APPENDIX A

TRANSPORTATION ASSESSMENT (PARADIGM TRANSPORTATION SOLUTIONS LTD.)

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Reconstruction of Regional Road 20 Between Highland Avenue and Montrose Road Environmental Assessment City of Niagara Falls

Paradigm Transportation Solutions Limited

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Project Summary

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Executive Summary

Content

Regional Road 20 (Lundy's Lane) is a major east/west roadway extending from Regional Road 82 (Allanport Road)/Highway 58 in the City of Thorold to Main Street in Niagara Falls. Regional Road 20 provides direct access to the tourist area of Niagara Falls and crosses two significant barriers: the QEW; and the Sir Adam Back Power Canal (SABPC).

As part of a Long-Term Transportation Needs Assessment along Regional Road 20 between Highland Avenue and Montrose Road, this supporting Transportation Assessment examines the existing traffic conditions and deficiencies and determines the transportation demand and the network improvements required for one future horizon for AM and PM peak periods.

Conclusions

Given current and future transportation needs, this study evaluated the potential for improvement and upgrades to the existing intersections within the proposed study area.

Overall Collisions

- From 2016 to 2019 and 2022, there were 393 reported collisions. Only one resulted in a fatality (0.2%), 15.3% caused non-fatal injuries, and 84.5% resulted in no reported injuries. Rear-end collisions were the most common (44%), followed by sideswipe (17%) and turning movement (16%). Property damage accounted for 85%. Environmental conditions were not a contributing factor.
- The comparison of expected and actual collisions within the study area has suggested a number of issues that should be considered and addressed in the Class EA process. Specifically:
  - Collision severity (fatal and injury) in the study area is elevated at two signalized intersections (Regional Road 20 at Dorchester Road and Regional Road 20 at Montrose Road) compared to general Collison predictions for Niagara Regional roads.

Vulnerable Road Users - Collisions

- 15.6% of all collisions have resulted in some form of injury, with the majority being minor injuries (15.3%). However, when this is broken down by mode of travel, pedestrian and cyclist collisions represent 0% of all serious/fatal collisions and 28.4% of minor injury collisions.
- Approximately 77.8% of pedestrian and 76.9% of cyclist collisions result in some form of injury, versus only 11.6% of motor vehicle collisions.
- Pedestrian and cyclist collisions only represent 5.6% of total collisions within the study area.
- Two mid-block collisions involved pedestrians along Regional Road 20 between Carlton Avenue and Prince Edward Avenue/Corwin Avenue. The number of collisions does not reflect a high number (i.e. 2 collisions over 5 years), and the severity was noted to reflect non-fatal injuries. This midblock segment's spacing between controlled crossings is 175-300 metres.
- As pedestrians should be encouraged to cross at controlled crosswalks in most situations, this section of Regional Road 20 could provide added benefits for pedestrians by providing a pedestrian signal or crossover.
- There were 7 collisions reported that involved a pedestrian at intersections, and 4 of these instances resulted from drivers completing their turn improperly. The remaining 3 collisions identified the drivers of the vehicles were driving properly, while one instance identified a pedestrian was crossing improperly.
- Based on the collision data supplied, no trends indicate that these collisions have occurred due to poor roadway geometrics or visibility issues, given that the collisions reflect less than one collision per year at an intersection involving a pedestrian.
- Thirteen collisions involved cyclists (approximately 3% of the total collisions), and the severity was noted to be reflective of non-fatal injuries.
- The distribution of collisions involving cyclists is slightly elevated than the number of collisions that involved cyclists overall in Niagara Region in 2019 (1.1%)
- The cause or causes of collisions involving cyclists are difficult to pinpoint. Eighty-five percent of the collisions occurred during clear weather conditions and on dry roads, indicating that road surface conditions were not a causative factor. Rear-end and



sideswipe collisions accounted for approximately 30% of all collisions involving cyclists.

- It is noted that 9 out of the 13 collisions that involved cyclists (69%) did occur during the approximate peak hours of the roadways.
- Collisions are also more prevalent with cyclists during the PM peak travel period, which may indicate that traffic operations are degraded, impacting safety performance.
- Problem intersections are noted at Regional Road 20 and Belmont Avenue as multiple collisions involved cyclists, representing approximately 15% of all collisions reported at this intersection, as well as Regional Road 20 and Montrose Road, which accounted for 30% of all collisions involving cyclists within the study area.
- The midblock segment along Regional Road 20 between Corwin Avenue and Highland Avenue is also noted as an area of concern, given this small section of roadway accounted solely for midblock collisions that involved cyclists, representing about 23% of all collisions that involved cyclists within the study area.
- Cyclists wishing to travel east-west along Regional Road 20 are faced with shared arrangements with high volumes of vehicle traffic or are required to divert to lower-order nearby roadways such as Barker Street to limit exposure to vehicle conflicts.
- The Ontario Traffic Manual Book 18: Cycling Facilities (OTM Book 18) indicated that a desirable type of bicycle facility would be a separated bicycle lane, cycle track or multi-use path.

Midblock Sections - Collisions

- Mid-block locations have an average of 1.94 collisions rate. The abnormal upper collision rate is 2.80 at a 95% confidence level.
- Regional Road 20 segment between Byng Ave and Carlton/Prince Edward Ave has a statistically significant collision rate of 4.54. This section is 65 metres long, with three access points on the south side that are too close together.
- The Regional Road 20 segment between Corwin Avenue and Depew Avenue has a statistically significant collision rate of 4.10. This section is 50 metres long with two access points on the opposite sides of the road. The connections appear to have sufficient space not to create left-turn lockups between drivers along Regional Road 20. The driveway on the north side

provides access to a relatively small animal hospital, which would typically not be a high-traffic generator.

- The Regional Road 20 segment between Corwin Avenue and Prince Edward Avenue/Carlton Avenue has a statistically significant collision rate of 3.20. This section is 207 metres long with 14 access points on the opposite sides of the road that are too close together.
- The Regional Road 20 segment between Franklin Avenue and Byng Avenue has a statistically significant collision rate of 2.53. This section is 70 metres long with four access points on the opposite sides of the road that are too close together.
- The high density of driveways may contribute to higher collision rates. A median could help, but collisions are still low overall and likely do not necessitate this mitigation measure. Most properties within this short section have at least two access points to Regional Road 20. From a safety perspective, providing a single access point would be beneficial to reduce the number of accesses within this segment length or restrict turning movements (right in/out) if close to an adjacent intersection.
- Most mid-block collisions in the study area between 2016-2019 and 2022 were rear-end and sideswipe collisions. Of 106 midblock collisions in the study area, 71 (67%) are reported to be rear-end and sideswipe classifications.
- This is likely due to drivers not knowing access points and lacking auxiliary turning lanes. Lack of wayfinding signage and heavy traffic could also be contributing factors. A center two-way left-turn lane could reduce collisions and aid merging traffic. Implementing this is expected to decrease midblock collisions by 26%.

Unsignalized Intersections - Collisions

- Unsignalized intersections have an average collision rate of 1.31, with a 95% confidence level that the abnormal upper collision rate is 2.52.
- The unsignalized intersection of Regional Road 20 and Franklin Avenue is statistically significant, with a collision rate of 4.75.
  - Rear-end and sideswipe collisions at this intersection accounted for approximately 37% of the reported events, angle accounting for 26%, turning movements at 21%, and single motor vehicle at 16%.
  - Weather does not appear to contribute, as 89% occur with dry conditions. Lighting could be a factor in the collisions, as 42% occurred during the evening hours; however, the intersection does appear to have overhead lamps.
  - Franklin Avenue could be subjected to restricted sight distance caused by a sizeable inground sign in the southwest corner and parking spaces in the southeast corner. Two driveways on the north side of Regional Road 20, providing access to a fast-food restaurant and a pharmacy, could also confuse drivers in determining who has the right of way when entering Regional Road 20.
  - Daylight triangles could be implemented in the southeast and southwest corners to improve sight distance.
  - Restricting the driveways to right in/out could also reduce the number of collisions by limiting the number of decisions drivers must make and conflict points. While installing a median (to restrict driveway and side street access) could address some concerns, the number and severity of collisions do not likely warrant this action.
- The unsignalized intersection of Regional Road 20 and Byng Avenue is statistically significant with a collision rate of 1.75.
  - Turning movement collisions at this location account for approximately 43% of all collisions, followed by rear-end and sideswipe collisions, accounting for 43%. Angle motor vehicle accidents account for 14% of the total collisions.
  - Weather does not appear to contribute, as 71% of all collisions occurred during dry conditions. Lighting could be a factor in 57% of collisions during evening hours; however, the intersection appears to have overhead lamps.

- Turning movement collisions occur when two vehicles approaching from opposite directions collide due to at least one vehicle attempting to make a left or U-turn in front of the opposing vehicle. A common cause of turning-motion collisions may be obstruction of sightlines.
- Two of the three collisions occurred during the early weekday afternoon hours when volumes are likely building along the roadway before the PM peak hour. Turning movement collisions can typically occur more often when gaps between vehicles become smaller and less frequent, and delays increase due to traffic congestion that forces motorists to accept fewer gaps, creating an increased risk for a collision.
- Potential mitigation measures at this location could include the addition of a left-turn lane to provide additional space and time for a vehicle to complete a left-turn without being pressured into completing a turn to “free up” the through lane.

Signalized Intersection - Collisions

- Signalized intersections have an average collision rate of 12.25, with a 95% confidence level that the abnormal upper collision rate is 23.01 collisions per year.
- Regional Road 20 and Montrose Road intersection has a statistically significant collision rate of 23.25, half associated with rear-end collisions and almost a quarter to turning movements.
  - Weather and lighting are not contributing factors, as most collisions occur during daylight hours and in dry conditions.
  - Intersections with heavy traffic and limited storage capacity are more prone to rear-end collisions. This is often due to unexpected slowdowns and queues spilling back into the through lane.
  - The intersection has a right-turn channelization, which can increase the likelihood of collisions and is also noted as a pedestrian safety concern.
  - To mitigate collisions, an increase to the left-turn storage and removal of the channelized right-turn lane could be considered.
- The signalized intersection of Regional Road 20 and Dorchester Road is noted to have a collision rate of 20.00 per year; this intersection significantly exceeds the average collision rate.

- Rear-end and sideswipe collisions at this intersection accounted for approximately 55% of the reported events, with angle accounting for 19%, turning movements at 16% and single motor vehicles at 6%.
- Weather and lighting are not contributing factors, as most collisions occur during daylight hours and in dry conditions.
- Excessive queuing may lead to more rear-end collisions during heavy traffic.
- Approaching collisions is also a concern. The existing left-turn lanes create visibility issues, given the created offset. To mitigate this, shadow lanes within pavement markings could improve visibility for left-turn movements.

- As part of the collision review, the summary results were compared against Ontario averages (2020) to determine if there were any differing profile trends for the distribution of collisions within the Regional Road 20 corridor. The summary noted the following:
  - The one fatal collision reported within the study area was as expected with the Ontario average, while the non-fatal injury collisions were lower, and property damage was only modestly higher than the Ontario average.
  - The study area has a higher percentage of collisions at intersections than Ontario averages. Rear-end collisions are almost double the Ontario average, while single motor vehicle impacts are significantly lower.
  - Collisions occurring during rainy conditions are higher than Ontario averages, while those during daylight, dawn/dusk and dark conditions are relatively close to the Ontario averages.
  - Collisions during the spring months are higher than Ontario averages, which could be due to sudden weather changes and major storms that impact roadway conditions.
  - The percentage of fatal injury collisions within the study corridor is lower than the Niagara Falls average.

Collision Mitigation

- Based on the collision review, the following is recommended to be considered as part of the preferred design for Regional Road 20:
  - As pedestrians should be encouraged to cross at controlled crosswalks in most situations, it is recommended that a

pedestrian signal or crossover be provided along Regional Road 20 between Dorchester Road and Highland Avenue.

- Cyclists wishing to travel east-west along Regional Road 20 are faced with shared arrangements with high volumes of vehicle traffic or are required to divert to lower-order nearby roadways such as Barker Street to limit exposure to vehicle conflicts.
- While the ultimate design of Regional Road 20 will most likely include continuous facilities for pedestrians, providing separated facilitates for cyclists is likely not feasible given a protected bicycle lane, cycle track, or multi-use pathway would be required given the speed and volume along Regional Road 20.
- Signing (i.e., sharing the road) could be utilized to highlight that the corridor accommodates both modes of travel. While these measures are expected to provide a nominal improvement to cycling safety, they should only be implemented in accordance with regional policies.
- Additional wayfinding signage should be considered to guide cyclists to the existing off-street facilities and adjacent lower classification roadways in the study area, including the Millennium Recreational Trail, which runs north-south along a hydro corridor and crosses the study area between Royal Manor Drive and Brookfield Avenue.
- Regional Road 20 between Byng Avenue and Carlton Avenue/Prince Edward Avenue has three all-movement access points spaced relatively close on the south side of the road. It would be beneficial from a safety perspective to close off two driveways and restrict one connection to right in/out operation to reduce conflict points.
- Regional Road 20 between Franklin Avenue and Byng Avenue has four all-movement access points spaced relatively close on the road's north and south sides. It would be beneficial from a safety perspective to close off one driveway and restrict three other connections to right in/out operation.
- Regional Road 20 between Corwin Avenue and Prince Edward Avenue/Carlton Avenue has 14 all-movement access points spaced relatively close on the road's north and south sides. It would be beneficial from a safety perspective to close off four driveways and restrict two other connections to right in/out operation.

