.9	
Approach LOS		C			C			B			B	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 71
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.57
Intersection Signal Delay (s/veh): 17.0 Intersection LOS: B
Intersection Capacity Utilization 71.8% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 1: Dorchester Road & Morrison Street





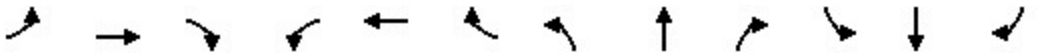
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	145	81	99	138	236	181	514	198	545
v/c Ratio	0.57	0.32	0.38	0.45	0.54	0.46	0.49	0.48	0.54
Control Delay (s/veh)	29.3	30.6	11.0	24.0	20.1	11.3	14.2	11.8	16.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	29.3	30.6	11.0	24.0	20.1	11.3	14.2	11.8	16.0
Queue Length 50th (m)	15.5	10.3	0.0	14.5	8.7	10.0	21.1	11.1	24.7
Queue Length 95th (m)	28.4	21.4	11.0	26.8	17.7	20.8	35.0	22.6	40.0
Internal Link Dist (m)		181.0			267.8		430.1		155.9
Turn Bay Length (m)	70.0			105.0		90.0		95.0	
Base Capacity (vph)	255	596	475	310	1011	394	1059	413	1017
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.14	0.21	0.45	0.23	0.46	0.49	0.48	0.54

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	125	70	85	119	112	91	156	313	129	170	353	116
Future Volume (vph)	125	70	85	119	112	91	156	313	129	170	353	116
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Total Lost time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.93		1.00	0.96		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1267	1410	990	1365	2249		1341	2335		1367	2297	
Flt Permitted	0.54	1.00	1.00	0.70	1.00		0.40	1.00		0.44	1.00	
Satd. Flow (perm)	726	1410	990	1012	2249		568	2335		626	2297	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	145	81	99	138	130	106	181	364	150	198	410	135
RTOR Reduction (vph)	0	0	81	0	89	0	0	43	0	0	31	0
Lane Group Flow (vph)	145	81	18	138	147	0	181	471	0	198	514	0
Confl. Peds. (#/hr)			5	5			2		1	1		2
Heavy Vehicles (%)	9%	12%	10%	1%	9%	1%	3%	4%	3%	1%	3%	16%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	19.4	12.9	12.9	16.8	11.6		37.9	30.9		37.1	30.5	
Effective Green, g (s)	19.4	12.9	12.9	16.8	11.6		37.9	30.9		37.1	30.5	
Actuated g/C Ratio	0.27	0.18	0.18	0.23	0.16		0.53	0.43		0.52	0.43	
Clearance Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	245	254	178	263	364		376	1007		392	978	
v/s Ratio Prot	c0.05	0.06		0.04	0.07		c0.05	0.20		0.05	c0.22	
v/s Ratio Perm	c0.11		0.02	0.09			0.21			0.21		
v/c Ratio	0.59	0.32	0.10	0.52	0.40		0.48	0.47		0.51	0.53	
Uniform Delay, d1	21.5	25.5	24.5	23.4	26.9		9.3	14.5		9.8	15.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.8	0.7	0.2	1.9	0.7		1.0	1.6		1.0	2.0	
Delay (s)	25.3	26.3	24.8	25.2	27.6		10.2	16.1		10.8	17.2	
Level of Service	C	C	C	C	C		B	B		B	B	
Approach Delay (s/veh)		25.4			26.8			14.5			15.5	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	18.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	71.6	Sum of lost time (s)	16.0
Intersection Capacity Utilization	71.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

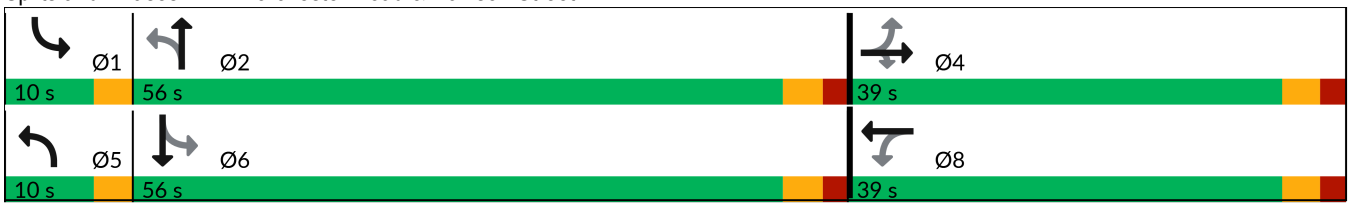


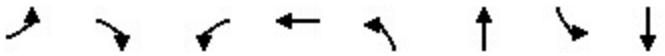
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	104	0	238	57	1	22	107	533	20	9	520	61
Future Volume (vph)	104	0	238	57	1	22	107	533	20	9	520	61
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Storage Length (m)	30.0		35.0	20.0		0.0	180.0		0.0	30.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.91	0.91
Ped Bike Factor							1.00	1.00		1.00	1.00	
Frt			0.850		0.856			0.995			0.984	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1381	1579	614	1354	1010	0	1316	2447	0	1244	3477	0
Flt Permitted	0.741			0.757			0.375			0.422		
Satd. Flow (perm)	1077	1579	614	1079	1010	0	519	2447	0	552	3477	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			280		24			5			27	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		106.7			108.0			280.1			454.1	
Travel Time (s)		7.7			7.8			20.2			32.7	
Confl. Peds. (#/hr)							1		3	3		1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	80%	2%	0%	14%	5%	3%	11%	11%	2%	13%
Adj. Flow (vph)	114	0	262	63	1	24	118	586	22	10	571	67
Shared Lane Traffic (%)												
Lane Group Flow (vph)	114	0	262	63	25	0	118	608	0	10	638	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	1.0		5.0	5.0	
Minimum Split (s)	39.0	39.0	39.0	39.0	39.0		9.5	52.0		9.5	52.0	
Total Split (s)	39.0	39.0	39.0	39.0	39.0		10.0	56.0		10.0	56.0	
Total Split (%)	37.1%	37.1%	37.1%	37.1%	37.1%		9.5%	53.3%		9.5%	53.3%	
Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		7.0	51.0		7.0	51.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)	11.0	11.0	11.0	11.0	11.0			16.0			16.0	
Flash Don't Walk (s)	23.0	23.0	23.0	23.0	23.0			31.0			31.0	
Pedestrian Calls (#/hr)	0	0	0	0	0			0			0	
Act Effct Green (s)	16.2		16.2	16.2	16.2		63.0	59.8		59.4	51.5	
Actuated g/C Ratio	0.18		0.18	0.18	0.18		0.72	0.68		0.68	0.59	
v/c Ratio	0.58		0.77	0.32	0.12		0.27	0.36		0.02	0.31	
Control Delay (s/veh)	43.3		18.9	33.8	12.3		7.2	9.1		6.3	10.6	
Queue Delay	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	43.3		18.9	33.8	12.3		7.2	9.1		6.3	10.6	
LOS	D		B	C	B		A	A		A	B	
Approach Delay (s/veh)		26.3			27.7			8.8			10.5	
Approach LOS		C			C			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 105			
Actuated Cycle Length: 87.7			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay (s/veh): 13.9		Intersection LOS: B	
Intersection Capacity Utilization 77.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Dorchester Road & Dawson Street





Lane Group	EBL	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	114	262	63	25	118	608	10	638
v/c Ratio	0.58	0.77	0.32	0.12	0.27	0.36	0.02	0.31
Control Delay (s/veh)	43.3	18.9	33.8	12.3	7.2	9.1	6.3	10.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	43.3	18.9	33.8	12.3	7.2	9.1	6.3	10.6
Queue Length 50th (m)	18.4	0.0	9.7	0.2	4.7	17.0	0.4	17.0
Queue Length 95th (m)	34.4	26.2	20.4	6.3	19.0	61.0	3.0	38.6
Internal Link Dist (m)				84.0		256.1		430.1
Turn Bay Length (m)	30.0	35.0	20.0		180.0		30.0	
Base Capacity (vph)	421	410	422	409	437	1670	436	2052
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	0.27	0.64	0.15	0.06	0.27	0.36	0.02	0.31

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	104	0	238	57	1	22	107	533	20	9	520	61
Future Volume (vph)	104	0	238	57	1	22	107	533	20	9	520	61
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Total Lost time (s)	5.0		5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00		1.00	1.00	1.00		1.00	0.95		1.00	0.91	
Frpb, ped/bikes	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00		0.85	1.00	0.86		1.00	0.99		1.00	0.98	
Flt Protected	0.95		1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1381		614	1354	1010		1315	2446		1244	3478	
Flt Permitted	0.74		1.00	0.76	1.00		0.37	1.00		0.42	1.00	
Satd. Flow (perm)	1077		614	1079	1010		519	2446		552	3478	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	114	0	262	63	1	24	118	586	22	10	571	67
RTOR Reduction (vph)	0	0	215	0	20	0	0	2	0	0	11	0
Lane Group Flow (vph)	114	0	47	63	5	0	118	606	0	10	627	0
Confl. Peds. (#/hr)							1		3	3		1
Heavy Vehicles (%)	0%	0%	80%	2%	0%	14%	5%	3%	11%	11%	2%	13%
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	16.2		16.2	16.2	16.2		63.9	59.8		55.1	54.0	
Effective Green, g (s)	16.2		16.2	16.2	16.2		63.9	59.8		55.1	54.0	
Actuated g/C Ratio	0.18		0.18	0.18	0.18		0.71	0.66		0.61	0.60	
Clearance Time (s)	5.0		5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	193		110	194	181		429	1623		346	2084	
v/s Ratio Prot					0.01		c0.02	c0.25		0.00	0.18	
v/s Ratio Perm	c0.11		0.08	0.06			0.17			0.02		
v/c Ratio	0.59		0.43	0.32	0.03		0.28	0.37		0.03	0.30	
Uniform Delay, d1	33.9		32.8	32.2	30.5		4.3	6.8		6.9	8.8	
Progression Factor	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.8		2.7	1.0	0.1		0.3	0.7		0.0	0.4	
Delay (s)	38.7		35.5	33.2	30.5		4.6	7.4		6.9	9.2	
Level of Service	D		D	C	C		A	A		A	A	
Approach Delay (s/veh)		36.5			32.4			7.0			9.2	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	15.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	90.1	Sum of lost time (s)	13.0
Intersection Capacity Utilization	77.4%	ICU Level of Service	D
Analysis Period (min)	15		

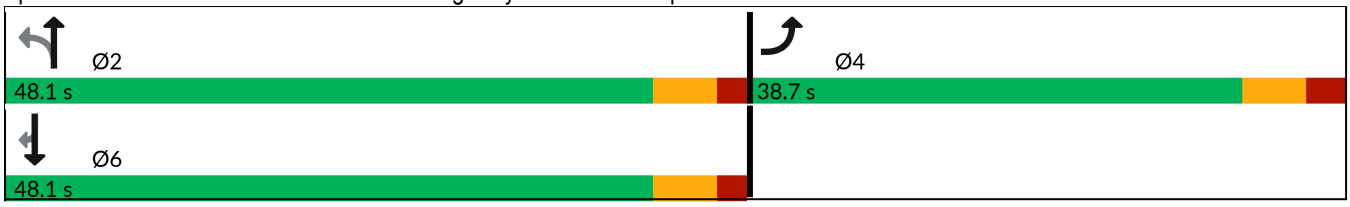
c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	23	0	163	638	405	396
Future Volume (vph)	23	0	163	638	405	396
Ideal Flow (vphpl)	1454	1301	1454	1579	1579	1301
Storage Length (m)	0.0	0.0	160.0			0.0
Storage Lanes	2	0	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt						0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	2271	0	1328	2913	2941	1063
Flt Permitted	0.950		0.490			
Satd. Flow (perm)	2271	0	685	2913	2941	1063
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						445
Link Speed (k/h)	50			50	50	
Link Distance (m)	166.4			377.5	280.1	
Travel Time (s)	12.0			27.2	20.2	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	18%	0%	4%	3%	2%	4%
Adj. Flow (vph)	26	0	183	717	455	445
Shared Lane Traffic (%)						
Lane Group Flow (vph)	26	0	183	717	455	445
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.2			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.60	1.40	1.26	1.26	1.60
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1		1	2	2	1
Detector Template	Left		Left	Thru	Thru	Right
Leading Detector (m)	2.0		2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0		2.0	0.6	0.6	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	8.0		10.0	10.0	10.0	10.0
Minimum Split (s)	38.7		24.1	24.1	24.1	24.1
Total Split (s)	38.7		48.1	48.1	48.1	48.1
Total Split (%)	44.6%		55.4%	55.4%	55.4%	55.4%
Maximum Green (s)	32.0		42.0	42.0	42.0	42.0
Yellow Time (s)	4.1		4.1	4.1	4.1	4.1
All-Red Time (s)	2.6		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7		6.1	6.1	6.1	6.1
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		Max	Max	Max	Max
Walk Time (s)	12.0					
Flash Don't Walk (s)	20.0					
Pedestrian Calls (#/hr)	0					
Act Effct Green (s)	8.0		58.8	58.8	58.8	58.8
Actuated g/C Ratio	0.13		0.93	0.93	0.93	0.93
v/c Ratio	0.09		0.29	0.26	0.17	0.44
Control Delay (s/veh)	25.2		3.3	1.6	1.4	1.8
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay (s/veh)	25.2		3.3	1.6	1.4	1.8
LOS	C		A	A	A	A
Approach Delay (s/veh)	25.2			2.0	1.6	
Approach LOS	C			A	A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 86.8			
Actuated Cycle Length: 63			
Natural Cycle: 70			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.44			
Intersection Signal Delay (s/veh): 2.1		Intersection LOS: A	
Intersection Capacity Utilization 57.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 3: Dorchester Road & Highway 420 North Ramp

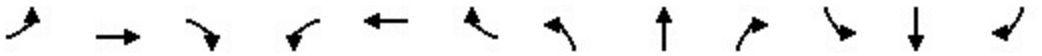


Lane Group	EBL	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	26	183	717	455	445
v/c Ratio	0.09	0.29	0.26	0.17	0.44
Control Delay (s/veh)	25.2	3.3	1.6	1.4	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	25.2	3.3	1.6	1.4	1.8
Queue Length 50th (m)	1.4	0.0	0.0	0.0	0.0
Queue Length 95th (m)	4.6	18.9	23.8	14.3	7.4
Internal Link Dist (m)	142.4		353.5	256.1	
Turn Bay Length (m)		160.0			
Base Capacity (vph)	1152	640	2720	2746	1022
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.02	0.29	0.26	0.17	0.44

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	23	0	163	638	405	396
Future Volume (vph)	23	0	163	638	405	396
Ideal Flow (vphpl)	1454	1301	1454	1579	1579	1301
Total Lost time (s)	6.7		6.1	6.1	6.1	6.1
Lane Util. Factor	0.97		1.00	0.95	0.95	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	0.95		0.95	1.00	1.00	1.00
Satd. Flow (prot)	2271		1328	2913	2941	1063
Flt Permitted	0.95		0.49	1.00	1.00	1.00
Satd. Flow (perm)	2271		684	2913	2941	1063
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	26	0	183	717	455	445
RTOR Reduction (vph)	0	0	0	0	0	94
Lane Group Flow (vph)	26	0	183	717	455	351
Heavy Vehicles (%)	18%	0%	4%	3%	2%	4%
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Actuated Green, G (s)	1.6		54.0	54.0	54.0	54.0
Effective Green, g (s)	1.6		54.0	54.0	54.0	54.0
Actuated g/C Ratio	0.02		0.79	0.79	0.79	0.79
Clearance Time (s)	6.7		6.1	6.1	6.1	6.1
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	53		540	2299	2321	839
v/s Ratio Prot	c0.01			0.25	0.15	
v/s Ratio Perm			0.27			c0.33
v/c Ratio	0.49		0.34	0.31	0.20	0.42
Uniform Delay, d1	33.0		2.1	2.0	1.8	2.3
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	7.0		1.7	0.4	0.2	1.5
Delay (s)	40.0		3.8	2.4	2.0	3.8
Level of Service	D		A	A	A	A
Approach Delay (s/veh)	40.0			2.7	2.9	
Approach LOS	D			A	A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	3.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	68.4	Sum of lost time (s)	12.8
Intersection Capacity Utilization	57.8%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

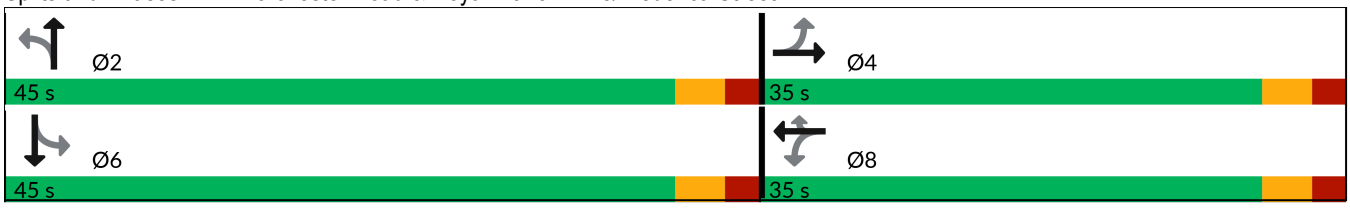


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	19	6	44	5	370	2	411	37	106	293	15
Future Volume (vph)	18	19	6	44	5	370	2	411	37	106	293	15
Ideal Flow (vphpl)	1433	1433	1433	1454	1579	1301	1454	1338	1338	1454	1338	1338
Storage Length (m)	0.0		0.0	45.0		0.0	95.0		0.0	165.0		0.0
Storage Lanes	0		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor								1.00		1.00		
Frt		0.981				0.850		0.988			0.993	
Flt Protected		0.980		0.950			0.950			0.950		
Satd. Flow (prot)	0	1251	0	1354	1579	1074	1381	2430	0	1368	2468	0
Flt Permitted		0.904		0.725			0.542			0.465		
Satd. Flow (perm)	0	1154	0	1033	1579	1074	788	2430	0	669	2468	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7				323		17			9	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		47.8			201.0			125.1			377.5	
Travel Time (s)		3.4			14.5			9.0			27.2	
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	6%	17%	0%	2%	0%	3%	0%	3%	6%	1%	2%	8%
Adj. Flow (vph)	20	22	7	50	6	420	2	467	42	120	333	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	49	0	50	6	420	2	509	0	120	350	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.42	1.42	1.42	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	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	5.0	
Minimum Split (s)	32.0	32.0		32.0	32.0	32.0	41.0	41.0		41.0	41.0	
Total Split (s)	35.0	35.0		35.0	35.0	35.0	45.0	45.0		45.0	45.0	
Total Split (%)	43.8%	43.8%		43.8%	43.8%	43.8%	56.3%	56.3%		56.3%	56.3%	
Maximum Green (s)	30.0	30.0		30.0	30.0	30.0	40.0	40.0		40.0	40.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	Max	Max		Max	Max	
Walk Time (s)	9.0	9.0		9.0	9.0	9.0	12.0	12.0		12.0	12.0	
Flash Don't Walk (s)	18.0	18.0		18.0	18.0	18.0	24.0	24.0		24.0	24.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	
Act Effct Green (s)		14.4		14.4	14.4	14.4	40.7	40.7		40.7	40.7	
Actuated g/C Ratio		0.22		0.22	0.22	0.22	0.62	0.62		0.62	0.62	
v/c Ratio		0.19		0.22	0.02	0.86	0.00	0.33		0.29	0.23	
Control Delay (s/veh)		18.1		21.2	17.0	24.2	8.5	8.3		11.1	7.6	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay (s/veh)		18.1		21.2	17.0	24.2	8.5	8.3		11.1	7.6	
LOS		B		C	B	C	A	A		B	A	
Approach Delay (s/veh)		18.1			23.8			8.3			8.5	
Approach LOS		B			C			A			A	

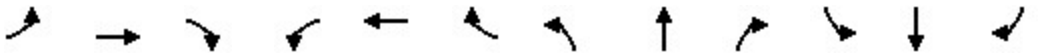
Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 65.3			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay (s/veh): 13.5		Intersection LOS: B	
Intersection Capacity Utilization 80.1%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 4: Dorchester Road & Royal Manor Drive/Frederica Street



Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	49	50	6	420	2	509	120	350
v/c Ratio	0.19	0.22	0.02	0.86	0.00	0.33	0.29	0.23
Control Delay (s/veh)	18.1	21.2	17.0	24.2	8.5	8.3	11.1	7.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	18.1	21.2	17.0	24.2	8.5	8.3	11.1	7.6
Queue Length 50th (m)	4.3	5.1	0.6	10.5	0.1	12.4	5.6	7.9
Queue Length 95th (m)	11.2	12.4	2.9	41.8	1.2	35.5	23.4	23.7
Internal Link Dist (m)	23.8		177.0			101.1		353.5
Turn Bay Length (m)		45.0			95.0		165.0	
Base Capacity (vph)	543	483	738	674	491	1521	417	1542
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	0.10	0.01	0.62	0.00	0.33	0.29	0.23

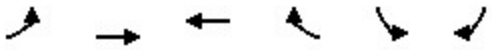
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	19	6	44	5	370	2	411	37	106	293	15
Future Volume (vph)	18	19	6	44	5	370	2	411	37	106	293	15
Ideal Flow (vphpl)	1433	1433	1433	1454	1579	1301	1454	1338	1338	1454	1338	1338
Total Lost time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt		0.98		1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected		0.98		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1251		1354	1579	1074	1381	2429		1367	2467	
Flt Permitted		0.90		0.73	1.00	1.00	0.54	1.00		0.46	1.00	
Satd. Flow (perm)		1154		1034	1579	1074	788	2429		669	2467	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	20	22	7	50	6	420	2	467	42	120	333	17
RTOR Reduction (vph)	0	5	0	0	0	252	0	6	0	0	3	0
Lane Group Flow (vph)	0	44	0	50	6	168	2	503	0	120	347	0
Confl. Peds. (#/hr)									1	1		
Heavy Vehicles (%)	6%	17%	0%	2%	0%	3%	0%	3%	6%	1%	2%	8%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		14.4		14.4	14.4	14.4	40.7	40.7		40.7	40.7	
Effective Green, g (s)		14.4		14.4	14.4	14.4	40.7	40.7		40.7	40.7	
Actuated g/C Ratio		0.22		0.22	0.22	0.22	0.63	0.63		0.63	0.63	
Clearance Time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		255		228	349	237	492	1518		418	1542	
v/s Ratio Prot					0.00			c0.21			0.14	
v/s Ratio Perm		0.04		0.05		c0.16	0.00			0.18		
v/c Ratio		0.17		0.22	0.02	0.71	0.00	0.33		0.29	0.22	
Uniform Delay, d1		20.5		20.7	19.8	23.4	4.6	5.8		5.6	5.3	
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.3		0.5	0.0	9.6	0.0	0.6		1.7	0.3	
Delay (s)		20.8		21.2	19.8	33.1	4.6	6.4		7.3	5.7	
Level of Service		C		C	B	C	A	A		A	A	
Approach Delay (s/veh)		20.8			31.6			6.3			6.1	
Approach LOS		C			C			A			A	

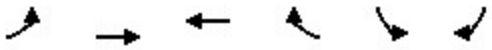
Intersection Summary			
HCM 2000 Control Delay (s/veh)	14.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	65.1	Sum of lost time (s)	10.0
Intersection Capacity Utilization	80.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	62	99	133	2	79	293
Future Volume (vph)	62	99	133	2	79	293
Ideal Flow (vphpl)	1454	1579	1338	1338	1454	1301
Storage Length (m)	85.0			0.0	40.0	0.0
Storage Lanes	1			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.998			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1303	2885	2418	0	1341	1084
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1303	2885	2418	0	1341	1084
Link Speed (k/h)		50	50		50	
Link Distance (m)		201.0	149.3		70.1	
Travel Time (s)		14.5	10.7		5.0	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	6%	4%	5%	0%	3%	2%
Adj. Flow (vph)	74	118	158	2	94	349
Shared Lane Traffic (%)						
Lane Group Flow (vph)	74	118	160	0	94	349
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.26	1.55	1.55	1.40	1.60
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 38.5%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	62	99	133	2	79	293
Future Volume (Veh/h)	62	99	133	2	79	293
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	74	118	158	2	94	349
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		201				
pX, platoon unblocked						
vC, conflicting volume	160				366	80
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	160				366	80
tC, single (s)	4.2				6.9	6.9
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.3
p0 queue free %	95				84	64
cM capacity (veh/h)	1388				572	964

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1	SB 2
Volume Total	74	59	59	105	55	94	349
Volume Left	74	0	0	0	0	94	0
Volume Right	0	0	0	0	2	0	349
cSH	1388	1700	1700	1700	1700	572	964
Volume to Capacity	0.05	0.03	0.03	0.06	0.03	0.16	0.36
Queue Length 95th (m)	1.4	0.0	0.0	0.0	0.0	4.7	13.3
Control Delay (s/veh)	7.7	0.0	0.0	0.0	0.0	12.5	10.8
Lane LOS	A					B	B
Approach Delay (s/veh)	3.0			0.0		11.2	
Approach LOS						B	

Intersection Summary			
Average Delay	7.0		
Intersection Capacity Utilization	38.5%	ICU Level of Service	A
Analysis Period (min)	15		

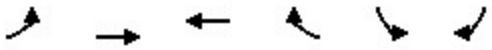
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	652	0	0	478	71	0
Future Volume (vph)	652	0	0	478	71	0
Ideal Flow (vphpl)	1579	1301	1454	1579	1454	1301
Lane Util. Factor	0.95	1.00	1.00	0.91	1.00	1.00
Frt						
Flt Protected					0.950	
Satd. Flow (prot)	2941	0	0	4105	1316	0
Flt Permitted					0.950	
Satd. Flow (perm)	2941	0	0	4105	1316	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	266.5			178.9	263.7	
Travel Time (s)	19.2			12.9	19.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	0%	5%	5%	2%
Adj. Flow (vph)	709	0	0	520	77	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	709	0	0	520	77	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.26	1.60	1.40	1.26	1.40	1.60
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 42.4%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	652	0	0	478	71	0
Future Volume (Veh/h)	652	0	0	478	71	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	709	0	0	520	77	0
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			709		882	355
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			709		882	355
tC, single (s)			4.1		6.9	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			100		72	100
cM capacity (veh/h)			899		280	642

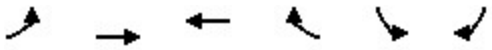
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	355	355	173	173	173	77
Volume Left	0	0	0	0	0	77
Volume Right	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	280
Volume to Capacity	0.21	0.21	0.10	0.10	0.10	0.28
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	8.7
Control Delay (s/veh)	0.0	0.0	0.0	0.0	0.0	22.7
Lane LOS						C
Approach Delay (s/veh)	0.0		0.0			22.7
Approach LOS						C

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	42.4%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	855	445	0	99	174
Future Volume (vph)	0	855	445	0	99	174
Ideal Flow (vphpl)	1454	1579	1579	1301	1433	1433
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	2941	2857	0	1309	1088
Flt Permitted					0.950	
Satd. Flow (perm)	0	2941	2857	0	1309	1088
Link Speed (k/h)		50	50		50	
Link Distance (m)		152.8	266.5		231.4	
Travel Time (s)		11.0	19.2		16.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	5%	3%	4%	12%
Adj. Flow (vph)	0	929	484	0	108	189
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	929	484	0	108	189
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.26	1.26	1.60	1.42	1.42
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

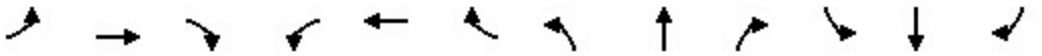
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 42.4%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	855	445	0	99	174
Future Volume (Veh/h)	0	855	445	0	99	174
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	929	484	0	108	189
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	484				949	242
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	484				949	242
tC, single (s)	4.1				6.9	7.1
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.4
p0 queue free %	100				58	74
cM capacity (veh/h)	1089				255	729

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	465	465	242	242	108	189
Volume Left	0	0	0	0	108	0
Volume Right	0	0	0	0	0	189
cSH	1700	1700	1700	1700	255	729
Volume to Capacity	0.27	0.27	0.14	0.14	0.42	0.26
Queue Length 95th (m)	0.0	0.0	0.0	0.0	15.9	8.3
Control Delay (s/veh)	0.0	0.0	0.0	0.0	29.1	11.7
Lane LOS					D	B
Approach Delay (s/veh)	0.0		0.0		18.0	
Approach LOS					C	

Intersection Summary			
Average Delay	3.1		
Intersection Capacity Utilization	42.4%	ICU Level of Service	A
Analysis Period (min)	15		

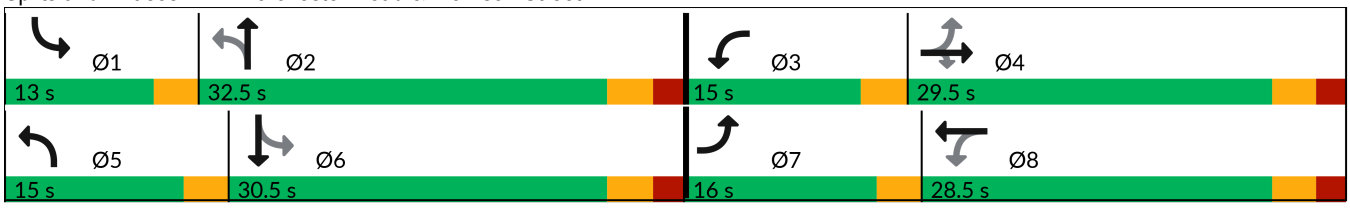


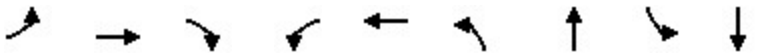
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	235	145	242	330	190	164	278	433	175	166	487	176
Future Volume (vph)	235	145	242	330	190	164	278	433	175	166	487	176
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Storage Length (m)	70.0		0.0	105.0		125.0	90.0		0.0	95.0		41.0
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00		0.98	0.99	0.99		1.00	0.99		1.00	1.00	
Frt			0.850		0.931			0.957			0.960	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1328	1504	1063	1368	2300	0	1341	2394	0	1381	2339	0
Flt Permitted	0.369			0.609			0.240			0.341		
Satd. Flow (perm)	514	1504	1044	872	2300	0	338	2394	0	494	2339	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			260		176			69			57	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		205.0			291.8			454.1			179.9	
Travel Time (s)		14.8			21.0			32.7			13.0	
Confl. Peds. (#/hr)	6		7	7		6	6		11	11		6
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	4%	5%	4%	1%	3%	1%	3%	1%	1%	0%	2%	9%
Adj. Flow (vph)	253	156	260	355	204	176	299	466	188	178	524	189
Shared Lane Traffic (%)												
Lane Group Flow (vph)	253	156	260	355	380	0	299	654	0	178	713	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	9.5	35.0	35.0	9.5	35.0		9.5	35.0		9.5	35.0	
Total Split (s)	16.0	29.5	29.5	15.0	28.5		15.0	32.5		13.0	30.5	
Total Split (%)	17.8%	32.8%	32.8%	16.7%	31.7%		16.7%	36.1%		14.4%	33.9%	
Maximum Green (s)	13.0	24.5	24.5	12.0	23.5		12.0	27.5		10.0	25.5	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)		10.0	10.0		10.0			10.0			10.0	
Flash Don't Walk (s)		20.0	20.0		20.0			20.0			20.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	29.4	14.8	14.8	28.2	14.2		46.5	32.8		41.4	30.1	
Actuated g/C Ratio	0.35	0.17	0.17	0.33	0.17		0.55	0.39		0.49	0.35	
v/c Ratio	0.85	0.60	0.66	0.99	0.72		0.91	0.68		0.53	0.83	
Control Delay (s/veh)	47.8	42.0	12.8	72.0	25.7		49.5	24.4		17.2	33.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	47.8	42.0	12.8	72.0	25.7		49.5	24.4		17.2	33.5	
LOS	D	D	B	E	C		D	C		B	C	
Approach Delay (s/veh)		32.8			48.1			32.3			30.3	
Approach LOS		C			D			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 84.9			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.99			
Intersection Signal Delay (s/veh): 35.4		Intersection LOS: D	
Intersection Capacity Utilization 98.8%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 1: Dorchester Road & Morrison Street





Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	253	156	260	355	380	299	654	178	713
v/c Ratio	0.85	0.60	0.66	0.99	0.72	0.91	0.68	0.53	0.83
Control Delay (s/veh)	47.8	42.0	12.8	72.0	25.7	49.5	24.4	17.2	33.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	47.8	42.0	12.8	72.0	25.7	49.5	24.4	17.2	33.5
Queue Length 50th (m)	32.7	24.8	0.0	~50.6	17.1	26.8	42.9	14.2	52.7
Queue Length 95th (m)	#56.8	44.1	22.2	#109.7	32.5	#84.1	71.7	30.7	#96.1
Internal Link Dist (m)		181.0			267.8		430.1		155.9
Turn Bay Length (m)	70.0			105.0		90.0		95.0	
Base Capacity (vph)	305	435	486	359	765	327	966	349	864
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.36	0.53	0.99	0.50	0.91	0.68	0.51	0.83

Intersection Summary

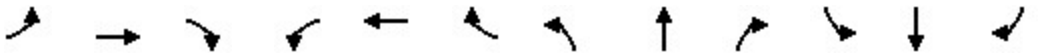
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	235	145	242	330	190	164	278	433	175	166	487	176
Future Volume (vph)	235	145	242	330	190	164	278	433	175	166	487	176
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Total Lost time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.98	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	1.00	
Frt	1.00	1.00	0.85	1.00	0.93		1.00	0.96		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1327	1504	1044	1364	2299		1341	2394		1380	2340	
Flt Permitted	0.37	1.00	1.00	0.61	1.00		0.24	1.00		0.34	1.00	
Satd. Flow (perm)	515	1504	1044	875	2299		338	2394		496	2340	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	253	156	260	355	204	176	299	466	188	178	524	189
RTOR Reduction (vph)	0	0	215	0	147	0	0	42	0	0	37	0
Lane Group Flow (vph)	253	156	45	355	233	0	299	612	0	178	676	0
Confl. Peds. (#/hr)	6		7	7		6	6		11	11		6
Heavy Vehicles (%)	4%	5%	4%	1%	3%	1%	3%	1%	1%	0%	2%	9%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	27.4	14.8	14.8	26.2	14.2		44.8	32.8		39.4	30.1	
Effective Green, g (s)	27.4	14.8	14.8	26.2	14.2		44.8	32.8		39.4	30.1	
Actuated g/C Ratio	0.32	0.17	0.17	0.31	0.17		0.53	0.39		0.46	0.35	
Clearance Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	286	262	181	339	384		320	924		327	829	
v/s Ratio Prot	c0.13	0.10		c0.15	0.10		c0.13	0.26		0.06	0.29	
v/s Ratio Perm	0.15		0.04	c0.18			c0.36			0.19		
v/c Ratio	0.88	0.60	0.25	1.05	0.61		0.93	0.66		0.54	0.82	
Uniform Delay, d1	24.6	32.3	30.3	28.1	32.8		14.1	21.5		14.2	24.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	26.0	3.6	0.7	61.8	2.7		33.4	3.7		1.9	8.7	
Delay (s)	50.6	35.9	31.0	89.9	35.5		47.5	25.2		16.0	33.6	
Level of Service	D	D	C	F	D		D	C		B	C	
Approach Delay (s/veh)		39.5			61.8			32.2			30.1	
Approach LOS		D			E			C			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	39.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	84.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	98.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