- A two-way centre left-turn lane can be considered as part of the overall preferred design.
- At the intersection of Regional Road 20 and Dorchester Road, the provision of shadow lanes for the eastbound approach should be considered as part of the preferred design to improve visibility for left-turn movements.
- At the Regional Road 20 and Montrose Road intersection, increased storage lengths for the eastbound and westbound left-turn movements are required. To improve the pedestrian crossing environment and reduce vehicle turning speeds, it is recommended that the channelized right turn lane be removed as part of the preferred design.

Operational Review

- Overall, the 2041 traffic conditions reveal localized congestion at study area intersections during the AM and PM peak hours. Generally, the congestion is localized to Montrose Road and the Dorchester Road intersection. In the PM peak hour, all approaches at these intersections are forecast to experience delays in the LOS E/F range.
- Four alternative cross-section configurations were analyzed based on 2041 traffic operations. The preferred alternative is Alternative 3 (five-lane cross-section) based on the traffic operations. Overall, the decrease in through capacity in Alternatives 1 and 2 increases delays in the east/west direction. The capacity is exceptionally constrained in the PM peak hour.
- Alternative 3 (five-lane) and Alternative 4 (four-lane) provide adequate LOS for most study area intersections. However, with Alternative 3 (five-lane), adding a centre TWLTL will reduce delay for through movements by removing left-turn disruptions to through traffic.
- The centre two-way left-turn lane will also benefit the corridor by providing additional left-turn lane storage at signalized intersections (i.e. storage can spillback to the TWLT and avoid blocking through lanes), reducing the risk of collisions and enabling two-stage left turns at unsignalized intersections.

Preferred Alterative

- The preferred alternative considers the Region's Operation Policy of the Transportation Master Plan. The policy states that the Region aims to maintain smooth traffic flow on its roadways. The main objective is to ensure safe access in line with the function and operation of the public road system and the access needs of adjacent land uses.
- With the increase in traffic on Regional Road, conflicts during mid-block turning movements (access to private driveways) will also increase. Implementing a two-way left turn will help resolve these conflicts and provide safe access to private driveways, aligning with the objective and intent of the Region's Policy Statement. As there are already several existing access points to Regional Road 20, these connections should be provided in a manner that ensures safety without affecting the capacity of the roadway, while also considering the needs of all road users.
- Emergency response times could also be improved as the two-way left-turn lane provides extra space for an emergency vehicle to navigate through the corridor under constrained conditions.
- Based on this, Alternative 3 (Five-Lane Cross-Section) is the preferred alternative.

Signalized Auxiliary Turn Lane Requirements

- Unless otherwise specified, a standard 63-metre taper length should be provided based on a 60 km/h design speed and 18:1 ratio for all turn lanes.
- Regional Road 20 at Montrose Road should
  - Eastbound left-turn lane 85-metre storage
  - Westbound left-turn lane 55-metre storage
  - Northbound left-turn lane 45-metre storage
  - Southbound left-turn lane 80-metre storage
  - Northbound right right-turn lane with 35-metre storage
  - Southbound right-turn lane with 145-metre storage and 49-metre taper
- Regional Road 20 at Belmont Avenue/Niagara Falls Inn
  - Eastbound left-turn lane 20-metre storage
  - Westbound left-turn lane 30-metre storage

- Northbound left-turn lane 30-metre storage

- Regional Road 20 at Royal Manor Drive
  - Eastbound left-turn lane 25-metre storage
  - Westbound left-turn lane 15-metre storage

- Regional Road 20 at Dorchester Road
  - Eastbound left-turn lane 60-metre storage
  - Westbound left-turn lane 65-metre storage
  - Northbound left-turn lane 75-metre storage
  - Southbound left-turn lane 45-metre storage
  - Northbound right-turn lane with 195-metre storage and 49-metre taper
  - Southbound right-turn lane with 30-metre storage

- Regional Road 20 at Highland Avenue/No Frills Plaza should be provided within the following turn lanes
  - Eastbound left-turn lane 55-metre storage
  - Westbound left-turn lane 35-metre storage
  - Northbound left-turn lane 45-metre storage

Active Transportation Review

- Active transportation facilities in the corridor show room for growth. Pedestrian infrastructure in the corridor is sufficient, with sidewalks on both sides of the road for most of the study corridor streets; the exceptions are Montrose Road and Brookfield Avenue, which have sidewalks on one side of the road. All signalized intersections include pedestrian pushbuttons, pedestrian signal heads, and delineated crosswalks.
- Cycling infrastructure in the corridor consists of bike lanes on Montrose Road south of Regional Road 20 and wide paved shoulders on Dorchester Road. Off-street facilities in the study area include the Millennium Recreational Trail, which runs north-south along a hydro corridor and crosses the study area between Royal Manor Drive and Brookfield Avenue.
- Active transportation usage in the corridor shows room for growth. Based on existing traffic counts, the pedestrian activity level is relatively low within the corridor, with pedestrian crossing volumes reaching between 60 to 70 pedestrians per

hour in the AM and PM periods at the busiest intersections (Regional Road 20 and Montrose Road).

- Similarly, cycling volumes along Regional Road 20 were less than 10 cyclists per hour during peak AM and PM periods, with up to 30 cyclists observed during the day. This observation was taken during October, which is not the peak tourist season; thus, it could result in an underestimation of cyclist volumes. In addition, the lack of on-street cycling facilities and the volume of vehicles along Regional Road 20 may dissuade cyclists from travelling along Regional Road 20.
- Even though cycling is not prohibited along Regional Road 20 through a shared arrangement with vehicle traffic, the All Ages and Abilities (AAA) design philosophy is to be encouraged. The goal of AAA in infrastructure planning is to encourage people of all ages and abilities to cycle more often and mitigate conflicts through facility design to the greatest extent possible.
- This philosophy implies that infrastructure should be safe and comfortable and provide equitable access to cycling facilities and essential community amenities. Applying these criteria is vital to improving and supporting community road safety goals.
- The existing cycling network, specifically along Regional Road 20, is limited. As such, cyclists wishing to travel east-west along Regional Road 20 are faced with shared arrangements with high volumes of vehicle traffic or are required to divert to lower-order roadways such as Barker Street to limit exposure to vehicle conflicts.
- Given this gap in the planned network, a continuous connection on Regional Road 20 through a physically separated facility would benefit connectivity through an east-west cycling route; however, given limited right-of-way, this is likely not feasible.
- Wayfinding signage should be considered to guide cyclists to the existing off-street facilities and lower classification roadways in the study area, including the Millennium Recreational Trail, which runs north-south along a hydro corridor and crosses the study area between Royal Manor Drive and Brookfield Avenue.

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1 Introduction

1.1 Overview

Regional Road 20 (Lundy's Lane) is a major east/west roadway extending from Regional Road 82 (Allanport Road)/Highway 58 in the City of Thorold to Main Street in Niagara Falls. Regional Road 20 provides direct access to the tourist area of Niagara Falls and crosses two significant barriers: the QEW; and the Sir Adam Back Power Canal (SABPC).

The Niagara Region Transportation Master Plan (TMP) sets out the strategic vision for transportation in the Niagara Region over the next 25 years. As Niagara Region implements its future growth plan outlined in How We GROW, the TMP ensures that Niagara Region plans and budgets for future transportation needs for an integrated network of cycling and pedestrian facilities, transit, roads, and highways. The TMP also recommends an updated and expanded set of policies to guide future transportation and land development decisions. The major components of the TMP are the Regional Road System, Transportation Demand Management, Transportation Systems Management, Public Transit Active Transportation, Complete Streets, and Goods Movement. Niagara Region is committed to implementing the overall goals of the TMP as part of its transportation capital projects.

The study's main objectives are to assess future traffic operations along the corridor, analyze alternative cross-sections, and recommend a preferred alternative configuration.

1.2 Purpose and Scope

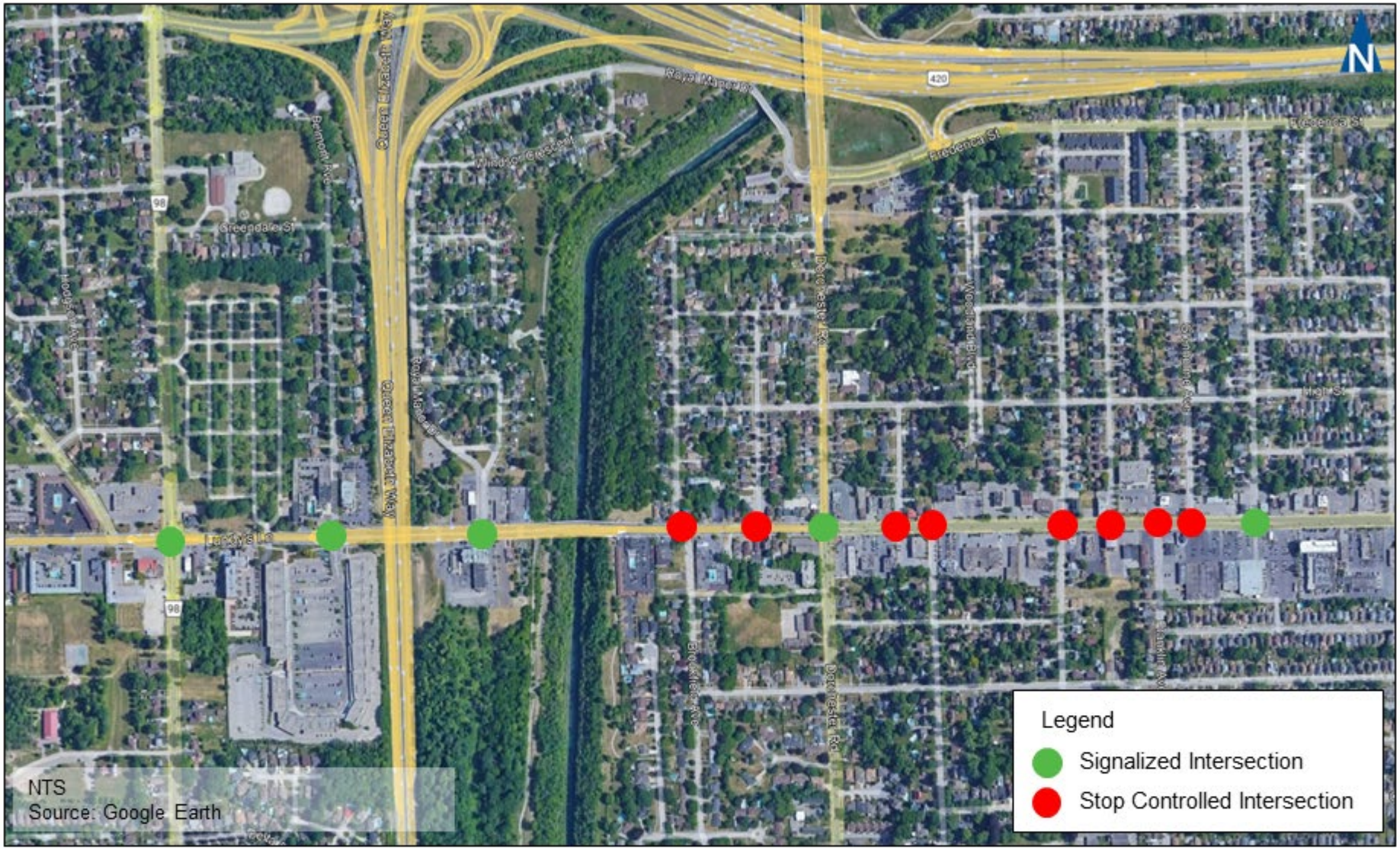
The scope of this study includes a Long-Term Transportation Needs Assessment along Regional Road 20 between Highland Avenue and Montrose Road. This consists of completing a Transportation Assessment to assess existing traffic conditions, safety improvements and deficiencies and determine the transportation demand and the network improvements required for one future horizon for AM and PM peak periods.

1.3 Study Area

The study area intersections assessed in this study include:

- Regional Road 20 at Regional Road 98 (Montrose Road) (signalized);
- Regional Road 20 at Belmont Avenue (signalized);
- Regional Road 20 at Royal Manor Drive (signalized);
- Regional Road 20 at Brookfield Avenue (unsignalized);
- Regional Road 20 at Mouland Avenue (unsignalized);
- Regional Road 20 at Dorchester Road (signalized);
- Regional Road 20 at Depew Avenue (unsignalized);
- Regional Road 20 at Corwin Avenue (unsignalized);
- Regional Road 20 at Prince Edward Avenue/Carlton Avenue (unsignalized);
- Regional Road 20 at Byng Avenue (unsignalized);
- Regional Road 20 at Franklin Avenue (unsignalized);
- Regional Road 20 at Glenholme Avenue (unsignalized); and
- Regional Road 20 at Highland Avenue (signalized).

Figure 1.1 illustrates the study area.