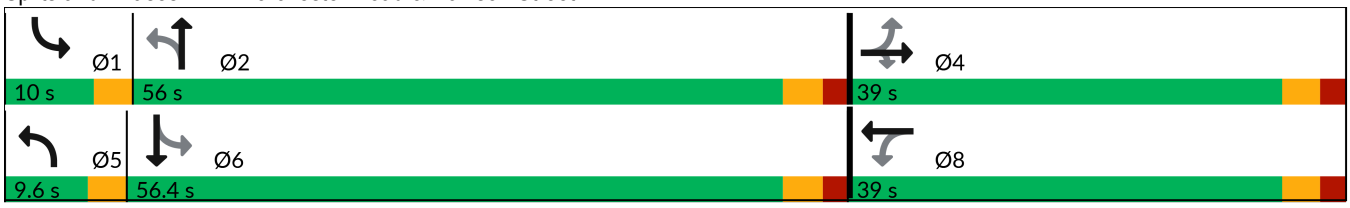


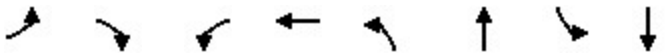
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	92	0	213	55	1	25	240	836	49	38	921	148
Future Volume (vph)	92	0	213	55	1	25	240	836	49	38	921	148
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Storage Length (m)	30.0		35.0	20.0		0.0	180.0		0.0	30.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.91	0.91
Ped Bike Factor			0.99	1.00			1.00	1.00		1.00	1.00	
Frt			0.850		0.856			0.992			0.979	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1381	1579	1015	1381	1103	0	1381	2495	0	1341	3503	0
Flt Permitted	0.740			0.757			0.218			0.299		
Satd. Flow (perm)	1076	1579	1001	1099	1103	0	317	2495	0	422	3503	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			189		26			8			41	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		106.7			108.0			280.1			454.1	
Travel Time (s)		7.7			7.8			20.2			32.7	
Confl. Peds. (#/hr)			2	2			5		2	2		5
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	9%	0%	0%	4%	0%	1%	0%	3%	2%	0%
Adj. Flow (vph)	94	0	217	56	1	26	245	853	50	39	940	151
Shared Lane Traffic (%)												
Lane Group Flow (vph)	94	0	217	56	27	0	245	903	0	39	1091	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	1.0		5.0	5.0	
Minimum Split (s)	39.0	39.0	39.0	39.0	39.0		9.5	52.0		9.5	52.0	
Total Split (s)	39.0	39.0	39.0	39.0	39.0		9.6	56.0		10.0	56.4	
Total Split (%)	37.1%	37.1%	37.1%	37.1%	37.1%		9.1%	53.3%		9.5%	53.7%	
Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		6.6	51.0		7.0	51.4	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)	11.0	11.0	11.0	11.0	11.0			16.0			16.0	
Flash Don't Walk (s)	23.0	23.0	23.0	23.0	23.0			31.0			31.0	
Pedestrian Calls (#/hr)	0	0	0	0	0			0			0	
Act Effct Green (s)	12.8		12.8	12.8	12.8		61.5	55.6		59.7	51.5	
Actuated g/C Ratio	0.15		0.15	0.15	0.15		0.73	0.66		0.71	0.61	
v/c Ratio	0.57		0.70	0.34	0.14		0.78	0.55		0.11	0.50	
Control Delay (s/veh)	46.8		19.8	36.7	13.8		25.5	10.9		4.3	10.3	
Queue Delay	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	46.8		19.8	36.7	13.8		25.5	10.9		4.3	10.3	
LOS	D		B	D	B		C	B		A	B	
Approach Delay (s/veh)		28.0			29.2			14.0			10.1	
Approach LOS		C			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 105			
Actuated Cycle Length: 84			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay (s/veh): 14.5		Intersection LOS: B	
Intersection Capacity Utilization 82.5%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 2: Dorchester Road & Dawson Street





Lane Group	EBL	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	94	217	56	27	245	903	39	1091
v/c Ratio	0.57	0.70	0.34	0.14	0.78	0.55	0.11	0.50
Control Delay (s/veh)	46.8	19.8	36.7	13.8	25.5	10.9	4.3	10.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	46.8	19.8	36.7	13.8	25.5	10.9	4.3	10.3
Queue Length 50th (m)	14.9	4.2	8.6	0.2	9.6	41.8	1.3	32.0
Queue Length 95th (m)	30.2	27.2	19.5	7.1	#43.0	78.0	5.0	54.7
Internal Link Dist (m)				84.0		256.1		430.1
Turn Bay Length (m)	30.0	35.0	20.0		180.0		30.0	
Base Capacity (vph)	436	518	445	463	315	1655	381	2165
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	0.22	0.42	0.13	0.06	0.78	0.55	0.10	0.50

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	92	0	213	55	1	25	240	836	49	38	921	148
Future Volume (vph)	92	0	213	55	1	25	240	836	49	38	921	148
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Total Lost time (s)	5.0		5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00		1.00	1.00	1.00		1.00	0.95		1.00	0.91	
Frpb, ped/bikes	1.00		0.99	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00		0.85	1.00	0.86		1.00	0.99		1.00	0.98	
Flt Protected	0.95		1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1381		1001	1379	1102		1381	2494		1341	3504	
Flt Permitted	0.74		1.00	0.76	1.00		0.22	1.00		0.30	1.00	
Satd. Flow (perm)	1075		1001	1099	1102		317	2494		422	3504	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	94	0	217	56	1	26	245	853	50	39	940	151
RTOR Reduction (vph)	0	0	161	0	22	0	0	3	0	0	16	0
Lane Group Flow (vph)	94	0	56	56	5	0	245	900	0	39	1075	0
Confl. Peds. (#/hr)			2	2			5		2	2		5
Heavy Vehicles (%)	0%	0%	9%	0%	0%	4%	0%	1%	0%	3%	2%	0%
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	12.8		12.8	12.8	12.8		62.3	55.7		56.7	52.9	
Effective Green, g (s)	12.8		12.8	12.8	12.8		62.3	55.7		56.7	52.9	
Actuated g/C Ratio	0.15		0.15	0.15	0.15		0.73	0.65		0.66	0.62	
Clearance Time (s)	5.0		5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	161		150	164	165		313	1628		321	2173	
v/s Ratio Prot					0.00		c0.06	0.36		0.01	0.31	
v/s Ratio Perm	c0.09		0.06	0.05			c0.51			0.08		
v/c Ratio	0.58		0.38	0.34	0.03		0.78	0.55		0.12	0.49	
Uniform Delay, d1	33.8		32.7	32.5	30.9		4.7	8.0		5.0	8.9	
Progression Factor	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.3		1.6	1.2	0.1		12.0	1.4		0.2	0.8	
Delay (s)	39.1		34.2	33.7	31.0		16.7	9.4		5.2	9.7	
Level of Service	D		C	C	C		B	A		A	A	
Approach Delay (s/veh)		35.7			32.8			11.0			9.5	
Approach LOS		D			C			B			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	13.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	85.3	Sum of lost time (s)	13.0
Intersection Capacity Utilization	82.5%	ICU Level of Service	E
Analysis Period (min)	15		

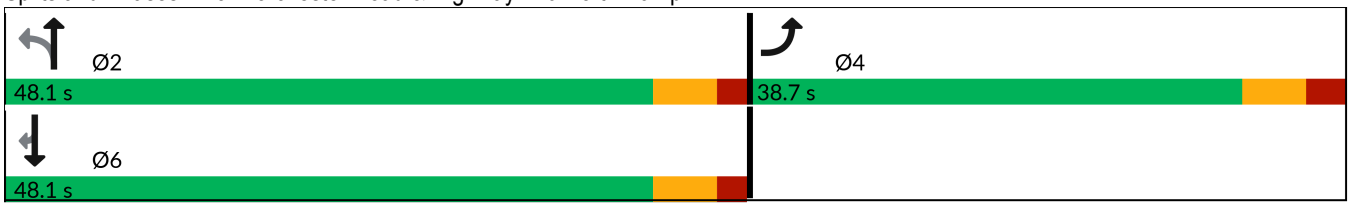
c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	55	0	215	1098	592	605
Future Volume (vph)	55	0	215	1098	592	605
Ideal Flow (vphpl)	1454	1301	1454	1579	1579	1301
Storage Length (m)	0.0	0.0	160.0			0.0
Storage Lanes	2	0	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor	1.00					
Frt						0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	2602	0	1341	2970	2941	1074
Flt Permitted	0.950		0.413			
Satd. Flow (perm)	2598	0	583	2970	2941	1074
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						644
Link Speed (k/h)	50			50	50	
Link Distance (m)	166.4			377.5	280.1	
Travel Time (s)	12.0			27.2	20.2	
Confl. Peds. (#/hr)	1					
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	3%	3%	3%	1%	2%	3%
Adj. Flow (vph)	59	0	229	1168	630	644
Shared Lane Traffic (%)						
Lane Group Flow (vph)	59	0	229	1168	630	644
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.2			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.60	1.40	1.26	1.26	1.60
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1		1	2	2	1
Detector Template	Left		Left	Thru	Thru	Right
Leading Detector (m)	2.0		2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0		2.0	0.6	0.6	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	8.0		10.0	10.0	10.0	10.0
Minimum Split (s)	38.7		24.1	24.1	24.1	24.1
Total Split (s)	38.7		48.1	48.1	48.1	48.1
Total Split (%)	44.6%		55.4%	55.4%	55.4%	55.4%
Maximum Green (s)	32.0		42.0	42.0	42.0	42.0
Yellow Time (s)	4.1		4.1	4.1	4.1	4.1
All-Red Time (s)	2.6		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7		6.1	6.1	6.1	6.1
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		Max	Max	Max	Max
Walk Time (s)	12.0					
Flash Don't Walk (s)	20.0					
Pedestrian Calls (#/hr)	0					
Act Effct Green (s)	8.1		50.4	50.4	50.4	50.4
Actuated g/C Ratio	0.13		0.80	0.80	0.80	0.80
v/c Ratio	0.18		0.49	0.49	0.27	0.65
Control Delay (s/veh)	25.9		9.8	5.1	3.6	4.1
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay (s/veh)	25.9		9.8	5.1	3.6	4.1
LOS	C		A	A	A	A
Approach Delay (s/veh)	25.9			5.8	3.9	
Approach LOS	C			A	A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 86.8			
Actuated Cycle Length: 63			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay (s/veh): 5.3		Intersection LOS: A	
Intersection Capacity Utilization 80.4%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Dorchester Road & Highway 420 North Ramp



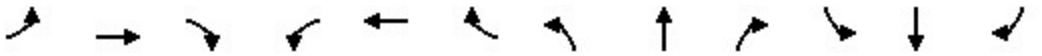
Lane Group	EBL	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	59	229	1168	630	644
v/c Ratio	0.18	0.49	0.49	0.27	0.65
Control Delay (s/veh)	25.9	9.8	5.1	3.6	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	25.9	9.8	5.1	3.6	4.1
Queue Length 50th (m)	3.4	12.4	33.4	13.8	0.0
Queue Length 95th (m)	8.1	35.5	49.0	21.0	9.3
Internal Link Dist (m)	142.4		353.5	256.1	
Turn Bay Length (m)		160.0			
Base Capacity (vph)	1321	466	2378	2354	988
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.04	0.49	0.49	0.27	0.65

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	55	0	215	1098	592	605
Future Volume (vph)	55	0	215	1098	592	605
Ideal Flow (vphpl)	1454	1301	1454	1579	1579	1301
Total Lost time (s)	6.7		6.1	6.1	6.1	6.1
Lane Util. Factor	0.97		1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	0.95		0.95	1.00	1.00	1.00
Satd. Flow (prot)	2602		1341	2970	2941	1074
Flt Permitted	0.95		0.41	1.00	1.00	1.00
Satd. Flow (perm)	2602		583	2970	2941	1074
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	59	0	229	1168	630	644
RTOR Reduction (vph)	0	0	0	0	0	173
Lane Group Flow (vph)	59	0	229	1168	630	471
Confl. Peds. (#/hr)	1					
Heavy Vehicles (%)	3%	3%	3%	1%	2%	3%
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Actuated Green, G (s)	4.9		48.0	48.0	48.0	48.0
Effective Green, g (s)	4.9		48.0	48.0	48.0	48.0
Actuated g/C Ratio	0.07		0.73	0.73	0.73	0.73
Clearance Time (s)	6.7		6.1	6.1	6.1	6.1
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	194		425	2169	2148	784
v/s Ratio Prot	c0.02			0.39	0.21	
v/s Ratio Perm			0.39			c0.44
v/c Ratio	0.30		0.54	0.54	0.29	0.60
Uniform Delay, d1	28.8		3.9	3.9	3.0	4.2
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.9		4.8	1.0	0.3	3.4
Delay (s)	29.7		8.8	4.9	3.4	7.6
Level of Service	C		A	A	A	A
Approach Delay (s/veh)	29.7			5.5	5.5	
Approach LOS	C			A	A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	6.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	65.7	Sum of lost time (s)	12.8
Intersection Capacity Utilization	80.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

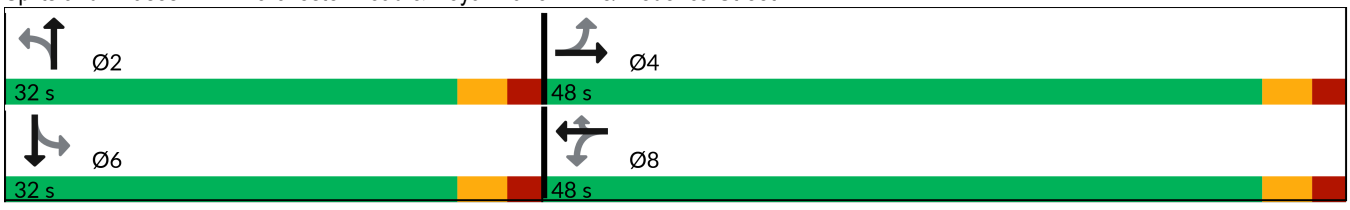


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	12	7	104	27	582	5	685	56	93	493	19
Future Volume (vph)	17	12	7	104	27	582	5	685	56	93	493	19
Ideal Flow (vphpl)	1433	1433	1433	1454	1579	1301	1454	1338	1338	1454	1338	1338
Storage Length (m)	0.0		0.0	45.0		0.0	95.0		0.0	165.0		0.0
Storage Lanes	0		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		1.00		1.00				1.00		1.00		
Frt		0.972				0.850		0.989			0.995	
Flt Protected		0.977		0.950			0.950			0.950		
Satd. Flow (prot)	0	1322	0	1303	1423	1095	1381	2460	0	1368	2476	0
Flt Permitted		0.916		0.732			0.382			0.242		
Satd. Flow (perm)	0	1239	0	1002	1423	1095	555	2460	0	348	2476	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8				56		11			5	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		47.8			201.0			125.1			377.5	
Travel Time (s)		3.4			14.5			9.0			27.2	
Confl. Peds. (#/hr)			3	3					5	5		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	8%	0%	6%	11%	1%	0%	2%	3%	1%	2%	6%
Adj. Flow (vph)	18	13	8	112	29	626	5	737	60	100	530	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	39	0	112	29	626	5	797	0	100	550	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.42	1.42	1.42	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	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	5.0	
Minimum Split (s)	32.0	32.0		32.0	32.0	32.0	41.0	41.0		41.0	41.0	
Total Split (s)	48.0	48.0		48.0	48.0	48.0	32.0	32.0		32.0	32.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%	60.0%	40.0%	40.0%		40.0%	40.0%	
Maximum Green (s)	43.0	43.0		43.0	43.0	43.0	27.0	27.0		27.0	27.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	Max	Max		Max	Max	
Walk Time (s)	9.0	9.0		9.0	9.0	9.0	12.0	12.0		12.0	12.0	
Flash Don't Walk (s)	18.0	18.0		18.0	18.0	18.0	24.0	24.0		24.0	24.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	
Act Effct Green (s)		43.0		43.0	43.0	43.0	36.0	36.0		36.0	36.0	
Actuated g/C Ratio		0.48		0.48	0.48	0.48	0.40	0.40		0.40	0.40	
v/c Ratio		0.06		0.23	0.04	1.12	0.02	0.80		0.71	0.55	
Control Delay (s/veh)		10.8		15.0	12.4	100.2	16.4	30.2		53.5	22.6	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay (s/veh)		10.8		15.0	12.4	100.2	16.4	30.2		53.5	22.6	
LOS		B		B	B	F	B	C		D	C	
Approach Delay (s/veh)		10.8			84.5			30.1			27.4	
Approach LOS		B			F			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 89			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.12			
Intersection Signal Delay (s/veh): 47.4		Intersection LOS: D	
Intersection Capacity Utilization 101.0%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 4: Dorchester Road & Royal Manor Drive/Frederica Street

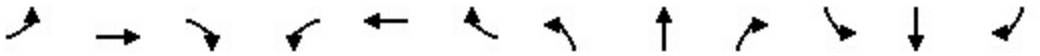


Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	39	112	29	626	5	797	100	550
v/c Ratio	0.06	0.23	0.04	1.12	0.02	0.80	0.71	0.55
Control Delay (s/veh)	10.8	15.0	12.4	100.2	16.4	30.2	53.5	22.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	10.8	15.0	12.4	100.2	16.4	30.2	53.5	22.6
Queue Length 50th (m)	2.8	11.2	2.6	~126.0	0.5	63.8	14.7	38.4
Queue Length 95th (m)	8.2	22.4	7.2	#193.0	2.7	88.9	#43.3	55.0
Internal Link Dist (m)	23.8		177.0			101.1		353.5
Turn Bay Length (m)		45.0			95.0		165.0	
Base Capacity (vph)	602	484	687	557	224	1001	140	1004
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.23	0.04	1.12	0.02	0.80	0.71	0.55

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

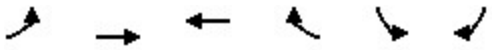
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	12	7	104	27	582	5	685	56	93	493	19
Future Volume (vph)	17	12	7	104	27	582	5	685	56	93	493	19
Ideal Flow (vphpl)	1433	1433	1433	1454	1579	1301	1454	1338	1338	1454	1338	1338
Total Lost time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt		0.97		1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected		0.98		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1322		1299	1423	1095	1381	2459		1366	2475	
Flt Permitted		0.92		0.73	1.00	1.00	0.38	1.00		0.24	1.00	
Satd. Flow (perm)		1239		1001	1423	1095	556	2459		348	2475	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	18	13	8	112	29	626	5	737	60	100	530	20
RTOR Reduction (vph)	0	4	0	0	0	29	0	7	0	0	3	0
Lane Group Flow (vph)	0	35	0	112	29	597	5	790	0	100	547	0
Confl. Peds. (#/hr)			3	3					5	5		
Heavy Vehicles (%)	0%	8%	0%	6%	11%	1%	0%	2%	3%	1%	2%	6%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		43.0		43.0	43.0	43.0	36.0	36.0		36.0	36.0	
Effective Green, g (s)		43.0		43.0	43.0	43.0	36.0	36.0		36.0	36.0	
Actuated g/C Ratio		0.48		0.48	0.48	0.48	0.40	0.40		0.40	0.40	
Clearance Time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		598		483	687	529	224	994		140	1001	
v/s Ratio Prot					0.02			c0.32			0.22	
v/s Ratio Perm		0.03		0.11		c0.55	0.01			0.29		
v/c Ratio		0.06		0.23	0.04	1.13	0.02	0.80		0.71	0.55	
Uniform Delay, d1		12.2		13.4	12.1	23.0	15.9	23.3		22.2	20.3	
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.0		0.2	0.0	79.6	0.2	6.6		26.6	2.1	
Delay (s)		12.3		13.6	12.2	102.6	16.1	29.8		48.8	22.4	
Level of Service		B		B	B	F	B	C		D	C	
Approach Delay (s/veh)		12.3			86.2			29.7			26.5	
Approach LOS		B			F			C			C	

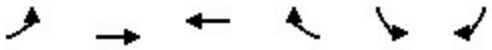
Intersection Summary			
HCM 2000 Control Delay (s/veh)	47.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	89.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	101.0%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	50	110	194	1	144	520
Future Volume (vph)	50	110	194	1	144	520
Ideal Flow (vphpl)	1454	1579	1338	1338	1454	1301
Storage Length (m)	85.0			0.0	0.0	40.0
Storage Lanes	1			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1381	2913	2515	0	1341	1074
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1381	2913	2515	0	1341	1074
Link Speed (k/h)		50	50		50	
Link Distance (m)		201.0	149.3		70.1	
Travel Time (s)		14.5	10.7		5.0	
Confl. Peds. (#/hr)	1			1		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	3%	1%	0%	3%	3%
Adj. Flow (vph)	56	122	216	1	160	578
Shared Lane Traffic (%)						
Lane Group Flow (vph)	56	122	217	0	160	578
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.26	1.55	1.55	1.40	1.60
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 61.5%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	50	110	194	1	144	520
Future Volume (Veh/h)	50	110	194	1	144	520
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)	56	122	216	1	160	578
Pedestrians					1	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						5
Median type		None	None			
Median storage veh)						
Upstream signal (m)		201				
pX, platoon unblocked						
vC, conflicting volume	218				391	110
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	218				391	110
tC, single (s)	4.1				6.9	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				71	37
cM capacity (veh/h)	1362				559	919

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	56	61	61	144	73	738
Volume Left	56	0	0	0	0	160
Volume Right	0	0	0	0	1	578
cSH	1362	1700	1700	1700	1700	1174
Volume to Capacity	0.04	0.04	0.04	0.08	0.04	0.63
Queue Length 95th (m)	1.0	0.0	0.0	0.0	0.0	37.4
Control Delay (s/veh)	7.8	0.0	0.0	0.0	0.0	15.0
Lane LOS	A					C
Approach Delay (s/veh)	2.4			0.0		15.0
Approach LOS						C

Intersection Summary			
Average Delay	10.2		
Intersection Capacity Utilization	61.5%	ICU Level of Service	B
Analysis Period (min)	15		

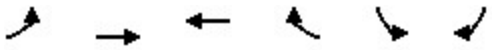
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	747	0	0	959	135	0
Future Volume (vph)	747	0	0	959	135	0
Ideal Flow (vphpl)	1579	1301	1454	1579	1454	1301
Lane Util. Factor	0.95	1.00	1.00	0.91	1.00	1.00
Frt						
Flt Protected					0.950	
Satd. Flow (prot)	2970	0	0	4268	1328	0
Flt Permitted					0.950	
Satd. Flow (perm)	2970	0	0	4268	1328	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	266.5			178.9	263.7	
Travel Time (s)	19.2			12.9	19.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	5%	0%	1%	4%	1%
Adj. Flow (vph)	812	0	0	1042	147	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	812	0	0	1042	147	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.26	1.60	1.40	1.26	1.40	1.60
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 61.5%		ICU Level of Service B	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	747	0	0	959	135	0
Future Volume (Veh/h)	747	0	0	959	135	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	812	0	0	1042	147	0
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			812		1159	406
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			812		1159	406
tC, single (s)			4.1		6.9	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		21	100
cM capacity (veh/h)			823		186	597

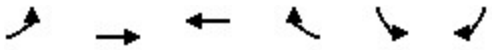
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	406	406	347	347	347	147
Volume Left	0	0	0	0	0	147
Volume Right	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	186
Volume to Capacity	0.24	0.24	0.20	0.20	0.20	0.79
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	43.0
Control Delay (s/veh)	0.0	0.0	0.0	0.0	0.0	72.7
Lane LOS						F
Approach Delay (s/veh)	0.0		0.0			72.7
Approach LOS						F

Intersection Summary			
Average Delay	5.3		
Intersection Capacity Utilization	61.5%	ICU Level of Service	B
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	776	883	0	193	310
Future Volume (vph)	0	776	883	0	193	310
Ideal Flow (vphpl)	1454	1579	1579	1301	1433	1433
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	2941	2941	0	1348	1183
Flt Permitted					0.950	
Satd. Flow (perm)	0	2941	2941	0	1348	1183
Link Speed (k/h)		50	50		50	
Link Distance (m)		152.8	266.5		231.4	
Travel Time (s)		11.0	19.2		16.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	1%	1%	3%
Adj. Flow (vph)	0	843	960	0	210	337
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	843	960	0	210	337
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.26	1.26	1.60	1.42	1.42
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

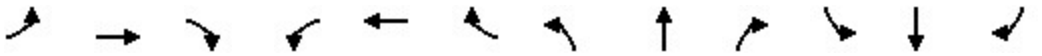
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 61.5%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↰	↱
Traffic Volume (veh/h)	0	776	883	0	193	310
Future Volume (Veh/h)	0	776	883	0	193	310
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	843	960	0	210	337
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	960				1382	480
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	960				1382	480
tC, single (s)	4.1				6.8	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				0	36
cM capacity (veh/h)	725				136	529

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	422	422	480	480	210	337
Volume Left	0	0	0	0	210	0
Volume Right	0	0	0	0	0	337
cSH	1700	1700	1700	1700	136	529
Volume to Capacity	0.25	0.25	0.28	0.28	1.54	0.64
Queue Length 95th (m)	0.0	0.0	0.0	0.0	116.8	35.5
Control Delay (s/veh)	0.0	0.0	0.0	0.0	335.0	23.0
Lane LOS					F	C
Approach Delay (s/veh)	0.0		0.0		142.8	
Approach LOS					F	

Intersection Summary			
Average Delay	33.2		
Intersection Capacity Utilization	61.5%	ICU Level of Service	B
Analysis Period (min)	15		

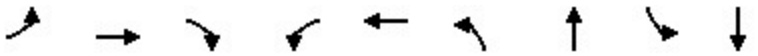


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	305	202	275	263	244	126	387	427	142	149	442	244
Future Volume (vph)	305	202	275	263	244	126	387	427	142	149	442	244
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Storage Length (m)	70.0		0.0	105.0		125.0	90.0		0.0	95.0		41.0
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00		0.98	1.00	0.99		1.00	1.00		1.00	0.99	
Frt			0.850		0.949			0.963			0.947	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1341	1548	1095	1368	2383	0	1368	2419	0	1368	2359	0
Flt Permitted	0.316			0.629			0.216			0.433		
Satd. Flow (perm)	445	1548	1076	902	2383	0	310	2419	0	622	2359	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			281		97			55			108	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		205.0			291.8			454.1			179.9	
Travel Time (s)		14.8			21.0			32.7			13.0	
Confl. Peds. (#/hr)	6		6	6		6	6		7	7		6
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	3%	2%	1%	1%	1%	0%	1%	1%	0%	1%	0%	4%
Adj. Flow (vph)	311	206	281	268	249	129	395	436	145	152	451	249
Shared Lane Traffic (%)												
Lane Group Flow (vph)	311	206	281	268	378	0	395	581	0	152	700	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	9.5	35.0	35.0	9.5	35.0		9.5	35.0		9.5	35.0	
Total Split (s)	18.0	31.5	31.5	13.0	26.5		20.0	36.0		9.5	25.5	
Total Split (%)	20.0%	35.0%	35.0%	14.4%	29.4%		22.2%	40.0%		10.6%	28.3%	
Maximum Green (s)	15.0	26.5	26.5	10.0	21.5		17.0	31.0		6.5	20.5	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)		10.0	10.0		10.0			10.0			10.0	
Flash Don't Walk (s)		20.0	20.0		20.0			20.0			20.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	36.3	21.2	21.2	28.3	16.2		52.1	40.6		38.6	30.1	
Actuated g/C Ratio	0.38	0.22	0.22	0.30	0.17		0.55	0.43		0.41	0.32	
v/c Ratio	0.99	0.59	0.61	0.84	0.77		1.09	0.54		0.50	0.85	
Control Delay (s/veh)	76.5	40.0	10.0	49.4	38.6		95.7	20.9		20.7	37.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	76.5	40.0	10.0	49.4	38.6		95.7	20.9		20.7	37.4	
LOS	E	D	B	D	D		F	C		C	D	
Approach Delay (s/veh)		43.7			43.1			51.2			34.4	
Approach LOS		D			D			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 94.4			
Natural Cycle: 100			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.09			
Intersection Signal Delay (s/veh): 43.4		Intersection LOS: D	
Intersection Capacity Utilization 111.0%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 1: Dorchester Road & Morrison Street



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	311	206	281	268	378	395	581	152	700
v/c Ratio	0.99	0.59	0.61	0.84	0.77	1.09	0.54	0.50	0.85
Control Delay (s/veh)	76.5	40.0	10.0	49.4	38.6	95.7	20.9	20.7	37.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	76.5	40.0	10.0	49.4	38.6	95.7	20.9	20.7	37.4
Queue Length 50th (m)	46.8	35.4	0.0	38.6	27.3	~62.9	38.5	14.0	56.7
Queue Length 95th (m)	#90.9	58.5	22.9	#72.5	43.7	#131.1	60.3	27.8	#97.2
Internal Link Dist (m)		181.0			267.8		430.1		155.9
Turn Bay Length (m)	70.0			105.0		90.0		95.0	
Base Capacity (vph)	313	435	504	319	618	362	1071	305	824
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.99	0.47	0.56	0.84	0.61	1.09	0.54	0.50	0.85

Intersection Summary

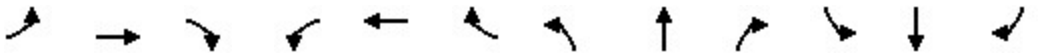
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	305	202	275	263	244	126	387	427	142	149	442	244
Future Volume (vph)	305	202	275	263	244	126	387	427	142	149	442	244
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Total Lost time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.95		1.00	0.96		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1340	1548	1076	1364	2382		1367	2418		1366	2358	
Flt Permitted	0.32	1.00	1.00	0.63	1.00		0.22	1.00		0.43	1.00	
Satd. Flow (perm)	445	1548	1076	903	2382		311	2418		623	2358	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	311	206	281	268	249	129	395	436	145	152	451	249
RTOR Reduction (vph)	0	0	218	0	80	0	0	31	0	0	74	0
Lane Group Flow (vph)	311	206	63	268	298	0	395	550	0	152	626	0
Confl. Peds. (#/hr)	6		6	6		6	6		7	7		6
Heavy Vehicles (%)	3%	2%	1%	1%	1%	0%	1%	1%	0%	1%	0%	4%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	34.2	21.2	21.2	26.2	16.2		50.1	40.6		36.6	30.1	
Effective Green, g (s)	34.2	21.2	21.2	26.2	16.2		50.1	40.6		36.6	30.1	
Actuated g/C Ratio	0.36	0.22	0.22	0.28	0.17		0.53	0.43		0.39	0.32	
Clearance Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	303	348	241	299	409		355	1041		293	752	
v/s Ratio Prot	c0.16	0.13		0.09	0.12		c0.20	0.23		0.04	0.27	
v/s Ratio Perm	c0.21		0.06	0.15			c0.39			0.17		
v/c Ratio	1.03	0.59	0.26	0.90	0.73		1.11	0.53		0.52	0.83	
Uniform Delay, d1	26.6	32.7	30.1	31.3	37.0		19.5	19.8		19.9	29.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	58.7	2.7	0.6	27.1	6.4		81.8	1.9		1.6	10.5	
Delay (s)	85.3	35.4	30.7	58.4	43.3		101.3	21.7		21.4	40.3	
Level of Service	F	D	C	E	D		F	C		C	D	
Approach Delay (s/veh)		53.2			49.6			53.9			36.9	
Approach LOS		D			D			D			D	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	48.5	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.15		
Actuated Cycle Length (s)	94.3	Sum of lost time (s)	16.0
Intersection Capacity Utilization	111.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

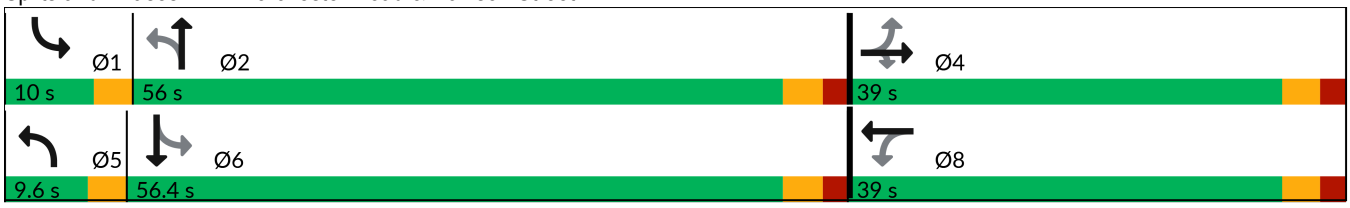


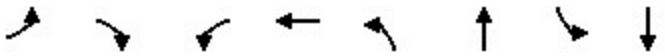
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	0	221	62	0	23	245	852	38	18	985	150
Future Volume (vph)	101	0	221	62	0	23	245	852	38	18	985	150
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Storage Length (m)	30.0		35.0	20.0		0.0	180.0		0.0	30.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.91	0.91
Ped Bike Factor			0.99	1.00			1.00	1.00		1.00	1.00	
Frt			0.850		0.850			0.994			0.980	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1381	1579	1106	1381	1137	0	1381	2525	0	1381	3569	0
Flt Permitted	0.742			0.757			0.199			0.307		
Satd. Flow (perm)	1079	1579	1091	1099	1137	0	289	2525	0	446	3569	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			186		215			6			38	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		106.7			108.0			280.1			454.1	
Travel Time (s)		7.7			7.8			20.2			32.7	
Confl. Peds. (#/hr)			2	2			3		1	1		3
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	103	0	226	63	0	23	250	869	39	18	1005	153
Shared Lane Traffic (%)												
Lane Group Flow (vph)	103	0	226	63	23	0	250	908	0	18	1158	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	1.0		5.0	5.0	
Minimum Split (s)	39.0	39.0	39.0	39.0	39.0		9.5	52.0		9.5	52.0	
Total Split (s)	39.0	39.0	39.0	39.0	39.0		9.6	56.0		10.0	56.4	
Total Split (%)	37.1%	37.1%	37.1%	37.1%	37.1%		9.1%	53.3%		9.5%	53.7%	
Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		6.6	51.0		7.0	51.4	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)	11.0	11.0	11.0	11.0	11.0			16.0			16.0	
Flash Don't Walk (s)	23.0	23.0	23.0	23.0	23.0			31.0			31.0	
Pedestrian Calls (#/hr)	0	0	0	0	0			0			0	
Act Effct Green (s)	13.3		13.3	13.3	13.3		62.2	57.7		59.4	51.5	
Actuated g/C Ratio	0.16		0.16	0.16	0.16		0.74	0.68		0.70	0.61	
v/c Ratio	0.61		0.69	0.36	0.06		0.84	0.53		0.05	0.53	
Control Delay (s/veh)	48.3		19.8	37.3	0.3		34.0	9.8		4.1	10.8	
Queue Delay	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	48.3		19.8	37.3	0.3		34.0	9.8		4.1	10.8	
LOS	D		B	D	A		C	A		A	B	
Approach Delay (s/veh)		28.8			27.4			15.0			10.7	
Approach LOS		C			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 105			
Actuated Cycle Length: 84.5			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay (s/veh): 15.2		Intersection LOS: B	
Intersection Capacity Utilization 83.5%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 2: Dorchester Road & Dawson Street





Lane Group	EBL	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	103	226	63	23	250	908	18	1158
v/c Ratio	0.61	0.69	0.36	0.06	0.84	0.53	0.05	0.53
Control Delay (s/veh)	48.3	19.8	37.3	0.3	34.0	9.8	4.1	10.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	48.3	19.8	37.3	0.3	34.0	9.8	4.1	10.8
Queue Length 50th (m)	16.5	6.0	9.7	0.0	10.3	28.3	0.6	35.8
Queue Length 95th (m)	32.7	29.5	21.5	0.0	#48.0	76.5	2.9	58.7
Internal Link Dist (m)				84.0		256.1		430.1
Turn Bay Length (m)	30.0	35.0	20.0		180.0		30.0	
Base Capacity (vph)	435	551	443	586	298	1724	397	2191
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	0.24	0.41	0.14	0.04	0.84	0.53	0.05	0.53

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	0	221	62	0	23	245	852	38	18	985	150
Future Volume (vph)	101	0	221	62	0	23	245	852	38	18	985	150
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Total Lost time (s)	5.0		5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00		1.00	1.00	1.00		1.00	0.95		1.00	0.91	
Frpb, ped/bikes	1.00		0.99	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00		0.85	1.00	0.85		1.00	0.99		1.00	0.98	
Flt Protected	0.95		1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1381		1091	1379	1137		1381	2524		1381	3570	
Flt Permitted	0.74		1.00	0.76	1.00		0.20	1.00		0.31	1.00	
Satd. Flow (perm)	1079		1091	1099	1137		289	2524		447	3570	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	103	0	226	63	0	23	250	869	39	18	1005	153
RTOR Reduction (vph)	0	0	157	0	19	0	0	2	0	0	14	0
Lane Group Flow (vph)	103	0	69	63	4	0	250	906	0	18	1144	0
Confl. Peds. (#/hr)			2	2			3		1	1		3
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	13.3		13.3	13.3	13.3		63.1	57.7		55.9	53.5	
Effective Green, g (s)	13.3		13.3	13.3	13.3		63.1	57.7		55.9	53.5	
Actuated g/C Ratio	0.15		0.15	0.15	0.15		0.73	0.67		0.65	0.62	
Clearance Time (s)	5.0		5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	166		167	169	175		294	1685		315	2210	
v/s Ratio Prot					0.00		c0.06	0.36		0.00	0.32	
v/s Ratio Perm	c0.10		0.06	0.06			c0.55			0.04		
v/c Ratio	0.62		0.41	0.37	0.02		0.85	0.54		0.06	0.52	
Uniform Delay, d1	34.2		33.0	32.8	31.0		5.3	7.4		5.5	9.2	
Progression Factor	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.0		1.6	1.4	0.0		20.3	1.2		0.1	0.9	
Delay (s)	41.2		34.7	34.2	31.1		25.6	8.7		5.5	10.1	
Level of Service	D		C	C	C		C	A		A	B	
Approach Delay (s/veh)		36.7			33.4			12.3			10.0	
Approach LOS		D			C			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	14.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	86.4	Sum of lost time (s)	13.0
Intersection Capacity Utilization	83.5%	ICU Level of Service	E
Analysis Period (min)	15		

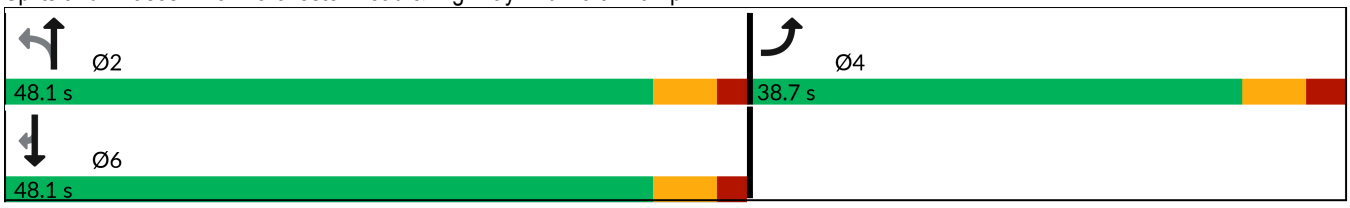
c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	43	0	216	1105	645	633
Future Volume (vph)	43	0	216	1105	645	633
Ideal Flow (vphpl)	1454	1301	1454	1579	1579	1301
Storage Length (m)	0.0	0.0	160.0			0.0
Storage Lanes	2	0	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor	1.00					
Frt						0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	2680	0	1368	3000	2970	1106
Flt Permitted	0.950		0.402			
Satd. Flow (perm)	2676	0	579	3000	2970	1106
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						646
Link Speed (k/h)	50			50	50	
Link Distance (m)	166.4			377.5	280.1	
Travel Time (s)	12.0			27.2	20.2	
Confl. Peds. (#/hr)	1					
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	1%	0%	1%	0%
Adj. Flow (vph)	44	0	220	1128	658	646
Shared Lane Traffic (%)						
Lane Group Flow (vph)	44	0	220	1128	658	646
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.2			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.60	1.40	1.26	1.26	1.60
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1		1	2	2	1
Detector Template	Left		Left	Thru	Thru	Right
Leading Detector (m)	2.0		2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0		2.0	0.6	0.6	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	8.0		10.0	10.0	10.0	10.0
Minimum Split (s)	38.7		24.1	24.1	24.1	24.1
Total Split (s)	38.7		48.1	48.1	48.1	48.1
Total Split (%)	44.6%		55.4%	55.4%	55.4%	55.4%
Maximum Green (s)	32.0		42.0	42.0	42.0	42.0
Yellow Time (s)	4.1		4.1	4.1	4.1	4.1
All-Red Time (s)	2.6		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7		6.1	6.1	6.1	6.1
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		Max	Max	Max	Max
Walk Time (s)	12.0					
Flash Don't Walk (s)	20.0					
Pedestrian Calls (#/hr)	0					
Act Effct Green (s)	8.0		54.5	54.5	54.5	54.5
Actuated g/C Ratio	0.13		0.87	0.87	0.87	0.87
v/c Ratio	0.13		0.44	0.43	0.26	0.62
Control Delay (s/veh)	25.4		7.5	3.6	2.7	3.5
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay (s/veh)	25.4		7.5	3.6	2.7	3.5
LOS	C		A	A	A	A
Approach Delay (s/veh)	25.4			4.2	3.1	
Approach LOS	C			A	A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 86.8			
Actuated Cycle Length: 62.8			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay (s/veh): 4.0		Intersection LOS: A	
Intersection Capacity Utilization 83.0%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 3: Dorchester Road & Highway 420 North Ramp



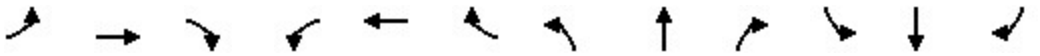
Lane Group	EBL	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	44	220	1128	658	646
v/c Ratio	0.13	0.44	0.43	0.26	0.62
Control Delay (s/veh)	25.4	7.5	3.6	2.7	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	25.4	7.5	3.6	2.7	3.5
Queue Length 50th (m)	2.4	0.0	0.0	0.0	0.0
Queue Length 95th (m)	6.6	32.6	45.0	21.6	9.1
Internal Link Dist (m)	142.4		353.5	256.1	
Turn Bay Length (m)		160.0			
Base Capacity (vph)	1364	502	2602	2576	1045
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.44	0.43	0.26	0.62

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	43	0	216	1105	645	633
Future Volume (vph)	43	0	216	1105	645	633
Ideal Flow (vphpl)	1454	1301	1454	1579	1579	1301
Total Lost time (s)	6.7		6.1	6.1	6.1	6.1
Lane Util. Factor	0.97		1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	0.95		0.95	1.00	1.00	1.00
Satd. Flow (prot)	2680		1368	3000	2970	1106
Flt Permitted	0.95		0.40	1.00	1.00	1.00
Satd. Flow (perm)	2680		578	3000	2970	1106
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	44	0	220	1128	658	646
RTOR Reduction (vph)	0	0	0	0	0	154
Lane Group Flow (vph)	44	0	220	1128	658	492
Confl. Peds. (#/hr)	1					
Heavy Vehicles (%)	0%	0%	1%	0%	1%	0%
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Actuated Green, G (s)	3.2		50.9	50.9	50.9	50.9
Effective Green, g (s)	3.2		50.9	50.9	50.9	50.9
Actuated g/C Ratio	0.05		0.76	0.76	0.76	0.76
Clearance Time (s)	6.7		6.1	6.1	6.1	6.1
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	128		439	2282	2259	841
v/s Ratio Prot	c0.02			0.38	0.22	
v/s Ratio Perm			0.38			c0.44
v/c Ratio	0.34		0.50	0.49	0.29	0.58
Uniform Delay, d1	30.8		3.1	3.1	2.5	3.4
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.6		4.0	0.8	0.3	3.0
Delay (s)	32.4		7.1	3.8	2.8	6.4
Level of Service	C		A	A	A	A
Approach Delay (s/veh)	32.4			4.4	4.6	
Approach LOS	C			A	A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	4.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	66.9	Sum of lost time (s)	12.8
Intersection Capacity Utilization	83.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

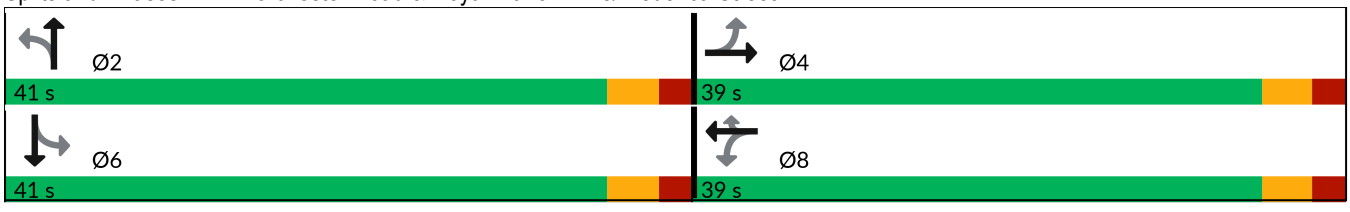


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	7	6	79	24	544	3	760	56	110	524	22
Future Volume (vph)	26	7	6	79	24	544	3	760	56	110	524	22
Ideal Flow (vphpl)	1433	1433	1433	1454	1579	1301	1454	1338	1338	1454	1338	1338
Storage Length (m)	0.0		0.0	45.0		0.0	95.0		0.0	165.0		0.0
Storage Lanes	0		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		1.00		1.00				1.00		1.00		
Frt		0.980				0.850		0.990			0.994	
Flt Protected		0.967		0.950			0.950			0.950		
Satd. Flow (prot)	0	1355	0	1368	1579	1095	1381	2510	0	1381	2503	0
Flt Permitted		0.867		0.731			0.396			0.248		
Satd. Flow (perm)	0	1215	0	1051	1579	1095	576	2510	0	360	2503	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6				103		12			7	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		47.8			201.0			125.1			377.5	
Travel Time (s)		3.4			14.5			9.0			27.2	
Confl. Peds. (#/hr)			2	2					8	8		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	0%	0%	1%	0%	1%	0%	0%	2%	0%	1%	0%
Adj. Flow (vph)	27	7	6	81	25	561	3	784	58	113	540	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	40	0	81	25	561	3	842	0	113	563	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.42	1.42	1.42	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	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	5.0	
Minimum Split (s)	32.0	32.0		32.0	32.0	32.0	41.0	41.0		41.0	41.0	
Total Split (s)	39.0	39.0		39.0	39.0	39.0	41.0	41.0		41.0	41.0	
Total Split (%)	48.8%	48.8%		48.8%	48.8%	48.8%	51.3%	51.3%		51.3%	51.3%	
Maximum Green (s)	34.0	34.0		34.0	34.0	34.0	36.0	36.0		36.0	36.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	Max	Max		Max	Max	
Walk Time (s)	9.0	9.0		9.0	9.0	9.0	12.0	12.0		12.0	12.0	
Flash Don't Walk (s)	18.0	18.0		18.0	18.0	18.0	24.0	24.0		24.0	24.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	
Act Effct Green (s)		34.0		34.0	34.0	34.0	36.0	36.0		36.0	36.0	
Actuated g/C Ratio		0.43		0.43	0.43	0.43	0.45	0.45		0.45	0.45	
v/c Ratio		0.08		0.18	0.04	1.07	0.01	0.74		0.70	0.50	
Control Delay (s/veh)		12.7		15.8	13.8	81.3	12.3	22.8		44.4	17.3	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay (s/veh)		12.7		15.8	13.8	81.3	12.3	22.8		44.4	17.3	
LOS		B		B	B	F	B	C		D	B	
Approach Delay (s/veh)		12.7			70.8			22.8			21.8	
Approach LOS		B			E			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Natural Cycle: 80			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.07			
Intersection Signal Delay (s/veh): 36.7		Intersection LOS: D	
Intersection Capacity Utilization 99.5%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 4: Dorchester Road & Royal Manor Drive/Frederica Street

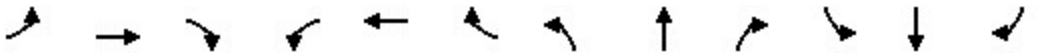


Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	40	81	25	561	3	842	113	563
v/c Ratio	0.08	0.18	0.04	1.07	0.01	0.74	0.70	0.50
Control Delay (s/veh)	12.7	15.8	13.8	81.3	12.3	22.8	44.4	17.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	12.7	15.8	13.8	81.3	12.3	22.8	44.4	17.3
Queue Length 50th (m)	3.1	7.8	2.3	~90.8	0.3	55.3	13.9	31.8
Queue Length 95th (m)	9.0	17.0	6.7	#152.8	1.8	78.7	#42.6	46.5
Internal Link Dist (m)	23.8		177.0			101.1		353.5
Turn Bay Length (m)		45.0			95.0		165.0	
Base Capacity (vph)	519	446	671	524	259	1136	162	1130
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	0.18	0.04	1.07	0.01	0.74	0.70	0.50

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

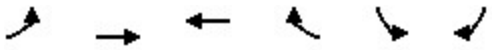
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	7	6	79	24	544	3	760	56	110	524	22
Future Volume (vph)	26	7	6	79	24	544	3	760	56	110	524	22
Ideal Flow (vphpl)	1433	1433	1433	1454	1579	1301	1454	1338	1338	1454	1338	1338
Total Lost time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt		0.98		1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected		0.97		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1355		1365	1579	1095	1381	2509		1379	2503	
Flt Permitted		0.87		0.73	1.00	1.00	0.40	1.00		0.25	1.00	
Satd. Flow (perm)		1215		1051	1579	1095	576	2509		360	2503	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	27	7	6	81	25	561	3	784	58	113	540	23
RTOR Reduction (vph)	0	3	0	0	0	59	0	7	0	0	4	0
Lane Group Flow (vph)	0	37	0	81	25	502	3	835	0	113	559	0
Confl. Peds. (#/hr)			2	2					8	8		
Heavy Vehicles (%)	0%	0%	0%	1%	0%	1%	0%	0%	2%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		34.0		34.0	34.0	34.0	36.0	36.0		36.0	36.0	
Effective Green, g (s)		34.0		34.0	34.0	34.0	36.0	36.0		36.0	36.0	
Actuated g/C Ratio		0.43		0.43	0.43	0.43	0.45	0.45		0.45	0.45	
Clearance Time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		516		446	671	465	259	1129		162	1126	
v/s Ratio Prot					0.02			c0.33			0.22	
v/s Ratio Perm		0.03		0.08		c0.46	0.01			0.31		
v/c Ratio		0.07		0.18	0.04	1.08	0.01	0.74		0.70	0.50	
Uniform Delay, d1		13.6		14.3	13.4	23.0	12.2	18.1		17.6	15.6	
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1		0.2	0.0	64.7	0.1	4.4		22.1	1.6	
Delay (s)		13.7		14.5	13.5	87.7	12.2	22.5		39.7	17.1	
Level of Service		B		B	B	F	B	C		D	B	
Approach Delay (s/veh)		13.7			76.0			22.5			20.9	
Approach LOS		B			E			C			C	

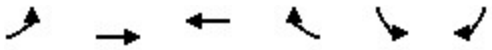
Intersection Summary			
HCM 2000 Control Delay (s/veh)	37.9	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	99.5%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	63	108	197	3	93	447
Future Volume (vph)	63	108	197	3	93	447
Ideal Flow (vphpl)	1454	1579	1338	1338	1454	1301
Storage Length (m)	85.0			0.0	0.0	40.0
Storage Lanes	1			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.998			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1354	3000	2512	0	1381	1106
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1354	3000	2512	0	1381	1106
Link Speed (k/h)		50	50		50	
Link Distance (m)		201.0	149.3		70.1	
Travel Time (s)		14.5	10.7		5.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	1%	0%	0%	0%
Adj. Flow (vph)	68	117	214	3	101	486
Shared Lane Traffic (%)						
Lane Group Flow (vph)	68	117	217	0	101	486
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.26	1.55	1.55	1.40	1.60
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

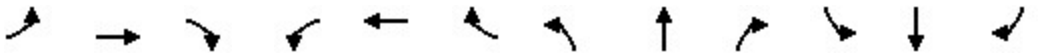
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 55.0%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	63	108	197	3	93	447
Future Volume (Veh/h)	63	108	197	3	93	447
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	68	117	214	3	101	486
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						5
Median type		None	None			
Median storage veh)						
Upstream signal (m)		201				
pX, platoon unblocked						
vC, conflicting volume	217				410	109
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	217				410	109
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	95				81	48
cM capacity (veh/h)	1350				546	931

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	68	59	59	143	74	587
Volume Left	68	0	0	0	0	101
Volume Right	0	0	0	0	3	486
cSH	1350	1700	1700	1700	1700	1124
Volume to Capacity	0.05	0.03	0.03	0.08	0.04	0.52
Queue Length 95th (m)	1.3	0.0	0.0	0.0	0.0	25.1
Control Delay (s/veh)	7.8	0.0	0.0	0.0	0.0	13.0
Lane LOS	A					B
Approach Delay (s/veh)	2.9			0.0		13.0
Approach LOS						B

Intersection Summary			
Average Delay	8.3		
Intersection Capacity Utilization	55.0%	ICU Level of Service	A
Analysis Period (min)	15		



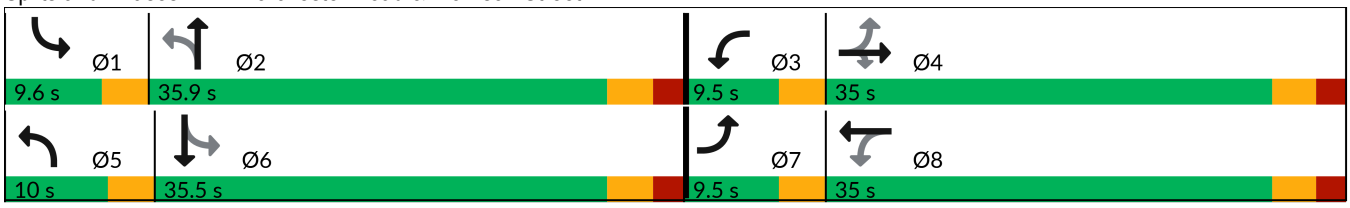
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	131	74	89	124	118	96	164	324	134	178	368	121
Future Volume (vph)	131	74	89	124	118	96	164	324	134	178	368	121
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Storage Length (m)	70.0		0.0	105.0		125.0	90.0		0.0	95.0		41.0
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor			0.98	1.00			1.00	1.00		1.00	1.00	
Frt			0.850		0.933			0.956			0.963	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1267	1410	1005	1368	2250	0	1341	2335	0	1368	2297	0
Flt Permitted	0.538			0.701			0.387			0.422		
Satd. Flow (perm)	718	1410	989	1005	2250	0	546	2335	0	607	2297	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			103		112			76			54	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		205.0			291.8			454.1			179.9	
Travel Time (s)		14.8			21.0			32.7			13.0	
Confl. Peds. (#/hr)			5	5			2		1	1		2
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	9%	12%	10%	1%	9%	1%	3%	4%	3%	1%	3%	16%
Adj. Flow (vph)	152	86	103	144	137	112	191	377	156	207	428	141
Shared Lane Traffic (%)												
Lane Group Flow (vph)	152	86	103	144	249	0	191	533	0	207	569	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

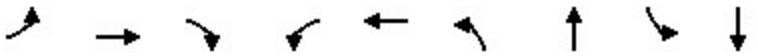
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	9.5	35.0	35.0	9.5	35.0		9.5	35.0		9.5	35.0	
Total Split (s)	9.5	35.0	35.0	9.5	35.0		10.0	35.9		9.6	35.5	
Total Split (%)	10.6%	38.9%	38.9%	10.6%	38.9%		11.1%	39.9%		10.7%	39.4%	
Maximum Green (s)	6.5	30.0	30.0	6.5	30.0		7.0	30.9		6.6	30.5	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)		10.0	10.0		10.0			10.0			10.0	
Flash Don't Walk (s)		20.0	20.0		20.0			20.0			20.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	20.3	13.1	13.1	19.6	11.1		39.9	30.9		39.1	30.5	
Actuated g/C Ratio	0.29	0.18	0.18	0.28	0.16		0.56	0.43		0.55	0.43	
v/c Ratio	0.60	0.33	0.39	0.46	0.56		0.50	0.50		0.51	0.56	
Control Delay (s/veh)	30.6	30.8	11.0	24.5	20.3		12.3	14.6		12.8	16.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	30.6	30.8	11.0	24.5	20.3		12.3	14.6		12.8	16.6	
LOS	C	C	B	C	C		B	B		B	B	
Approach Delay (s/veh)		24.7			21.8			14.0			15.6	
Approach LOS		C			C			B			B	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 71.2
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.60
Intersection Signal Delay (s/veh): 17.6 Intersection LOS: B
Intersection Capacity Utilization 72.8% ICU Level of Service C
Analysis Period (min) 15

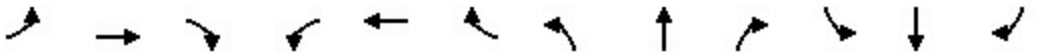
Splits and Phases: 1: Dorchester Road & Morrison Street





Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	152	86	103	144	249	191	533	207	569
v/c Ratio	0.60	0.33	0.39	0.46	0.56	0.50	0.50	0.51	0.56
Control Delay (s/veh)	30.6	30.8	11.0	24.5	20.3	12.3	14.6	12.8	16.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	30.6	30.8	11.0	24.5	20.3	12.3	14.6	12.8	16.6
Queue Length 50th (m)	16.3	11.0	0.0	15.2	9.2	10.6	22.2	11.7	26.3
Queue Length 95th (m)	29.8	22.4	11.2	27.8	18.5	22.2	36.9	24.0	42.7
Internal Link Dist (m)		181.0			267.8		430.1		155.9
Turn Bay Length (m)	70.0			105.0		90.0		95.0	
Base Capacity (vph)	254	594	476	310	1014	384	1057	404	1015
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.14	0.22	0.46	0.25	0.50	0.50	0.51	0.56

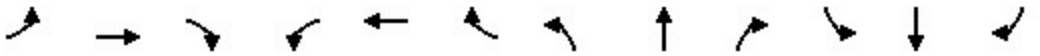
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	131	74	89	124	118	96	164	324	134	178	368	121
Future Volume (vph)	131	74	89	124	118	96	164	324	134	178	368	121
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Total Lost time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.93		1.00	0.96		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1267	1410	990	1365	2249		1341	2335		1367	2297	
Flt Permitted	0.54	1.00	1.00	0.70	1.00		0.39	1.00		0.42	1.00	
Satd. Flow (perm)	718	1410	990	1007	2249		546	2335		607	2297	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	152	86	103	144	137	112	191	377	156	207	428	141
RTOR Reduction (vph)	0	0	84	0	94	0	0	43	0	0	31	0
Lane Group Flow (vph)	152	86	19	144	155	0	191	490	0	207	538	0
Confl. Peds. (#/hr)			5	5			2		1	1		2
Heavy Vehicles (%)	9%	12%	10%	1%	9%	1%	3%	4%	3%	1%	3%	16%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	19.6	13.1	13.1	17.0	11.8		37.9	30.9		37.1	30.5	
Effective Green, g (s)	19.6	13.1	13.1	17.0	11.8		37.9	30.9		37.1	30.5	
Actuated g/C Ratio	0.27	0.18	0.18	0.24	0.16		0.53	0.43		0.52	0.42	
Clearance Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	245	257	180	264	369		365	1004		383	975	
v/s Ratio Prot	c0.06	0.06		0.04	0.07		c0.05	0.21		0.05	c0.23	
v/s Ratio Perm	c0.11		0.02	0.09			0.22			0.23		
v/c Ratio	0.62	0.33	0.10	0.55	0.42		0.52	0.49		0.54	0.55	
Uniform Delay, d1	21.7	25.6	24.5	23.4	26.9		9.5	14.7		9.9	15.5	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.8	0.8	0.3	2.3	0.8		1.4	1.7		1.6	2.2	
Delay (s)	26.5	26.3	24.7	25.7	27.7		10.8	16.4		11.5	17.8	
Level of Service	C	C	C	C	C		B	B		B	B	
Approach Delay (s/veh)		25.9			27.0			15.0			16.1	
Approach LOS		C			C			B			B	

Intersection Summary					
HCM 2000 Control Delay (s/veh)	19.1	HCM 2000 Level of Service	B		
HCM 2000 Volume to Capacity ratio	0.58				
Actuated Cycle Length (s)	71.8	Sum of lost time (s)	16.0		
Intersection Capacity Utilization	72.8%	ICU Level of Service	C		
Analysis Period (min)	15				

c Critical Lane Group



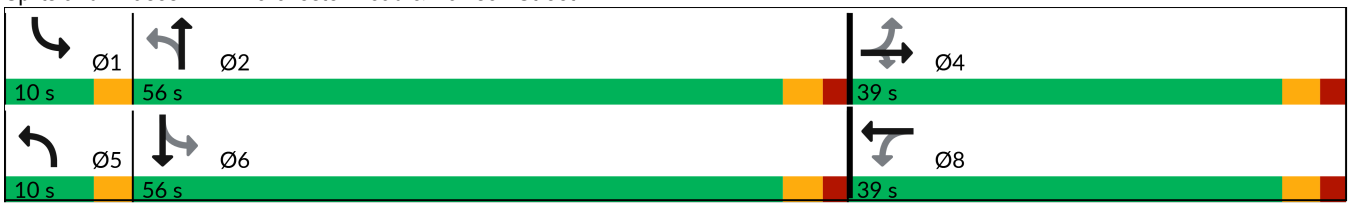
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	104	0	239	59	1	23	108	559	21	10	545	62
Future Volume (vph)	104	0	239	59	1	23	108	559	21	10	545	62
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Storage Length (m)	30.0		35.0	20.0		0.0	180.0		0.0	30.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.91	0.91
Ped Bike Factor							1.00	1.00		1.00	1.00	
Frt			0.850		0.856			0.995			0.985	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1381	1579	614	1354	1009	0	1316	2447	0	1244	3482	0
Flt Permitted	0.740			0.757			0.362			0.410		
Satd. Flow (perm)	1076	1579	614	1079	1009	0	501	2447	0	536	3482	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			265		25			5			26	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		106.7			108.0			280.1			454.1	
Travel Time (s)		7.7			7.8			20.2			32.7	
Confl. Peds. (#/hr)							1		3	3		1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	80%	2%	0%	14%	5%	3%	11%	11%	2%	13%
Adj. Flow (vph)	114	0	263	65	1	25	119	614	23	11	599	68
Shared Lane Traffic (%)												
Lane Group Flow (vph)	114	0	263	65	26	0	119	637	0	11	667	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

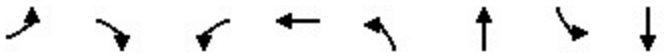
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	1.0		5.0	5.0	
Minimum Split (s)	39.0	39.0	39.0	39.0	39.0		9.5	52.0		9.5	52.0	
Total Split (s)	39.0	39.0	39.0	39.0	39.0		10.0	56.0		10.0	56.0	
Total Split (%)	37.1%	37.1%	37.1%	37.1%	37.1%		9.5%	53.3%		9.5%	53.3%	
Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		7.0	51.0		7.0	51.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)	11.0	11.0	11.0	11.0	11.0			16.0			16.0	
Flash Don't Walk (s)	23.0	23.0	23.0	23.0	23.0			31.0			31.0	
Pedestrian Calls (#/hr)	0	0	0	0	0			0			0	
Act Effct Green (s)	16.3		16.3	16.3	16.3		63.0	59.8		59.4	51.5	
Actuated g/C Ratio	0.19		0.19	0.19	0.19		0.72	0.68		0.68	0.59	
v/c Ratio	0.57		0.80	0.33	0.13		0.28	0.38		0.03	0.33	
Control Delay (s/veh)	43.0		22.8	33.9	12.0		7.4	9.3		6.4	10.8	
Queue Delay	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	43.0		22.8	33.9	12.0		7.4	9.3		6.4	10.8	
LOS	D		C	C	B		A	A		A	B	
Approach Delay (s/veh)		28.9			27.7			9.0			10.7	
Approach LOS		C			C			A			B	

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 87.9
Natural Cycle: 105
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay (s/veh): 14.5 Intersection LOS: B
Intersection Capacity Utilization 77.6% ICU Level of Service D
Analysis Period (min) 15

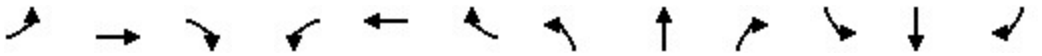
Splits and Phases: 2: Dorchester Road & Dawson Street





Lane Group	EBL	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	114	263	65	26	119	637	11	667
v/c Ratio	0.57	0.80	0.33	0.13	0.28	0.38	0.03	0.33
Control Delay (s/veh)	43.0	22.8	33.9	12.0	7.4	9.3	6.4	10.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	43.0	22.8	33.9	12.0	7.4	9.3	6.4	10.8
Queue Length 50th (m)	18.4	0.0	10.0	0.2	4.7	18.1	0.4	18.0
Queue Length 95th (m)	34.4	32.9	21.2	6.5	19.1	64.8	3.2	40.7
Internal Link Dist (m)				84.0		256.1		430.1
Turn Bay Length (m)	30.0	35.0	20.0		180.0		30.0	
Base Capacity (vph)	420	401	421	409	424	1667	426	2052
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	0.27	0.66	0.15	0.06	0.28	0.38	0.03	0.33

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	104	0	239	59	1	23	108	559	21	10	545	62
Future Volume (vph)	104	0	239	59	1	23	108	559	21	10	545	62
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Total Lost time (s)	5.0		5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00		1.00	1.00	1.00		1.00	0.95		1.00	0.91	
Frpb, ped/bikes	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00		0.85	1.00	0.86		1.00	0.99		1.00	0.98	
Flt Protected	0.95		1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1381		614	1354	1009		1315	2446		1244	3481	
Flt Permitted	0.74		1.00	0.76	1.00		0.36	1.00		0.41	1.00	
Satd. Flow (perm)	1076		614	1079	1009		501	2446		537	3481	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	114	0	263	65	1	25	119	614	23	11	599	68
RTOR Reduction (vph)	0	0	215	0	20	0	0	2	0	0	10	0
Lane Group Flow (vph)	114	0	48	65	6	0	119	635	0	11	657	0
Confl. Peds. (#/hr)							1		3	3		1
Heavy Vehicles (%)	0%	0%	80%	2%	0%	14%	5%	3%	11%	11%	2%	13%
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	16.3		16.3	16.3	16.3		63.9	59.8		55.1	54.0	
Effective Green, g (s)	16.3		16.3	16.3	16.3		63.9	59.8		55.1	54.0	
Actuated g/C Ratio	0.18		0.18	0.18	0.18		0.71	0.66		0.61	0.60	
Clearance Time (s)	5.0		5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	194		110	194	182		417	1621		336	2083	
v/s Ratio Prot					0.01		c0.02	c0.26		0.00	0.19	
v/s Ratio Perm	c0.11		0.08	0.06			0.18			0.02		
v/c Ratio	0.59		0.43	0.34	0.03		0.29	0.39		0.03	0.32	
Uniform Delay, d1	33.9		32.8	32.2	30.4		4.3	6.9		6.9	9.0	
Progression Factor	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.5		2.7	1.0	0.1		0.4	0.7		0.0	0.4	
Delay (s)	38.4		35.5	33.2	30.5		4.7	7.6		6.9	9.4	
Level of Service	D		D	C	C		A	A		A	A	
Approach Delay (s/veh)		36.4			32.5			7.2			9.3	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	14.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	90.2	Sum of lost time (s)	13.0
Intersection Capacity Utilization	77.6%	ICU Level of Service	D
Analysis Period (min)	15		

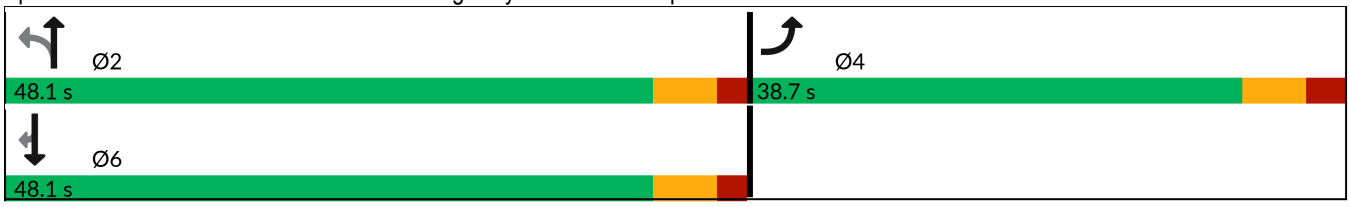
c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	24	0	171	664	419	409
Future Volume (vph)	24	0	171	664	419	409
Ideal Flow (vphpl)	1454	1301	1454	1579	1579	1301
Storage Length (m)	0.0	0.0	160.0			0.0
Storage Lanes	2	0	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt						0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	2271	0	1328	2913	2941	1063
Flt Permitted	0.950		0.482			
Satd. Flow (perm)	2271	0	674	2913	2941	1063
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						460
Link Speed (k/h)	50			50	50	
Link Distance (m)	166.4			377.5	280.1	
Travel Time (s)	12.0			27.2	20.2	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	18%	0%	4%	3%	2%	4%
Adj. Flow (vph)	27	0	192	746	471	460
Shared Lane Traffic (%)						
Lane Group Flow (vph)	27	0	192	746	471	460
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.2			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.60	1.40	1.26	1.26	1.60
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1		1	2	2	1
Detector Template	Left		Left	Thru	Thru	Right
Leading Detector (m)	2.0		2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0		2.0	0.6	0.6	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	8.0		10.0	10.0	10.0	10.0
Minimum Split (s)	38.7		24.1	24.1	24.1	24.1
Total Split (s)	38.7		48.1	48.1	48.1	48.1
Total Split (%)	44.6%		55.4%	55.4%	55.4%	55.4%
Maximum Green (s)	32.0		42.0	42.0	42.0	42.0
Yellow Time (s)	4.1		4.1	4.1	4.1	4.1
All-Red Time (s)	2.6		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7		6.1	6.1	6.1	6.1
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		Max	Max	Max	Max
Walk Time (s)	12.0					
Flash Don't Walk (s)	20.0					
Pedestrian Calls (#/hr)	0					
Act Effct Green (s)	8.0		58.5	58.5	58.5	58.5
Actuated g/C Ratio	0.13		0.93	0.93	0.93	0.93
v/c Ratio	0.09		0.31	0.27	0.17	0.45
Control Delay (s/veh)	25.0		3.5	1.7	1.4	1.9
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay (s/veh)	25.0		3.5	1.7	1.4	1.9
LOS	C		A	A	A	A
Approach Delay (s/veh)	25.0			2.1	1.7	
Approach LOS	C			A	A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 86.8			
Actuated Cycle Length: 62.7			
Natural Cycle: 70			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.45			
Intersection Signal Delay (s/veh): 2.2		Intersection LOS: A	
Intersection Capacity Utilization 59.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 3: Dorchester Road & Highway 420 North Ramp

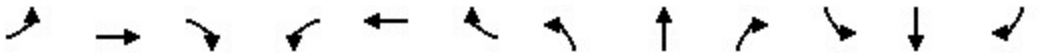


Lane Group	EBL	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	27	192	746	471	460
v/c Ratio	0.09	0.31	0.27	0.17	0.45
Control Delay (s/veh)	25.0	3.5	1.7	1.4	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	25.0	3.5	1.7	1.4	1.9
Queue Length 50th (m)	1.5	0.0	0.0	0.0	0.0
Queue Length 95th (m)	4.7	20.6	25.1	14.7	7.5
Internal Link Dist (m)	142.4		353.5	256.1	
Turn Bay Length (m)		160.0			
Base Capacity (vph)	1159	629	2720	2746	1023
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.02	0.31	0.27	0.17	0.45