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TRANSPORTATION SOLUTIONS LIMITED

Location of Subject Corridor

Regional Road 20 Environmental Assessment
210300

Figure 1.1

2 Existing Inventory

2.1 Roadway Characteristics

The roadways of interest within the study area include:

- **Regional Road 20 (Regional Road 20)** is an east-west regional arterial roadway [1]. The road has a four-lane urban cross-section and a posted speed limit of 50 km/h east of Regional Road 98 (Montrose Road) and 60 km/h west of Regional Road 98. Active transportation facilities include sidewalks on both sides of the road. There are no dedicated on-street cycling facilities present in the study area.
- **Regional Road 98 (Montrose Road)** is a north-south regional arterial roadway with a four-lane cross-section. The posted speed limit is 50 km/h. Active transportation facilities include sidewalks on both sides of the road south of Regional Road 20 and the west side of the road north of Regional Road 20. Bike lanes are on both sides of the road south of Regional Road 20.
- **Belmont Avenue** is a north-south local road with a two-lane cross-section. As no posted speed limit is visible, the statutory speed limit of 50 km/h is assumed. Active transportation facilities include sidewalks on both sides of the road. There are no dedicated on-street cycling facilities present in the study area.
- **Royal Manor Drive** is a north-south local road with a two-lane cross-section. As no posted speed limit is visible, the statutory speed limit of 50 km/h is assumed. Active transportation facilities include sidewalks on both sides of the road. There are no dedicated on-street cycling facilities present in the study area.
- **Brookfield Avenue** is a north-south local road with a two-lane cross-section. As no posted speed limit is visible, the statutory speed limit of 50 km/h is assumed. Active transportation facilities include sidewalks on both sides of the road north of Regional Road 20 and the west side of the street south of Regional Road 20. There are no dedicated on-street cycling facilities present in the study area.
- **Mouland Avenue** is a north-south local road with a two-lane cross-section. As no posted speed limit is visible, the statutory speed limit of 50 km/h is assumed. Active transportation facilities include sidewalks on both sides of the road. There are

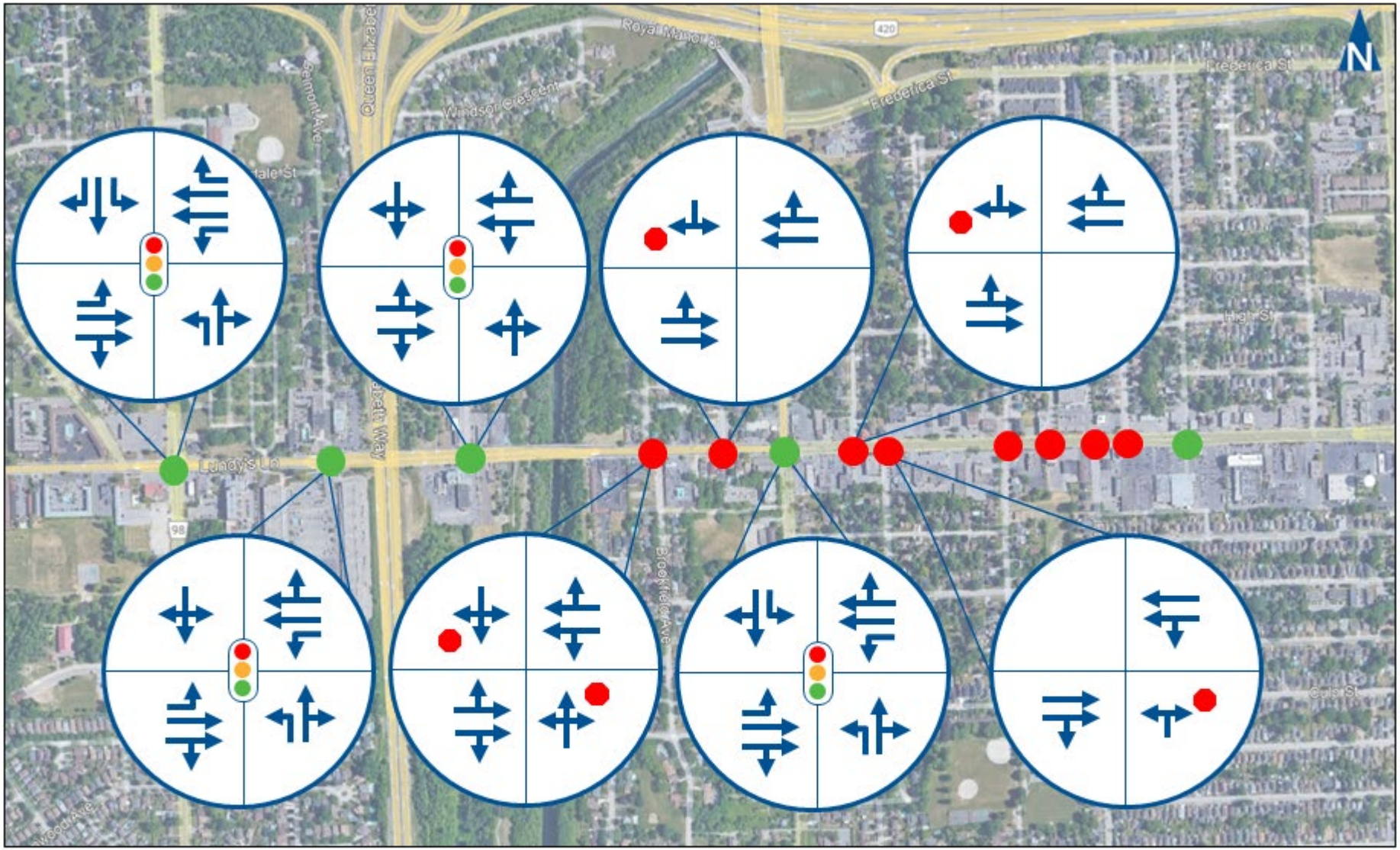
[1] Niagara Region - Regional Road Map. 2021.

no dedicated on-street cycling facilities present in the study area.

- **Dorchester Road** is a north-south arterial roadway with a two-lane cross-section in the study area. The posted speed limit is 50 km/h. Active transportation facilities include sidewalks on both sides of the road and wide paved shoulders on both sides south of Regional Road 20 for cycling.
- **Depew Avenue** is a north-south local road with a two-lane cross-section. As no posted speed limit is visible, the statutory speed limit of 50 km/h is assumed. Active transportation facilities include sidewalks on both sides of the road. There are no dedicated on-street cycling facilities present in the study area.
- **Corwin Avenue** is a north-south local road with a two-lane cross-section. As no posted speed limit is visible, the statutory speed limit of 50 km/h is assumed. Active transportation facilities include sidewalks on both sides of the road. There are no dedicated on-street cycling facilities present in the study area.
- **Prince Edward Avenue / Carlton Avenue** is a north-south local road with a two-lane cross-section. As no posted speed limit is visible, the statutory speed limit of 50 km/h is assumed. Active transportation facilities include sidewalks on both sides of the road. There are no dedicated on-street cycling facilities present in the study area.
- **Byng Avenue** is a north-south local road with a two-lane cross-section. As no posted speed limit is visible, the statutory speed limit of 50 km/h is assumed. Active transportation facilities include sidewalks on both sides of the road. There are no dedicated on-street cycling facilities present in the study area.
- **Franklin Avenue** is a north-south local road with a two-lane cross-section. As no posted speed limit is visible, the statutory speed limit of 50 km/h is assumed. Active transportation facilities include sidewalks on both sides of the road. There are no dedicated on-street cycling facilities present in the study area.
- **Glenholme Avenue** is a north-south local road with a two-lane cross-section. As no posted speed limit is visible, the statutory speed limit of 50 km/h is assumed. Active transportation facilities include sidewalks on both sides of the road. There are no dedicated on-street cycling facilities present in the study area.

- **Highland Avenue** is a north-south local road with a two-lane cross-section. The posted speed limit is 50 km/h. Active transportation facilities include sidewalks on both sides of the road. There are no dedicated on-street cycling facilities present in the study area.

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

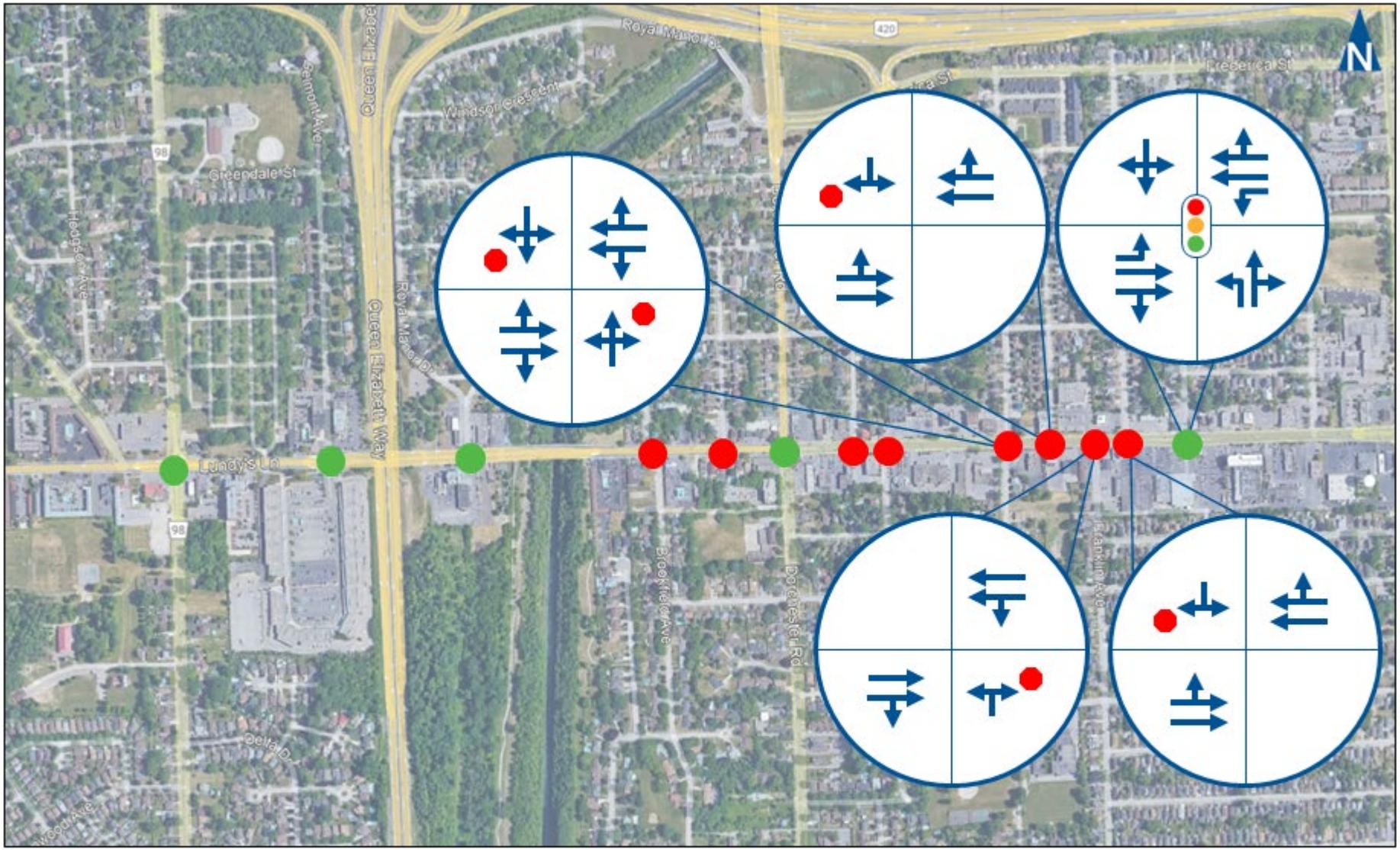


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Existing Lane Configurations & Traffic Control (1/2)

Regional Road 20 Environmental Assessment
210300

Figure 2.1A



Existing Lane Configurations & Traffic Control (2/2)

Regional Road 20 Environmental Assessment
210300

Figure 2.1B

2.2 Active Transportation

2.2.1 Pedestrians

Pedestrian infrastructure typically consists of sidewalks or multi-use paths parallel to the roadway. Most study corridor streets have sidewalks on both sides; the exceptions are Montrose Road and Brookfield Avenue, which have sidewalks on one side.

All signalized intersections include pedestrian pushbuttons, pedestrian signal heads, and delineated crosswalks.

Based on existing traffic counts, the pedestrian activity level is relatively low within the corridor, with pedestrian crossing volumes reaching between 60 to 70 pedestrians per hour in the AM and PM periods at the busiest intersection (Regional Road 20 and Montrose Road).

2.2.2 Cycling

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 in the form of multi-use or informal trails.

On-street cycling facilities in the study area consist of bike lanes on Montrose Road south of Regional Road 20 and wide paved shoulders on Dorchester Road.

Off-street facilities in the study area include the Millennium Recreational Trail, which runs north-south along a hydro corridor and crosses the study area between Royal Manor Drive and Brookfield Avenue.

Even though cycling is not prohibited along Regional Road 20 through a shared arrangement with vehicle traffic, the All Ages and Abilities (AAA) design philosophy is encouraged to be applied to the corridor. The goal of AAA in infrastructure planning is to encourage people of all ages and abilities to cycle more often and mitigate conflicts through facility design to the greatest extent possible.

This philosophy implies that infrastructure should be safe and comfortable and provide equitable access to cycling facilities and essential community amenities. Applying these criteria is vital to improving road safety and supporting community road safety goals.

The existing cycling network, specifically along Regional Road 20, is limited. As such, cyclists wishing to travel east-west along Regional

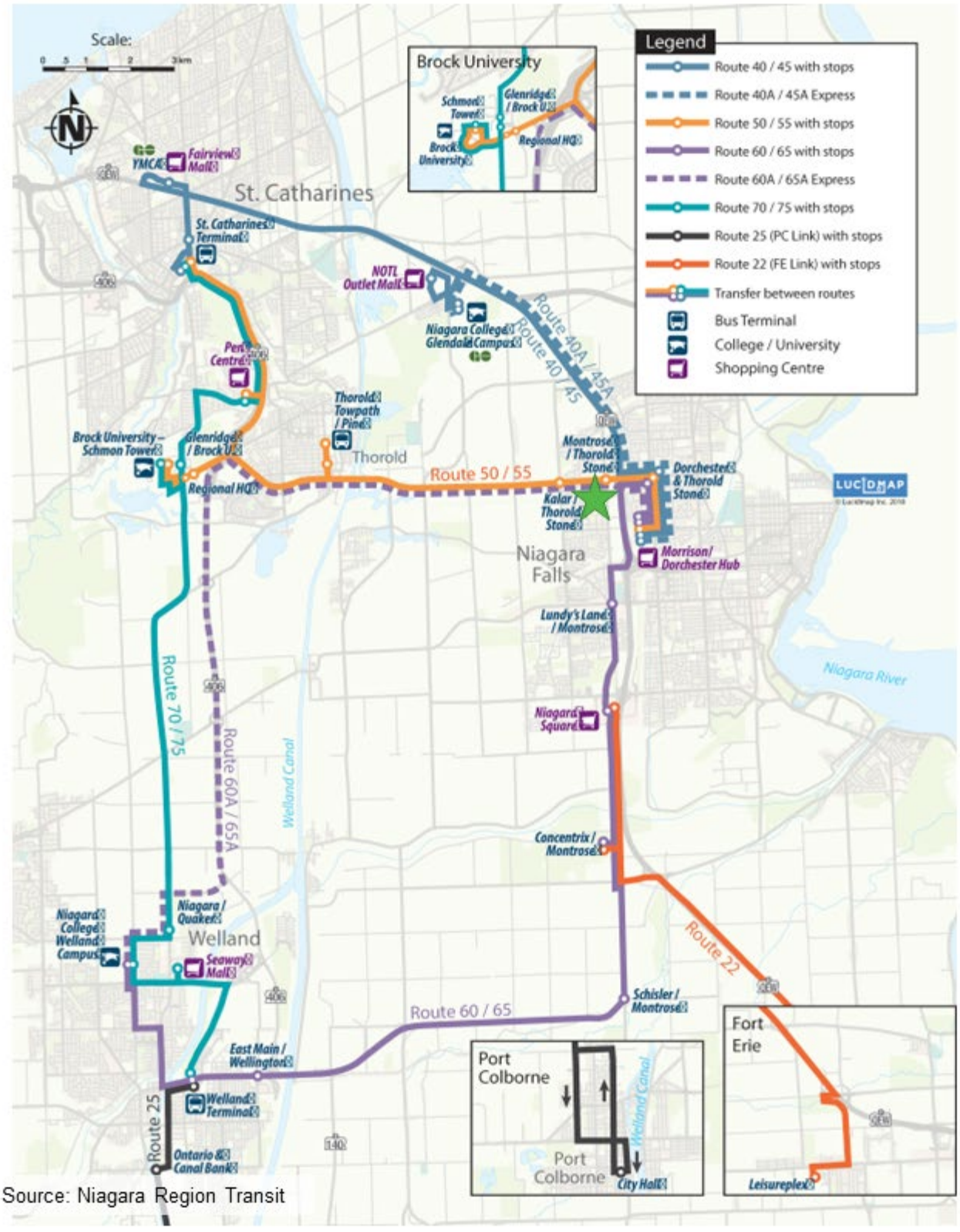
Road 20 are faced with shared arrangements with high volumes of vehicle traffic or are required to divert to lower-order nearby roadways such as Barker Street to limit exposure to vehicle conflicts. Given this gap in the planned network, a continuous connection on Regional Road 20 should be considered to provide a primary east-west cycling route and local connectivity within the study area.

2.3 Transit Service

The study corridor is served by regional transit service (Niagara Region Transit) and local transit services (WEGO). Niagara Region Transit provides transit service across the Niagara Region and local route service in St. Catharines, Niagara Falls, Welland, Port Colborne, and Fort Erie. Note that as of January 1, 2023, Niagara Falls Transit, which had provided local transit service within Niagara Falls, has become part of Niagara Region Transit. WEGO Transit service remains a separate service. The following routes serve the study corridor:

- **Niagara Region Transit**
  - **Route 60/65** runs between Morrison/Dorchester Hub and Niagara College (Welland Campus) and stops at Regional Road 20 and Montrose Road. Service is provided hourly Monday to Saturday between 6:55 AM and 11:00 PM
  - **113/213 – Montrose Road (RR98)** runs along Montrose Road between Mt. Carmel Plaza and Canadian Drive Hub. Service is provided hourly Monday to Saturday between 6:00 AM and 11:00 PM and Sunday between 7:00 AM and 8:00 PM.
  - **111/211 – Dorchester Road** runs along Dorchester Road between Morrison/Dorchester Hub and Canadian Drive Hub. Service is provided every half hour Monday to Saturday between 6:00 AM and 11:15 PM and Sunday between 7:15 AM and 8:30 PM.
- **WEGO:**
  - **WEGO Red Line** provides service along Regional Road 20 between Campark Resort and Table Rock Welcome Centre. Service runs every 30 minutes between 6:00 AM and 10:22 PM on Sunday to Thursday (Sunday service starts one hour later at 7:00 AM). On Friday and Saturday, bus service runs every 30 minutes between 6:00 AM and 12:22 AM.

Figures 2.2 and 2.3 illustrate the Niagara Region Transit regional routes and the local Niagara Falls routes service serving the study corridor.

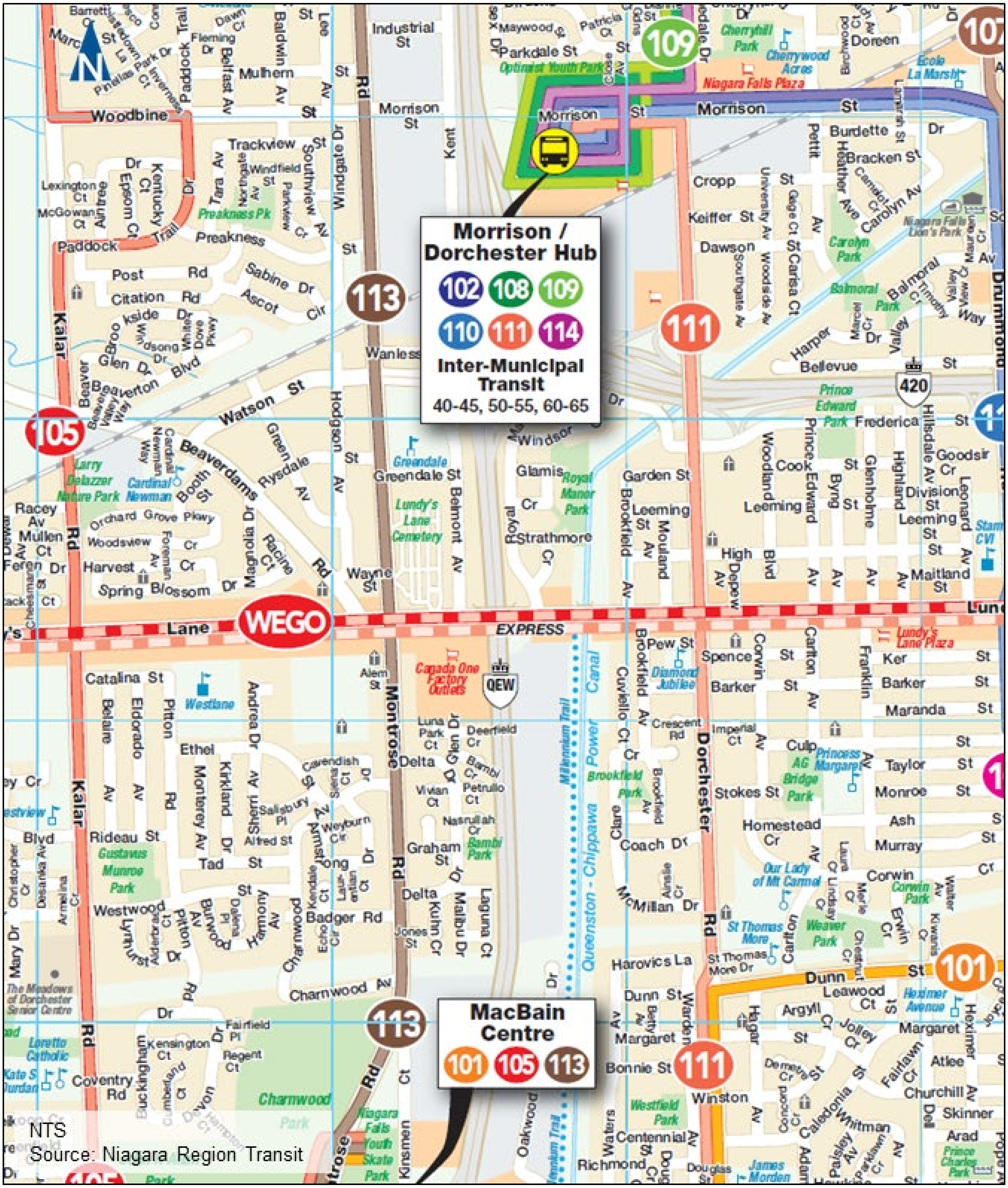


Source: Niagara Region Transit

Niagara Region Transit Regional Service

Regional Road 20 Environmental Assessment
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Figure 2.2



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Niagara Region Transit Local Service

Regional Road 20 Environmental Assessment
210300

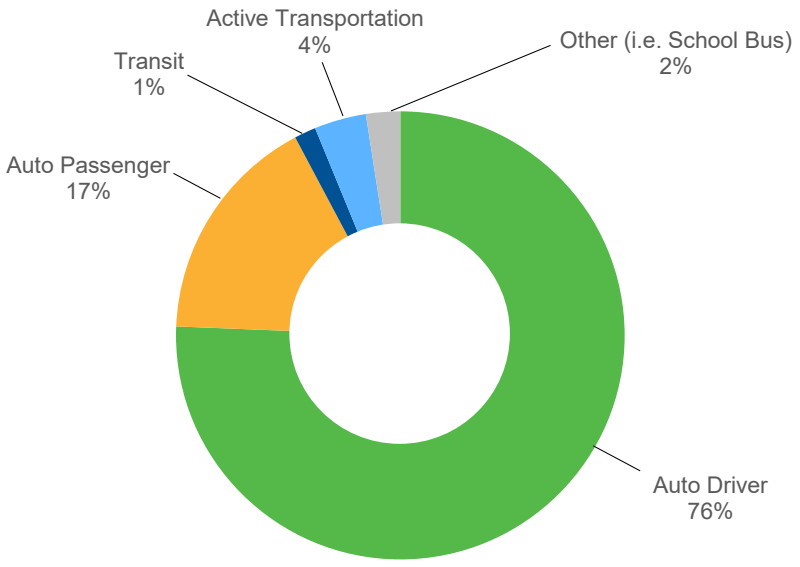
Figure 2.3

2.4 Mode Split

The existing travel modes within the City of Niagara Falls are estimated based on the Transportation Tomorrow Survey (TTS). The TTS survey randomly selects households in the Greater Golden Horseshoe (GGH), which is an important data source for transportation planning and is supported by the Niagara Region. TTS data from 2016 [2] (the most recent survey) was available for Niagara Falls. This data comprises modes of transportation originating in Niagara Falls and going to a destination within and external to Niagara Falls. **Chart 2.1** summarizes the all-day mode split for all of Niagara Falls.

The 2016 TTS data suggests that most trips made within the City are auto-orientated, with 93% of journeys being auto-driver or auto-passenger trips. Auto Passenger trips can be classified as individuals relying on automobiles, not vehicle drivers. These trips include rides provided by family and friends of the individuals and ride-hailing services. Transit trips make up approximately 1% of the daily trips, active transportation (i.e. cycling and walking) makeup 4% of the trips, and the remaining 2% of trips consist of other modes such as school bus trips.

CHART 2.1: 2016 TTS - NIAGARA FALLS MODE SPLIT



The City of Niagara Falls growth objective is to create and develop transit and pedestrian-friendly, sustainable, and livable City through

[2] Transportation Tomorrow Survey (TTS). 2016. Data Management Group, University of Toronto.

urban design criteria and guidelines. The official plan embraces sustainability and creates a vision for complete compact communities served by streets made for driving, walking, and cycling, as well as an attractive transit system. This vision is supported by policies to reduce auto dependence, limit the amount of land occupied by automobile parking, and increase non-automobile travel. The data suggest there is room for growth in non-automobile travel.

2.5 Traffic Demand

2.5.1 Traffic Volumes

Turning movement counts (TMC) are used to quantify the movement of vehicles and assess intersection operations. Existing traffic counts at an intersection or on a road section form the analysis's foundation. The traffic counts are usually collected during peak periods at an intersection to complete the level of service analysis. **Table 2.2** provides a summary of traffic count locations and sources**. Appendix A** contains the turning movement data.

TABLE 2.2: TURNING MOVEMENT COUNT LOCATION AND DATE

Intersection	Date	Conducted By
Regional Road 20 & Regional Road 98	July 2019	Niagara Region
Regional Road 20 & Belmont Avenue	October 2019	Niagara Region
Regional Road 20 & Royal Manor Drive	October 2019	Niagara Region
Regional Road 20 & Brookfield Avenue	November 2021	Accu-Traffic
Regional Road 20 & Mouland Avenue	November 2021	Accu-Traffic
Regional Road 20 & Dorchester Road	October 2019	Niagara Region
Regional Road 20 & Depew Avenue	November 2021	Accu-Traffic
Regional Road 20 & Corwin Avenue	November 2021	Accu-Traffic
Regional Road 20 & Prince Edward Avenue/Carlton Avenue	November 2021	Accu-Traffic
Regional Road 20 & Byng Avenue	November 2021	Accu-Traffic
Regional Road 20 & Franklin Avenue	November 2021	Accu-Traffic
Regional Road 20 & Glenholme Avenue	November 2021	Accu-Traffic
Regional Road 20 & Highland Avenue	July 2019	Niagara Region

2.5.2 Volume Adjustments

The Niagara Region Impact Study Guidelines indicate the requirement for collecting new data for counts three years or older. Acknowledging this requirement and the current situation related to the COVID-19 pandemic, the ability to collect up-to-date data is impacted. However, the region recognizes the current situation and has supported using pre-COVID-19 TMCs and, if deemed necessary, applying a factor to the volumes.