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	24	0	171	664	419	409
Future Volume (vph)	24	0	171	664	419	409
Ideal Flow (vphpl)	1454	1301	1454	1579	1579	1301
Total Lost time (s)	6.7		6.1	6.1	6.1	6.1
Lane Util. Factor	0.97		1.00	0.95	0.95	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	0.95		0.95	1.00	1.00	1.00
Satd. Flow (prot)	2271		1328	2913	2941	1063
Flt Permitted	0.95		0.48	1.00	1.00	1.00
Satd. Flow (perm)	2271		674	2913	2941	1063
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	27	0	192	746	471	460
RTOR Reduction (vph)	0	0	0	0	0	97
Lane Group Flow (vph)	27	0	192	746	471	363
Heavy Vehicles (%)	18%	0%	4%	3%	2%	4%
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Actuated Green, G (s)	1.6		53.6	53.6	53.6	53.6
Effective Green, g (s)	1.6		53.6	53.6	53.6	53.6
Actuated g/C Ratio	0.02		0.79	0.79	0.79	0.79
Clearance Time (s)	6.7		6.1	6.1	6.1	6.1
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	53		531	2296	2318	837
v/s Ratio Prot	c0.01			0.26	0.16	
v/s Ratio Perm			0.28			c0.34
v/c Ratio	0.51		0.36	0.32	0.20	0.43
Uniform Delay, d1	32.8		2.1	2.0	1.8	2.3
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	7.5		1.9	0.4	0.2	1.6
Delay (s)	40.3		4.0	2.4	2.0	3.9
Level of Service	D		A	A	A	A
Approach Delay (s/veh)	40.3			2.8	3.0	
Approach LOS	D			A	A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	3.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	68.0	Sum of lost time (s)	12.8
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

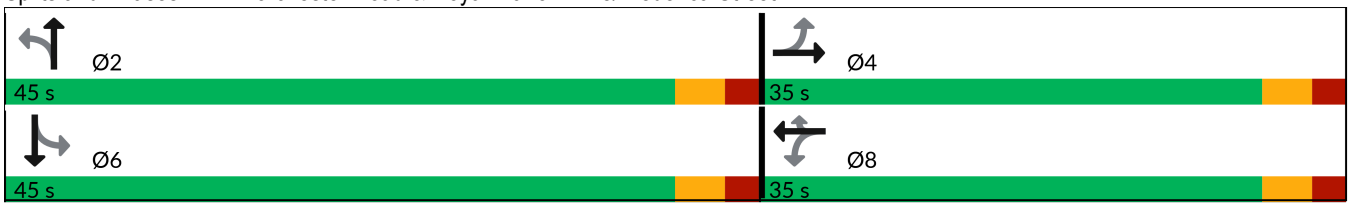


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	20	7	46	6	386	2	429	39	110	304	15
Future Volume (vph)	19	20	7	46	6	386	2	429	39	110	304	15
Ideal Flow (vphpl)	1433	1433	1433	1454	1579	1301	1454	1338	1338	1454	1338	1338
Storage Length (m)	0.0		0.0	45.0		0.0	95.0		0.0	165.0		0.0
Storage Lanes	0		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor								1.00		1.00		
Frt		0.980				0.850		0.988			0.993	
Flt Protected		0.980		0.950			0.950			0.950		
Satd. Flow (prot)	0	1253	0	1354	1579	1074	1381	2430	0	1368	2468	0
Flt Permitted		0.906		0.722			0.536			0.454		
Satd. Flow (perm)	0	1158	0	1029	1579	1074	779	2430	0	653	2468	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8				306		17			9	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		47.8			201.0			125.1			377.5	
Travel Time (s)		3.4			14.5			9.0			27.2	
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	6%	17%	0%	2%	0%	3%	0%	3%	6%	1%	2%	8%
Adj. Flow (vph)	22	23	8	52	7	439	2	488	44	125	345	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	53	0	52	7	439	2	532	0	125	362	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.42	1.42	1.42	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	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	5.0	
Minimum Split (s)	32.0	32.0		32.0	32.0	32.0	41.0	41.0		41.0	41.0	
Total Split (s)	35.0	35.0		35.0	35.0	35.0	45.0	45.0		45.0	45.0	
Total Split (%)	43.8%	43.8%		43.8%	43.8%	43.8%	56.3%	56.3%		56.3%	56.3%	
Maximum Green (s)	30.0	30.0		30.0	30.0	30.0	40.0	40.0		40.0	40.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	Max	Max		Max	Max	
Walk Time (s)	9.0	9.0		9.0	9.0	9.0	12.0	12.0		12.0	12.0	
Flash Don't Walk (s)	18.0	18.0		18.0	18.0	18.0	24.0	24.0		24.0	24.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	
Act Effct Green (s)		17.0		17.0	17.0	17.0	40.7	40.7		40.7	40.7	
Actuated g/C Ratio		0.25		0.25	0.25	0.25	0.60	0.60		0.60	0.60	
v/c Ratio		0.18		0.20	0.02	0.88	0.00	0.36		0.32	0.24	
Control Delay (s/veh)		17.2		20.1	16.7	27.8	9.0	9.5		12.8	8.6	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay (s/veh)		17.2		20.1	16.7	27.8	9.0	9.5		12.8	8.6	
LOS		B		C	B	C	A	A		B	A	
Approach Delay (s/veh)		17.2			26.8			9.5			9.7	
Approach LOS		B			C			A			A	

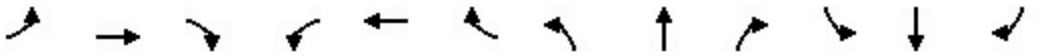
Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 67.9			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay (s/veh): 15.3		Intersection LOS: B	
Intersection Capacity Utilization 81.6%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 4: Dorchester Road & Royal Manor Drive/Frederica Street



Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	53	52	7	439	2	532	125	362
v/c Ratio	0.18	0.20	0.02	0.88	0.00	0.36	0.32	0.24
Control Delay (s/veh)	17.2	20.1	16.7	27.8	9.0	9.5	12.8	8.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	17.2	20.1	16.7	27.8	9.0	9.5	12.8	8.6
Queue Length 50th (m)	4.6	5.4	0.7	15.1	0.1	16.1	7.3	10.2
Queue Length 95th (m)	11.8	12.8	3.2	52.6	1.2	37.4	24.7	24.6
Internal Link Dist (m)	23.8		177.0			101.1		353.5
Turn Bay Length (m)		45.0			95.0		165.0	
Base Capacity (vph)	525	462	709	651	467	1463	391	1483
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	0.10	0.11	0.01	0.67	0.00	0.36	0.32	0.24

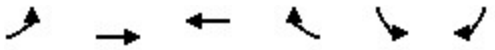
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	20	7	46	6	386	2	429	39	110	304	15
Future Volume (vph)	19	20	7	46	6	386	2	429	39	110	304	15
Ideal Flow (vphpl)	1433	1433	1433	1454	1579	1301	1454	1338	1338	1454	1338	1338
Total Lost time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt		0.98		1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected		0.98		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1252		1354	1579	1074	1381	2429		1367	2468	
Flt Permitted		0.91		0.72	1.00	1.00	0.54	1.00		0.45	1.00	
Satd. Flow (perm)		1157		1030	1579	1074	779	2429		654	2468	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	22	23	8	52	7	439	2	488	44	125	345	17
RTOR Reduction (vph)	0	6	0	0	0	229	0	7	0	0	4	0
Lane Group Flow (vph)	0	47	0	52	7	210	2	525	0	125	358	0
Confl. Peds. (#/hr)									1	1		
Heavy Vehicles (%)	6%	17%	0%	2%	0%	3%	0%	3%	6%	1%	2%	8%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		17.0		17.0	17.0	17.0	40.7	40.7		40.7	40.7	
Effective Green, g (s)		17.0		17.0	17.0	17.0	40.7	40.7		40.7	40.7	
Actuated g/C Ratio		0.25		0.25	0.25	0.25	0.60	0.60		0.60	0.60	
Clearance Time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		290		258	396	269	468	1460		393	1483	
v/s Ratio Prot					0.00			c0.22			0.15	
v/s Ratio Perm		0.04		0.05		c0.20	0.00			0.19		
v/c Ratio		0.16		0.20	0.02	0.78	0.00	0.36		0.32	0.24	
Uniform Delay, d1		19.8		20.0	19.1	23.6	5.4	6.9		6.7	6.3	
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.3		0.4	0.0	13.6	0.0	0.7		2.1	0.4	
Delay (s)		20.1		20.4	19.1	37.2	5.4	7.6		8.8	6.7	
Level of Service		C		C	B	D	A	A		A	A	
Approach Delay (s/veh)		20.1			35.2			7.6			7.2	
Approach LOS		C			D			A			A	

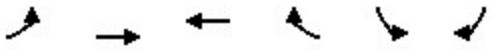
Intersection Summary			
HCM 2000 Control Delay (s/veh)	16.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	67.7	Sum of lost time (s)	10.0
Intersection Capacity Utilization	81.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	64	103	139	2	83	305
Future Volume (vph)	64	103	139	2	83	305
Ideal Flow (vphpl)	1454	1579	1338	1338	1454	1301
Storage Length (m)	85.0			0.0	40.0	0.0
Storage Lanes	1			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.998			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1303	2885	2418	0	1341	1084
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1303	2885	2418	0	1341	1084
Link Speed (k/h)		50	50		50	
Link Distance (m)		201.0	149.3		70.1	
Travel Time (s)		14.5	10.7		5.0	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	6%	4%	5%	0%	3%	2%
Adj. Flow (vph)	76	123	165	2	99	363
Shared Lane Traffic (%)						
Lane Group Flow (vph)	76	123	167	0	99	363
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.26	1.55	1.55	1.40	1.60
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 39.8%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	64	103	139	2	83	305
Future Volume (Veh/h)	64	103	139	2	83	305
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	76	123	165	2	99	363
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		201				
pX, platoon unblocked						
vC, conflicting volume	167				380	84
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	167				380	84
tC, single (s)	4.2				6.9	6.9
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.3
p0 queue free %	94				82	62
cM capacity (veh/h)	1380				560	959

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1	SB 2
Volume Total	76	62	62	110	57	99	363
Volume Left	76	0	0	0	0	99	0
Volume Right	0	0	0	0	2	0	363
cSH	1380	1700	1700	1700	1700	560	959
Volume to Capacity	0.06	0.04	0.04	0.06	0.03	0.18	0.38
Queue Length 95th (m)	1.4	0.0	0.0	0.0	0.0	5.1	14.3
Control Delay (s/veh)	7.8	0.0	0.0	0.0	0.0	12.8	11.0
Lane LOS	A					B	B
Approach Delay (s/veh)	3.0			0.0		11.4	
Approach LOS						B	

Intersection Summary			
Average Delay	7.1		
Intersection Capacity Utilization	39.8%	ICU Level of Service	A
Analysis Period (min)	15		

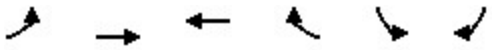
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	682	0	0	497	75	0
Future Volume (vph)	682	0	0	497	75	0
Ideal Flow (vphpl)	1579	1301	1454	1579	1454	1301
Lane Util. Factor	0.95	1.00	1.00	0.91	1.00	1.00
Frt						
Flt Protected					0.950	
Satd. Flow (prot)	2941	0	0	4105	1316	0
Flt Permitted					0.950	
Satd. Flow (perm)	2941	0	0	4105	1316	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	266.5			178.9	263.7	
Travel Time (s)	19.2			12.9	19.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	0%	5%	5%	2%
Adj. Flow (vph)	741	0	0	540	82	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	741	0	0	540	82	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.26	1.60	1.40	1.26	1.40	1.60
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 44.0%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	682	0	0	497	75	0
Future Volume (Veh/h)	682	0	0	497	75	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	741	0	0	540	82	0
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			741		921	371
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			741		921	371
tC, single (s)			4.1		6.9	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			100		69	100
cM capacity (veh/h)			875		264	627

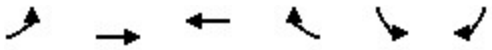
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	371	371	180	180	180	82
Volume Left	0	0	0	0	0	82
Volume Right	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	264
Volume to Capacity	0.22	0.22	0.11	0.11	0.11	0.31
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	10.2
Control Delay (s/veh)	0.0	0.0	0.0	0.0	0.0	24.6
Lane LOS						C
Approach Delay (s/veh)	0.0		0.0			24.6
Approach LOS						C

Intersection Summary			
Average Delay	1.5		
Intersection Capacity Utilization	44.0%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	896	464	0	103	183
Future Volume (vph)	0	896	464	0	103	183
Ideal Flow (vphpl)	1454	1579	1579	1301	1433	1433
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	2941	2857	0	1309	1088
Flt Permitted					0.950	
Satd. Flow (perm)	0	2941	2857	0	1309	1088
Link Speed (k/h)		50	50		50	
Link Distance (m)		152.8	266.5		231.4	
Travel Time (s)		11.0	19.2		16.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	5%	3%	4%	12%
Adj. Flow (vph)	0	974	504	0	112	199
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	974	504	0	112	199
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.26	1.26	1.60	1.42	1.42
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

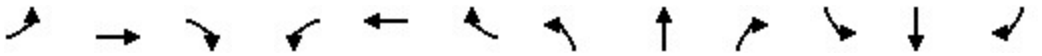
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 44.0%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↰	↱
Traffic Volume (veh/h)	0	896	464	0	103	183
Future Volume (Veh/h)	0	896	464	0	103	183
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	974	504	0	112	199
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	504				991	252
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	504				991	252
tC, single (s)	4.1				6.9	7.1
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.4
p0 queue free %	100				53	72
cM capacity (veh/h)	1071				240	718

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	487	487	252	252	112	199
Volume Left	0	0	0	0	112	0
Volume Right	0	0	0	0	0	199
cSH	1700	1700	1700	1700	240	718
Volume to Capacity	0.29	0.29	0.15	0.15	0.47	0.28
Queue Length 95th (m)	0.0	0.0	0.0	0.0	18.4	9.0
Control Delay (s/veh)	0.0	0.0	0.0	0.0	32.6	11.9
Lane LOS					D	B
Approach Delay (s/veh)	0.0		0.0		19.4	
Approach LOS					C	

Intersection Summary			
Average Delay	3.4		
Intersection Capacity Utilization	44.0%	ICU Level of Service	A
Analysis Period (min)	15		

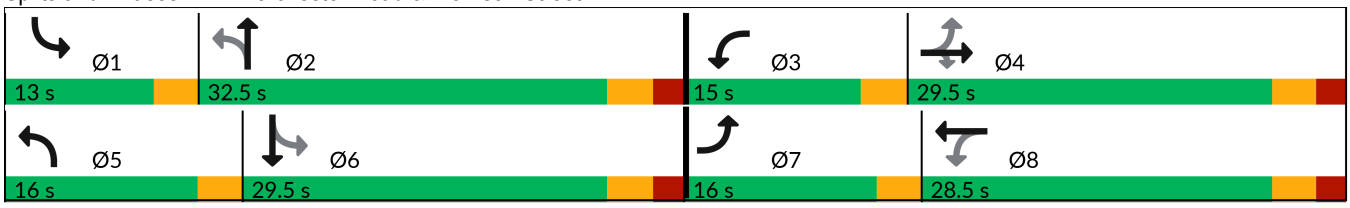


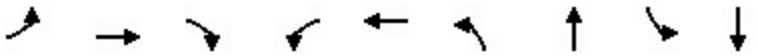
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	246	152	253	344	199	172	292	451	182	174	506	185
Future Volume (vph)	246	152	253	344	199	172	292	451	182	174	506	185
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Storage Length (m)	70.0		0.0	105.0		125.0	90.0		0.0	95.0		41.0
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00		0.98	1.00	0.99		1.00	0.99		1.00	1.00	
Frt			0.850		0.930			0.957			0.960	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1328	1504	1063	1368	2298	0	1341	2394	0	1381	2339	0
Flt Permitted	0.338			0.596			0.218			0.331		
Satd. Flow (perm)	471	1504	1044	854	2298	0	307	2394	0	480	2339	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			272		185			70			57	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		205.0			291.8			454.1			179.9	
Travel Time (s)		14.8			21.0			32.7			13.0	
Confl. Peds. (#/hr)	6		7	7		6	6		11	11		6
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	4%	5%	4%	1%	3%	1%	3%	1%	1%	0%	2%	9%
Adj. Flow (vph)	265	163	272	370	214	185	314	485	196	187	544	199
Shared Lane Traffic (%)												
Lane Group Flow (vph)	265	163	272	370	399	0	314	681	0	187	743	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	9.5	35.0	35.0	9.5	35.0		9.5	35.0		9.5	35.0	
Total Split (s)	16.0	29.5	29.5	15.0	28.5		16.0	32.5		13.0	29.5	
Total Split (%)	17.8%	32.8%	32.8%	16.7%	31.7%		17.8%	36.1%		14.4%	32.8%	
Maximum Green (s)	13.0	24.5	24.5	12.0	23.5		13.0	27.5		10.0	24.5	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)		10.0	10.0		10.0			10.0			10.0	
Flash Don't Walk (s)		20.0	20.0		20.0			20.0			20.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	30.1	15.3	15.3	28.5	14.5		48.1	33.6		41.7	30.1	
Actuated g/C Ratio	0.35	0.18	0.18	0.33	0.17		0.56	0.39		0.48	0.35	
v/c Ratio	0.91	0.62	0.67	1.05	0.74		0.96	0.70		0.57	0.87	
Control Delay (s/veh)	59.0	43.0	12.8	88.7	26.8		59.2	25.4		19.0	38.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	59.0	43.0	12.8	88.7	26.8		59.2	25.4		19.0	38.3	
LOS	E	D	B	F	C		E	C		B	D	
Approach Delay (s/veh)		37.3			56.5			36.1			34.5	
Approach LOS		D			E			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 86.5			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.05			
Intersection Signal Delay (s/veh): 40.5		Intersection LOS: D	
Intersection Capacity Utilization 102.3%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 1: Dorchester Road & Morrison Street



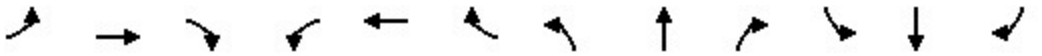


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	265	163	272	370	399	314	681	187	743
v/c Ratio	0.91	0.62	0.67	1.05	0.74	0.96	0.70	0.57	0.87
Control Delay (s/veh)	59.0	43.0	12.8	88.7	26.8	59.2	25.4	19.0	38.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	59.0	43.0	12.8	88.7	26.8	59.2	25.4	19.0	38.3
Queue Length 50th (m)	35.4	26.4	0.0	~59.1	18.4	29.7	46.0	15.3	57.9
Queue Length 95th (m)	#67.3	46.3	23.0	#125.0	34.5	#95.1	76.7	32.9	#106.4
Internal Link Dist (m)		181.0			267.8		430.1		155.9
Turn Bay Length (m)	70.0			105.0		90.0		95.0	
Base Capacity (vph)	294	427	491	353	760	326	971	338	850
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.90	0.38	0.55	1.05	0.53	0.96	0.70	0.55	0.87

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

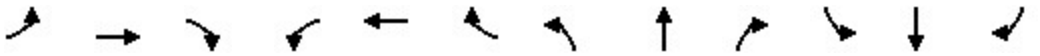
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	246	152	253	344	199	172	292	451	182	174	506	185
Future Volume (vph)	246	152	253	344	199	172	292	451	182	174	506	185
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Total Lost time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.98	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	1.00	
Frt	1.00	1.00	0.85	1.00	0.93		1.00	0.96		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1327	1504	1044	1364	2299		1341	2394		1380	2338	
Flt Permitted	0.34	1.00	1.00	0.60	1.00		0.22	1.00		0.33	1.00	
Satd. Flow (perm)	471	1504	1044	855	2299		307	2394		481	2338	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	265	163	272	370	214	185	314	485	196	187	544	199
RTOR Reduction (vph)	0	0	224	0	154	0	0	43	0	0	37	0
Lane Group Flow (vph)	265	163	48	370	245	0	314	638	0	187	706	0
Confl. Peds. (#/hr)	6		7	7		6	6		11	11		6
Heavy Vehicles (%)	4%	5%	4%	1%	3%	1%	3%	1%	1%	0%	2%	9%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	28.1	15.3	15.3	26.5	14.5		46.2	33.6		39.8	30.2	
Effective Green, g (s)	28.1	15.3	15.3	26.5	14.5		46.2	33.6		39.8	30.2	
Actuated g/C Ratio	0.32	0.18	0.18	0.31	0.17		0.53	0.39		0.46	0.35	
Clearance Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	279	266	184	332	385		319	929		321	816	
v/s Ratio Prot	c0.14	0.11		c0.15	0.11		c0.15	0.27		0.06	0.30	
v/s Ratio Perm	0.17		0.05	c0.19			c0.38			0.20		
v/c Ratio	0.95	0.61	0.26	1.11	0.64		0.98	0.69		0.58	0.87	
Uniform Delay, d1	25.7	32.9	30.7	28.7	33.5		15.4	22.1		14.8	26.3	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	39.9	4.1	0.8	83.9	3.4		45.8	4.1		2.7	11.8	
Delay (s)	65.6	37.0	31.5	112.6	37.0		61.2	26.2		17.5	38.1	
Level of Service	E	D	C	F	D		E	C		B	D	
Approach Delay (s/veh)		45.7			73.4			37.2			33.9	
Approach LOS		D			E			D			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	46.3	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	86.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	102.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

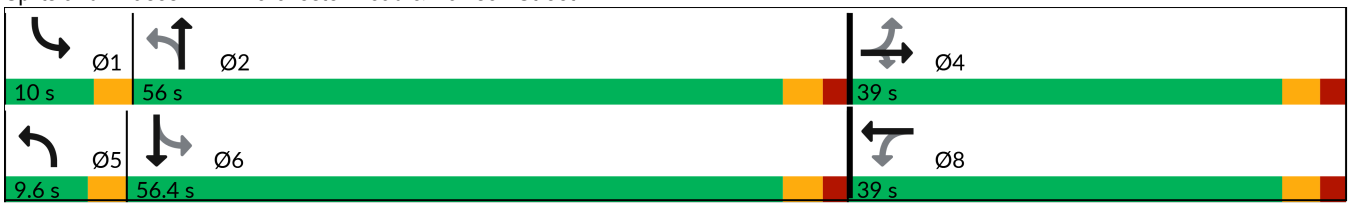


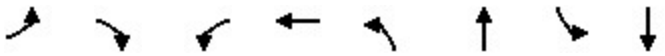
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	92	0	214	57	1	26	241	876	52	40	965	149
Future Volume (vph)	92	0	214	57	1	26	241	876	52	40	965	149
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Storage Length (m)	30.0		35.0	20.0		0.0	180.0		0.0	30.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.91	0.91
Ped Bike Factor			0.99	1.00			1.00	1.00		1.00	1.00	
Frt			0.850		0.855			0.992			0.980	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1381	1579	1015	1381	1102	0	1381	2495	0	1341	3507	0
Flt Permitted	0.739			0.757			0.205			0.281		
Satd. Flow (perm)	1075	1579	1001	1099	1102	0	298	2495	0	396	3507	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			181		27			8			39	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		106.7			108.0			280.1			454.1	
Travel Time (s)		7.7			7.8			20.2			32.7	
Confl. Peds. (#/hr)			2	2			5		2	2		5
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	9%	0%	0%	4%	0%	1%	0%	3%	2%	0%
Adj. Flow (vph)	94	0	218	58	1	27	246	894	53	41	985	152
Shared Lane Traffic (%)												
Lane Group Flow (vph)	94	0	218	58	28	0	246	947	0	41	1137	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	1.0		5.0	5.0	
Minimum Split (s)	39.0	39.0	39.0	39.0	39.0		9.5	52.0		9.5	52.0	
Total Split (s)	39.0	39.0	39.0	39.0	39.0		9.6	56.0		10.0	56.4	
Total Split (%)	37.1%	37.1%	37.1%	37.1%	37.1%		9.1%	53.3%		9.5%	53.7%	
Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		6.6	51.0		7.0	51.4	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)	11.0	11.0	11.0	11.0	11.0			16.0			16.0	
Flash Don't Walk (s)	23.0	23.0	23.0	23.0	23.0			31.0			31.0	
Pedestrian Calls (#/hr)	0	0	0	0	0			0			0	
Act Effct Green (s)	13.0		13.0	13.0	13.0		61.5	55.7		59.7	51.6	
Actuated g/C Ratio	0.15		0.15	0.15	0.15		0.73	0.66		0.71	0.61	
v/c Ratio	0.57		0.71	0.34	0.15		0.81	0.57		0.12	0.53	
Control Delay (s/veh)	46.3		21.6	36.8	13.4		30.6	11.5		4.5	10.8	
Queue Delay	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	46.3		21.6	36.8	13.4		30.6	11.5		4.5	10.8	
LOS	D		C	D	B		C	B		A	B	
Approach Delay (s/veh)		29.1			29.2			15.4			10.5	
Approach LOS		C			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 105			
Actuated Cycle Length: 84.2			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay (s/veh): 15.3		Intersection LOS: B	
Intersection Capacity Utilization 82.6%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 2: Dorchester Road & Dawson Street

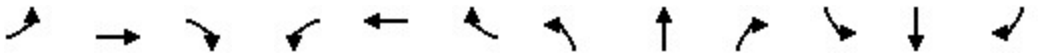




Lane Group	EBL	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	94	218	58	28	246	947	41	1137
v/c Ratio	0.57	0.71	0.34	0.15	0.81	0.57	0.12	0.53
Control Delay (s/veh)	46.3	21.6	36.8	13.4	30.6	11.5	4.5	10.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	46.3	21.6	36.8	13.4	30.6	11.5	4.5	10.8
Queue Length 50th (m)	14.9	5.6	8.9	0.2	9.7	45.2	1.4	34.2
Queue Length 95th (m)	30.0	29.1	19.8	7.1	#47.9	86.2	5.4	59.7
Internal Link Dist (m)				84.0		256.1		430.1
Turn Bay Length (m)	30.0	35.0	20.0		180.0		30.0	
Base Capacity (vph)	435	513	445	462	302	1652	363	2162
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.42	0.13	0.06	0.81	0.57	0.11	0.53

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	92	0	214	57	1	26	241	876	52	40	965	149
Future Volume (vph)	92	0	214	57	1	26	241	876	52	40	965	149
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Total Lost time (s)	5.0		5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00		1.00	1.00	1.00		1.00	0.95		1.00	0.91	
Frpb, ped/bikes	1.00		0.99	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00		0.85	1.00	0.86		1.00	0.99		1.00	0.98	
Flt Protected	0.95		1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1381		1001	1379	1102		1381	2494		1341	3507	
Flt Permitted	0.74		1.00	0.76	1.00		0.21	1.00		0.28	1.00	
Satd. Flow (perm)	1074		1001	1099	1102		298	2494		397	3507	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	94	0	218	58	1	27	246	894	53	41	985	152
RTOR Reduction (vph)	0	0	153	0	23	0	0	3	0	0	15	0
Lane Group Flow (vph)	94	0	65	58	5	0	246	944	0	41	1122	0
Confl. Peds. (#/hr)			2	2			5		2	2		5
Heavy Vehicles (%)	0%	0%	9%	0%	0%	4%	0%	1%	0%	3%	2%	0%
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	13.0		13.0	13.0	13.0		62.3	55.7		56.7	52.9	
Effective Green, g (s)	13.0		13.0	13.0	13.0		62.3	55.7		56.7	52.9	
Actuated g/C Ratio	0.15		0.15	0.15	0.15		0.73	0.65		0.66	0.62	
Clearance Time (s)	5.0		5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	163		152	167	167		300	1624		305	2169	
v/s Ratio Prot					0.00		c0.06	0.38		0.01	0.32	
v/s Ratio Perm	c0.09		0.06	0.05			c0.53			0.08		
v/c Ratio	0.58		0.42	0.35	0.03		0.82	0.58		0.13	0.52	
Uniform Delay, d1	33.7		32.9	32.5	30.9		5.0	8.4		5.1	9.1	
Progression Factor	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.9		1.9	1.3	0.1		16.2	1.5		0.2	0.9	
Delay (s)	38.6		34.8	33.7	31.0		21.2	9.9		5.3	10.0	
Level of Service	D		C	C	C		C	A		A	B	
Approach Delay (s/veh)		35.9			32.8			12.2			9.9	
Approach LOS		D			C			B			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	14.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	85.5	Sum of lost time (s)	13.0
Intersection Capacity Utilization	82.6%	ICU Level of Service	E
Analysis Period (min)	15		

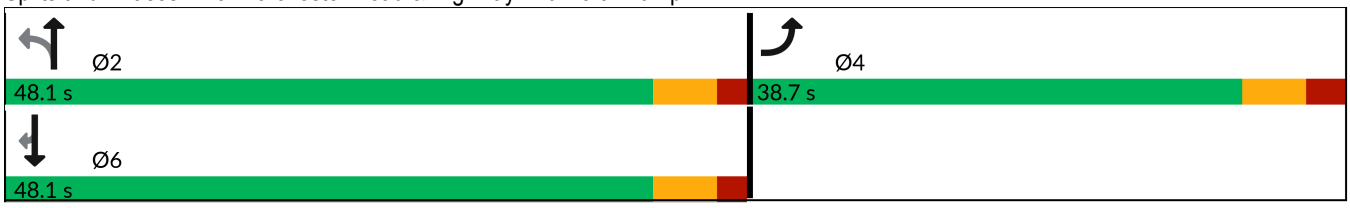
c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	57	0	226	1140	616	629
Future Volume (vph)	57	0	226	1140	616	629
Ideal Flow (vphpl)	1454	1301	1454	1579	1579	1301
Storage Length (m)	0.0	0.0	160.0			0.0
Storage Lanes	2	0	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor	1.00					
Frt						0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	2602	0	1341	2970	2941	1074
Flt Permitted	0.950		0.403			
Satd. Flow (perm)	2598	0	569	2970	2941	1074
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						669
Link Speed (k/h)	50			50	50	
Link Distance (m)	166.4			377.5	280.1	
Travel Time (s)	12.0			27.2	20.2	
Confl. Peds. (#/hr)	1					
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	3%	3%	3%	1%	2%	3%
Adj. Flow (vph)	61	0	240	1213	655	669
Shared Lane Traffic (%)						
Lane Group Flow (vph)	61	0	240	1213	655	669
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.2			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.60	1.40	1.26	1.26	1.60
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1		1	2	2	1
Detector Template	Left		Left	Thru	Thru	Right
Leading Detector (m)	2.0		2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0		2.0	0.6	0.6	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	8.0		10.0	10.0	10.0	10.0
Minimum Split (s)	38.7		24.1	24.1	24.1	24.1
Total Split (s)	38.7		48.1	48.1	48.1	48.1
Total Split (%)	44.6%		55.4%	55.4%	55.4%	55.4%
Maximum Green (s)	32.0		42.0	42.0	42.0	42.0
Yellow Time (s)	4.1		4.1	4.1	4.1	4.1
All-Red Time (s)	2.6		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7		6.1	6.1	6.1	6.1
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		Max	Max	Max	Max
Walk Time (s)	12.0					
Flash Don't Walk (s)	20.0					
Pedestrian Calls (#/hr)	0					
Act Effct Green (s)	8.1		50.4	50.4	50.4	50.4
Actuated g/C Ratio	0.13		0.80	0.80	0.80	0.80
v/c Ratio	0.18		0.53	0.51	0.28	0.67
Control Delay (s/veh)	26.0		11.3	5.2	3.7	4.5
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay (s/veh)	26.0		11.3	5.2	3.7	4.5
LOS	C		B	A	A	A
Approach Delay (s/veh)	26.0			6.2	4.1	
Approach LOS	C			A	A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 86.8			
Actuated Cycle Length: 63			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay (s/veh): 5.7		Intersection LOS: A	
Intersection Capacity Utilization 83.4%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 3: Dorchester Road & Highway 420 North Ramp



Lane Group	EBL	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	61	240	1213	655	669
v/c Ratio	0.18	0.53	0.51	0.28	0.67
Control Delay (s/veh)	26.0	11.3	5.2	3.7	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	26.0	11.3	5.2	3.7	4.5
Queue Length 50th (m)	3.5	13.7	35.5	14.5	0.0
Queue Length 95th (m)	8.4	#45.1	52.2	22.1	9.4
Internal Link Dist (m)	142.4		353.5	256.1	
Turn Bay Length (m)		160.0			
Base Capacity (vph)	1321	455	2378	2354	993
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.05	0.53	0.51	0.28	0.67

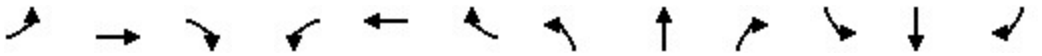
Intersection Summary

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

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	57	0	226	1140	616	629
Future Volume (vph)	57	0	226	1140	616	629
Ideal Flow (vphpl)	1454	1301	1454	1579	1579	1301
Total Lost time (s)	6.7		6.1	6.1	6.1	6.1
Lane Util. Factor	0.97		1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	0.95		0.95	1.00	1.00	1.00
Satd. Flow (prot)	2602		1341	2970	2941	1074
Flt Permitted	0.95		0.40	1.00	1.00	1.00
Satd. Flow (perm)	2602		569	2970	2941	1074
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	61	0	240	1213	655	669
RTOR Reduction (vph)	0	0	0	0	0	180
Lane Group Flow (vph)	61	0	240	1213	655	489
Confl. Peds. (#/hr)	1					
Heavy Vehicles (%)	3%	3%	3%	1%	2%	3%
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Actuated Green, G (s)	4.9		48.0	48.0	48.0	48.0
Effective Green, g (s)	4.9		48.0	48.0	48.0	48.0
Actuated g/C Ratio	0.07		0.73	0.73	0.73	0.73
Clearance Time (s)	6.7		6.1	6.1	6.1	6.1
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	194		415	2169	2148	784
v/s Ratio Prot	c0.02			0.41	0.22	
v/s Ratio Perm			0.42			c0.46
v/c Ratio	0.31		0.58	0.56	0.30	0.62
Uniform Delay, d1	28.8		4.1	4.0	3.1	4.4
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.9		5.8	1.0	0.4	3.7
Delay (s)	29.7		9.9	5.1	3.4	8.1
Level of Service	C		A	A	A	A
Approach Delay (s/veh)	29.7			5.9	5.8	
Approach LOS	C			A	A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	6.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	65.7	Sum of lost time (s)	12.8
Intersection Capacity Utilization	83.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

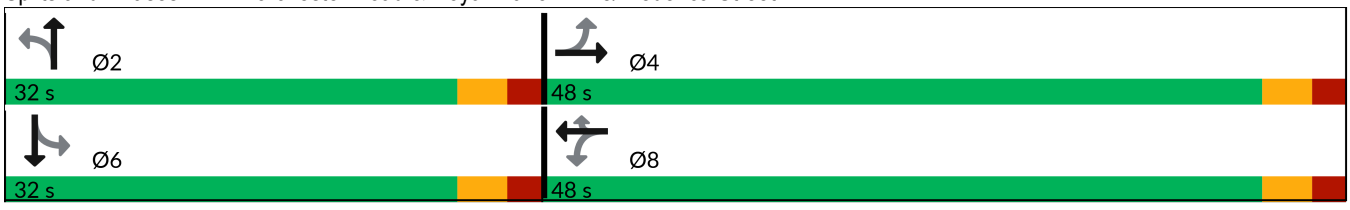


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	12	8	109	29	604	6	713	58	96	514	20
Future Volume (vph)	18	12	8	109	29	604	6	713	58	96	514	20
Ideal Flow (vphpl)	1433	1433	1433	1454	1579	1301	1454	1338	1338	1454	1338	1338
Storage Length (m)	0.0		0.0	45.0		0.0	95.0		0.0	165.0		0.0
Storage Lanes	0		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		1.00		1.00				1.00		1.00		
Frt		0.970				0.850		0.989			0.994	
Flt Protected		0.977		0.950			0.950			0.950		
Satd. Flow (prot)	0	1320	0	1303	1423	1095	1381	2460	0	1368	2474	0
Flt Permitted		0.913		0.730			0.367			0.227		
Satd. Flow (perm)	0	1234	0	999	1423	1095	534	2460	0	327	2474	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9				50		11			5	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		47.8			201.0			125.1			377.5	
Travel Time (s)		3.4			14.5			9.0			27.2	
Confl. Peds. (#/hr)			3	3					5	5		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	8%	0%	6%	11%	1%	0%	2%	3%	1%	2%	6%
Adj. Flow (vph)	19	13	9	117	31	649	6	767	62	103	553	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	41	0	117	31	649	6	829	0	103	575	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.42	1.42	1.42	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	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	5.0	
Minimum Split (s)	32.0	32.0		32.0	32.0	32.0	41.0	41.0		41.0	41.0	
Total Split (s)	48.0	48.0		48.0	48.0	48.0	32.0	32.0		32.0	32.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%	60.0%	40.0%	40.0%		40.0%	40.0%	
Maximum Green (s)	43.0	43.0		43.0	43.0	43.0	27.0	27.0		27.0	27.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	Max	Max		Max	Max	
Walk Time (s)	9.0	9.0		9.0	9.0	9.0	12.0	12.0		12.0	12.0	
Flash Don't Walk (s)	18.0	18.0		18.0	18.0	18.0	24.0	24.0		24.0	24.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	
Act Effct Green (s)		43.0		43.0	43.0	43.0	36.0	36.0		36.0	36.0	
Actuated g/C Ratio		0.48		0.48	0.48	0.48	0.40	0.40		0.40	0.40	
v/c Ratio		0.07		0.24	0.05	1.17	0.03	0.83		0.78	0.57	
Control Delay (s/veh)		10.6		15.2	12.5	118.6	16.7	32.1		64.0	23.2	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay (s/veh)		10.6		15.2	12.5	118.6	16.7	32.1		64.0	23.2	
LOS		B		B	B	F	B	C		E	C	
Approach Delay (s/veh)		10.6			99.3			32.0			29.4	
Approach LOS		B			F			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 89			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.17			
Intersection Signal Delay (s/veh): 53.7		Intersection LOS: D	
Intersection Capacity Utilization 103.7%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 4: Dorchester Road & Royal Manor Drive/Frederica Street