As a result, weekday historic TMC data has been used and adjusted based on factors to provide reasonable traffic volumes for the baseline horizon (2021). The weekday TMC data was factored into the 2021 base year condition by applying a growth rate based on historical traffic growth trends.

Historical traffic in the area between 2015 and 2019 has been assessed. Traffic data shows that between 2015 and 2019, traffic growth varied between -4.9% to 3.4% per annum, depending on the intersection. Based on the data, no growth has been applied to the TMC data to factor volumes to a 2023 base year.

2.5.3 Seasonal Variation

Traffic volumes within Niagara Falls vary depending on the season. During the summer months, Niagara Falls attracts a large number of tourists, resulting in summer traffic volumes being noticeably higher than the rest of the year.

Niagara regional road traffic data [3] from 2018 shows that summer average daily traffic on Regional Road 20 varies between -6% lower to +9% higher than the average annual daily traffic within the study area. In the study area, the summer average daily traffic on Regional Road 20 is 5% higher than the annual daily traffic.

Based on the data, a conservative seasonal factor of 1.10 (10% increase) was applied to the AM and PM peak hour traffic volumes.

2.5.4 Volume Balancing

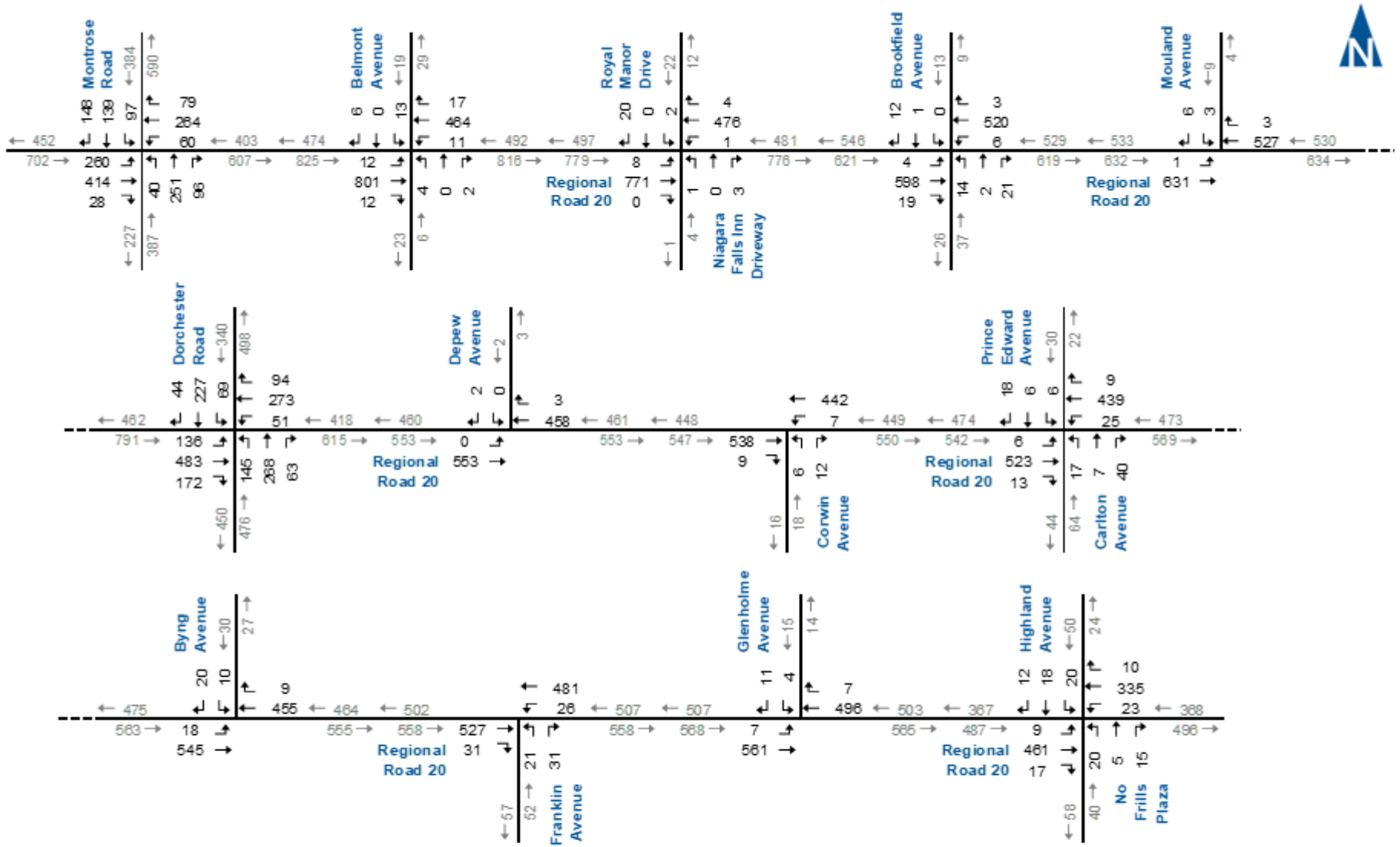
The analysis for this study focuses on a select number of significant intersections, minor intersections, driveways, etc. These segments would account for discrepancies between traffic volumes. In addition, the data for each intersection may have been collected at different

[3] Niagara Region, Regional Road Traffic Volumes 2020 https://niagaraopendata.ca/dataset/regional-road-traffic-volumes

times and dates, which would also account for differences between the adjacent volumes.

Given the context of the study area, "volume balancing" has not been undertaken, as numerous driveways within the study area would contribute to varied volumes between the intersections.

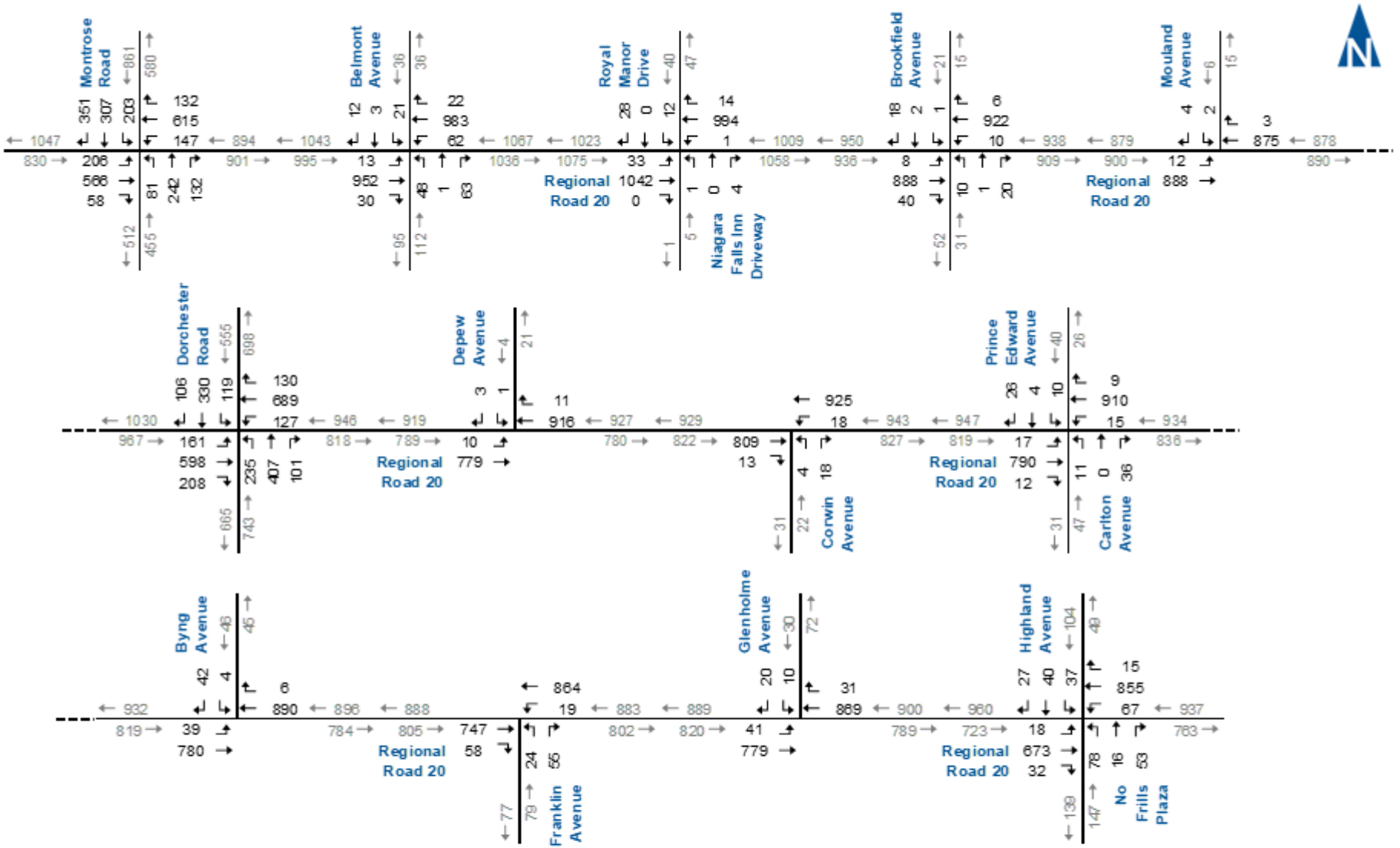
Figure 2.4 and **Figure 2.5** illustrate the intersection turning movement volumes within the study area during the weekday peak hours.



Base Year Traffic Volumes
AM Peak Hour

Regional Road 20 Environmental Assessment
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Figure 2.4



Base Year Traffic Volumes
PM Peak Hour

Regional Road 20 Environmental Assessment
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Figure 2.5

2.5.5 Cycling Volumes

As surveyed in the Transportation Tomorrow Survey (TTS) by the University of Toronto, in 2011, Niagara Region residents made 3.4% of their daily trips by active modes—amounting to 6,100 cycling trips (0.6%) and 27,300 walking trips (2.8%)[4]. By 2016, 3.8% of Niagara Region residents made their daily trips by active modes, with cycling increasing to 6,700 trips (0.7%) and walking increasing to 28,900 trips (3.1%)[5].

For the City of Niagara Falls, the percentage of daily trips by active mode is higher at 3.9% in 2011 (0.6% cycling and 3.3% walking) and 5% in 2016 (0.6% cycling and 4.4% walking).

Paradigm undertook cycling counts along the Regional Road 20 corridor in October 2022. The following intersections, Montrose Road, Dorchester Road, and Highland Avenue, have been selected to represent cyclist volumes at the study area's eastern, central, and western terminus. Cycling data from the counts are outlined in **Table 2.3**. **Appendix A** includes the data.

TABLE 2.3: CYCLING VOLUMES

Roadway	Intersection	2022 Volumes			
		AM Peak Hour Cyclists	PM Peak Hour Cyclists	Daily Cyclists (8hr)	Mode Share %
Regional Road 20	Montrose Road	2	4	30	0.30%
	Dorchester Road	2	3	29	0.30%
	Highland Avenue	1	5	19	0.20%

*Peak hour data shown is peak hour for vehicular traffic

The Region's transportation system will need to address the mobility needs of a more dependent younger aging population on alternative modes of transportation and a population interested in using a wide range of transportation modes. The existing cycling mode share along Regional Road 20 indicates that 0.2-0.3% of trips observed in October 2022 were cyclists. Comparing this to the 2016 average mode share along Regional Roads from TTS data, cycling volumes are considered below the average of 0.7% for the Niagara Region and 0.6% for the City of Niagara Falls.

As the City and Region have not identified a cycling mode share target to achieve, it is determined that the current mode share would be a reasonable estimate for planning purposes. Using an assumption that

[4] Niagara Region, *Transportation Master Plan – Needs and Opportunities Report*, August 2016

[5] Data Management Group, *Transportation Tomorrow Survey 2016*, University of Toronto, 2016, http://www.transportationtomorrow.on.ca/

0.7% of all trips would-be cyclists based on 2016 TTS data for Niagara Region, cycling ridership along Regional Road 20 could be around 100 daily cyclists during the peak season.

2.5.6 Transit Ridership

Mobility is an important marker for the quality of life, and public transportation provides a critical means of mobility for residents who do not own a car or cannot drive. Transit provides access to employment opportunities, education, medical care and other basic needs. It promotes sustainable community development by influencing long-term decisions about buying a second car or a car.

The City of Niagara Falls provided transit ridership volumes for WEGO Red. Ridership along this line has seen annual growth between 2014-2017 at an average rate of 35% per annum and slowing to modes increase of 5.5% per annum between 2017 and 2019. COVID-19 restrictions significantly negatively impacted ridership, with a decrease of close to 50% for 2022 from 2019.

Ridership numbers within the study area experienced 73,500 for the year 2019 (before COVID-19) and ridership of 28,000 for the year 2022. As noted above, the primary driver behind the substantial decline in transit service was due to COVID-19 and the cascading effects it had on the Region.

Long-term ridership projections see ridership levels returning to 75% of the 2019 volumes for years 2023-2024, while long-term growth is considered to be an increase of 4% annually. Ridership projections for the study area are projected at 107,400 for 2041.

2.6 Traffic Operations

The quality of intersection operations at signalized and unsignalized intersections is evaluated in terms of the level of service (LOS) and volume to capacity (v/c) as defined by the Highway Capacity Manual (HCM). LOS is evaluated based on the average control delay per vehicle and includes deceleration delay, queue move-up delay, stopped delay and final acceleration delay.

Capacity is evaluated in the ratio of demand flow to capacity with an at-capacity condition represented by a v/c ratio of 1.00 (i.e. volume demand equals capacity). For signalized intersections, LOS ranges from LOS A (<10 seconds of average delay) to LOS F (>80 seconds of average delay). For unsignalized intersections, the LOS ranges from LOS A (<10 seconds of average delay) to LOS F (>50 seconds of average delay).

The traffic operations in the study area have been evaluated using Synchro 11 with the following parameters:

- Existing lane configurations;
- Signal timing is provided by the Region (and included in **Appendix A** for reference);
- Heavy vehicle percentages and pedestrian volumes, as extracted from the turning movement, counts, and
- Synchro default values for all other inputs.

Synchro implements the methodology of the Highway Capacity Manual (HCM). The intersection analysis considers three different measures of performance:

- The level of service (LOS), based on the average delay for each turning movement, measured in seconds (s);
- The volume-to-capacity (v/c) ratio for each movement; and
- The 95th percentile queue length, in metres (m).

Table 2.3 and **Figure 2.6** summarize the base year traffic operations in the corridor, and the critical movements are outlined below:

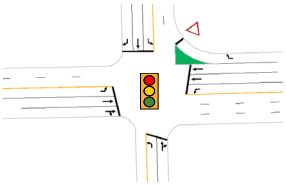
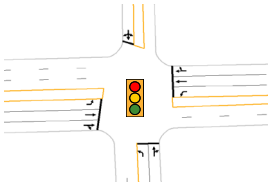
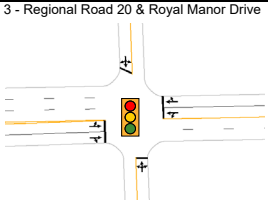
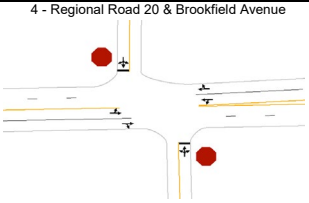
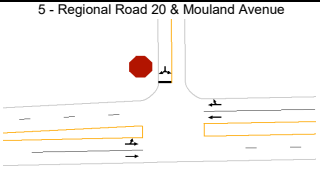
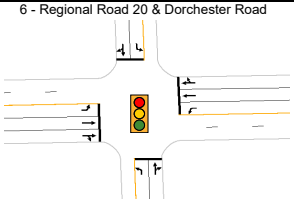
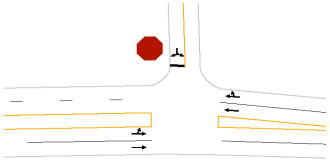
- Eastbound through movement at the signalized intersection of Regional Road 20 and Belmont Avenue operates at LOS D with a v/c ratio above 0.95 during the PM peak hour.
- Eastbound through/right, westbound through/right, and northbound through/right movements at the signalized intersection of Regional Road 20 and Dorchester operate at LOS E and v/c ratios above 0.85 during the PM peak hour.

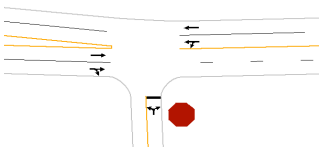
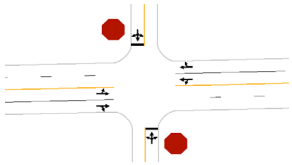
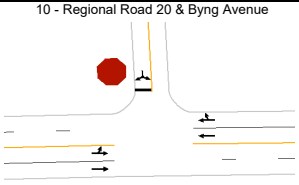
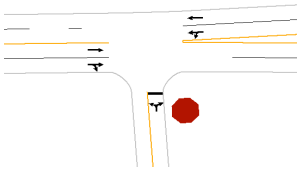
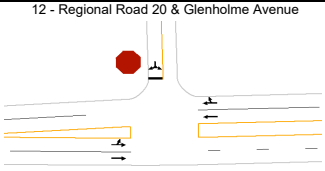
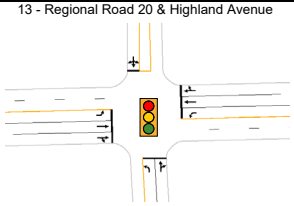
Appendix B contains the detailed Synchro reports.

Localized congestion occurs at study area intersections during the AM and PM peak hours. Generally, the congestion results in left-turn queues extending beyond available storage, particularly eastbound and westbound left turns at Montrose Road and Dorchester Road. In the PM peak hour, eastbound shared through/right movements and westbound shared through/right movements at Dorchester Road experience delays.



TABLE 2.3: BASE YEAR TRAFFIC OPERATIONS

Intersection / Lane Configuration	LOS AM	LOS PM	Critical Movements LOS	V/C	Delay
1- Regional Road 20 & Montrose Road 	C	D			
2 - Regional Road 20 & Belmont Avenue 	B	C			
3 - Regional Road 20 & Royal Manor Drive 	B	D	EBT PM D	0.97	47
4 - Regional Road 20 & Brookfield Avenue 	A	A			
5 - Regional Road 20 & Mouland Avenue 	A	A			
6 - Regional Road 20 & Dorchester Road 	D	E	EBT PM E WBT PM E NBT PM E	0.96 0.99 0.94	79 67 60
7 - Regional Road 20 & Depew Avenue 	A	A			

Intersection / Lane Configuration	LOS AM	LOS PM	Critical Movements LOS	V/C	Delay
8 - Regional Road 20 & Corwin Avenue 	A	A			
9 - Regional Road 20 & Prince Edward Avenue/Carlton Avenue 	A	A			
10 - Regional Road 20 & Byng Avenue 	B	B			
11 - Regional Road 20 & Franklin Avenue 	B	C			
12 - Regional Road 20 & Glenholme Avenue 	B	C			
13 - Regional Road 20 & Highland Avenue 	B	C			



Base Year Peak Hour LOS

Figure 2.6

3 Collision Review

Niagara Region provided collision information for 2016 to 2022 (excluding 2020 and 2021 due to COVID). The data was provided in tabulated form and included the following information: date and time, weather, impact type, presence of injuries, and road surface condition. Additional information for each driver was provided: direction of travel, vehicle maneuver, vehicle type, and driver action. **Appendix C** contains the collision summary sheets and diagrams.

The collision reports have been reviewed as is. No modifications or adjustments have been made to correct any duplicate entries or entries for which the collision record appears incorrect (i.e. rear-end collision between a northbound and westbound driver).

The cornerstone of site collision analysis is identifying abnormal collision patterns and trends. In deciding what is abnormal, the concept compares the study area collision characteristics to the collision characteristics of a group of similar sites. Differences between the study collision characteristics and the comparison group are abnormal and indicate a safety problem.

The study area collision records included both intersection and mid-block collisions and were summarized within the following collision categories:

- Severity and Initial Impact Type.
- Location of Occurrence.
- Environmental Conditions; and
- Lighting Conditions

For this summary, eight different collision types have been summarized, which include:

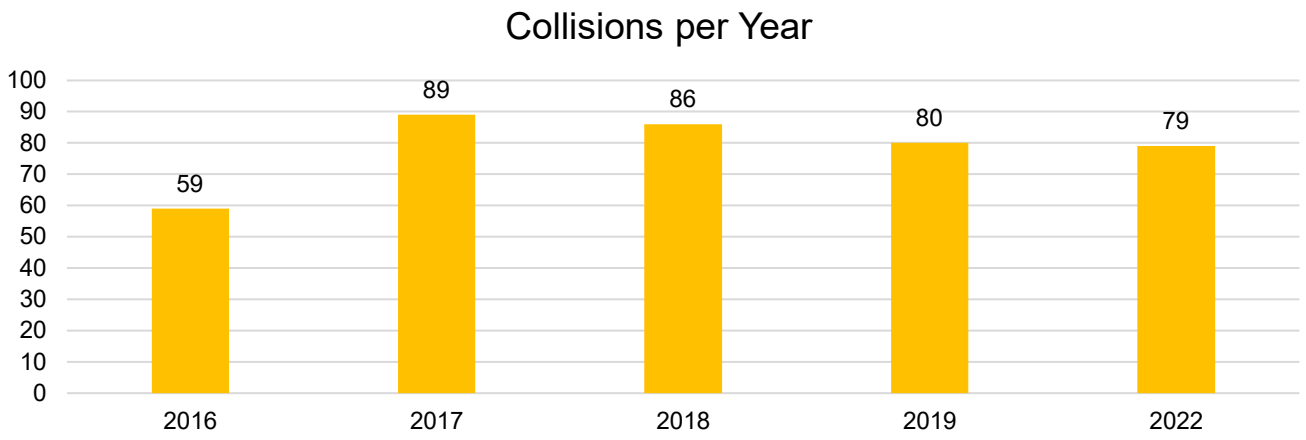
- Approach - collisions involving vehicles travelling in opposite directions on the same roadway (i.e. head-on collisions);
- Angle - collisions typically occurring at intersections or driveways, where vehicles are travelling on different roadways and collide on a right angle;
- Rear End - collisions on the same road and in the same direction of travel where one vehicle hits the rear of another vehicle;

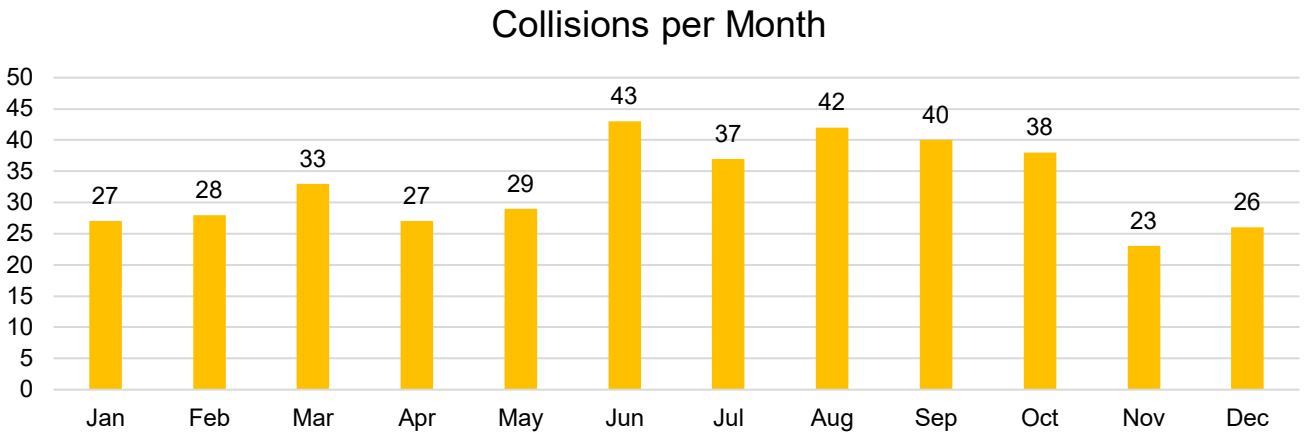
- Sideswipe – collisions on the same road where one vehicle hits another vehicle in another lane of travel or while in the process of changing lanes;
- Turning - collision where both vehicles are on the same road, and one vehicle strikes another vehicle while in the process of making a turn at an intersection or driveway;
- Single Vehicle Unattended – collision where a vehicle strikes an unattended vehicle, usually parked;
- Other Single Vehicle – all other collisions involving a single vehicle either leaving the roadway or striking another object; and
- Other – all other collisions.

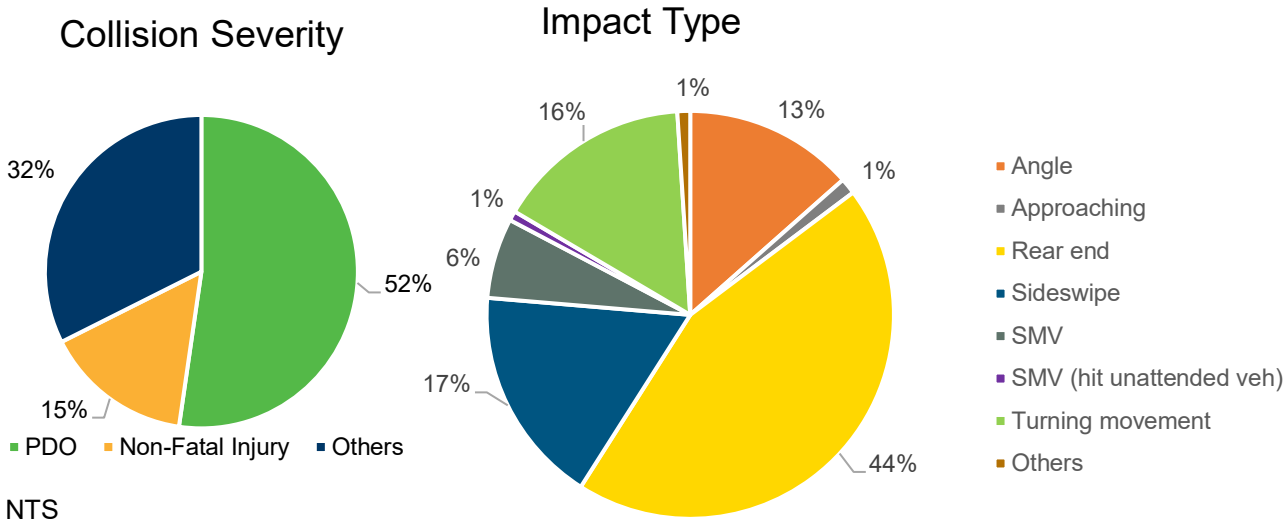
The collision information was analyzed for all midblock and intersection locations within the study area. **Figure 3.1** shows a summary of all collisions.

The collision history indicates that between 2016 and 2019 and 2022, 393 collisions were reported. The environmental condition was not contributing to these collisions, as 84% of collisions occurred in a "clear" environment.