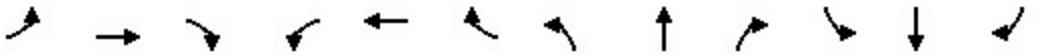


Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	41	117	31	649	6	829	103	575
v/c Ratio	0.07	0.24	0.05	1.17	0.03	0.83	0.78	0.57
Control Delay (s/veh)	10.6	15.2	12.5	118.6	16.7	32.1	64.0	23.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	10.6	15.2	12.5	118.6	16.7	32.1	64.0	23.2
Queue Length 50th (m)	2.9	11.8	2.8	~136.2	0.6	67.7	15.7	40.8
Queue Length 95th (m)	8.4	23.3	7.5	#203.9	3.2	#96.9	#46.1	57.9
Internal Link Dist (m)	23.8		177.0			101.1		353.5
Turn Bay Length (m)		45.0			95.0		165.0	
Base Capacity (vph)	600	482	687	554	216	1001	132	1003
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.24	0.05	1.17	0.03	0.83	0.78	0.57

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

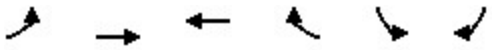
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	12	8	109	29	604	6	713	58	96	514	20
Future Volume (vph)	18	12	8	109	29	604	6	713	58	96	514	20
Ideal Flow (vphpl)	1433	1433	1433	1454	1579	1301	1454	1338	1338	1454	1338	1338
Total Lost time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt		0.97		1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected		0.98		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1321		1299	1423	1095	1381	2460		1366	2474	
Flt Permitted		0.91		0.73	1.00	1.00	0.37	1.00		0.23	1.00	
Satd. Flow (perm)		1235		999	1423	1095	533	2460		326	2474	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	19	13	9	117	31	649	6	767	62	103	553	22
RTOR Reduction (vph)	0	5	0	0	0	26	0	7	0	0	3	0
Lane Group Flow (vph)	0	36	0	117	31	623	6	822	0	103	572	0
Confl. Peds. (#/hr)			3	3					5	5		
Heavy Vehicles (%)	0%	8%	0%	6%	11%	1%	0%	2%	3%	1%	2%	6%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		43.0		43.0	43.0	43.0	36.0	36.0		36.0	36.0	
Effective Green, g (s)		43.0		43.0	43.0	43.0	36.0	36.0		36.0	36.0	
Actuated g/C Ratio		0.48		0.48	0.48	0.48	0.40	0.40		0.40	0.40	
Clearance Time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		596		482	687	529	215	995		131	1000	
v/s Ratio Prot					0.02			c0.33			0.23	
v/s Ratio Perm		0.03		0.12		c0.57	0.01			0.32		
v/c Ratio		0.06		0.24	0.05	1.18	0.03	0.83		0.79	0.57	
Uniform Delay, d1		12.2		13.5	12.2	23.0	16.0	23.7		23.1	20.5	
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	0.0	98.4	0.2	7.8		36.6	2.4	
Delay (s)		12.3		13.7	12.2	121.4	16.2	31.5		59.8	22.9	
Level of Service		B		B	B	F	B	C		E	C	
Approach Delay (s/veh)		12.3			101.4			31.4			28.5	
Approach LOS		B			F			C			C	

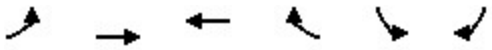
Intersection Summary			
HCM 2000 Control Delay (s/veh)	54.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	89.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	103.7%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	52	114	202	1	151	540
Future Volume (vph)	52	114	202	1	151	540
Ideal Flow (vphpl)	1454	1579	1338	1338	1454	1301
Storage Length (m)	85.0			0.0	0.0	40.0
Storage Lanes	1			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1381	2913	2515	0	1341	1074
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1381	2913	2515	0	1341	1074
Link Speed (k/h)		50	50		50	
Link Distance (m)		201.0	149.3		70.1	
Travel Time (s)		14.5	10.7		5.0	
Confl. Peds. (#/hr)	1			1		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	3%	1%	0%	3%	3%
Adj. Flow (vph)	58	127	224	1	168	600
Shared Lane Traffic (%)						
Lane Group Flow (vph)	58	127	225	0	168	600
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.26	1.55	1.55	1.40	1.60
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 63.6%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	52	114	202	1	151	540
Future Volume (Veh/h)	52	114	202	1	151	540
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)	58	127	224	1	168	600
Pedestrians					1	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						5
Median type		None	None			
Median storage veh)						
Upstream signal (m)		201				
pX, platoon unblocked						
vC, conflicting volume	226				405	114
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	226				405	114
tC, single (s)	4.1				6.9	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	96				69	34
cM capacity (veh/h)	1353				546	914

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	58	64	64	149	76	768
Volume Left	58	0	0	0	0	168
Volume Right	0	0	0	0	1	600
cSH	1353	1700	1700	1700	1700	1170
Volume to Capacity	0.04	0.04	0.04	0.09	0.04	0.66
Queue Length 95th (m)	1.1	0.0	0.0	0.0	0.0	41.6
Control Delay (s/veh)	7.8	0.0	0.0	0.0	0.0	15.8
Lane LOS	A					C
Approach Delay (s/veh)	2.4			0.0		15.8
Approach LOS						C

Intersection Summary			
Average Delay	10.7		
Intersection Capacity Utilization	63.6%	ICU Level of Service	B
Analysis Period (min)	15		

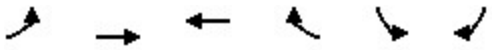
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	779	0	0	1001	142	0
Future Volume (vph)	779	0	0	1001	142	0
Ideal Flow (vphpl)	1579	1301	1454	1579	1454	1301
Lane Util. Factor	0.95	1.00	1.00	0.91	1.00	1.00
Frt						
Flt Protected					0.950	
Satd. Flow (prot)	2970	0	0	4268	1328	0
Flt Permitted					0.950	
Satd. Flow (perm)	2970	0	0	4268	1328	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	266.5			178.9	263.7	
Travel Time (s)	19.2			12.9	19.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	5%	0%	1%	4%	1%
Adj. Flow (vph)	847	0	0	1088	154	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	847	0	0	1088	154	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.26	1.60	1.40	1.26	1.40	1.60
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 64.0%		ICU Level of Service C	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	779	0	0	1001	142	0
Future Volume (Veh/h)	779	0	0	1001	142	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	847	0	0	1088	154	0
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			847		1210	424
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			847		1210	424
tC, single (s)			4.1		6.9	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		11	100
cM capacity (veh/h)			799		172	582

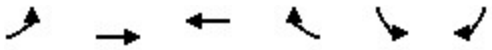
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	424	424	363	363	363	154
Volume Left	0	0	0	0	0	154
Volume Right	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	172
Volume to Capacity	0.25	0.25	0.21	0.21	0.21	0.89
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	52.3
Control Delay (s/veh)	0.0	0.0	0.0	0.0	0.0	96.7
Lane LOS						F
Approach Delay (s/veh)	0.0		0.0			96.7
Approach LOS						F

Intersection Summary			
Average Delay	7.1		
Intersection Capacity Utilization	64.0%	ICU Level of Service	C
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	811	923	0	200	325
Future Volume (vph)	0	811	923	0	200	325
Ideal Flow (vphpl)	1454	1579	1579	1301	1433	1433
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	2941	2941	0	1348	1183
Flt Permitted					0.950	
Satd. Flow (perm)	0	2941	2941	0	1348	1183
Link Speed (k/h)		50	50		50	
Link Distance (m)		152.8	266.5		231.4	
Travel Time (s)		11.0	19.2		16.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	1%	1%	3%
Adj. Flow (vph)	0	882	1003	0	217	353
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	882	1003	0	217	353
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.26	1.26	1.60	1.42	1.42
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

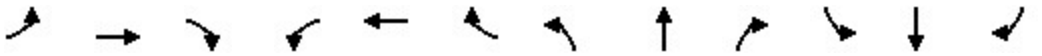
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 64.0%		ICU Level of Service C	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	811	923	0	200	325
Future Volume (Veh/h)	0	811	923	0	200	325
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	882	1003	0	217	353
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	1003				1444	502
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1003				1444	502
tC, single (s)	4.1				6.8	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				0	31
cM capacity (veh/h)	698				124	512

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	441	441	502	502	217	353
Volume Left	0	0	0	0	217	0
Volume Right	0	0	0	0	0	353
cSH	1700	1700	1700	1700	124	512
Volume to Capacity	0.26	0.26	0.30	0.30	1.75	0.69
Queue Length 95th (m)	0.0	0.0	0.0	0.0	132.4	42.1
Control Delay (s/veh)	0.0	0.0	0.0	0.0	429.4	26.2
Lane LOS					F	D
Approach Delay (s/veh)	0.0		0.0		179.7	
Approach LOS					F	

Intersection Summary			
Average Delay	41.7		
Intersection Capacity Utilization	64.0%	ICU Level of Service	C
Analysis Period (min)	15		



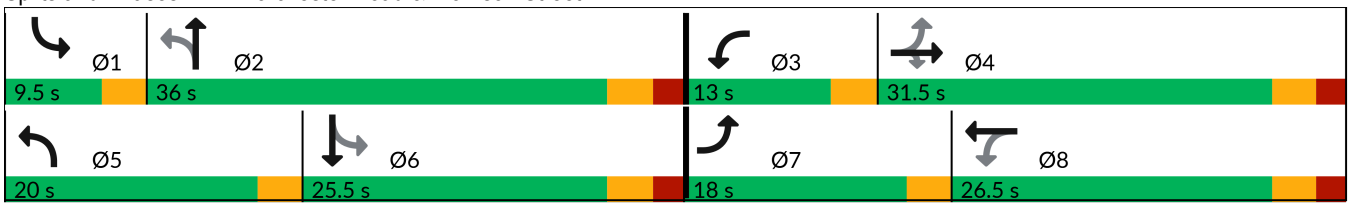
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	319	211	288	273	255	132	406	445	147	156	459	255
Future Volume (vph)	319	211	288	273	255	132	406	445	147	156	459	255
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Storage Length (m)	70.0		0.0	105.0		125.0	90.0		0.0	95.0		41.0
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00		0.98	1.00	0.99		1.00	1.00		1.00	0.99	
Frt			0.850		0.949			0.963			0.946	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1341	1548	1095	1368	2383	0	1368	2419	0	1368	2356	0
Flt Permitted	0.304			0.624			0.199			0.423		
Satd. Flow (perm)	428	1548	1076	895	2383	0	286	2419	0	607	2356	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			294		97			54			109	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		205.0			291.8			454.1			179.9	
Travel Time (s)		14.8			21.0			32.7			13.0	
Confl. Peds. (#/hr)	6		6	6		6	6		7	7		6
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	3%	2%	1%	1%	1%	0%	1%	1%	0%	1%	0%	4%
Adj. Flow (vph)	326	215	294	279	260	135	414	454	150	159	468	260
Shared Lane Traffic (%)												
Lane Group Flow (vph)	326	215	294	279	395	0	414	604	0	159	728	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

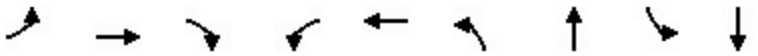
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	9.5	35.0	35.0	9.5	35.0		9.5	35.0		9.5	35.0	
Total Split (s)	18.0	31.5	31.5	13.0	26.5		20.0	36.0		9.5	25.5	
Total Split (%)	20.0%	35.0%	35.0%	14.4%	29.4%		22.2%	40.0%		10.6%	28.3%	
Maximum Green (s)	15.0	26.5	26.5	10.0	21.5		17.0	31.0		6.5	20.5	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)		10.0	10.0		10.0			10.0			10.0	
Flash Don't Walk (s)		20.0	20.0		20.0			20.0			20.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	36.9	21.8	21.8	28.9	16.8		52.1	40.6		38.6	30.1	
Actuated g/C Ratio	0.39	0.23	0.23	0.30	0.18		0.55	0.43		0.41	0.32	
v/c Ratio	1.05	0.61	0.62	0.87	0.79		1.18	0.57		0.53	0.89	
Control Delay (s/veh)	92.1	40.3	10.0	53.2	39.8		129.1	21.7		22.4	41.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	92.1	40.3	10.0	53.2	39.8		129.1	21.7		22.4	41.5	
LOS	F	D	B	D	D		F	C		C	D	
Approach Delay (s/veh)		49.9			45.3			65.4			38.0	
Approach LOS		D			D			E			D	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 95
Natural Cycle: 100
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.18
Intersection Signal Delay (s/veh): 50.5 Intersection LOS: D
Intersection Capacity Utilization 115.1% ICU Level of Service H
Analysis Period (min) 15

Splits and Phases: 1: Dorchester Road & Morrison Street



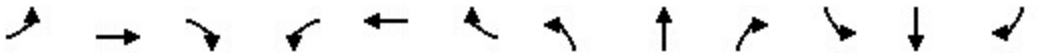


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	326	215	294	279	395	414	604	159	728
v/c Ratio	1.05	0.61	0.62	0.87	0.79	1.18	0.57	0.53	0.89
Control Delay (s/veh)	92.1	40.3	10.0	53.2	39.8	129.1	21.7	22.4	41.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	92.1	40.3	10.0	53.2	39.8	129.1	21.7	22.4	41.5
Queue Length 50th (m)	~53.5	37.2	0.0	40.5	29.2	~75.9	41.4	15.0	61.2
Queue Length 95th (m)	#102.1	61.0	23.8	#79.7	46.4	#144.0	63.6	29.0	#104.0
Internal Link Dist (m)		181.0			267.8		430.1		155.9
Turn Bay Length (m)	70.0			105.0		90.0		95.0	
Base Capacity (vph)	310	432	512	321	615	351	1064	298	819
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.05	0.50	0.57	0.87	0.64	1.18	0.57	0.53	0.89

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

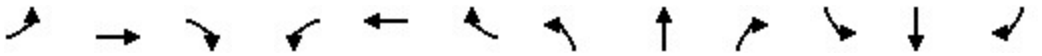
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	319	211	288	273	255	132	406	445	147	156	459	255
Future Volume (vph)	319	211	288	273	255	132	406	445	147	156	459	255
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Total Lost time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.95		1.00	0.96		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1340	1548	1076	1364	2382		1367	2418		1366	2357	
Flt Permitted	0.30	1.00	1.00	0.62	1.00		0.20	1.00		0.42	1.00	
Satd. Flow (perm)	429	1548	1076	895	2382		287	2418		609	2357	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	326	215	294	279	260	135	414	454	150	159	468	260
RTOR Reduction (vph)	0	0	226	0	80	0	0	31	0	0	74	0
Lane Group Flow (vph)	326	215	68	279	315	0	414	573	0	159	654	0
Confl. Peds. (#/hr)	6		6	6		6	6		7	7		6
Heavy Vehicles (%)	3%	2%	1%	1%	1%	0%	1%	1%	0%	1%	0%	4%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	34.8	21.8	21.8	26.8	16.8		50.1	40.6		36.6	30.1	
Effective Green, g (s)	34.8	21.8	21.8	26.8	16.8		50.1	40.6		36.6	30.1	
Actuated g/C Ratio	0.37	0.23	0.23	0.28	0.18		0.53	0.43		0.39	0.32	
Clearance Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	301	355	247	302	421		344	1034		286	747	
v/s Ratio Prot	c0.17	0.14		0.10	0.13		c0.21	0.24		0.04	0.28	
v/s Ratio Perm	c0.23		0.06	0.16			c0.42			0.18		
v/c Ratio	1.08	0.61	0.27	0.92	0.75		1.20	0.55		0.56	0.87	
Uniform Delay, d1	26.5	32.7	30.0	31.6	37.0		20.9	20.4		20.4	30.6	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	75.8	2.9	0.6	32.4	7.1		116.0	2.1		2.3	13.6	
Delay (s)	102.3	35.6	30.6	64.0	44.2		136.9	22.5		22.7	44.2	
Level of Service	F	D	C	E	D		F	C		C	D	
Approach Delay (s/veh)		59.9			52.4			69.0			40.3	
Approach LOS		E			D			E			D	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	56.1	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.23		
Actuated Cycle Length (s)	94.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	115.1%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

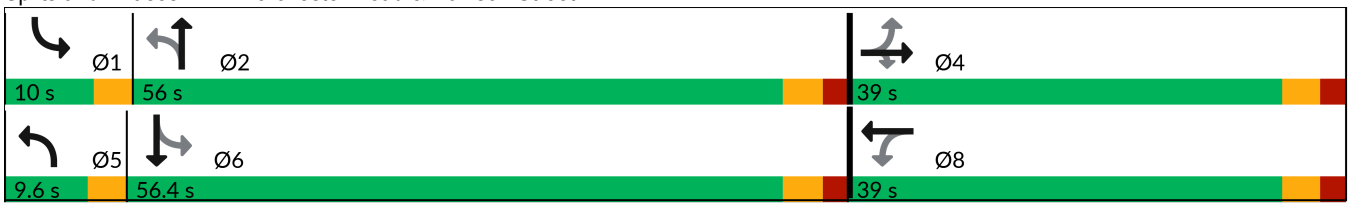


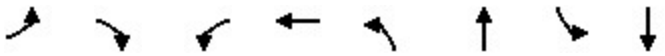
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	0	221	65	0	24	245	892	40	19	1032	150
Future Volume (vph)	101	0	221	65	0	24	245	892	40	19	1032	150
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Storage Length (m)	30.0		35.0	20.0		0.0	180.0		0.0	30.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.91	0.91
Ped Bike Factor			0.99	1.00			1.00	1.00		1.00	1.00	
Frt			0.850		0.850			0.994			0.981	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1381	1579	1106	1381	1137	0	1381	2525	0	1381	3573	0
Flt Permitted	0.742			0.757			0.187			0.290		
Satd. Flow (perm)	1079	1579	1091	1099	1137	0	272	2525	0	422	3573	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			179		205			6			36	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		106.7			108.0			280.1			454.1	
Travel Time (s)		7.7			7.8			20.2			32.7	
Confl. Peds. (#/hr)			2	2			3		1	1		3
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	103	0	226	66	0	24	250	910	41	19	1053	153
Shared Lane Traffic (%)												
Lane Group Flow (vph)	103	0	226	66	24	0	250	951	0	19	1206	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	1.0		5.0	5.0	
Minimum Split (s)	39.0	39.0	39.0	39.0	39.0		9.5	52.0		9.5	52.0	
Total Split (s)	39.0	39.0	39.0	39.0	39.0		9.6	56.0		10.0	56.4	
Total Split (%)	37.1%	37.1%	37.1%	37.1%	37.1%		9.1%	53.3%		9.5%	53.7%	
Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		6.6	51.0		7.0	51.4	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)	11.0	11.0	11.0	11.0	11.0			16.0			16.0	
Flash Don't Walk (s)	23.0	23.0	23.0	23.0	23.0			31.0			31.0	
Pedestrian Calls (#/hr)	0	0	0	0	0			0			0	
Act Effct Green (s)	13.4		13.4	13.4	13.4		62.1	57.6		59.4	51.5	
Actuated g/C Ratio	0.16		0.16	0.16	0.16		0.73	0.68		0.70	0.61	
v/c Ratio	0.60		0.70	0.38	0.07		0.87	0.55		0.05	0.55	
Control Delay (s/veh)	47.8		21.1	37.7	0.4		40.2	10.3		4.3	11.3	
Queue Delay	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	47.8		21.1	37.7	0.4		40.2	10.3		4.3	11.3	
LOS	D		C	D	A		D	B		A	B	
Approach Delay (s/veh)		29.5			27.7			16.6			11.1	
Approach LOS		C			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 105			
Actuated Cycle Length: 84.6			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay (s/veh): 16.1		Intersection LOS: B	
Intersection Capacity Utilization 83.5%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 2: Dorchester Road & Dawson Street

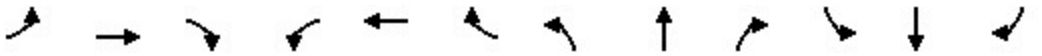




Lane Group	EBL	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	103	226	66	24	250	951	19	1206
v/c Ratio	0.60	0.70	0.38	0.07	0.87	0.55	0.05	0.55
Control Delay (s/veh)	47.8	21.1	37.7	0.4	40.2	10.3	4.3	11.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	47.8	21.1	37.7	0.4	40.2	10.3	4.3	11.3
Queue Length 50th (m)	16.5	7.1	10.2	0.0	10.3	30.4	0.7	38.3
Queue Length 95th (m)	32.5	31.1	22.2	0.0	#51.9	84.0	3.1	63.5
Internal Link Dist (m)				84.0		256.1		430.1
Turn Bay Length (m)	30.0	35.0	20.0		180.0		30.0	
Base Capacity (vph)	434	546	442	580	286	1722	381	2190
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	0.24	0.41	0.15	0.04	0.87	0.55	0.05	0.55

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	0	221	65	0	24	245	892	40	19	1032	150
Future Volume (vph)	101	0	221	65	0	24	245	892	40	19	1032	150
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Total Lost time (s)	5.0		5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00		1.00	1.00	1.00		1.00	0.95		1.00	0.91	
Frpb, ped/bikes	1.00		0.99	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00		0.85	1.00	0.85		1.00	0.99		1.00	0.98	
Flt Protected	0.95		1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1381		1091	1379	1137		1381	2523		1381	3573	
Flt Permitted	0.74		1.00	0.76	1.00		0.19	1.00		0.29	1.00	
Satd. Flow (perm)	1078		1091	1099	1137		272	2523		422	3573	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	103	0	226	66	0	24	250	910	41	19	1053	153
RTOR Reduction (vph)	0	0	151	0	20	0	0	2	0	0	14	0
Lane Group Flow (vph)	103	0	75	66	4	0	250	949	0	19	1192	0
Confl. Peds. (#/hr)			2	2			3		1	1		3
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	13.4		13.4	13.4	13.4		63.1	57.7		55.9	53.5	
Effective Green, g (s)	13.4		13.4	13.4	13.4		63.1	57.7		55.9	53.5	
Actuated g/C Ratio	0.15		0.15	0.15	0.15		0.73	0.67		0.65	0.62	
Clearance Time (s)	5.0		5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	166		169	170	176		283	1682		299	2209	
v/s Ratio Prot					0.00		c0.07	0.38		0.00	0.33	
v/s Ratio Perm	c0.10		0.07	0.06			c0.58			0.04		
v/c Ratio	0.62		0.44	0.39	0.02		0.88	0.56		0.06	0.54	
Uniform Delay, d1	34.2		33.2	32.9	31.0		5.8	7.7		5.5	9.4	
Progression Factor	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.0		1.8	1.5	0.0		26.0	1.4		0.1	1.0	
Delay (s)	41.2		35.0	34.3	31.0		31.9	9.1		5.6	10.4	
Level of Service	D		D	C	C		C	A		A	B	
Approach Delay (s/veh)		36.9			33.5			13.8			10.3	
Approach LOS		D			C			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	15.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	86.5	Sum of lost time (s)	13.0
Intersection Capacity Utilization	83.5%	ICU Level of Service	E
Analysis Period (min)	15		

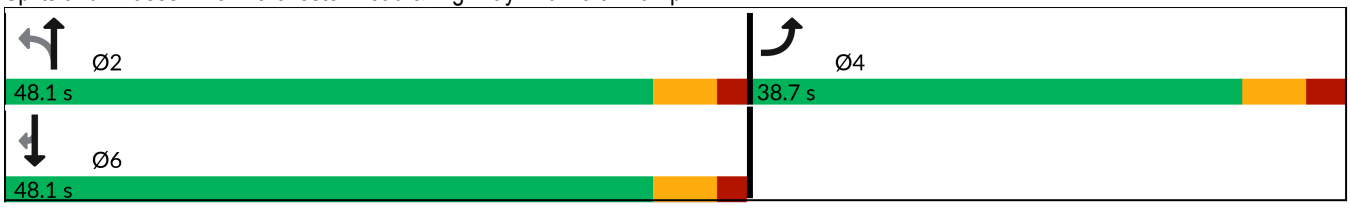
c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	45	0	227	1147	672	657
Future Volume (vph)	45	0	227	1147	672	657
Ideal Flow (vphpl)	1454	1301	1454	1579	1579	1301
Storage Length (m)	0.0	0.0	160.0			0.0
Storage Lanes	2	0	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor	1.00					
Frt						0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	2680	0	1368	3000	2970	1106
Flt Permitted	0.950		0.391			
Satd. Flow (perm)	2676	0	563	3000	2970	1106
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						670
Link Speed (k/h)	50			50	50	
Link Distance (m)	166.4			377.5	280.1	
Travel Time (s)	12.0			27.2	20.2	
Confl. Peds. (#/hr)	1					
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	1%	0%	1%	0%
Adj. Flow (vph)	46	0	232	1170	686	670
Shared Lane Traffic (%)						
Lane Group Flow (vph)	46	0	232	1170	686	670
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.2			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.60	1.40	1.26	1.26	1.60
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1		1	2	2	1
Detector Template	Left		Left	Thru	Thru	Right
Leading Detector (m)	2.0		2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0		2.0	0.6	0.6	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	8.0		10.0	10.0	10.0	10.0
Minimum Split (s)	38.7		24.1	24.1	24.1	24.1
Total Split (s)	38.7		48.1	48.1	48.1	48.1
Total Split (%)	44.6%		55.4%	55.4%	55.4%	55.4%
Maximum Green (s)	32.0		42.0	42.0	42.0	42.0
Yellow Time (s)	4.1		4.1	4.1	4.1	4.1
All-Red Time (s)	2.6		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7		6.1	6.1	6.1	6.1
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		Max	Max	Max	Max
Walk Time (s)	12.0					
Flash Don't Walk (s)	20.0					
Pedestrian Calls (#/hr)	0					
Act Effct Green (s)	8.0		51.6	51.6	51.6	51.6
Actuated g/C Ratio	0.13		0.81	0.81	0.81	0.81
v/c Ratio	0.14		0.51	0.48	0.29	0.66
Control Delay (s/veh)	26.0		10.5	4.9	3.6	4.0
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay (s/veh)	26.0		10.5	4.9	3.6	4.0
LOS	C		B	A	A	A
Approach Delay (s/veh)	26.0			5.8	3.8	
Approach LOS	C			A	A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 86.8			
Actuated Cycle Length: 64			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay (s/veh): 5.2		Intersection LOS: A	
Intersection Capacity Utilization 86.0%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 3: Dorchester Road & Highway 420 North Ramp



Lane Group	EBL	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	46	232	1170	686	670
v/c Ratio	0.14	0.51	0.48	0.29	0.66
Control Delay (s/veh)	26.0	10.5	4.9	3.6	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	26.0	10.5	4.9	3.6	4.0
Queue Length 50th (m)	2.8	13.0	33.2	15.4	0.0
Queue Length 95th (m)	6.8	#39.8	47.6	22.8	9.3
Internal Link Dist (m)	142.4		353.5	256.1	
Turn Bay Length (m)		160.0			
Base Capacity (vph)	1342	454	2419	2395	1021
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.51	0.48	0.29	0.66

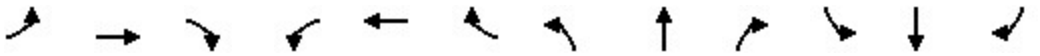
Intersection Summary

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

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	45	0	227	1147	672	657
Future Volume (vph)	45	0	227	1147	672	657
Ideal Flow (vphpl)	1454	1301	1454	1579	1579	1301
Total Lost time (s)	6.7		6.1	6.1	6.1	6.1
Lane Util. Factor	0.97		1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	0.95		0.95	1.00	1.00	1.00
Satd. Flow (prot)	2680		1368	3000	2970	1106
Flt Permitted	0.95		0.39	1.00	1.00	1.00
Satd. Flow (perm)	2680		563	3000	2970	1106
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	46	0	232	1170	686	670
RTOR Reduction (vph)	0	0	0	0	0	177
Lane Group Flow (vph)	46	0	232	1170	686	493
Confl. Peds. (#/hr)	1					
Heavy Vehicles (%)	0%	0%	1%	0%	1%	0%
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Actuated Green, G (s)	4.8		49.1	49.1	49.1	49.1
Effective Green, g (s)	4.8		49.1	49.1	49.1	49.1
Actuated g/C Ratio	0.07		0.74	0.74	0.74	0.74
Clearance Time (s)	6.7		6.1	6.1	6.1	6.1
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	192		414	2208	2186	814
v/s Ratio Prot	c0.02			0.39	0.23	
v/s Ratio Perm			0.41			c0.45
v/c Ratio	0.24		0.56	0.53	0.31	0.61
Uniform Delay, d1	29.2		4.0	3.8	3.0	4.2
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.6		5.4	0.9	0.4	3.3
Delay (s)	29.9		9.3	4.7	3.4	7.5
Level of Service	C		A	A	A	A
Approach Delay (s/veh)	29.9			5.5	5.4	
Approach LOS	C			A	A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	5.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	66.7	Sum of lost time (s)	12.8
Intersection Capacity Utilization	86.0%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

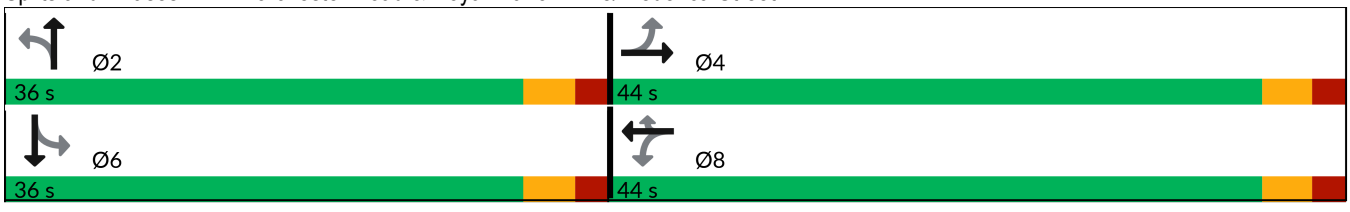


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	8	7	83	25	564	3	792	58	115	545	23
Future Volume (vph)	27	8	7	83	25	564	3	792	58	115	545	23
Ideal Flow (vphpl)	1433	1433	1433	1454	1579	1301	1454	1338	1338	1454	1338	1338
Storage Length (m)	0.0		0.0	45.0		0.0	95.0		0.0	165.0		0.0
Storage Lanes	0		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		1.00		1.00				1.00		1.00		
Frt		0.978				0.850		0.990			0.994	
Flt Protected		0.968		0.950			0.950			0.950		
Satd. Flow (prot)	0	1354	0	1368	1579	1095	1381	2510	0	1381	2503	0
Flt Permitted		0.870		0.729			0.370			0.217		
Satd. Flow (perm)	0	1217	0	1048	1579	1095	538	2510	0	315	2503	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7				62		11			6	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		47.8			201.0			125.1			377.5	
Travel Time (s)		3.4			14.5			9.0			27.2	
Confl. Peds. (#/hr)			2	2					8	8		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	0%	0%	1%	0%	1%	0%	0%	2%	0%	1%	0%
Adj. Flow (vph)	28	8	7	86	26	581	3	816	60	119	562	24
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	43	0	86	26	581	3	876	0	119	586	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.42	1.42	1.42	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	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	5.0	
Minimum Split (s)	32.0	32.0		32.0	32.0	32.0	41.0	41.0		41.0	41.0	
Total Split (s)	44.0	44.0		44.0	44.0	44.0	36.0	36.0		36.0	36.0	
Total Split (%)	55.0%	55.0%		55.0%	55.0%	55.0%	45.0%	45.0%		45.0%	45.0%	
Maximum Green (s)	39.0	39.0		39.0	39.0	39.0	31.0	31.0		31.0	31.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	Max	Max		Max	Max	
Walk Time (s)	9.0	9.0		9.0	9.0	9.0	12.0	12.0		12.0	12.0	
Flash Don't Walk (s)	18.0	18.0		18.0	18.0	18.0	24.0	24.0		24.0	24.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	
Act Effct Green (s)		39.0		39.0	39.0	39.0	36.0	36.0		36.0	36.0	
Actuated g/C Ratio		0.46		0.46	0.46	0.46	0.42	0.42		0.42	0.42	
v/c Ratio		0.08		0.18	0.04	1.09	0.01	0.82		0.89	0.55	
Control Delay (s/veh)		11.8		14.9	13.0	87.4	14.7	29.2		82.7	20.7	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay (s/veh)		11.8		14.9	13.0	87.4	14.7	29.2		82.7	20.7	
LOS		B		B	B	F	B	C		F	C	
Approach Delay (s/veh)		11.8			75.6			29.2			31.1	
Approach LOS		B			E			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 85			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.09			
Intersection Signal Delay (s/veh): 43.3		Intersection LOS: D	
Intersection Capacity Utilization 102.6%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 4: Dorchester Road & Royal Manor Drive/Frederica Street

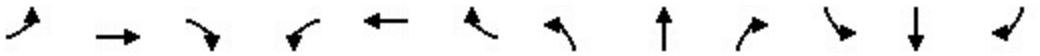


Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	43	86	26	581	3	876	119	586
v/c Ratio	0.08	0.18	0.04	1.09	0.01	0.82	0.89	0.55
Control Delay (s/veh)	11.8	14.9	13.0	87.4	14.7	29.2	82.7	20.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	11.8	14.9	13.0	87.4	14.7	29.2	82.7	20.7
Queue Length 50th (m)	3.3	8.4	2.4	~106.8	0.3	66.7	18.3	38.0
Queue Length 95th (m)	9.2	17.7	6.8	#171.0	2.0	#94.2	#52.4	54.5
Internal Link Dist (m)	23.8		177.0			101.1		353.5
Turn Bay Length (m)		45.0			95.0		165.0	
Base Capacity (vph)	562	480	724	535	227	1069	133	1063
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	0.18	0.04	1.09	0.01	0.82	0.89	0.55

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

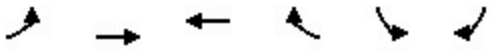
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	8	7	83	25	564	3	792	58	115	545	23
Future Volume (vph)	27	8	7	83	25	564	3	792	58	115	545	23
Ideal Flow (vphpl)	1433	1433	1433	1454	1579	1301	1454	1338	1338	1454	1338	1338
Total Lost time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt		0.98		1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected		0.97		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1354		1365	1579	1095	1381	2510		1379	2503	
Flt Permitted		0.87		0.73	1.00	1.00	0.37	1.00		0.22	1.00	
Satd. Flow (perm)		1216		1048	1579	1095	537	2510		315	2503	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	28	8	7	86	26	581	3	816	60	119	562	24
RTOR Reduction (vph)	0	4	0	0	0	34	0	6	0	0	3	0
Lane Group Flow (vph)	0	39	0	86	26	547	3	870	0	119	583	0
Confl. Peds. (#/hr)			2	2					8	8		
Heavy Vehicles (%)	0%	0%	0%	1%	0%	1%	0%	0%	2%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		39.0		39.0	39.0	39.0	36.0	36.0		36.0	36.0	
Effective Green, g (s)		39.0		39.0	39.0	39.0	36.0	36.0		36.0	36.0	
Actuated g/C Ratio		0.46		0.46	0.46	0.46	0.42	0.42		0.42	0.42	
Clearance Time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		557		480	724	502	227	1063		133	1060	
v/s Ratio Prot					0.02			0.35			0.23	
v/s Ratio Perm		0.03		0.08		c0.50	0.01			c0.38		
v/c Ratio		0.07		0.18	0.04	1.09	0.01	0.82		0.89	0.55	
Uniform Delay, d1		12.9		13.6	12.7	23.0	14.2	21.6		22.7	18.4	
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1		0.2	0.0	67.0	0.1	7.0		53.8	2.1	
Delay (s)		12.9		13.7	12.7	90.0	14.3	28.6		76.6	20.5	
Level of Service		B		B	B	F	B	C		E	C	
Approach Delay (s/veh)		12.9			77.6			28.6			29.9	
Approach LOS		B			E			C			C	

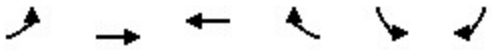
Intersection Summary			
HCM 2000 Control Delay (s/veh)	43.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	102.6%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	65	113	206	3	98	463
Future Volume (vph)	65	113	206	3	98	463
Ideal Flow (vphpl)	1454	1579	1338	1338	1454	1301
Storage Length (m)	85.0			0.0	0.0	40.0
Storage Lanes	1			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.998			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1354	3000	2512	0	1381	1106
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1354	3000	2512	0	1381	1106
Link Speed (k/h)		50	50		50	
Link Distance (m)		201.0	149.3		70.1	
Travel Time (s)		14.5	10.7		5.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	1%	0%	0%	0%
Adj. Flow (vph)	71	123	224	3	107	503
Shared Lane Traffic (%)						
Lane Group Flow (vph)	71	123	227	0	107	503
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.26	1.55	1.55	1.40	1.60
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

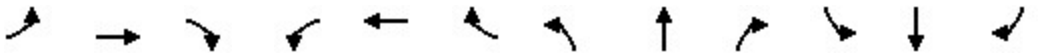
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 56.8%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	65	113	206	3	98	463
Future Volume (Veh/h)	65	113	206	3	98	463
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	71	123	224	3	107	503
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						5
Median type		None	None			
Median storage veh)						
Upstream signal (m)		201				
pX, platoon unblocked						
vC, conflicting volume	227				429	114
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	227				429	114
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	95				80	46
cM capacity (veh/h)	1339				530	924

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	71	62	62	149	78	610
Volume Left	71	0	0	0	0	107
Volume Right	0	0	0	0	3	503
cSH	1339	1700	1700	1700	1700	1121
Volume to Capacity	0.05	0.04	0.04	0.09	0.05	0.54
Queue Length 95th (m)	1.3	0.0	0.0	0.0	0.0	27.2
Control Delay (s/veh)	7.8	0.0	0.0	0.0	0.0	13.5
Lane LOS	A					B
Approach Delay (s/veh)	2.9			0.0		13.5
Approach LOS						B

Intersection Summary			
Average Delay	8.5		
Intersection Capacity Utilization	56.8%	ICU Level of Service	B
Analysis Period (min)	15		



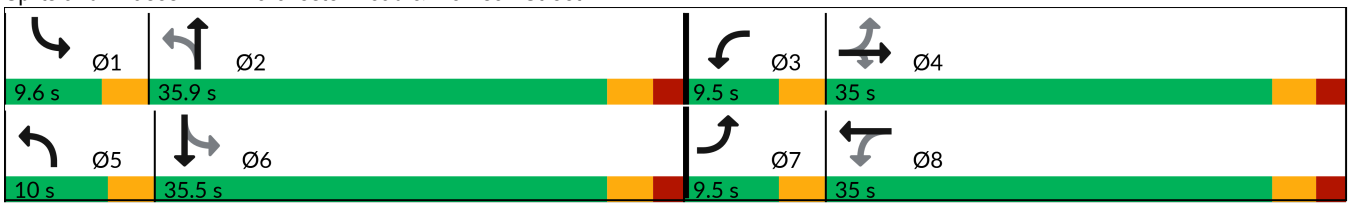
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	138	78	94	129	124	101	173	338	139	188	386	128
Future Volume (vph)	138	78	94	129	124	101	173	338	139	188	386	128
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Storage Length (m)	70.0		0.0	105.0		125.0	90.0		0.0	95.0		41.0
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor			0.98	1.00			1.00	1.00		1.00	1.00	
Frt			0.850		0.933			0.956			0.963	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1267	1410	1005	1368	2250	0	1341	2335	0	1368	2296	0
Flt Permitted	0.532			0.698			0.368			0.407		
Satd. Flow (perm)	710	1410	989	1001	2250	0	519	2335	0	586	2296	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			109		117			76			54	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		205.0			291.8			454.1			179.9	
Travel Time (s)		14.8			21.0			32.7			13.0	
Confl. Peds. (#/hr)			5	5			2		1	1		2
Peak Hour Factor	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Heavy Vehicles (%)	9%	12%	10%	1%	9%	1%	3%	4%	3%	1%	3%	16%
Adj. Flow (vph)	160	91	109	150	144	117	201	393	162	219	449	149
Shared Lane Traffic (%)												
Lane Group Flow (vph)	160	91	109	150	261	0	201	555	0	219	598	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

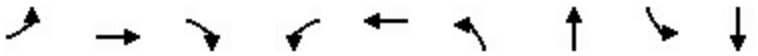
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	9.5	35.0	35.0	9.5	35.0		9.5	35.0		9.5	35.0	
Total Split (s)	9.5	35.0	35.0	9.5	35.0		10.0	35.9		9.6	35.5	
Total Split (%)	10.6%	38.9%	38.9%	10.6%	38.9%		11.1%	39.9%		10.7%	39.4%	
Maximum Green (s)	6.5	30.0	30.0	6.5	30.0		7.0	30.9		6.6	30.5	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)		10.0	10.0		10.0			10.0			10.0	
Flash Don't Walk (s)		20.0	20.0		20.0			20.0			20.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	20.4	13.2	13.2	19.8	11.3		39.9	30.9		39.1	30.5	
Actuated g/C Ratio	0.29	0.19	0.19	0.28	0.16		0.56	0.43		0.55	0.43	
v/c Ratio	0.63	0.35	0.40	0.48	0.58		0.54	0.53		0.56	0.59	
Control Delay (s/veh)	32.4	31.0	10.9	25.0	20.5		13.8	15.1		14.2	17.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	32.4	31.0	10.9	25.0	20.5		13.8	15.1		14.2	17.3	
LOS	C	C	B	C	C		B	B		B	B	
Approach Delay (s/veh)		25.6			22.1			14.7			16.5	
Approach LOS		C			C			B			B	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 71.3
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.63
Intersection Signal Delay (s/veh): 18.3 Intersection LOS: B
Intersection Capacity Utilization 73.8% ICU Level of Service D
Analysis Period (min) 15

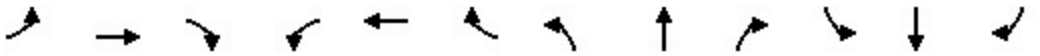
Splits and Phases: 1: Dorchester Road & Morrison Street





Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	160	91	109	150	261	201	555	219	598
v/c Ratio	0.63	0.35	0.40	0.48	0.58	0.54	0.53	0.56	0.59
Control Delay (s/veh)	32.4	31.0	10.9	25.0	20.5	13.8	15.1	14.2	17.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	32.4	31.0	10.9	25.0	20.5	13.8	15.1	14.2	17.3
Queue Length 50th (m)	17.3	11.7	0.0	15.9	9.7	11.3	23.6	12.5	28.3
Queue Length 95th (m)	31.1	23.5	11.5	28.8	19.2	23.8	39.4	25.8	46.0
Internal Link Dist (m)		181.0			267.8		430.1		155.9
Turn Bay Length (m)	70.0			105.0		90.0		95.0	
Base Capacity (vph)	253	593	479	310	1015	371	1055	394	1013
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.15	0.23	0.48	0.26	0.54	0.53	0.56	0.59

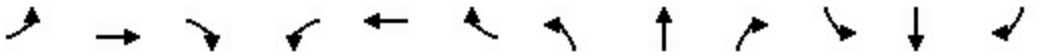
Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	138	78	94	129	124	101	173	338	139	188	386	128
Future Volume (vph)	138	78	94	129	124	101	173	338	139	188	386	128
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Total Lost time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.93		1.00	0.96		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1267	1410	990	1365	2249		1341	2335		1367	2296	
Flt Permitted	0.53	1.00	1.00	0.70	1.00		0.37	1.00		0.41	1.00	
Satd. Flow (perm)	710	1410	990	1003	2249		520	2335		586	2296	
Peak-hour factor, PHF	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86	0.86
Adj. Flow (vph)	160	91	109	150	144	117	201	393	162	219	449	149
RTOR Reduction (vph)	0	0	89	0	98	0	0	43	0	0	31	0
Lane Group Flow (vph)	160	91	20	150	163	0	201	512	0	219	567	0
Confl. Peds. (#/hr)			5	5			2		1	1		2
Heavy Vehicles (%)	9%	12%	10%	1%	9%	1%	3%	4%	3%	1%	3%	16%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	19.7	13.2	13.2	17.1	11.9		37.9	30.9		37.1	30.5	
Effective Green, g (s)	19.7	13.2	13.2	17.1	11.9		37.9	30.9		37.1	30.5	
Actuated g/C Ratio	0.27	0.18	0.18	0.24	0.17		0.53	0.43		0.52	0.42	
Clearance Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	244	258	181	264	372		354	1003		374	973	
v/s Ratio Prot	c0.06	0.06		0.04	0.07		c0.06	0.22		0.05	0.25	
v/s Ratio Perm	c0.12		0.02	0.09			0.24			c0.25		
v/c Ratio	0.66	0.35	0.11	0.57	0.44		0.57	0.51		0.59	0.58	
Uniform Delay, d1	21.9	25.6	24.5	23.5	27.0		9.6	15.0		10.1	15.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.2	0.8	0.3	2.8	0.8		2.1	1.9		2.3	2.5	
Delay (s)	28.1	26.5	24.7	26.3	27.8		11.7	16.8		12.4	18.4	
Level of Service	C	C	C	C	C		B	B		B	B	
Approach Delay (s/veh)		26.7			27.3			15.5			16.8	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	19.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	71.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	73.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

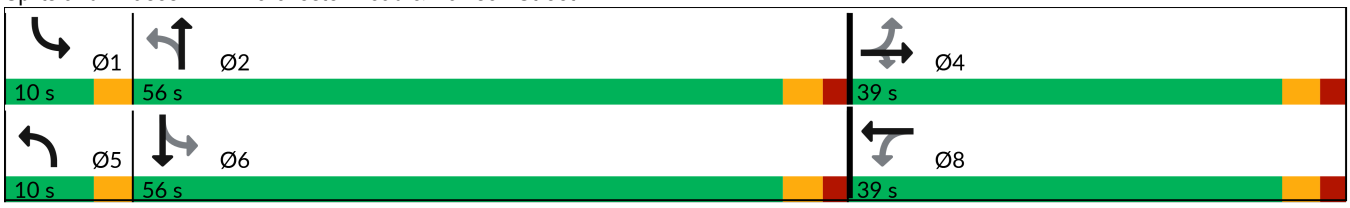


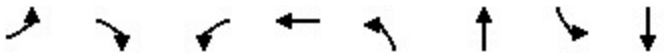
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	104	0	239	63	1	24	109	589	22	10	574	62
Future Volume (vph)	104	0	239	63	1	24	109	589	22	10	574	62
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Storage Length (m)	30.0		35.0	20.0		0.0	180.0		0.0	30.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.91	0.91
Ped Bike Factor							1.00	1.00		1.00	1.00	
Frt			0.850		0.856			0.995			0.985	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1381	1579	614	1354	1009	0	1316	2447	0	1244	3484	0
Flt Permitted	0.740			0.757			0.347			0.397		
Satd. Flow (perm)	1076	1579	614	1079	1009	0	480	2447	0	519	3484	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			248		26			5			24	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		106.7			108.0			280.1			454.1	
Travel Time (s)		7.7			7.8			20.2			32.7	
Confl. Peds. (#/hr)							1		3	3		1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Heavy Vehicles (%)	0%	0%	80%	2%	0%	14%	5%	3%	11%	11%	2%	13%
Adj. Flow (vph)	114	0	263	69	1	26	120	647	24	11	631	68
Shared Lane Traffic (%)												
Lane Group Flow (vph)	114	0	263	69	27	0	120	671	0	11	699	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	1.0		5.0	5.0	
Minimum Split (s)	39.0	39.0	39.0	39.0	39.0		9.5	52.0		9.5	52.0	
Total Split (s)	39.0	39.0	39.0	39.0	39.0		10.0	56.0		10.0	56.0	
Total Split (%)	37.1%	37.1%	37.1%	37.1%	37.1%		9.5%	53.3%		9.5%	53.3%	
Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		7.0	51.0		7.0	51.0	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)	11.0	11.0	11.0	11.0	11.0			16.0			16.0	
Flash Don't Walk (s)	23.0	23.0	23.0	23.0	23.0			31.0			31.0	
Pedestrian Calls (#/hr)	0	0	0	0	0			0			0	
Act Effct Green (s)	17.3		17.3	17.3	17.3		63.0	59.8		59.5	51.6	
Actuated g/C Ratio	0.19		0.19	0.19	0.19		0.71	0.67		0.67	0.58	
v/c Ratio	0.55		0.82	0.33	0.12		0.30	0.41		0.03	0.34	
Control Delay (s/veh)	41.0		27.2	33.5	11.6		8.0	10.0		6.8	11.5	
Queue Delay	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	41.0		27.2	33.5	11.6		8.0	10.0		6.8	11.5	
LOS	D		C	C	B		A	B		A	B	
Approach Delay (s/veh)		31.4			27.3			9.7			11.4	
Approach LOS		C			C			A			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 105			
Actuated Cycle Length: 88.9			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay (s/veh): 15.3		Intersection LOS: B	
Intersection Capacity Utilization 77.8%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: Dorchester Road & Dawson Street

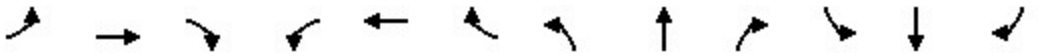




Lane Group	EBL	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	114	263	69	27	120	671	11	699
v/c Ratio	0.55	0.82	0.33	0.12	0.30	0.41	0.03	0.34
Control Delay (s/veh)	41.0	27.2	33.5	11.6	8.0	10.0	6.8	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	41.0	27.2	33.5	11.6	8.0	10.0	6.8	11.5
Queue Length 50th (m)	18.4	2.2	10.7	0.2	4.8	19.5	0.4	19.2
Queue Length 95th (m)	34.4	#48.0	22.1	6.5	19.2	69.5	3.2	43.1
Internal Link Dist (m)				84.0		256.1		430.1
Turn Bay Length (m)	30.0	35.0	20.0		180.0		30.0	
Base Capacity (vph)	416	389	417	406	406	1648	411	2030
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	0.27	0.68	0.17	0.07	0.30	0.41	0.03	0.34

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	104	0	239	63	1	24	109	589	22	10	574	62
Future Volume (vph)	104	0	239	63	1	24	109	589	22	10	574	62
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Total Lost time (s)	5.0		5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00		1.00	1.00	1.00		1.00	0.95		1.00	0.91	
Frpb, ped/bikes	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00		0.85	1.00	0.86		1.00	0.99		1.00	0.99	
Flt Protected	0.95		1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1381		614	1354	1009		1315	2446		1244	3485	
Flt Permitted	0.74		1.00	0.76	1.00		0.35	1.00		0.40	1.00	
Satd. Flow (perm)	1075		614	1079	1009		481	2446		519	3485	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	114	0	263	69	1	26	120	647	24	11	631	68
RTOR Reduction (vph)	0	0	201	0	21	0	0	2	0	0	10	0
Lane Group Flow (vph)	114	0	62	69	6	0	120	669	0	11	689	0
Confl. Peds. (#/hr)							1		3	3		1
Heavy Vehicles (%)	0%	0%	80%	2%	0%	14%	5%	3%	11%	11%	2%	13%
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	17.3		17.3	17.3	17.3		64.0	59.9		55.2	54.1	
Effective Green, g (s)	17.3		17.3	17.3	17.3		64.0	59.9		55.2	54.1	
Actuated g/C Ratio	0.19		0.19	0.19	0.19		0.70	0.66		0.60	0.59	
Clearance Time (s)	5.0		5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	203		116	204	191		400	1604		322	2065	
v/s Ratio Prot					0.01		c0.02	c0.27		0.00	0.20	
v/s Ratio Perm	c0.11		0.10	0.06			0.19			0.02		
v/c Ratio	0.56		0.53	0.34	0.03		0.30	0.42		0.03	0.33	
Uniform Delay, d1	33.6		33.4	32.0	30.2		4.6	7.4		7.2	9.4	
Progression Factor	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.5		4.7	1.0	0.1		0.4	0.8		0.0	0.4	
Delay (s)	37.1		38.0	33.0	30.2		5.0	8.2		7.2	9.9	
Level of Service	D		D	C	C		A	A		A	A	
Approach Delay (s/veh)		37.7			32.2			7.8			9.8	
Approach LOS		D			C			A			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	15.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.45		
Actuated Cycle Length (s)	91.3	Sum of lost time (s)	13.0
Intersection Capacity Utilization	77.8%	ICU Level of Service	D
Analysis Period (min)	15		

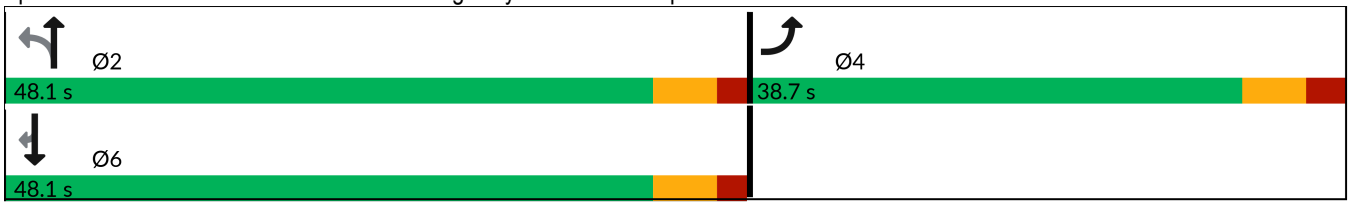
c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	25	0	180	696	437	424
Future Volume (vph)	25	0	180	696	437	424
Ideal Flow (vphpl)	1454	1301	1454	1579	1579	1301
Storage Length (m)	0.0	0.0	160.0			0.0
Storage Lanes	2	0	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Frt						0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	2271	0	1328	2913	2941	1063
Flt Permitted	0.950		0.473			
Satd. Flow (perm)	2271	0	661	2913	2941	1063
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						476
Link Speed (k/h)	50			50	50	
Link Distance (m)	166.4			377.5	280.1	
Travel Time (s)	12.0			27.2	20.2	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles (%)	18%	0%	4%	3%	2%	4%
Adj. Flow (vph)	28	0	202	782	491	476
Shared Lane Traffic (%)						
Lane Group Flow (vph)	28	0	202	782	491	476
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.2			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.60	1.40	1.26	1.26	1.60
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1		1	2	2	1
Detector Template	Left		Left	Thru	Thru	Right
Leading Detector (m)	2.0		2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0		2.0	0.6	0.6	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	8.0		10.0	10.0	10.0	10.0
Minimum Split (s)	38.7		24.1	24.1	24.1	24.1
Total Split (s)	38.7		48.1	48.1	48.1	48.1
Total Split (%)	44.6%		55.4%	55.4%	55.4%	55.4%
Maximum Green (s)	32.0		42.0	42.0	42.0	42.0
Yellow Time (s)	4.1		4.1	4.1	4.1	4.1
All-Red Time (s)	2.6		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7		6.1	6.1	6.1	6.1
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		Max	Max	Max	Max
Walk Time (s)	12.0					
Flash Don't Walk (s)	20.0					
Pedestrian Calls (#/hr)	0					
Act Effct Green (s)	8.0		55.8	55.8	55.8	55.8
Actuated g/C Ratio	0.13		0.87	0.87	0.87	0.87
v/c Ratio	0.10		0.35	0.31	0.19	0.48
Control Delay (s/veh)	26.0		5.4	2.8	2.4	2.3
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay (s/veh)	26.0		5.4	2.8	2.4	2.3
LOS	C		A	A	A	A
Approach Delay (s/veh)	26.0			3.3	2.3	
Approach LOS	C			A	A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 86.8			
Actuated Cycle Length: 64			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.48			
Intersection Signal Delay (s/veh): 3.2		Intersection LOS: A	
Intersection Capacity Utilization 61.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 3: Dorchester Road & Highway 420 North Ramp

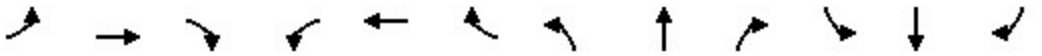


Lane Group	EBL	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	28	202	782	491	476
v/c Ratio	0.10	0.35	0.31	0.19	0.48
Control Delay (s/veh)	26.0	5.4	2.8	2.4	2.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	26.0	5.4	2.8	2.4	2.3
Queue Length 50th (m)	1.5	0.0	0.0	0.0	0.0
Queue Length 95th (m)	4.8	22.7	26.6	15.3	7.6
Internal Link Dist (m)	142.4		353.5	256.1	
Turn Bay Length (m)		160.0			
Base Capacity (vph)	1136	577	2542	2566	988
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.02	0.35	0.31	0.19	0.48

Intersection Summary

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	25	0	180	696	437	424
Future Volume (vph)	25	0	180	696	437	424
Ideal Flow (vphpl)	1454	1301	1454	1579	1579	1301
Total Lost time (s)	6.7		6.1	6.1	6.1	6.1
Lane Util. Factor	0.97		1.00	0.95	0.95	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	0.95		0.95	1.00	1.00	1.00
Satd. Flow (prot)	2271		1328	2913	2941	1063
Flt Permitted	0.95		0.47	1.00	1.00	1.00
Satd. Flow (perm)	2271		661	2913	2941	1063
Peak-hour factor, PHF	0.89	0.89	0.89	0.89	0.89	0.89
Adj. Flow (vph)	28	0	202	782	491	476
RTOR Reduction (vph)	0	0	0	0	0	111
Lane Group Flow (vph)	28	0	202	782	491	365
Heavy Vehicles (%)	18%	0%	4%	3%	2%	4%
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Actuated Green, G (s)	3.1		52.1	52.1	52.1	52.1
Effective Green, g (s)	3.1		52.1	52.1	52.1	52.1
Actuated g/C Ratio	0.05		0.77	0.77	0.77	0.77
Clearance Time (s)	6.7		6.1	6.1	6.1	6.1
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	103		506	2231	2253	814
v/s Ratio Prot	c0.01			0.27	0.17	
v/s Ratio Perm			0.31			c0.34
v/c Ratio	0.27		0.40	0.35	0.22	0.45
Uniform Delay, d1	31.4		2.7	2.5	2.2	2.8
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.4		2.3	0.4	0.2	1.8
Delay (s)	32.8		5.0	3.0	2.5	4.6
Level of Service	C		A	A	A	A
Approach Delay (s/veh)	32.8			3.4	3.5	
Approach LOS	C			A	A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	3.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	68.0	Sum of lost time (s)	12.8
Intersection Capacity Utilization	61.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

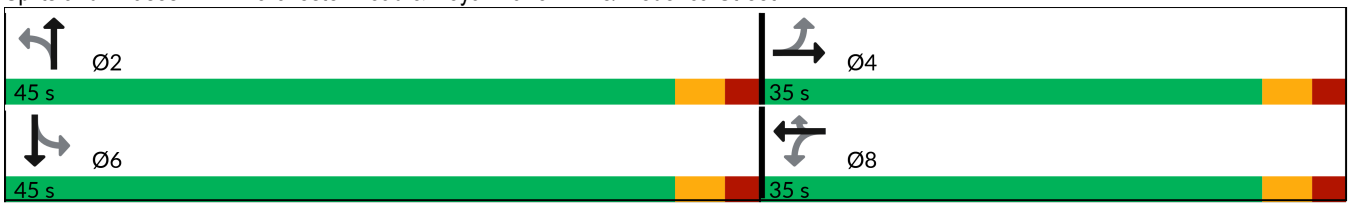


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	21	7	49	6	404	2	451	41	115	316	16
Future Volume (vph)	20	21	7	49	6	404	2	451	41	115	316	16
Ideal Flow (vphpl)	1433	1433	1433	1454	1579	1301	1454	1338	1338	1454	1338	1338
Storage Length (m)	0.0		0.0	45.0		0.0	95.0		0.0	165.0		0.0
Storage Lanes	0		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor								1.00		1.00		
Frt		0.980				0.850		0.987			0.993	
Flt Protected		0.980		0.950			0.950			0.950		
Satd. Flow (prot)	0	1252	0	1354	1579	1074	1381	2428	0	1368	2468	0
Flt Permitted		0.909		0.721			0.528			0.433		
Satd. Flow (perm)	0	1161	0	1028	1579	1074	768	2428	0	623	2468	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8				286		17			9	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		47.8			201.0			125.1			377.5	
Travel Time (s)		3.4			14.5			9.0			27.2	
Confl. Peds. (#/hr)									1	1		
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Heavy Vehicles (%)	6%	17%	0%	2%	0%	3%	0%	3%	6%	1%	2%	8%
Adj. Flow (vph)	23	24	8	56	7	459	2	513	47	131	359	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	55	0	56	7	459	2	560	0	131	377	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.42	1.42	1.42	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	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	5.0	
Minimum Split (s)	32.0	32.0		32.0	32.0	32.0	41.0	41.0		41.0	41.0	
Total Split (s)	35.0	35.0		35.0	35.0	35.0	45.0	45.0		45.0	45.0	
Total Split (%)	43.8%	43.8%		43.8%	43.8%	43.8%	56.3%	56.3%		56.3%	56.3%	
Maximum Green (s)	30.0	30.0		30.0	30.0	30.0	40.0	40.0		40.0	40.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	Max	Max		Max	Max	
Walk Time (s)	9.0	9.0		9.0	9.0	9.0	12.0	12.0		12.0	12.0	
Flash Don't Walk (s)	18.0	18.0		18.0	18.0	18.0	24.0	24.0		24.0	24.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	
Act Effct Green (s)		19.9		19.9	19.9	19.9	40.7	40.7		40.7	40.7	
Actuated g/C Ratio		0.28		0.28	0.28	0.28	0.57	0.57		0.57	0.57	
v/c Ratio		0.17		0.19	0.02	0.91	0.00	0.40		0.37	0.27	
Control Delay (s/veh)		16.5		19.3	16.2	32.2	10.0	10.9		15.0	9.8	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay (s/veh)		16.5		19.3	16.2	32.2	10.0	10.9		15.0	9.8	
LOS		B		B	B	C	A	B		B	A	
Approach Delay (s/veh)		16.5			30.6			10.9			11.2	
Approach LOS		B			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 70.8			
Natural Cycle: 75			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.91			
Intersection Signal Delay (s/veh): 17.4		Intersection LOS: B	
Intersection Capacity Utilization 83.2%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 4: Dorchester Road & Royal Manor Drive/Frederica Street



Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	55	56	7	459	2	560	131	377
v/c Ratio	0.17	0.19	0.02	0.91	0.00	0.40	0.37	0.27
Control Delay (s/veh)	16.5	19.3	16.2	32.2	10.0	10.9	15.0	9.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	16.5	19.3	16.2	32.2	10.0	10.9	15.0	9.8
Queue Length 50th (m)	4.8	5.8	0.7	22.9	0.1	21.4	9.7	13.2
Queue Length 95th (m)	12.3	13.5	3.2	#77.1	1.2	39.7	26.8	25.6
Internal Link Dist (m)	23.8		177.0			101.1		353.5
Turn Bay Length (m)		45.0			95.0		165.0	
Base Capacity (vph)	505	443	681	625	441	1402	358	1422
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.13	0.01	0.73	0.00	0.40	0.37	0.27

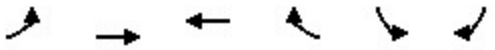
Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	21	7	49	6	404	2	451	41	115	316	16
Future Volume (vph)	20	21	7	49	6	404	2	451	41	115	316	16
Ideal Flow (vphpl)	1433	1433	1433	1454	1579	1301	1454	1338	1338	1454	1338	1338
Total Lost time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt		0.98		1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected		0.98		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1252		1354	1579	1074	1381	2429		1367	2468	
Flt Permitted		0.91		0.72	1.00	1.00	0.53	1.00		0.43	1.00	
Satd. Flow (perm)		1161		1028	1579	1074	768	2429		623	2468	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	23	24	8	56	7	459	2	512	47	131	359	18
RTOR Reduction (vph)	0	6	0	0	0	205	0	7	0	0	4	0
Lane Group Flow (vph)	0	49	0	56	7	254	2	553	0	131	373	0
Confl. Peds. (#/hr)									1	1		
Heavy Vehicles (%)	6%	17%	0%	2%	0%	3%	0%	3%	6%	1%	2%	8%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		19.9		19.9	19.9	19.9	40.7	40.7		40.7	40.7	
Effective Green, g (s)		19.9		19.9	19.9	19.9	40.7	40.7		40.7	40.7	
Actuated g/C Ratio		0.28		0.28	0.28	0.28	0.58	0.58		0.58	0.58	
Clearance Time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		327		289	445	302	442	1400		359	1422	
v/s Ratio Prot					0.00			c0.23			0.15	
v/s Ratio Perm		0.04		0.05		c0.24	0.00			0.21		
v/c Ratio		0.15		0.19	0.02	0.84	0.00	0.39		0.36	0.26	
Uniform Delay, d1		19.0		19.3	18.3	23.9	6.3	8.2		8.0	7.5	
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.2		0.3	0.0	18.2	0.0	0.8		2.9	0.4	
Delay (s)		19.2		19.6	18.3	42.0	6.4	9.0		10.9	7.9	
Level of Service		B		B	B	D	A	A		B	A	
Approach Delay (s/veh)		19.2			39.3			9.0			8.7	
Approach LOS		B			D			A			A	

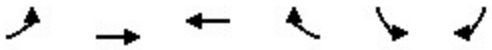
Intersection Summary			
HCM 2000 Control Delay (s/veh)	18.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	70.6	Sum of lost time (s)	10.0
Intersection Capacity Utilization	83.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	67	108	146	2	87	320
Future Volume (vph)	67	108	146	2	87	320
Ideal Flow (vphpl)	1454	1579	1338	1338	1454	1301
Storage Length (m)	85.0			0.0	40.0	0.0
Storage Lanes	1			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.998			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1303	2885	2418	0	1341	1084
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1303	2885	2418	0	1341	1084
Link Speed (k/h)		50	50		50	
Link Distance (m)		201.0	149.3		70.1	
Travel Time (s)		14.5	10.7		5.0	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Heavy Vehicles (%)	6%	4%	5%	0%	3%	2%
Adj. Flow (vph)	80	129	174	2	104	381
Shared Lane Traffic (%)						
Lane Group Flow (vph)	80	129	176	0	104	381
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.26	1.55	1.55	1.40	1.60
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	41.4%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	67	108	146	2	87	320
Future Volume (Veh/h)	67	108	146	2	87	320
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.84	0.84	0.84	0.84	0.84	0.84
Hourly flow rate (vph)	80	129	174	2	104	381
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		201				
pX, platoon unblocked						
vC, conflicting volume	176				400	88
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	176				400	88
tC, single (s)	4.2				6.9	6.9
tC, 2 stage (s)						
tF (s)	2.3				3.5	3.3
p0 queue free %	94				81	60
cM capacity (veh/h)	1369				542	953

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1	SB 2
Volume Total	80	65	65	116	60	104	381
Volume Left	80	0	0	0	0	104	0
Volume Right	0	0	0	0	2	0	381
cSH	1369	1700	1700	1700	1700	542	953
Volume to Capacity	0.06	0.04	0.04	0.07	0.04	0.19	0.40
Queue Length 95th (m)	1.5	0.0	0.0	0.0	0.0	5.6	15.6
Control Delay (s/veh)	7.8	0.0	0.0	0.0	0.0	13.2	11.3
Lane LOS	A					B	B
Approach Delay (s/veh)	3.0			0.0		11.7	
Approach LOS						B	

Intersection Summary			
Average Delay	7.2		
Intersection Capacity Utilization	41.4%	ICU Level of Service	A
Analysis Period (min)	15		

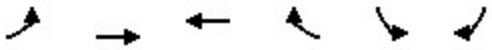
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	717	0	0	519	79	0
Future Volume (vph)	717	0	0	519	79	0
Ideal Flow (vphpl)	1579	1301	1454	1579	1454	1301
Lane Util. Factor	0.95	1.00	1.00	0.91	1.00	1.00
Frt						
Flt Protected					0.950	
Satd. Flow (prot)	2941	0	0	4105	1316	0
Flt Permitted					0.950	
Satd. Flow (perm)	2941	0	0	4105	1316	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	266.5			178.9	263.7	
Travel Time (s)	19.2			12.9	19.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	2%	0%	5%	5%	2%
Adj. Flow (vph)	779	0	0	564	86	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	779	0	0	564	86	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.26	1.60	1.40	1.26	1.40	1.60
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 45.9%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	717	0	0	519	79	0
Future Volume (Veh/h)	717	0	0	519	79	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	779	0	0	564	86	0
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			779		967	390
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			779		967	390
tC, single (s)			4.1		6.9	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.6	3.3
p0 queue free %			100		65	100
cM capacity (veh/h)			847		247	609

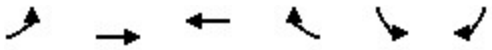
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	390	390	188	188	188	86
Volume Left	0	0	0	0	0	86
Volume Right	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	247
Volume to Capacity	0.23	0.23	0.11	0.11	0.11	0.35
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	12.0
Control Delay (s/veh)	0.0	0.0	0.0	0.0	0.0	27.2
Lane LOS						D
Approach Delay (s/veh)	0.0		0.0			27.2
Approach LOS						D

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	45.9%	ICU Level of Service	A
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↰	↱
Traffic Volume (vph)	0	944	486	0	107	193
Future Volume (vph)	0	944	486	0	107	193
Ideal Flow (vphpl)	1454	1579	1579	1301	1433	1433
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	2941	2857	0	1309	1088
Flt Permitted					0.950	
Satd. Flow (perm)	0	2941	2857	0	1309	1088
Link Speed (k/h)		50	50		50	
Link Distance (m)		152.8	266.5		231.4	
Travel Time (s)		11.0	19.2		16.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	5%	3%	4%	12%
Adj. Flow (vph)	0	1026	528	0	116	210
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1026	528	0	116	210
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.26	1.26	1.60	1.42	1.42
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

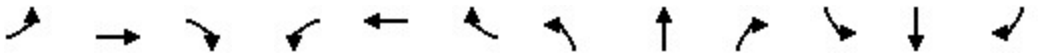
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 45.9%		ICU Level of Service A	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	944	486	0	107	193
Future Volume (Veh/h)	0	944	486	0	107	193
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	1026	528	0	116	210
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	528				1041	264
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	528				1041	264
tC, single (s)	4.1				6.9	7.1
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.4
p0 queue free %	100				48	70
cM capacity (veh/h)	1049				222	705