A single fatality occurred at Regional Road 20 and Montrose Road intersection in 2019. All other collisions indicate property damage accounted for 84%, while the remaining 15% were classified as non-fatal injuries. The most common impact type was the rear end (44%). Other collisions included sideswipe (17%) and turning movement (16%).







NTS
Source: Niagara Region

paradigm TRANSPORTATION SOLUTIONS LIMITED

Total Collisions Analysis Summary (2016-2019 + 2022)

3.1 Comparison to Ontario Averages

As part of the collision review, the summary results were compared against Ontario averages (2020)[6] to determine if there were any differing profile trends for the distribution of collisions within the Regional Road 20 corridor.

The one fatal collision reported within the study area was similar to the Ontario average of about 0.3% per year. The non-fatal injury collisions were 0.5% lower yearly, while the property damage was only 0.7% higher than the Ontario averages. **Table 3.1A** summarizes the classification comparison.

TABLE 3.1A: CLASSIFICATION COMPARISON (ONTARIO)

Classification	Ontario 2020	Study Area
Non-fatal injury	15.8%	15.3%
Fatal	0.3%	0.3%
Property Damage Only	83.8%	84.5%

Collisions by initial impact type indicate the percentage of angle (13%) and rear-end (44%), which is higher (almost double) than the Ontario averages (8%) and (25%). Alternatively, single-motor vehicle impacts are significantly lower (7%) than Ontario's (33%) average. **Table 3.1B** summarizes the initial impact comparison.

TABLE 3.1B: INITIAL IMPACT COMPARISON (ONTARIO)

Initial Impact Type	Ontario 2020	Study Area
Angle	8%	13%
Approaching	1%	1%
Rear end	25%	44%
Sideswipe	12%	17%
SMV	28%	6%
SMV (hit unattended veh)	5%	1%
Turning movement	19%	16%
Others	2%	1%

[6] 2020 Ontario Road Safety Annual Report Selected Statistics, Produced by the Ministry of Transportation of Ontario.

The distribution of collisions within the study area is significantly higher at intersections (73.0%) compared to the Ontario averages (45.6%). **Table 3.1C** summarizes the location comparison.

TABLE 3.1C: LOCATION COMPARISON (ONTARIO)

Location	Ontario 2020	Study Area
Midblock	54.4%	27.0%
Intersection/Intersection Related	45.6%	73.0%

As summarized by lighting conditions, the collision distribution was fairly close to the Ontario averages, which occur during daylight, dawn/dusk, and dark conditions. **Table 3.1D** summarizes the lighting comparison.

TABLE 3.1D: LIGHTING COMPARISON (ONTARIO)

Lighting	Ontario 2020	Study Area
Daylight	68.2%	70.2%
Dawn	2.4%	0.3%
Dusk	3.7%	3.1%
Darkness	25.6%	26.5%
Other	0.1%	0.0%

The percentage of collisions within the roadway corridor during rain (10.7%) was higher than the Ontario average of 7.3%. The remainder of the collision distributions, summarized by visibility, were closely matched to the Ontario averages. **Table 3.1E** summarizes the visibility comparison.

TABLE 3.1E: VISIBILITY COMPARISON (ONTARIO)

Visibility	Ontario 2020	Study Area
Clear	81.5%	84.2%
Drifting Snow	0.7%	0.3%
Fog, mist, smoke, dust	0.6%	0.5%
Freezing Rain	0.5%	0.3%
Rain	7.3%	10.7%
Snow	8.9%	4.1%
Other	0.6%	0.0%



In terms of the percentage of collisions that occurred during each month of the year, the rate of collisions that occurred during the months of January (6.9%), February (7.1%), November (5.9%) and December (6.6%) was lower than the Ontario averages of 12.3%, 12.1%, 10.1% and 9.6% for the same periods. In an opposite trend, the percentage of collisions within the roadway corridor during April (6.9%) and June (10.9%) were higher than Ontario averages of 3.4% and 7.2% for the same periods—the remaining months remained relatively close to the Ontario averages.

From a seasonal perspective, the percentage of collisions during the spring months (25.2%) was higher than the Ontario average of 15.9 %, while the winter months (22.4%) were lower than the Ontario average of 30.9%. The remaining months were all reasonably close to the Ontario averages.

Comparing the visibility criteria, the study area noted that more collisions contributed to rainy conditions than the Ontario average, while fewer collisions resulted from snow conditions. The higher percentage of collisions during the spring months may be related to an increase in rain provided for the area as well as tourists, where an increase in drivers may not be prepared for sudden weather changes and major storms that impact roadway conditions. Moreover, an opposite trend is observed for the winter months, with fewer collisions than the Ontario average. **Table 3.1F** summarizes the monthly comparison.

TABLE 3.1F: MONTHLY COMPARISON (ONTARIO)

Season	Month	Ontario 2020	Study Area
Winter	Jan	12.3%	6.9%
	Feb	12.1%	7.1%
	Mar	6.5%	8.4%
Spring	Apr	3.4%	6.9%
	May	5.3%	7.4%
	Jun	7.2%	10.9%
Summer	Jul	7.9%	9.4%
	Aug	8.2%	10.7%
	Sep	8.4%	10.2%
Fall	Oct	9.1%	9.7%
	Nov	10.1%	5.9%
	Dec	9.6%	6.6%

Based on the 2020 Ontario Road Safety Annual Report for the total number of collisions within Niagara Falls, the classification of collisions is consistent with the study area. The percentage of fatal injury collisions at 0.3% within the study corridor is lower than the Niagara Falls average of 0.7%. **Table 3.1G** summarizes the classification comparison for Niagara Falls.

TABLE 3.1G: CLASSIFICATION COMPARISON (NIAGARA FALLS)

Classification	Niagara Falls (2020)	Study Area
Non-fatal injury	13.3%	15.3%
Fatal	0.7%	0.3%
Property Damage Only	86.0%	84.5%

3.2 Safety Performance Function

The collision summary shows 393 collisions occurred within the study area between 2016-2019 and 2022. Of the 393 collisions, 297 occurred at intersections.

A single fatal collision occurred within the study area during the analysis period. According to the motor vehicle accident report, the fatality was reported at Regional Road 20 and Montrose Road intersection in 2019. The collision occurred in February with snow, and the environmental conditions with the light conditions were noted as dark. The collision was noted as a single motor vehicle collision with the driver performing an eastbound left turn movement and losing control.

During this same period, 15% of the collisions resulted in an injury, with the remainder causing only property damage. This severity distribution is “slightly elevated” since 13% of all collisions in Niagara Falls in 2020 were injury collisions[7].

3.2.1 Safety Performance Function

The Safety Performance Function (SPF) application is helpful in network screening to identify intersections that experience higher collisions than expected. The analysis is a broad-based approach to estimating safety; nonetheless, it is appropriate for a planning-level comparative analysis.

[7] [7] 2020 Ontario Road Safety Annual Report Selected Statistics, Produced by the Ministry of Transportation of Ontario.

Collision prediction models for the study area intersections were obtained from the Niagara Region to estimate the frequency and severity of collisions expected at the study area intersections. The models employed for this are provided in **Appendix C**.

The prediction models use annual daily traffic volumes as the dependent variable for the major and minor roadways; this has been determined based on the regional roadways' Annual Average Daily Traffic (AADT) based on the Region's AADT data set [8].

For the local roadway that do not have any AADT collected data, the peak hour traffic volumes as contained in **Figures 2.4-2.5** of this report and the following formula has been utilized to provide reasonable AADT projects:

$$AADT = (AM + PM) / 2 * 10$$

AADT = Annual Average Daily Traffic
AM = AM peak hour traffic volumes
PM = PM peak hour traffic volumes

When the minor road AADT is determined if the two-way AADT on the two minor leg approaches differ, the larger of the two values is used. **Table 3.2** summarizes the expected collisions per year as well as a comparison with actual collisions per year over five years for intersections along Regional Road 20. The collision summary has suggested the following issues should be considered and addressed in the Class EA process:

- Collision severity (fatal and injury) in the study area is elevated at two signalized intersections (Regional Road 20 at Dorchester Road and Regional Road 20 at Montrose Road) compared to general Collison predictions for Niagara Regional roads.

[8] Regional Road Traffic Volumes, Niagara Region, 2020

TABLE 3.2: PREDICTED VS ACTUAL

Intersection	Collision Per Year	Collision Type		
		Total	Severe	PDO
Lundy's Lane at Belmont Avenue	Predicted	2.48	0.44	2.04
	Actual (Average)	4.00	1.00	3.00
Lundy's Lane at Royal Manor Drive	Predicted	1.93	0.34	1.59
	Actual (Average)	4.80	0.00	4.80
Lundy's Lane at Highland Avenue	Predicted	2.80	0.50	2.30
	Actual (Average)	5.60	1.00	4.60
Lundy's Lane at Dorchester Road	Predicted	6.96	1.15	5.80
	Actual (Average)	16.00	3.00	13.00
Lundy's Lane at Montrose Road	Predicted	7.24	1.20	6.04
	Actual (Average)	18.60	2.60	16.00
Lundy's Lane at Mouland Avenue	Predicted	0.52	0.06	0.46
	Actual (Average)	0.40	0.20	0.20
Lundy's Lane at Brookfield Avenue	Predicted	0.67	0.34	0.34
	Actual (Average)	0.60	0.00	0.60
Lundy's Lane at Byng Avenue	Predicted	0.72	0.10	0.62
	Actual (Average)	1.40	0.00	1.40
Lundy's Lane at Depew Avenue	Predicted	0.50	0.06	0.44
	Actual (Average)	0.40	0.00	0.40
Lundy's Lane at Glenhome Avenue	Predicted	0.70	0.09	0.61
	Actual (Average)	0.60	0.40	0.20
Lundys' Lane at Carlton Avenue	Predicted	0.66	0.33	0.33
	Actual (Average)	0.60	0.20	0.40
Lundy's Lane at Corwin Avenue	Predicted	0.64	0.08	0.55
	Actual (Average)	0.60	0.00	0.60
Lundy's Lane at Franklin Avenue	Predicted	0.83	0.12	0.71
	Actual (Average)	3.80	0.80	3.00

3.3 Vulnerable Road Users

Collisions reported to the province are categorized by four levels of severity: Fatalities, Major Injuries (requiring extensive treatment or hospital stays), Minimal/Minor Injuries, and No Injuries (often referred to as Property Damage Only collisions). Fatal collisions and Major Injury Collisions are typically grouped and reported together as both types of collisions are very traumatic, and the conditions that result in major injuries can often also result in fatalities.

These combined collisions are often reported as KSI collisions (where someone is killed or seriously injured). On average, KSI collisions represent just under 0.3% of total annual collisions and are noted to be less than the provincial average of 0.7%.

Table 3.3 summarizes the collisions between 2016-2019 and 2022 by collision severity and mode of travel. Over this period, 15.6% of all collisions have resulted in some form of injury, with the majority minor injuries (15.3%). However, when this is broken down by mode of travel, pedestrian and cyclist collisions represent 0% of all serious/fatal collisions and 28.4% of minor injury collisions.

Approximately 77.8% of pedestrian and 76.9% of cyclist collisions result in some form of injury, versus only 11.6% of motor vehicle collisions. Despite the observation that pedestrian and cyclist collisions only represent 5.6% of total collisions occurring within the study area, these two user groups are the most vulnerable users of the road network regarding the share of collisions resulting in the potential for injuries.

TABLE 3.3: COLLISION SEVERITY BY MODE OF TRAVEL

Type	Vehicle	Pedestrian	Cyclist	Total
KSI	**1**	**0**	**0**	**1**
% of Collisions	0.3%	0.0%	0.0%	0.3%
% of Mode	100.0%	0.0%	0.0%	100.0%
Minor Injury	**43**	**7**	**10**	**60**
% of Collisions	11.6%	77.8%	76.9%	15.3%
% of Mode	71.7%	11.7%	16.7%	100.0%
No Injury	**327**	**2**	**3**	**332**
% of Collisions	88.1%	22.2%	23.1%	84.5%
% of Mode	98.5%	0.6%	0.9%	100.0%
Total	**371**	**9**	**13**	**393**
% of Collisions	100.0%	100.0%	100.0%	100.0%
% of Mode	94.4%	2.3%	3.3%	100.0%