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	513	513	264	264	116	210
Volume Left	0	0	0	0	116	0
Volume Right	0	0	0	0	0	210
cSH	1700	1700	1700	1700	222	705
Volume to Capacity	0.30	0.30	0.16	0.16	0.52	0.30
Queue Length 95th (m)	0.0	0.0	0.0	0.0	21.8	10.0
Control Delay (s/veh)	0.0	0.0	0.0	0.0	37.6	12.3
Lane LOS					E	B
Approach Delay (s/veh)	0.0		0.0		21.3	
Approach LOS					C	

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	45.9%	ICU Level of Service	A
Analysis Period (min)	15		

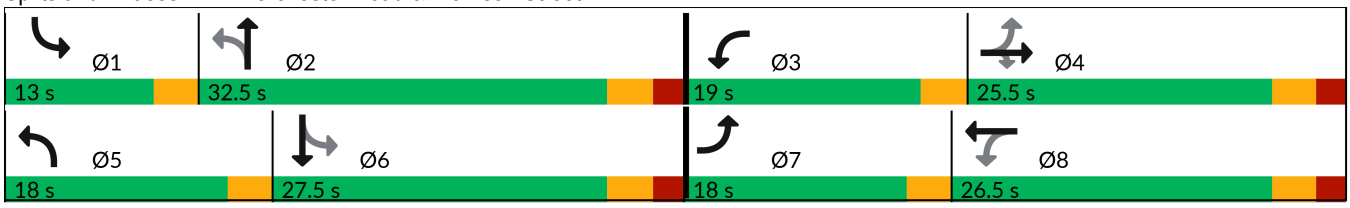


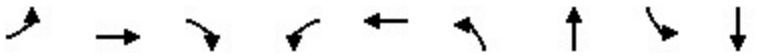
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	260	160	267	360	210	181	307	473	190	183	528	195
Future Volume (vph)	260	160	267	360	210	181	307	473	190	183	528	195
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Storage Length (m)	70.0		0.0	105.0		125.0	90.0		0.0	95.0		41.0
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00		0.98	1.00	0.99		1.00	0.99		1.00	1.00	
Frt			0.850		0.931			0.957			0.960	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1328	1504	1063	1368	2300	0	1341	2394	0	1381	2338	0
Flt Permitted	0.367			0.473			0.180			0.321		
Satd. Flow (perm)	512	1504	1044	678	2300	0	254	2394	0	465	2338	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			287		195			69			56	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		205.0			291.8			454.1			179.9	
Travel Time (s)		14.8			21.0			32.7			13.0	
Confl. Peds. (#/hr)	6		7	7		6	6		11	11		6
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	4%	5%	4%	1%	3%	1%	3%	1%	1%	0%	2%	9%
Adj. Flow (vph)	280	172	287	387	226	195	330	509	204	197	568	210
Shared Lane Traffic (%)												
Lane Group Flow (vph)	280	172	287	387	421	0	330	713	0	197	778	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	9.5	35.0	35.0	9.5	35.0		9.5	35.0		9.5	35.0	
Total Split (s)	18.0	25.5	25.5	19.0	26.5		18.0	32.5		13.0	27.5	
Total Split (%)	20.0%	28.3%	28.3%	21.1%	29.4%		20.0%	36.1%		14.4%	30.6%	
Maximum Green (s)	15.0	20.5	20.5	16.0	21.5		15.0	27.5		10.0	22.5	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)		10.0	10.0		10.0			10.0			10.0	
Flash Don't Walk (s)		20.0	20.0		20.0			20.0			20.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	32.1	15.4	15.4	34.9	16.8		50.1	35.4		41.8	30.1	
Actuated g/C Ratio	0.35	0.17	0.17	0.38	0.18		0.54	0.38		0.45	0.33	
v/c Ratio	0.92	0.69	0.69	1.03	0.73		1.05	0.75		0.64	0.98	
Control Delay (s/veh)	58.8	50.7	14.0	83.0	26.7		88.0	28.8		24.6	57.4	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	58.8	50.7	14.0	83.0	26.7		88.0	28.8		24.6	57.4	
LOS	E	D	B	F	C		F	C		C	E	
Approach Delay (s/veh)		39.5			53.7			47.5			50.8	
Approach LOS		D			D			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 92.6			
Natural Cycle: 100			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.05			
Intersection Signal Delay (s/veh): 48.1		Intersection LOS: D	
Intersection Capacity Utilization 106.3%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 1: Dorchester Road & Morrison Street



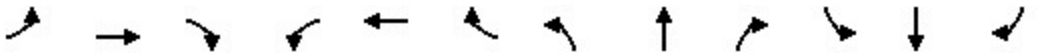


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	280	172	287	387	421	330	713	197	778
v/c Ratio	0.92	0.69	0.69	1.03	0.73	1.05	0.75	0.64	0.98
Control Delay (s/veh)	58.8	50.7	14.0	83.0	26.7	88.0	28.8	24.6	57.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	58.8	50.7	14.0	83.0	26.7	88.0	28.8	24.6	57.4
Queue Length 50th (m)	39.4	30.6	0.0	~63.6	21.0	~48.9	54.8	18.8	71.2
Queue Length 95th (m)	#74.4	52.6	25.8	#102.5	38.1	#111.5	84.4	#37.9	#121.6
Internal Link Dist (m)		181.0			267.8		430.1		155.9
Turn Bay Length (m)	70.0			105.0		90.0		95.0	
Base Capacity (vph)	312	333	454	374	684	313	956	310	796
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.90	0.52	0.63	1.03	0.62	1.05	0.75	0.64	0.98

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

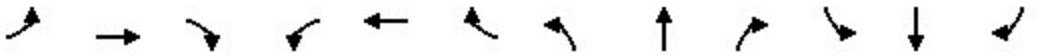
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	260	160	267	360	210	181	307	473	190	183	528	195
Future Volume (vph)	260	160	267	360	210	181	307	473	190	183	528	195
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Total Lost time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.98	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	1.00	
Frt	1.00	1.00	0.85	1.00	0.93		1.00	0.96		1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1327	1504	1044	1365	2299		1341	2394		1380	2337	
Flt Permitted	0.37	1.00	1.00	0.47	1.00		0.18	1.00		0.32	1.00	
Satd. Flow (perm)	513	1504	1044	680	2299		255	2394		466	2337	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	280	172	287	387	226	195	330	509	204	197	568	210
RTOR Reduction (vph)	0	0	239	0	160	0	0	43	0	0	38	0
Lane Group Flow (vph)	280	172	48	387	261	0	330	670	0	197	740	0
Confl. Peds. (#/hr)	6		7	7		6	6		11	11		6
Heavy Vehicles (%)	4%	5%	4%	1%	3%	1%	3%	1%	1%	0%	2%	9%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	30.0	15.4	15.4	32.8	16.8		48.1	35.4		39.8	30.1	
Effective Green, g (s)	30.0	15.4	15.4	32.8	16.8		48.1	35.4		39.8	30.1	
Actuated g/C Ratio	0.32	0.17	0.17	0.35	0.18		0.52	0.38		0.43	0.33	
Clearance Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	294	250	173	359	417		308	916		296	760	
v/s Ratio Prot	0.15	0.11		c0.19	0.11		c0.17	0.28		0.07	0.32	
v/s Ratio Perm	0.16		0.05	c0.20			c0.38			0.22		
v/c Ratio	0.95	0.69	0.28	1.08	0.63		1.07	0.73		0.67	0.97	
Uniform Delay, d1	27.7	36.3	33.7	27.8	35.0		20.9	24.5		17.7	30.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	39.6	7.6	0.9	69.9	2.9		71.5	5.1		5.6	26.9	
Delay (s)	67.2	43.9	34.6	97.7	37.9		92.4	29.6		23.3	57.7	
Level of Service	E	D	C	F	D		F	C		C	E	
Approach Delay (s/veh)		49.1			66.6			49.5			50.7	
Approach LOS		D			E			D			D	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	53.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.13		
Actuated Cycle Length (s)	92.5	Sum of lost time (s)	16.0
Intersection Capacity Utilization	106.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

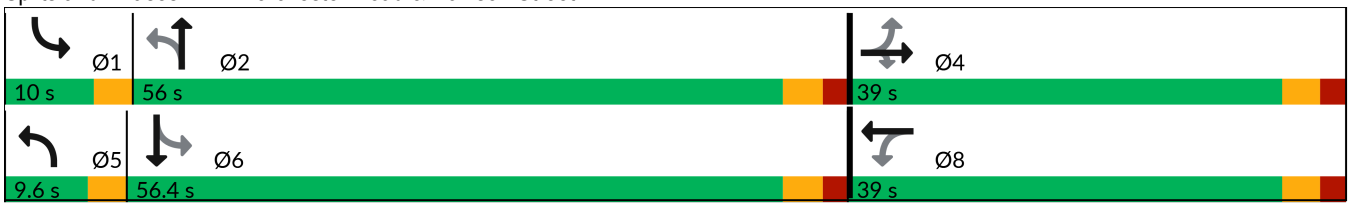


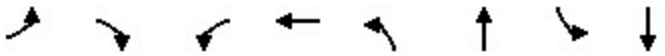
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	93	0	216	60	1	28	241	923	55	42	1017	149
Future Volume (vph)	93	0	216	60	1	28	241	923	55	42	1017	149
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Storage Length (m)	30.0		35.0	20.0		0.0	180.0		0.0	30.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.91	0.91
Ped Bike Factor			0.99	1.00			1.00	1.00		1.00	1.00	
Frt			0.850		0.855			0.992			0.981	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1381	1579	1015	1381	1101	0	1381	2495	0	1341	3510	0
Flt Permitted	0.738			0.757			0.191			0.262		
Satd. Flow (perm)	1073	1579	1001	1099	1101	0	277	2495	0	370	3510	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			172		29			8			36	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		106.7			108.0			280.1			454.1	
Travel Time (s)		7.7			7.8			20.2			32.7	
Confl. Peds. (#/hr)			2	2			5		2	2		5
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	9%	0%	0%	4%	0%	1%	0%	3%	2%	0%
Adj. Flow (vph)	95	0	220	61	1	29	246	942	56	43	1038	152
Shared Lane Traffic (%)												
Lane Group Flow (vph)	95	0	220	61	30	0	246	998	0	43	1190	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	1.0		5.0	5.0	
Minimum Split (s)	39.0	39.0	39.0	39.0	39.0		9.5	52.0		9.5	52.0	
Total Split (s)	39.0	39.0	39.0	39.0	39.0		9.6	56.0		10.0	56.4	
Total Split (%)	37.1%	37.1%	37.1%	37.1%	37.1%		9.1%	53.3%		9.5%	53.7%	
Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		6.6	51.0		7.0	51.4	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)	11.0	11.0	11.0	11.0	11.0			16.0			16.0	
Flash Don't Walk (s)	23.0	23.0	23.0	23.0	23.0			31.0			31.0	
Pedestrian Calls (#/hr)	0	0	0	0	0			0			0	
Act Effct Green (s)	13.3		13.3	13.3	13.3		61.6	55.7		59.8	51.6	
Actuated g/C Ratio	0.16		0.16	0.16	0.16		0.73	0.66		0.71	0.61	
v/c Ratio	0.57		0.73	0.35	0.15		0.85	0.61		0.13	0.55	
Control Delay (s/veh)	45.7		23.9	36.8	13.0		37.6	12.4		4.8	11.4	
Queue Delay	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	45.7		23.9	36.8	13.0		37.6	12.4		4.8	11.4	
LOS	D		C	D	B		D	B		A	B	
Approach Delay (s/veh)		30.5			29.0			17.4			11.1	
Approach LOS		C			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 105			
Actuated Cycle Length: 84.6			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.85			
Intersection Signal Delay (s/veh): 16.5		Intersection LOS: B	
Intersection Capacity Utilization 82.6%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 2: Dorchester Road & Dawson Street

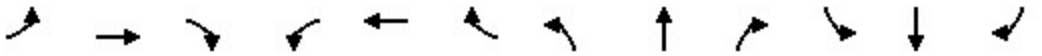




Lane Group	EBL	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	95	220	61	30	246	998	43	1190
v/c Ratio	0.57	0.73	0.35	0.15	0.85	0.61	0.13	0.55
Control Delay (s/veh)	45.7	23.9	36.8	13.0	37.6	12.4	4.8	11.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	45.7	23.9	36.8	13.0	37.6	12.4	4.8	11.4
Queue Length 50th (m)	15.0	7.3	9.3	0.2	9.7	49.5	1.4	37.0
Queue Length 95th (m)	30.2	31.7	20.7	7.2	#53.1	97.2	5.9	66.1
Internal Link Dist (m)				84.0		256.1		430.1
Turn Bay Length (m)	30.0	35.0	20.0		180.0		30.0	
Base Capacity (vph)	433	506	443	461	288	1646	345	2155
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	0.22	0.43	0.14	0.07	0.85	0.61	0.12	0.55

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	93	0	216	60	1	28	241	923	55	42	1017	149
Future Volume (vph)	93	0	216	60	1	28	241	923	55	42	1017	149
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Total Lost time (s)	5.0		5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00		1.00	1.00	1.00		1.00	0.95		1.00	0.91	
Frpb, ped/bikes	1.00		0.99	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00		0.85	1.00	0.86		1.00	0.99		1.00	0.98	
Flt Protected	0.95		1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1381		1001	1379	1101		1381	2494		1341	3510	
Flt Permitted	0.74		1.00	0.76	1.00		0.19	1.00		0.26	1.00	
Satd. Flow (perm)	1073		1001	1099	1101		278	2494		370	3510	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	95	0	220	61	1	29	246	942	56	43	1038	152
RTOR Reduction (vph)	0	0	145	0	25	0	0	3	0	0	14	0
Lane Group Flow (vph)	95	0	75	61	5	0	246	995	0	43	1176	0
Confl. Peds. (#/hr)			2	2			5		2	2		5
Heavy Vehicles (%)	0%	0%	9%	0%	0%	4%	0%	1%	0%	3%	2%	0%
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	13.3		13.3	13.3	13.3		62.3	55.7		56.7	52.9	
Effective Green, g (s)	13.3		13.3	13.3	13.3		62.3	55.7		56.7	52.9	
Actuated g/C Ratio	0.16		0.16	0.16	0.16		0.73	0.65		0.66	0.62	
Clearance Time (s)	5.0		5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	166		155	170	170		286	1619		287	2164	
v/s Ratio Prot					0.00		c0.07	0.40		0.01	0.34	
v/s Ratio Perm	c0.09		0.07	0.06			c0.56			0.09		
v/c Ratio	0.57		0.48	0.36	0.03		0.86	0.61		0.15	0.54	
Uniform Delay, d1	33.6		33.1	32.4	30.8		5.5	8.8		5.2	9.5	
Progression Factor	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.7		2.4	1.3	0.1		22.2	1.8		0.2	1.0	
Delay (s)	38.3		35.5	33.7	30.9		27.7	10.5		5.5	10.5	
Level of Service	D		D	C	C		C	B		A	B	
Approach Delay (s/veh)		36.3			32.8			13.9			10.3	
Approach LOS		D			C			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	15.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	85.8	Sum of lost time (s)	13.0
Intersection Capacity Utilization	82.6%	ICU Level of Service	E
Analysis Period (min)	15		

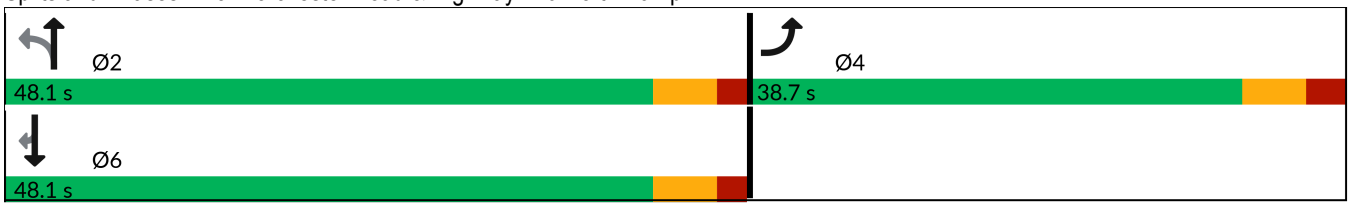
c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	59	0	238	1190	646	657
Future Volume (vph)	59	0	238	1190	646	657
Ideal Flow (vphpl)	1454	1301	1454	1579	1579	1301
Storage Length (m)	0.0	0.0	160.0			0.0
Storage Lanes	2	0	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor	1.00					
Frt						0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	2602	0	1341	2970	2941	1074
Flt Permitted	0.950		0.390			
Satd. Flow (perm)	2598	0	551	2970	2941	1074
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						699
Link Speed (k/h)	50			50	50	
Link Distance (m)	166.4			377.5	280.1	
Travel Time (s)	12.0			27.2	20.2	
Confl. Peds. (#/hr)	1					
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	3%	3%	3%	1%	2%	3%
Adj. Flow (vph)	63	0	253	1266	687	699
Shared Lane Traffic (%)						
Lane Group Flow (vph)	63	0	253	1266	687	699
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.2			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.60	1.40	1.26	1.26	1.60
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1		1	2	2	1
Detector Template	Left		Left	Thru	Thru	Right
Leading Detector (m)	2.0		2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0		2.0	0.6	0.6	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	8.0		10.0	10.0	10.0	10.0
Minimum Split (s)	38.7		24.1	24.1	24.1	24.1
Total Split (s)	38.7		48.1	48.1	48.1	48.1
Total Split (%)	44.6%		55.4%	55.4%	55.4%	55.4%
Maximum Green (s)	32.0		42.0	42.0	42.0	42.0
Yellow Time (s)	4.1		4.1	4.1	4.1	4.1
All-Red Time (s)	2.6		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7		6.1	6.1	6.1	6.1
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		Max	Max	Max	Max
Walk Time (s)	12.0					
Flash Don't Walk (s)	20.0					
Pedestrian Calls (#/hr)	0					
Act Effct Green (s)	8.1		50.4	50.4	50.4	50.4
Actuated g/C Ratio	0.13		0.80	0.80	0.80	0.80
v/c Ratio	0.19		0.57	0.53	0.29	0.70
Control Delay (s/veh)	26.1		13.6	5.5	3.7	5.1
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay (s/veh)	26.1		13.6	5.5	3.7	5.1
LOS	C		B	A	A	A
Approach Delay (s/veh)	26.1			6.8	4.4	
Approach LOS	C			A	A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 86.8			
Actuated Cycle Length: 63			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay (s/veh): 6.1		Intersection LOS: A	
Intersection Capacity Utilization 86.8%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 3: Dorchester Road & Highway 420 North Ramp



Lane Group	EBL	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	63	253	1266	687	699
v/c Ratio	0.19	0.57	0.53	0.29	0.70
Control Delay (s/veh)	26.1	13.6	5.5	3.7	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	26.1	13.6	5.5	3.7	5.1
Queue Length 50th (m)	3.6	15.4	38.2	15.5	0.0
Queue Length 95th (m)	8.6	#58.4	56.8	23.6	9.7
Internal Link Dist (m)	142.4		353.5	256.1	
Turn Bay Length (m)		160.0			
Base Capacity (vph)	1321	441	2377	2354	999
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.05	0.57	0.53	0.29	0.70

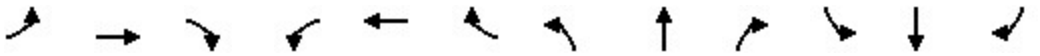
Intersection Summary

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

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	59	0	238	1190	646	657
Future Volume (vph)	59	0	238	1190	646	657
Ideal Flow (vphpl)	1454	1301	1454	1579	1579	1301
Total Lost time (s)	6.7		6.1	6.1	6.1	6.1
Lane Util. Factor	0.97		1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	0.95		0.95	1.00	1.00	1.00
Satd. Flow (prot)	2602		1341	2970	2941	1074
Flt Permitted	0.95		0.39	1.00	1.00	1.00
Satd. Flow (perm)	2602		551	2970	2941	1074
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	63	0	253	1266	687	699
RTOR Reduction (vph)	0	0	0	0	0	188
Lane Group Flow (vph)	63	0	253	1266	687	511
Confl. Peds. (#/hr)	1					
Heavy Vehicles (%)	3%	3%	3%	1%	2%	3%
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Actuated Green, G (s)	4.9		48.0	48.0	48.0	48.0
Effective Green, g (s)	4.9		48.0	48.0	48.0	48.0
Actuated g/C Ratio	0.07		0.73	0.73	0.73	0.73
Clearance Time (s)	6.7		6.1	6.1	6.1	6.1
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	194		402	2169	2148	784
v/s Ratio Prot	c0.02			0.43	0.23	
v/s Ratio Perm			0.46			c0.48
v/c Ratio	0.32		0.63	0.58	0.32	0.65
Uniform Delay, d1	28.8		4.4	4.2	3.1	4.5
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	1.0		7.3	1.2	0.4	4.2
Delay (s)	29.8		11.7	5.3	3.5	8.7
Level of Service	C		B	A	A	A
Approach Delay (s/veh)	29.8			6.4	6.1	
Approach LOS	C			A	A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	6.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	65.7	Sum of lost time (s)	12.8
Intersection Capacity Utilization	86.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

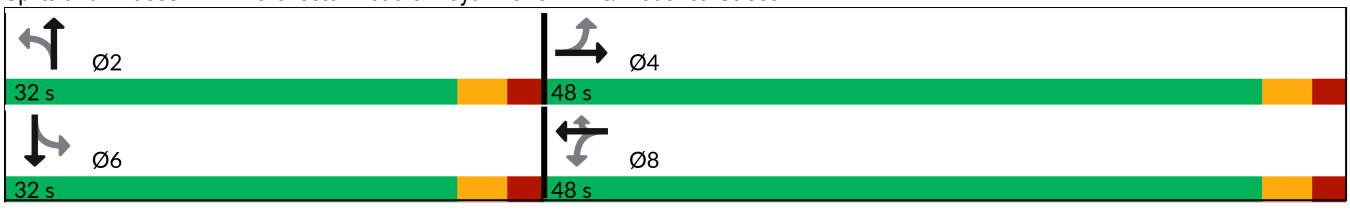


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	13	8	115	30	629	6	747	61	101	538	21
Future Volume (vph)	18	13	8	115	30	629	6	747	61	101	538	21
Ideal Flow (vphpl)	1433	1433	1433	1454	1579	1301	1454	1338	1338	1454	1338	1338
Storage Length (m)	0.0		0.0	45.0		0.0	95.0		0.0	165.0		0.0
Storage Lanes	0		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		1.00		1.00				1.00		1.00		
Frt		0.971				0.850		0.989			0.994	
Flt Protected		0.978		0.950			0.950			0.950		
Satd. Flow (prot)	0	1321	0	1303	1423	1095	1381	2460	0	1368	2474	0
Flt Permitted		0.915		0.730			0.350			0.208		
Satd. Flow (perm)	0	1236	0	999	1423	1095	509	2460	0	299	2474	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9				43		11			5	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		47.8			201.0			125.1			377.5	
Travel Time (s)		3.4			14.5			9.0			27.2	
Confl. Peds. (#/hr)			3	3					5	5		
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	0%	8%	0%	6%	11%	1%	0%	2%	3%	1%	2%	6%
Adj. Flow (vph)	19	14	9	124	32	676	6	803	66	109	578	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	42	0	124	32	676	6	869	0	109	601	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.42	1.42	1.42	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	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	5.0	
Minimum Split (s)	32.0	32.0		32.0	32.0	32.0	41.0	41.0		41.0	41.0	
Total Split (s)	48.0	48.0		48.0	48.0	48.0	32.0	32.0		32.0	32.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%	60.0%	40.0%	40.0%		40.0%	40.0%	
Maximum Green (s)	43.0	43.0		43.0	43.0	43.0	27.0	27.0		27.0	27.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	Max	Max		Max	Max	
Walk Time (s)	9.0	9.0		9.0	9.0	9.0	12.0	12.0		12.0	12.0	
Flash Don't Walk (s)	18.0	18.0		18.0	18.0	18.0	24.0	24.0		24.0	24.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	
Act Effct Green (s)		43.0		43.0	43.0	43.0	36.0	36.0		36.0	36.0	
Actuated g/C Ratio		0.48		0.48	0.48	0.48	0.40	0.40		0.40	0.40	
v/c Ratio		0.07		0.26	0.05	1.23	0.03	0.87		0.91	0.60	
Control Delay (s/veh)		10.7		15.4	12.5	141.0	16.7	35.1		91.3	23.7	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay (s/veh)		10.7		15.4	12.5	141.0	16.7	35.1		91.3	23.7	
LOS		B		B	B	F	B	D		F	C	
Approach Delay (s/veh)		10.7			117.4			35.0			34.1	
Approach LOS		B			F			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 89			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.23			
Intersection Signal Delay (s/veh): 62.2		Intersection LOS: E	
Intersection Capacity Utilization 107.4%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 4: Dorchester Road & Royal Manor Drive/Frederica Street

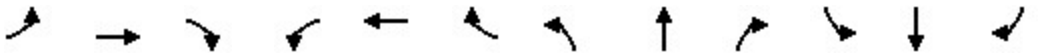


Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	42	124	32	676	6	869	109	601
v/c Ratio	0.07	0.26	0.05	1.23	0.03	0.87	0.91	0.60
Control Delay (s/veh)	10.7	15.4	12.5	141.0	16.7	35.1	91.3	23.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	10.7	15.4	12.5	141.0	16.7	35.1	91.3	23.7
Queue Length 50th (m)	3.0	12.6	2.9	~148.0	0.6	72.8	18.0	43.2
Queue Length 95th (m)	8.6	24.7	7.7	#216.5	3.2	#110.6	#51.2	61.1
Internal Link Dist (m)	23.8		177.0			101.1		353.5
Turn Bay Length (m)		45.0			95.0		165.0	
Base Capacity (vph)	601	482	687	551	205	1001	120	1003
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.26	0.05	1.23	0.03	0.87	0.91	0.60

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

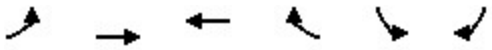
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	13	8	115	30	629	6	747	61	101	538	21
Future Volume (vph)	18	13	8	115	30	629	6	747	61	101	538	21
Ideal Flow (vphpl)	1433	1433	1433	1454	1579	1301	1454	1338	1338	1454	1338	1338
Total Lost time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt		0.97		1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected		0.98		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1321		1299	1423	1095	1381	2459		1366	2474	
Flt Permitted		0.91		0.73	1.00	1.00	0.35	1.00		0.21	1.00	
Satd. Flow (perm)		1236		998	1423	1095	509	2459		299	2474	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	19	14	9	124	32	676	6	803	66	109	578	23
RTOR Reduction (vph)	0	5	0	0	0	22	0	7	0	0	3	0
Lane Group Flow (vph)	0	37	0	124	32	654	6	862	0	109	598	0
Confl. Peds. (#/hr)			3	3					5	5		
Heavy Vehicles (%)	0%	8%	0%	6%	11%	1%	0%	2%	3%	1%	2%	6%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		43.0		43.0	43.0	43.0	36.0	36.0		36.0	36.0	
Effective Green, g (s)		43.0		43.0	43.0	43.0	36.0	36.0		36.0	36.0	
Actuated g/C Ratio		0.48		0.48	0.48	0.48	0.40	0.40		0.40	0.40	
Clearance Time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		597		482	687	529	205	994		120	1000	
v/s Ratio Prot					0.02			0.35			0.24	
v/s Ratio Perm		0.03		0.12		c0.60	0.01			c0.36		
v/c Ratio		0.06		0.26	0.05	1.24	0.03	0.87		0.91	0.60	
Uniform Delay, d1		12.3		13.6	12.2	23.0	16.0	24.3		24.9	20.8	
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	0.0	121.7	0.3	10.1		60.3	2.6	
Delay (s)		12.3		13.9	12.2	144.7	16.2	34.5		85.3	23.5	
Level of Service		B		B	B	F	B	C		F	C	
Approach Delay (s/veh)		12.3			120.1			34.3			32.9	
Approach LOS		B			F			C			C	

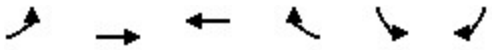
Intersection Summary			
HCM 2000 Control Delay (s/veh)	62.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	89.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	107.4%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	55	120	212	1	159	563
Future Volume (vph)	55	120	212	1	159	563
Ideal Flow (vphpl)	1454	1579	1338	1338	1454	1301
Storage Length (m)	85.0			0.0	0.0	40.0
Storage Lanes	1			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1381	2913	2515	0	1341	1074
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1381	2913	2515	0	1341	1074
Link Speed (k/h)		50	50		50	
Link Distance (m)		201.0	149.3		70.1	
Travel Time (s)		14.5	10.7		5.0	
Confl. Peds. (#/hr)	1			1		
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	3%	1%	0%	3%	3%
Adj. Flow (vph)	61	133	236	1	177	626
Shared Lane Traffic (%)						
Lane Group Flow (vph)	61	133	237	0	177	626
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.26	1.55	1.55	1.40	1.60
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 66.1%		ICU Level of Service C	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	55	120	212	1	159	563
Future Volume (Veh/h)	55	120	212	1	159	563
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)	61	133	236	1	177	626
Pedestrians					1	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						5
Median type		None	None			
Median storage veh)						
Upstream signal (m)		201				
pX, platoon unblocked						
vC, conflicting volume	238				426	120
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	238				426	120
tC, single (s)	4.1				6.9	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	95				67	31
cM capacity (veh/h)	1340				528	906

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	61	67	67	157	80	803
Volume Left	61	0	0	0	0	177
Volume Right	0	0	0	0	1	626
cSH	1340	1700	1700	1700	1700	1162
Volume to Capacity	0.05	0.04	0.04	0.09	0.05	0.69
Queue Length 95th (m)	1.1	0.0	0.0	0.0	0.0	47.5
Control Delay (s/veh)	7.8	0.0	0.0	0.0	0.0	16.9
Lane LOS	A					C
Approach Delay (s/veh)	2.5			0.0		16.9
Approach LOS						C

Intersection Summary			
Average Delay	11.4		
Intersection Capacity Utilization	66.1%	ICU Level of Service	C
Analysis Period (min)	15		

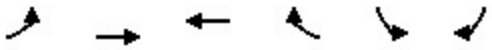
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	817	0	0	1053	150	0
Future Volume (vph)	817	0	0	1053	150	0
Ideal Flow (vphpl)	1579	1301	1454	1579	1454	1301
Lane Util. Factor	0.95	1.00	1.00	0.91	1.00	1.00
Frt						
Flt Protected					0.950	
Satd. Flow (prot)	2970	0	0	4268	1328	0
Flt Permitted					0.950	
Satd. Flow (perm)	2970	0	0	4268	1328	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	266.5			178.9	263.7	
Travel Time (s)	19.2			12.9	19.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	1%	5%	0%	1%	4%	1%
Adj. Flow (vph)	888	0	0	1145	163	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	888	0	0	1145	163	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	0.0			0.0	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.26	1.60	1.40	1.26	1.40	1.60
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 67.1%		ICU Level of Service C	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	817	0	0	1053	150	0
Future Volume (Veh/h)	817	0	0	1053	150	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	888	0	0	1145	163	0
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			888		1270	444
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			888		1270	444
tC, single (s)			4.1		6.9	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		0	100
cM capacity (veh/h)			771		157	564

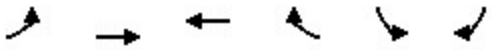
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	444	444	382	382	382	163
Volume Left	0	0	0	0	0	163
Volume Right	0	0	0	0	0	0
cSH	1700	1700	1700	1700	1700	157
Volume to Capacity	0.26	0.26	0.22	0.22	0.22	1.04
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	65.5
Control Delay (s/veh)	0.0	0.0	0.0	0.0	0.0	139.6
Lane LOS						F
Approach Delay (s/veh)	0.0		0.0			139.6
Approach LOS						F

Intersection Summary			
Average Delay	10.4		
Intersection Capacity Utilization	67.1%	ICU Level of Service	C
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑	↑↑		↰	↱
Traffic Volume (vph)	0	854	972	0	208	342
Future Volume (vph)	0	854	972	0	208	342
Ideal Flow (vphpl)	1454	1579	1579	1301	1433	1433
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00
Frt						0.850
Flt Protected					0.950	
Satd. Flow (prot)	0	2941	2941	0	1348	1183
Flt Permitted					0.950	
Satd. Flow (perm)	0	2941	2941	0	1348	1183
Link Speed (k/h)		50	50		50	
Link Distance (m)		152.8	266.5		231.4	
Travel Time (s)		11.0	19.2		16.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	1%	1%	3%
Adj. Flow (vph)	0	928	1057	0	226	372
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	928	1057	0	226	372
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.26	1.26	1.60	1.42	1.42
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

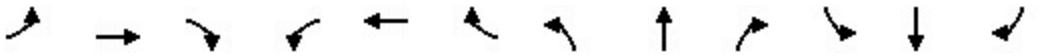
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 67.1%		ICU Level of Service C	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	854	972	0	208	342
Future Volume (Veh/h)	0	854	972	0	208	342
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	928	1057	0	226	372
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	1057				1521	529
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1057				1521	529
tC, single (s)	4.1				6.8	7.0
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				0	24
cM capacity (veh/h)	667				110	492

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1	SB 2
Volume Total	464	464	529	529	226	372
Volume Left	0	0	0	0	226	0
Volume Right	0	0	0	0	0	372
cSH	1700	1700	1700	1700	110	492
Volume to Capacity	0.27	0.27	0.31	0.31	2.05	0.76
Queue Length 95th (m)	0.0	0.0	0.0	0.0	151.5	51.9
Control Delay (s/veh)	0.0	0.0	0.0	0.0	566.7	31.6
Lane LOS					F	D
Approach Delay (s/veh)	0.0		0.0		233.8	
Approach LOS					F	

Intersection Summary			
Average Delay	54.1		
Intersection Capacity Utilization	67.1%	ICU Level of Service	C
Analysis Period (min)	15		

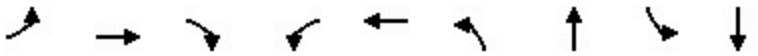


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	336	223	304	285	269	139	428	466	153	165	479	269
Future Volume (vph)	336	223	304	285	269	139	428	466	153	165	479	269
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Storage Length (m)	70.0		0.0	105.0		125.0	90.0		0.0	95.0		41.0
Storage Lanes	1		1	1		1	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	1.00		0.98	1.00	0.99		1.00	1.00		1.00	0.99	
Frt			0.850		0.949			0.963			0.946	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1341	1548	1095	1368	2383	0	1368	2419	0	1368	2356	0
Flt Permitted	0.290			0.595			0.178			0.412		
Satd. Flow (perm)	408	1548	1076	853	2383	0	256	2419	0	592	2356	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			310		97			54			111	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		205.0			291.8			454.1			179.9	
Travel Time (s)		14.8			21.0			32.7			13.0	
Confl. Peds. (#/hr)	6		6	6		6	6		7	7		6
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	3%	2%	1%	1%	1%	0%	1%	1%	0%	1%	0%	4%
Adj. Flow (vph)	343	228	310	291	274	142	437	476	156	168	489	274
Shared Lane Traffic (%)												
Lane Group Flow (vph)	343	228	310	291	416	0	437	632	0	168	763	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	7	4	4	3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	9.5	35.0	35.0	9.5	35.0		9.5	35.0		9.5	35.0	
Total Split (s)	18.0	31.5	31.5	13.0	26.5		20.0	36.0		9.5	25.5	
Total Split (%)	20.0%	35.0%	35.0%	14.4%	29.4%		22.2%	40.0%		10.6%	28.3%	
Maximum Green (s)	15.0	26.5	26.5	10.0	21.5		17.0	31.0		6.5	20.5	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	0.0	2.0	2.0	0.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Lead/Lag	Lead	Lag	Lag	Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)		10.0	10.0		10.0			10.0			10.0	
Flash Don't Walk (s)		20.0	20.0		20.0			20.0			20.0	
Pedestrian Calls (#/hr)		0	0		0			0			0	
Act Effct Green (s)	37.5	22.5	22.5	29.5	17.5		52.1	40.6		38.5	30.0	
Actuated g/C Ratio	0.39	0.24	0.24	0.31	0.18		0.54	0.42		0.40	0.31	
v/c Ratio	1.12	0.63	0.63	0.92	0.81		1.30	0.60		0.58	0.94	
Control Delay (s/veh)	114.4	40.9	10.0	61.7	41.3		177.4	22.7		24.6	48.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	114.4	40.9	10.0	61.7	41.3		177.4	22.7		24.6	48.1	
LOS	F	D	B	E	D		F	C		C	D	
Approach Delay (s/veh)		58.6			49.7			85.9			43.8	
Approach LOS		E			D			F			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 95.6			
Natural Cycle: 100			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.30			
Intersection Signal Delay (s/veh): 61.2		Intersection LOS: E	
Intersection Capacity Utilization 120.1%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 1: Dorchester Road & Morrison Street

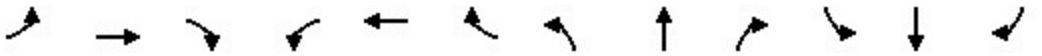


Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	343	228	310	291	416	437	632	168	763
v/c Ratio	1.12	0.63	0.63	0.92	0.81	1.30	0.60	0.58	0.94
Control Delay (s/veh)	114.4	40.9	10.0	61.7	41.3	177.4	22.7	24.6	48.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	114.4	40.9	10.0	61.7	41.3	177.4	22.7	24.6	48.1
Queue Length 50th (m)	~56.6	39.9	0.0	42.7	31.7	~92.1	45.3	16.4	67.1
Queue Length 95th (m)	#112.3	64.7	24.7	#90.0	49.5	#159.9	67.6	30.5	#111.8
Internal Link Dist (m)		181.0			267.8		430.1		155.9
Turn Bay Length (m)	70.0			105.0		90.0		95.0	
Base Capacity (vph)	306	429	522	317	611	337	1057	291	816
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.12	0.53	0.59	0.92	0.68	1.30	0.60	0.58	0.94

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

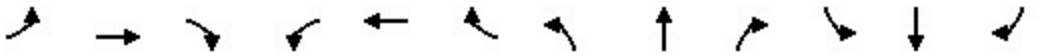
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	336	223	304	285	269	139	428	466	153	165	479	269
Future Volume (vph)	336	223	304	285	269	139	428	466	153	165	479	269
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Total Lost time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00	0.98	1.00	0.99		1.00	1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00	0.85	1.00	0.95		1.00	0.96		1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1340	1548	1076	1364	2382		1367	2419		1366	2356	
Flt Permitted	0.29	1.00	1.00	0.60	1.00		0.18	1.00		0.41	1.00	
Satd. Flow (perm)	409	1548	1076	855	2382		257	2419		593	2356	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	343	228	310	291	274	142	437	476	156	168	489	274
RTOR Reduction (vph)	0	0	237	0	79	0	0	31	0	0	76	0
Lane Group Flow (vph)	343	228	73	291	337	0	437	601	0	168	687	0
Confl. Peds. (#/hr)	6		6	6		6	6		7	7		6
Heavy Vehicles (%)	3%	2%	1%	1%	1%	0%	1%	1%	0%	1%	0%	4%
Turn Type	pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	35.5	22.5	22.5	27.5	17.5		50.1	40.6		36.6	30.1	
Effective Green, g (s)	35.5	22.5	22.5	27.5	17.5		50.1	40.6		36.6	30.1	
Actuated g/C Ratio	0.37	0.24	0.24	0.29	0.18		0.52	0.42		0.38	0.31	
Clearance Time (s)	3.0	5.0	5.0	3.0	5.0		3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	297	364	253	299	436		332	1027		279	741	
v/s Ratio Prot	c0.18	0.15		0.10	0.14		c0.23	0.25		0.04	0.29	
v/s Ratio Perm	c0.25		0.07	0.18			c0.46			0.19		
v/c Ratio	1.15	0.63	0.29	0.97	0.77		1.32	0.59		0.60	0.93	
Uniform Delay, d1	26.3	32.8	30.0	32.2	37.2		22.7	21.1		21.0	31.7	
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	100.9	3.3	0.6	44.4	8.3		162.1	2.4		3.6	19.4	
Delay (s)	127.2	36.1	30.6	76.7	45.4		184.8	23.5		24.6	51.1	
Level of Service	F	D	C	E	D		F	C		C	D	
Approach Delay (s/veh)		69.6			58.3			89.4			46.3	
Approach LOS		E			E			F			D	

Intersection Summary					
HCM 2000 Control Delay (s/veh)	67.2	HCM 2000 Level of Service	E		
HCM 2000 Volume to Capacity ratio	1.33				
Actuated Cycle Length (s)	95.6	Sum of lost time (s)	16.0		
Intersection Capacity Utilization	120.1%	ICU Level of Service	H		
Analysis Period (min)	15				

c Critical Lane Group

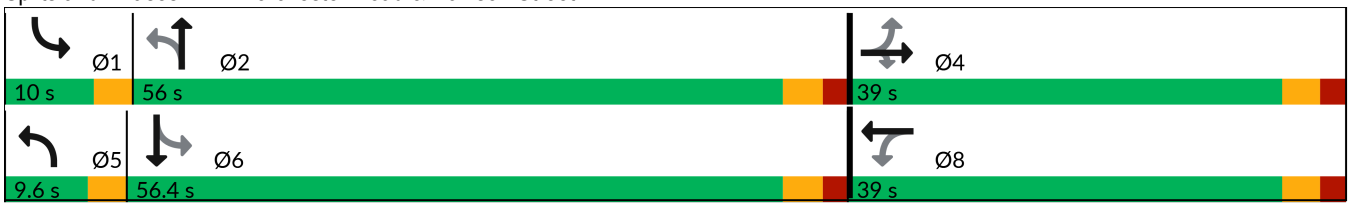


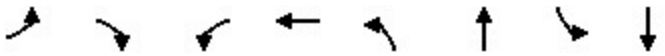
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	102	0	221	68	0	26	245	941	42	20	1088	150
Future Volume (vph)	102	0	221	68	0	26	245	941	42	20	1088	150
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Storage Length (m)	30.0		35.0	20.0		0.0	180.0		0.0	30.0		0.0
Storage Lanes	1		1	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.91	0.91
Ped Bike Factor			0.99	1.00			1.00	1.00		1.00	1.00	
Frt			0.850		0.850			0.994			0.982	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1381	1579	1106	1381	1137	0	1381	2525	0	1381	3577	0
Flt Permitted	0.740			0.757			0.173			0.271		
Satd. Flow (perm)	1076	1579	1091	1099	1137	0	251	2525	0	394	3577	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			170		194			6			33	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		106.7			108.0			280.1			454.1	
Travel Time (s)		7.7			7.8			20.2			32.7	
Confl. Peds. (#/hr)			2	2			3		1	1		3
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	104	0	226	69	0	27	250	960	43	20	1110	153
Shared Lane Traffic (%)												
Lane Group Flow (vph)	104	0	226	69	27	0	250	1003	0	20	1263	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2	1	1	2		1	2		1	2	
Detector Template	Left	Thru	Right	Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0	2.0	2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6	2.0	2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Detector Phase	4	4	4	8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0		5.0	1.0		5.0	5.0	
Minimum Split (s)	39.0	39.0	39.0	39.0	39.0		9.5	52.0		9.5	52.0	
Total Split (s)	39.0	39.0	39.0	39.0	39.0		9.6	56.0		10.0	56.4	
Total Split (%)	37.1%	37.1%	37.1%	37.1%	37.1%		9.1%	53.3%		9.5%	53.7%	
Maximum Green (s)	34.0	34.0	34.0	34.0	34.0		6.6	51.0		7.0	51.4	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0		0.0	2.0		0.0	2.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None	None	None	None		None	Max		None	Max	
Walk Time (s)	11.0	11.0	11.0	11.0	11.0			16.0			16.0	
Flash Don't Walk (s)	23.0	23.0	23.0	23.0	23.0			31.0			31.0	
Pedestrian Calls (#/hr)	0	0	0	0	0			0			0	
Act Effct Green (s)	13.6		13.6	13.6	13.6		62.2	57.7		59.5	51.6	
Actuated g/C Ratio	0.16		0.16	0.16	0.16		0.73	0.68		0.70	0.61	
v/c Ratio	0.60		0.71	0.39	0.08		0.92	0.58		0.06	0.58	
Control Delay (s/veh)	47.6		22.9	37.9	0.5		50.4	11.1		4.4	11.8	
Queue Delay	0.0		0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay (s/veh)	47.6		22.9	37.9	0.5		50.4	11.1		4.4	11.8	
LOS	D		C	D	A		D	B		A	B	
Approach Delay (s/veh)		30.7			27.4			18.9			11.7	
Approach LOS		C			C			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 105			
Actuated Cycle Length: 84.9			
Natural Cycle: 105			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay (s/veh): 17.4		Intersection LOS: B	
Intersection Capacity Utilization 83.5%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 2: Dorchester Road & Dawson Street

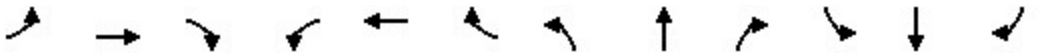




Lane Group	EBL	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	104	226	69	27	250	1003	20	1263
v/c Ratio	0.60	0.71	0.39	0.08	0.92	0.58	0.06	0.58
Control Delay (s/veh)	47.6	22.9	37.9	0.5	50.4	11.1	4.4	11.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	47.6	22.9	37.9	0.5	50.4	11.1	4.4	11.8
Queue Length 50th (m)	16.6	8.5	10.7	0.0	10.4	33.4	0.7	41.4
Queue Length 95th (m)	32.7	33.0	23.0	0.0	#56.4	94.1	3.3	69.9
Internal Link Dist (m)				84.0		256.1		430.1
Turn Bay Length (m)	30.0	35.0	20.0		180.0		30.0	
Base Capacity (vph)	432	539	441	572	272	1717	363	2186
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	0.24	0.42	0.16	0.05	0.92	0.58	0.06	0.58

Intersection Summary

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



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	102	0	221	68	0	26	245	941	42	20	1088	150
Future Volume (vph)	102	0	221	68	0	26	245	941	42	20	1088	150
Ideal Flow (vphpl)	1454	1579	1301	1454	1338	1338	1454	1338	1338	1454	1338	1338
Total Lost time (s)	5.0		5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Lane Util. Factor	1.00		1.00	1.00	1.00		1.00	0.95		1.00	0.91	
Frpb, ped/bikes	1.00		0.99	1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00		0.85	1.00	0.85		1.00	0.99		1.00	0.98	
Flt Protected	0.95		1.00	0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1381		1091	1379	1137		1381	2524		1381	3576	
Flt Permitted	0.74		1.00	0.76	1.00		0.17	1.00		0.27	1.00	
Satd. Flow (perm)	1075		1091	1099	1137		252	2524		393	3576	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	104	0	226	69	0	27	250	960	43	20	1110	153
RTOR Reduction (vph)	0	0	143	0	23	0	0	2	0	0	13	0
Lane Group Flow (vph)	104	0	83	69	4	0	250	1001	0	20	1250	0
Confl. Peds. (#/hr)			2	2			3		1	1		3
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Turn Type	Perm		Perm	Perm	NA		pm+pt	NA		pm+pt	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		4	8			2			6		
Actuated Green, G (s)	13.6		13.6	13.6	13.6		63.1	57.7		55.9	53.5	
Effective Green, g (s)	13.6		13.6	13.6	13.6		63.1	57.7		55.9	53.5	
Actuated g/C Ratio	0.16		0.16	0.16	0.16		0.73	0.67		0.64	0.62	
Clearance Time (s)	5.0		5.0	5.0	5.0		3.0	5.0		3.0	5.0	
Vehicle Extension (s)	3.0		3.0	3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	168		171	172	178		269	1679		280	2206	
v/s Ratio Prot					0.00		c0.07	0.40		0.00	0.35	
v/s Ratio Perm	c0.10		0.08	0.06			c0.60			0.04		
v/c Ratio	0.62		0.48	0.40	0.02		0.93	0.60		0.07	0.57	
Uniform Delay, d1	34.1		33.3	32.9	30.9		6.9	8.0		5.6	9.8	
Progression Factor	1.00		1.00	1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	6.6		2.1	1.5	0.1		36.0	1.6		0.1	1.1	
Delay (s)	40.8		35.5	34.4	31.0		42.9	9.6		5.7	10.8	
Level of Service	D		D	C	C		D	A		A	B	
Approach Delay (s/veh)		37.2			33.5			16.3			10.8	
Approach LOS		D			C			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	16.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	86.7	Sum of lost time (s)	13.0
Intersection Capacity Utilization	83.5%	ICU Level of Service	E
Analysis Period (min)	15		

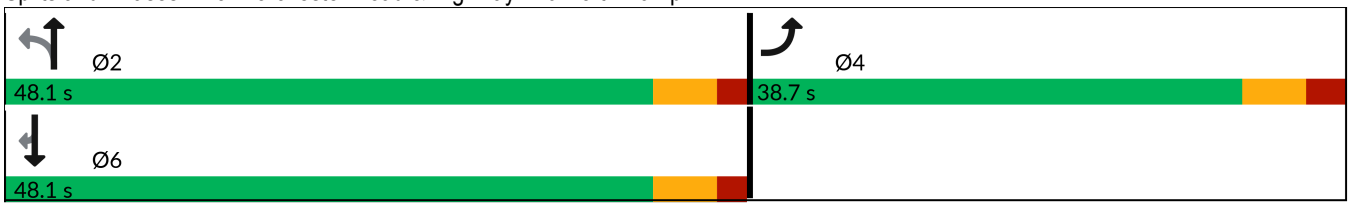
c Critical Lane Group

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	46	0	239	1197	703	686
Future Volume (vph)	46	0	239	1197	703	686
Ideal Flow (vphpl)	1454	1301	1454	1579	1579	1301
Storage Length (m)	0.0	0.0	160.0			0.0
Storage Lanes	2	0	1			1
Taper Length (m)	7.5		7.5			
Lane Util. Factor	0.97	1.00	1.00	0.95	0.95	1.00
Ped Bike Factor	1.00					
Frt						0.850
Flt Protected	0.950		0.950			
Satd. Flow (prot)	2680	0	1368	3000	2970	1106
Flt Permitted	0.950		0.379			
Satd. Flow (perm)	2676	0	546	3000	2970	1106
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)						700
Link Speed (k/h)	50			50	50	
Link Distance (m)	166.4			377.5	280.1	
Travel Time (s)	12.0			27.2	20.2	
Confl. Peds. (#/hr)	1					
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Heavy Vehicles (%)	0%	0%	1%	0%	1%	0%
Adj. Flow (vph)	47	0	244	1221	717	700
Shared Lane Traffic (%)						
Lane Group Flow (vph)	47	0	244	1221	717	700
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	Left	Right
Median Width(m)	7.2			3.6	3.6	
Link Offset(m)	0.0			0.0	0.0	
Crosswalk Width(m)	4.8			4.8	4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.60	1.40	1.26	1.26	1.60
Turning Speed (k/h)	25	15	25			15
Number of Detectors	1		1	2	2	1
Detector Template	Left		Left	Thru	Thru	Right
Leading Detector (m)	2.0		2.0	10.0	10.0	2.0
Trailing Detector (m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0		0.0	0.0	0.0	0.0
Detector 1 Size(m)	2.0		2.0	0.6	0.6	2.0
Detector 1 Type	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0		0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0		0.0	0.0	0.0	0.0
Detector 2 Position(m)				9.4	9.4	
Detector 2 Size(m)				0.6	0.6	
Detector 2 Type				Cl+Ex	Cl+Ex	
Detector 2 Channel						
Detector 2 Extend (s)				0.0	0.0	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Detector Phase	4		2	2	6	6
Switch Phase						
Minimum Initial (s)	8.0		10.0	10.0	10.0	10.0
Minimum Split (s)	38.7		24.1	24.1	24.1	24.1
Total Split (s)	38.7		48.1	48.1	48.1	48.1
Total Split (%)	44.6%		55.4%	55.4%	55.4%	55.4%
Maximum Green (s)	32.0		42.0	42.0	42.0	42.0
Yellow Time (s)	4.1		4.1	4.1	4.1	4.1
All-Red Time (s)	2.6		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	6.7		6.1	6.1	6.1	6.1
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Recall Mode	None		Max	Max	Max	Max
Walk Time (s)	12.0					
Flash Don't Walk (s)	20.0					
Pedestrian Calls (#/hr)	0					
Act Effct Green (s)	8.0		51.3	51.3	51.3	51.3
Actuated g/C Ratio	0.13		0.81	0.81	0.81	0.81
v/c Ratio	0.14		0.56	0.51	0.30	0.68
Control Delay (s/veh)	25.9		12.7	5.1	3.7	4.5
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay (s/veh)	25.9		12.7	5.1	3.7	4.5
LOS	C		B	A	A	A
Approach Delay (s/veh)	25.9			6.4	4.1	
Approach LOS	C			A	A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 86.8			
Actuated Cycle Length: 63.7			
Natural Cycle: 90			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay (s/veh): 5.6		Intersection LOS: A	
Intersection Capacity Utilization 89.5%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 3: Dorchester Road & Highway 420 North Ramp



Lane Group	EBL	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	47	244	1221	717	700
v/c Ratio	0.14	0.56	0.51	0.30	0.68
Control Delay (s/veh)	25.9	12.7	5.1	3.7	4.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	25.9	12.7	5.1	3.7	4.5
Queue Length 50th (m)	2.8	14.6	35.6	16.4	0.0
Queue Length 95th (m)	6.9	#55.6	51.3	24.0	9.4
Internal Link Dist (m)	142.4		353.5	256.1	
Turn Bay Length (m)		160.0			
Base Capacity (vph)	1346	439	2415	2391	1027
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.56	0.51	0.30	0.68

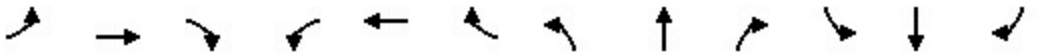
Intersection Summary

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

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	46	0	239	1197	703	686
Future Volume (vph)	46	0	239	1197	703	686
Ideal Flow (vphpl)	1454	1301	1454	1579	1579	1301
Total Lost time (s)	6.7		6.1	6.1	6.1	6.1
Lane Util. Factor	0.97		1.00	0.95	0.95	1.00
Frpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00		1.00	1.00	1.00	1.00
Frt	1.00		1.00	1.00	1.00	0.85
Flt Protected	0.95		0.95	1.00	1.00	1.00
Satd. Flow (prot)	2680		1368	3000	2970	1106
Flt Permitted	0.95		0.38	1.00	1.00	1.00
Satd. Flow (perm)	2680		546	3000	2970	1106
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	47	0	244	1221	717	700
RTOR Reduction (vph)	0	0	0	0	0	186
Lane Group Flow (vph)	47	0	244	1221	717	514
Confl. Peds. (#/hr)	1					
Heavy Vehicles (%)	0%	0%	1%	0%	1%	0%
Turn Type	Prot		Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases			2			6
Actuated Green, G (s)	4.8		48.8	48.8	48.8	48.8
Effective Green, g (s)	4.8		48.8	48.8	48.8	48.8
Actuated g/C Ratio	0.07		0.73	0.73	0.73	0.73
Clearance Time (s)	6.7		6.1	6.1	6.1	6.1
Vehicle Extension (s)	3.0		3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	193		401	2204	2182	812
v/s Ratio Prot	c0.02			0.41	0.24	
v/s Ratio Perm			0.45			c0.47
v/c Ratio	0.24		0.61	0.55	0.33	0.63
Uniform Delay, d1	29.1		4.2	3.9	3.1	4.4
Progression Factor	1.00		1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7		6.7	1.0	0.4	3.7
Delay (s)	29.7		10.9	4.9	3.5	8.1
Level of Service	C		B	A	A	A
Approach Delay (s/veh)	29.7			5.9	5.8	
Approach LOS	C			A	A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	6.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.60		
Actuated Cycle Length (s)	66.4	Sum of lost time (s)	12.8
Intersection Capacity Utilization	89.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

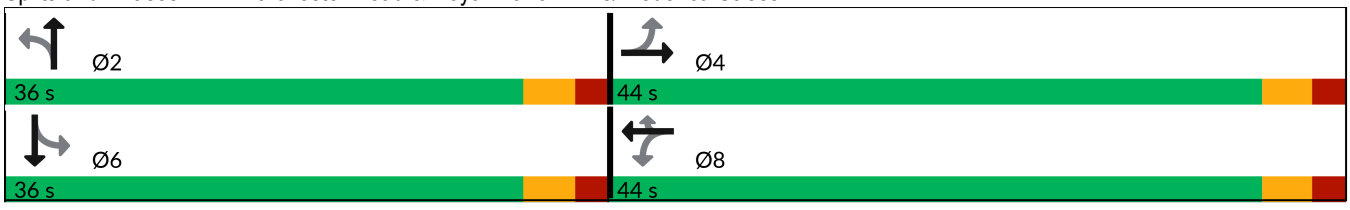


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	8	7	87	27	587	3	830	61	120	571	24
Future Volume (vph)	29	8	7	87	27	587	3	830	61	120	571	24
Ideal Flow (vphpl)	1433	1433	1433	1454	1579	1301	1454	1338	1338	1454	1338	1338
Storage Length (m)	0.0		0.0	45.0		0.0	95.0		0.0	165.0		0.0
Storage Lanes	0		0	1		1	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor		1.00		1.00				1.00		1.00		
Frt		0.979				0.850		0.990			0.994	
Flt Protected		0.968		0.950			0.950			0.950		
Satd. Flow (prot)	0	1355	0	1368	1579	1095	1381	2510	0	1381	2503	0
Flt Permitted		0.863		0.728			0.353			0.198		
Satd. Flow (perm)	0	1208	0	1046	1579	1095	513	2510	0	288	2503	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7				53		11			6	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		47.8			201.0			125.1			377.5	
Travel Time (s)		3.4			14.5			9.0			27.2	
Confl. Peds. (#/hr)			2	2					8	8		
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Heavy Vehicles (%)	0%	0%	0%	1%	0%	1%	0%	0%	2%	0%	1%	0%
Adj. Flow (vph)	30	8	7	90	28	605	3	856	63	124	589	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	45	0	90	28	605	3	919	0	124	614	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.6			3.6			3.6			3.6	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.42	1.42	1.42	1.40	1.26	1.60	1.40	1.55	1.55	1.40	1.55	1.55
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	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	5.0	
Minimum Split (s)	32.0	32.0		32.0	32.0	32.0	41.0	41.0		41.0	41.0	
Total Split (s)	44.0	44.0		44.0	44.0	44.0	36.0	36.0		36.0	36.0	
Total Split (%)	55.0%	55.0%		55.0%	55.0%	55.0%	45.0%	45.0%		45.0%	45.0%	
Maximum Green (s)	39.0	39.0		39.0	39.0	39.0	31.0	31.0		31.0	31.0	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	Max	Max		Max	Max	
Walk Time (s)	9.0	9.0		9.0	9.0	9.0	12.0	12.0		12.0	12.0	
Flash Don't Walk (s)	18.0	18.0		18.0	18.0	18.0	24.0	24.0		24.0	24.0	
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	
Act Effct Green (s)		39.0		39.0	39.0	39.0	36.0	36.0		36.0	36.0	
Actuated g/C Ratio		0.46		0.46	0.46	0.46	0.42	0.42		0.42	0.42	
v/c Ratio		0.08		0.19	0.04	1.14	0.01	0.86		1.02	0.58	
Control Delay (s/veh)		11.9		15.0	13.0	106.9	14.7	32.0		119.2	21.2	
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay (s/veh)		11.9		15.0	13.0	106.9	14.7	32.0		119.2	21.2	
LOS		B		B	B	F	B	C		F	C	
Approach Delay (s/veh)		11.9			91.8			31.9			37.7	
Approach LOS		B			F			C			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 85			
Natural Cycle: 100			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.14			
Intersection Signal Delay (s/veh): 51.1		Intersection LOS: D	
Intersection Capacity Utilization 106.3%		ICU Level of Service G	
Analysis Period (min) 15			

Splits and Phases: 4: Dorchester Road & Royal Manor Drive/Frederica Street

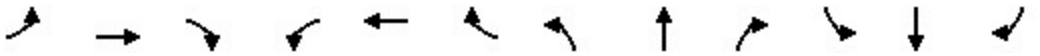


Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	45	90	28	605	3	919	124	614
v/c Ratio	0.08	0.19	0.04	1.14	0.01	0.86	1.02	0.58
Control Delay (s/veh)	11.9	15.0	13.0	106.9	14.7	32.0	119.2	21.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	11.9	15.0	13.0	106.9	14.7	32.0	119.2	21.2
Queue Length 50th (m)	3.5	8.8	2.6	~117.5	0.3	72.0	~21.4	40.4
Queue Length 95th (m)	9.5	18.4	7.2	#182.5	2.0	#110.5	#56.9	57.7
Internal Link Dist (m)	23.8		177.0			101.1		353.5
Turn Bay Length (m)		45.0			95.0		165.0	
Base Capacity (vph)	558	479	724	531	217	1069	121	1063
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	0.19	0.04	1.14	0.01	0.86	1.02	0.58

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

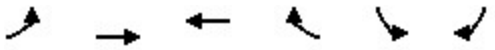
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	8	7	87	27	587	3	830	61	120	571	24
Future Volume (vph)	29	8	7	87	27	587	3	830	61	120	571	24
Ideal Flow (vphpl)	1433	1433	1433	1454	1579	1301	1454	1338	1338	1454	1338	1338
Total Lost time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00		1.00	1.00	1.00	1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Frt		0.98		1.00	1.00	0.85	1.00	0.99		1.00	0.99	
Flt Protected		0.97		0.95	1.00	1.00	0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1355		1365	1579	1095	1381	2510		1380	2503	
Flt Permitted		0.86		0.73	1.00	1.00	0.35	1.00		0.20	1.00	
Satd. Flow (perm)		1209		1046	1579	1095	513	2510		288	2503	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	30	8	7	90	28	605	3	856	63	124	589	25
RTOR Reduction (vph)	0	4	0	0	0	29	0	6	0	0	3	0
Lane Group Flow (vph)	0	41	0	90	28	576	3	913	0	124	611	0
Confl. Peds. (#/hr)			2	2					8	8		
Heavy Vehicles (%)	0%	0%	0%	1%	0%	1%	0%	0%	2%	0%	1%	0%
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		
Actuated Green, G (s)		39.0		39.0	39.0	39.0	36.0	36.0		36.0	36.0	
Effective Green, g (s)		39.0		39.0	39.0	39.0	36.0	36.0		36.0	36.0	
Actuated g/C Ratio		0.46		0.46	0.46	0.46	0.42	0.42		0.42	0.42	
Clearance Time (s)		5.0		5.0	5.0	5.0	5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		554		479	724	502	217	1063		121	1060	
v/s Ratio Prot					0.02			0.36			0.24	
v/s Ratio Perm		0.03		0.09		c0.53	0.01			c0.43		
v/c Ratio		0.07		0.19	0.04	1.15	0.01	0.86		1.02	0.58	
Uniform Delay, d1		12.9		13.6	12.7	23.0	14.2	22.2		24.5	18.7	
Progression Factor		1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1		0.2	0.0	87.7	0.1	9.0		88.6	2.3	
Delay (s)		12.9		13.8	12.7	110.7	14.3	31.2		113.1	21.0	
Level of Service		B		B	B	F	B	C		F	C	
Approach Delay (s/veh)		12.9			94.9			31.1			36.4	
Approach LOS		B			F			C			D	

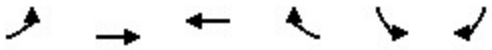
Intersection Summary			
HCM 2000 Control Delay (s/veh)	51.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.08		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	106.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	69	118	216	3	103	481
Future Volume (vph)	69	118	216	3	103	481
Ideal Flow (vphpl)	1454	1579	1338	1338	1454	1301
Storage Length (m)	85.0			0.0	0.0	40.0
Storage Lanes	1			0	1	1
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Frt			0.998			0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1354	3000	2512	0	1381	1106
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1354	3000	2512	0	1381	1106
Link Speed (k/h)		50	50		50	
Link Distance (m)		201.0	149.3		70.1	
Travel Time (s)		14.5	10.7		5.0	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	1%	0%	0%	0%
Adj. Flow (vph)	75	128	235	3	112	523
Shared Lane Traffic (%)						
Lane Group Flow (vph)	75	128	238	0	112	523
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		3.6	3.6		3.6	
Link Offset(m)		0.0	0.0		0.0	
Crosswalk Width(m)		4.8	4.8		4.8	
Two way Left Turn Lane						
Headway Factor	1.40	1.26	1.55	1.55	1.40	1.60
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 58.8%		ICU Level of Service B	
Analysis Period (min) 15			



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	69	118	216	3	103	481
Future Volume (Veh/h)	69	118	216	3	103	481
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	75	128	235	3	112	523
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						5
Median type		None	None			
Median storage veh)						
Upstream signal (m)		201				
pX, platoon unblocked						
vC, conflicting volume	238				451	119
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	238				451	119
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	94				78	43
cM capacity (veh/h)	1326				512	917

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	75	64	64	157	81	635
Volume Left	75	0	0	0	0	112
Volume Right	0	0	0	0	3	523
cSH	1326	1700	1700	1700	1700	1113
Volume to Capacity	0.06	0.04	0.04	0.09	0.05	0.57
Queue Length 95th (m)	1.4	0.0	0.0	0.0	0.0	30.0
Control Delay (s/veh)	7.9	0.0	0.0	0.0	0.0	14.0
Lane LOS	A					B
Approach Delay (s/veh)	2.9			0.0		14.0
Approach LOS						B

Intersection Summary			
Average Delay	8.8		
Intersection Capacity Utilization	58.8%	ICU Level of Service	B
Analysis Period (min)	15		

Appendix F

Parking Proxy Data

16 Concord Place, Town of Grimsby

Aqua Zul - Parking Survey

Surveyor - Scott Catton

Friday, 03 June 2022

Area #	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00
At Grade #1-2	16	14	16	15	15	18	24	20
At Grade #3	1	4	4	5	5	4	4	4
At Grade #4-5	16	12	12	13	9	12	12	12
At Grade #7	23	20	26	27	26	31	31	31
At Grade #8-9	27	36	34	37	38	41	37	37
U/G	123	147	158	170	185	198	211	216
Illegal	0	0	0	0	3	0	0	0
Aqua Blu (off site)	14	14	18	19	20	21	23	23

Aqua Zul	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00
Visitor	59	62	62	65	65	71	**73**	69
Occupant	147	171	188	202	216	233	246	**251**
Sum	**206**	**233**	**250**	**267**	**281**	**304**	**319**	**320**
Overall Ratio	0.60	0.68	0.73	0.78	0.82	0.89	0.93	**0.94**
Visitor Ratio	0.17	0.18	0.18	0.19	0.19	**0.21**	**0.21**	0.20
Occupant Ratio	0.43	0.50	0.55	0.59	0.63	0.68	0.72	**0.73**

Notes

*Areas 1 & 2 merged for counting purposes. All visitor parking
*Area 3 is not signed visitor parking = assume occupant
*Areas 4 & 5 merged for counting purposes. All visitor parking
*Area 6 does not exist
*Area 7 is not signed visitor parking = assume occupant
*Areas 8 & 9 merged for counting purposes. All visitor parking

Observations

*On-demand transit service in use. Noticed 3 times
*pick-up/drop-off activity high around 18:00 (uber eats)
*some spaces in u/g have a car + motorcycle. Counted as 2
*Aqua Blu (off site) parking used by persons going to Aqua Zul, pick-up/drop-off, and Aqua Blu.
*one at grade space in #8 used by boat
*one at grade space in #8 used by large commercial truck
*sky jack on edge of site not counted
*Resident commented on occupants using at grade parking
*3 illegal parked trucks in fire route at front of site. Appear to be work trucks
*DeSantis truck parked in U/G

16 Concord Place, Town of Grimsby

Aqua Zul - Parking Survey

Surveyor - Scott Catton

Saturday, 04 June 2022

Area #	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00
At Grade #1-2	17	15	16	16	17	17	20	20
At Grade #3	6	5	5	6	6	5	5	5
At Grade #4-5	12	13	13	13	10	12	13	13
At Grade #7	29	25	28	31	25	25	27	29
At Grade #8-9	40	37	39	45	39	37	42	40
U/G	142	142	147	156	163	179	191	197
Illegal	0	0	0	0	0	0	0	0
Aqua Blu (off site)	18	24	21	21	26	26	27	27

Aqua Zul	18:00	19:00	20:00	21:00	22:00	23:00	00:00	01:00
Visitor	69	65	68	74	66	66	**75**	73
Occupant	177	172	180	193	194	209	223	**231**
Sum	246	237	248	267	260	275	298	**304**
Overall Ratio	0.72	0.69	0.73	0.78	0.76	0.80	0.87	**0.89**
Visitor Ratio	0.20	0.19	0.20	0.22	0.19	0.19	**0.22**	0.21
Occupant Ratio	0.52	0.50	0.53	0.56	0.57	0.61	0.65	**0.68**

Notes

Areas 1 & 2 merged for counting purposes. All visitor parking
Area 3 is not signed visitor parking = assume occupant
Areas 4 & 5 merged for counting purposes. All visitor parking
Area 6 does not exist
Area 7 is not signed visitor parking = assume occupant
Areas 8 & 9 merged for counting purposes. All visitor parking

Observations

*some spaces in u/g have a car + motorcycle. Counted as 2
*Aqua Blu (off site) parking used by persons going to Aqua Zul, pick-up/drop-off, and Aqua Blu.
*one at grade space in #8 used by boat
*one at grade space in #8 used by large commercial truck
*sky jack on edge of site not counted
*DeSantis truck parked in U/G

Parking Study

Location:	15 Towering Heights Blvd. St. Catharines	Date:	February 28th - March 1st
Observer:	CK	Time:	22:00 - 01:00
Weather:	Clear		

Vehicles Parked at Start	Inside:	49	Visitor:	6
	Outside:	57	TOTAL:	112

Time	Vehicles at End of Period
22:00 - 22:15	112
22:16 - 22:30	113
22:31 - 22:45	113
22:46 - 23:00	112
23:01 - 23:15	113
23:16 - 23:30	114
23:31 - 23:45	114
23:46 - 00:00	114
00:01 - 00:15	114
00:16 - 00:30	114
00:31 - 00:45	115
00:46 - 01:00	116
MAXIMUM VEHICLES:	116

Parking Study

Location:	15 Towering Heights Blvd. St. Catharines	Date:	March 2nd - 3rd, 2019
Observer:	CK	Time:	22:00 - 01:00
Weather:	Clear		

Vehicles Parked at Start	Inside:	45	Visitor:	8
	Outside:	56	TOTAL:	109

Time	Vehicles at End of Period
22:00 - 22:15	109
22:16 - 22:30	109
22:31 - 22:45	110
22:46 - 23:00	110
23:01 - 23:15	111
23:16 - 23:30	112
23:31 - 23:45	111
23:46 - 00:00	113
00:01 - 00:15	114
00:16 - 00:30	116
00:31 - 00:45	117
00:46 - 01:00	118
MAXIMUM VEHICLES:	118

Multifamily Housing - 2+ BR (Mid-Rise) - Not Close to Rail Transit
(221)

Peak Period Parking Demand vs: **Dwelling Units**
On a: **Weekday (Monday - Friday)**
Setting/Location: **General Urban/Suburban**
Number of Studies: 44
Avg. Num. of Dwelling Units: 231

Peak Period Parking Demand per Dwelling Unit

Average Rate	Range of Rates	33rd / 85th Percentile	95% Confidence Interval	Standard Deviation (Coeff. of Variation)
1.23	0.39 - 1.75	0.98 / 1.45	1.15 - 1.31	0.27 (22%)

Data Plot and Equation