3.3.1 Pedestrian Collisions

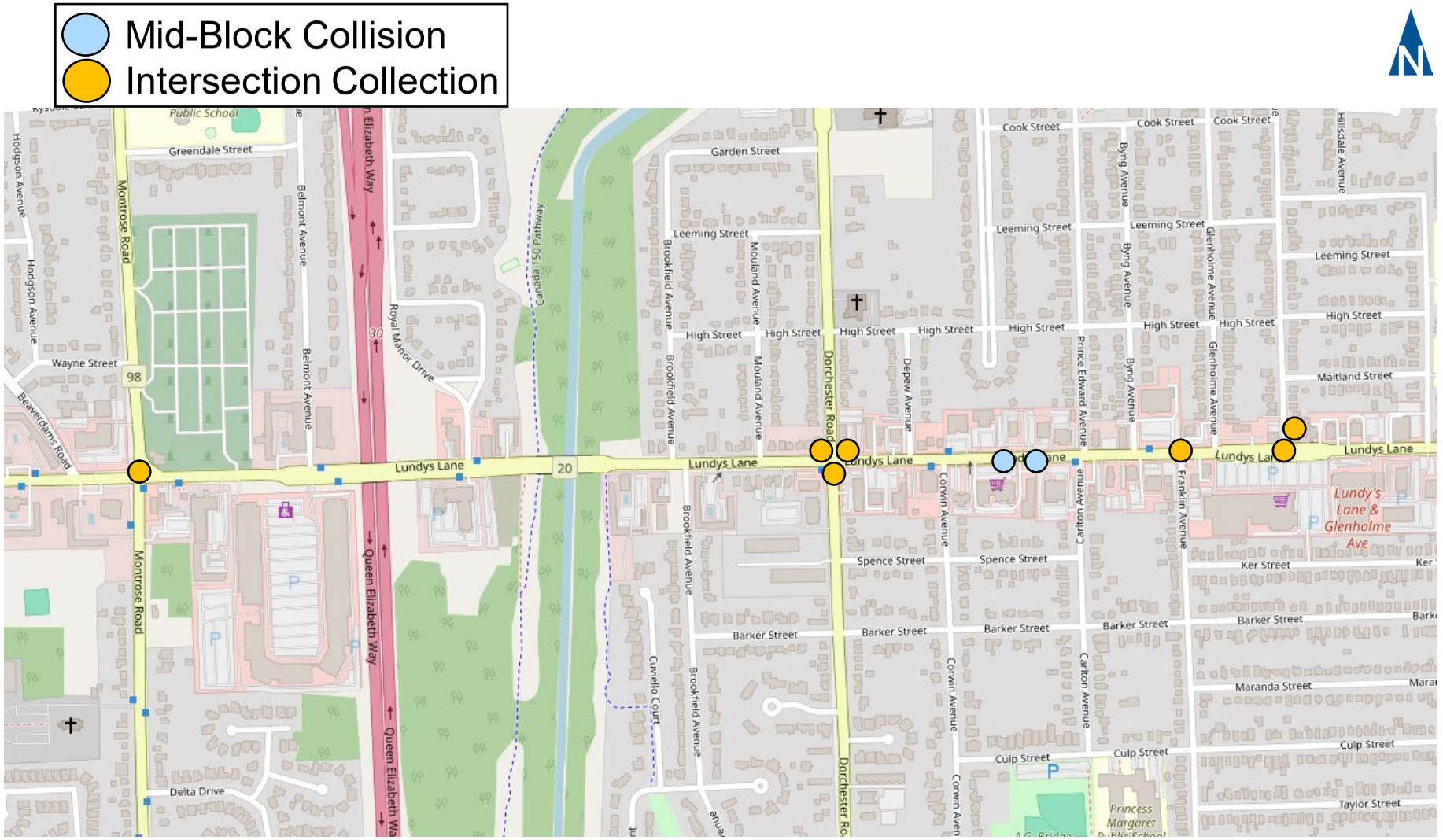
The collision history indicates that between 2016-2019 and 2022, 9 collisions were reported involving pedestrians (approximately 2% of the total collisions). The distribution of collisions involving pedestrians is slightly higher than the number of collisions involving pedestrians overall in the Niagara Region in 2019 (1.5%)[9]. The pedestrian collisions that occurred along the study area are summarized below:

- Regional Road 20 between Carlton Avenue and Prince Edward Avenue/Corwin Avenue – Two collisions occurred in 2017 and 2018.
  - The collision in 2017 occurred at 11:20 PM in snow and dark conditions in February. The collision involved a vehicle travelling and striking a pedestrian, resulting in a non-fatal injury.
  - The collision in 2018 occurred at 4:53 PM in clear and daylight conditions in February. The collision involved a vehicle travelling and striking a pedestrian crossing without traffic control, resulting in a non-fatal injury.
- Regional Road 20 at Dorchester Road – Three collisions occurred in 2016, 2018, and 2022.
  - The collision in 2016 occurred at 8:10 AM in clear and daylight conditions in March. The collision involved a vehicle turning (improper turn) and striking a pedestrian crossing with right of way, resulting in a non-fatal injury.
  - The collision in 2018 occurred at 7:06 PM in rain and dark conditions in October. The collision involved a vehicle turning (improper turn) and striking a pedestrian crossing with right of way, resulting in a non-fatal injury.
  - The collision in 2022 occurred at 7:39 PM in clear and daylight conditions in June. The collision involved a vehicle turning (improper turn) and striking a pedestrian crossing with right of way, resulting in a non-fatal injury.
- Regional Road 20 at Franklin Avenue – A single collision occurred in 2019.
  - The collision in 2019 occurred at 12:15 PM in clear and daylight conditions in March. The collision involved a vehicle turning (improper turn) and striking a pedestrian crossing with right of way, resulting in a non-fatal injury.

[9] 2019 Annual Collision Report, Niagara Region

- Regional Road 20 at Highland Avenue – Two collisions occurred in 2017 and 2018.
  - The collision in 2017 occurred at 9:05 AM in clear and daylight conditions in January. The collision involved a vehicle driving properly and striking a pedestrian crossing with right of way, resulting in a non-fatal injury.
  - The collision in 2018 occurred at 6:05 PM in clear and daylight conditions in May. The collision involved a vehicle t vehicle driving properly and striking a pedestrian crossing with the right of way, resulting in property damage only.
- Regional Road 20 at Montrose Road – A single collision occurred in 2018.
  - The collision in 2018 occurred at 7:43 PM in clear and daylight conditions in May. The collision involved a vehicle driving properly and striking a pedestrian crossing without right of way, resulting in a non-fatal injury.

The approximate locations of the pedestrian collisions within the study area are illustrated in **Figure 3.2**.



Approximate Location of Pedestrian Collisions

Regional Road 20 Environmental Assessment
210300

Figure 3.2

3.3.2 Pedestrian Focus Area

Most collisions that are ultimately used to determine the safety performance of a facility are ordinarily motor vehicle collisions. The collision frequency of pedestrians and cyclists is far lower, and while these are the more vulnerable road users, their level of safety may not be appropriately reflected in an overall collision rate.

Maximizing safety for all travel modes and users means providing a system with the lowest net crash risk. However, such a system might include certain features that significantly reduce motor vehicle crashes at the expense of a slight increase in pedestrian and/or cyclist crashes. For example, right-turn channelization at signalized intersections is generally regarded as providing a safety improvement for vehicle traffic but a safety disbenefit to pedestrians since they bring pedestrian-vehicle interactions in a fully non-signalized environment and further compel the environment with increased turning speeds given the large radius provided through channelization.

Based on the collision data, two mid-block collisions involved pedestrians along Regional Road 20 between Carlton Avenue and Prince Edward Avenue/Corwin Avenue. The number of collisions does not reflect a high number (i.e. 2 collisions over 5 years), and the severity was noted to reflect non-fatal injuries.

This midblock segment contains a commercial plaza on both the north and south sides of Regional Road 20, and the closest controlled crossings are located at the intersection of Regional Road 20 and Dorchester Road and Regional Road 20 at Highland Avenue. The spacing between these controlled crossings for this midblock segment is 175-300 metres. However, insufficient information is available in the collision summary sheets to directly link these collisions to a specific access or location within this segment.

Because of the disparity in size and weight between vehicles and pedestrians, a unique safety concern is created for the latter user group. This causes concern over interactions between these user groups, mainly where children and school-aged road users are present. As pedestrians should be encouraged to cross at controlled crosswalks in most situations, this section of Regional Road 20 could provide added benefits for pedestrians by providing a pedestrian signal or crossover.

Based on the Ontario Traffic Manual (OTM), the recommended minimum distance between controlled crossings is 100 metres. As controlled crossings along Regional Road 20 within this area are spaced approximately 675 metres apart (between Dorchester Road



and Highland Avenue), the spacing criteria can be maintained by adding a pedestrian signal or crossover.

At the intersections within the study area, 7 collisions were reported involving a pedestrian, where 4 of these instances resulted from drivers completing their turn improperly. The remaining 3 collisions identified the drivers of the vehicles were driving properly, while one instance identified a pedestrian was crossing improperly.

Based on the collision data supplied, no trends indicate that these collisions have occurred due to poor roadway geometrics or visibility issues, given that the collisions reflect less than one collision per year at an intersection involving a pedestrian.

3.3.3 Cyclists Collisions

The collision history indicates that between 2016-2019 and 2022, 13 collisions were reported involving cyclists (approximately 3% of the total collisions). The distribution of collisions involving cyclists is slightly higher than the number of collisions involving cyclists overall in the Niagara Region in 2019 (1.1%) [10]. The cyclist collisions that occurred along the study area are summarized below:

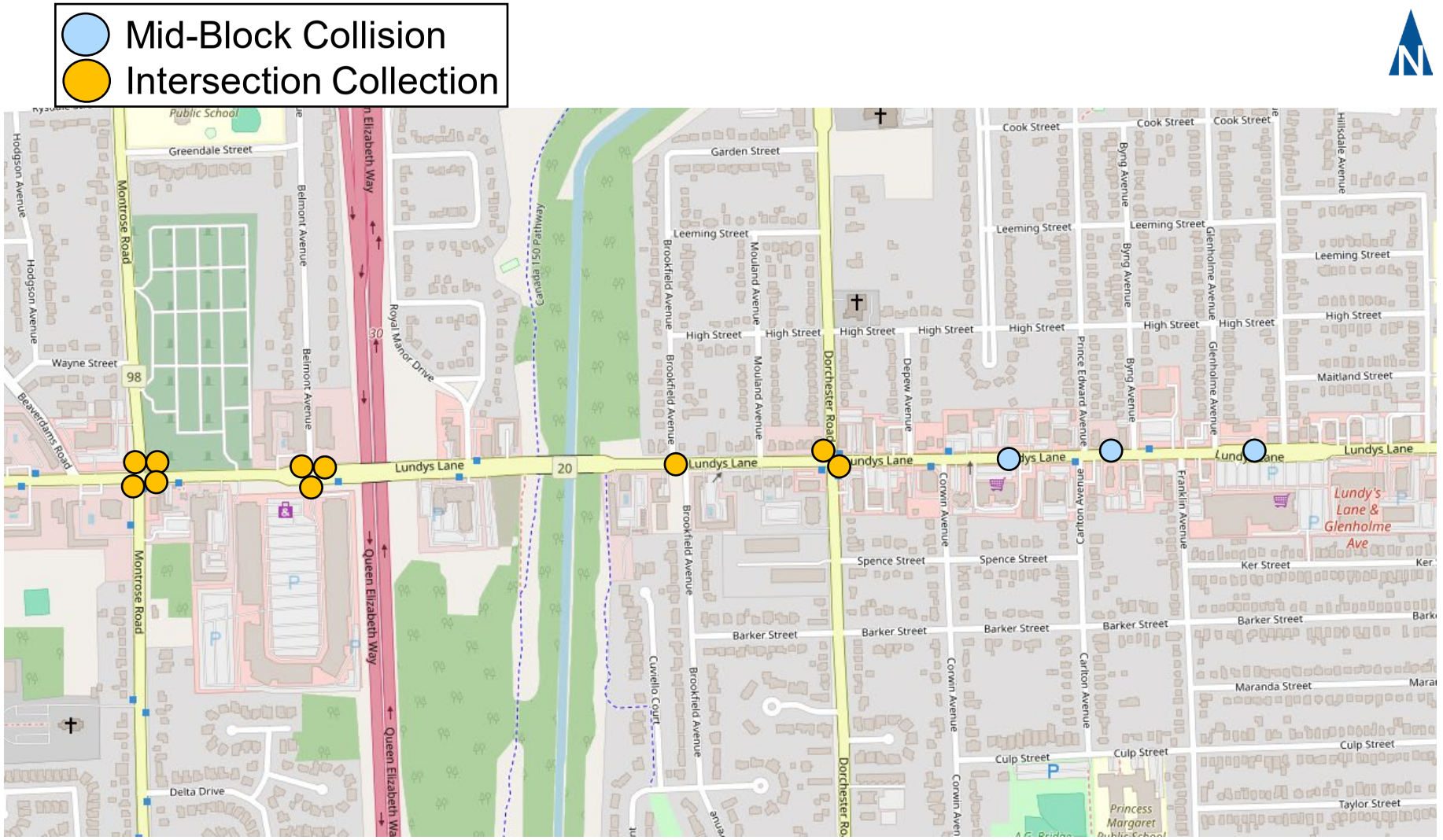
- Regional Road 20 between Carlton Avenue and Prince Edward Avenue/Corwin Avenue – One collision occurred in 2016.
  - The collision in 2016 occurred at 2:52 PM in clear and daylight conditions in May. The collision involved a vehicle travelling and striking a cyclist, resulting in a non-fatal injury.
- Regional Road 20 between Highland Avenue and Glenhome Avenue – One collision occurred in 2022.
  - The collision in 2022 occurred at 1:59 PM in clear and daylight conditions in April. The collision involved a vehicle travelling and passing a cyclist, striking the cyclist and resulting in a non-fatal injury.
- Regional Road 20 between Byng Avenue and Carlton Avenue/Prince Edward Avenue – One collision occurred in 2017.
  - The collision in May of 2017 occurred at 4:59 PM in clear and daylight conditions. The collision involved a vehicle travelling, striking the cyclist through an angle movement, resulting in a non-fatal injury.

[10] 2019 Annual Collision Report, Niagara Region

- Regional Road 20 at Dorchester Road – Two collisions occurred in 2017 and 2019.
  - The collision in 2017 occurred at 3:47 PM in clear and daylight conditions in June. The collision involved a vehicle travelling, striking the cyclist through an angle movement, resulting in a non-fatal injury.
  - The collision in 2019 occurred at 4:34 PM in clear and daylight conditions in June. The collision involved a vehicle turning and striking a cyclist, resulting in a non-fatal injury.
- Regional Road 20 at Brookfield Avenue – A single collision occurred in 2018.
  - The collision in 2018 occurred at 1:18 PM in clear and daylight conditions in May. The collision involved a vehicle turning and striking a cyclist, resulting in only property damage.
- Regional Road 20 at Belmont Avenue – Three collisions occurred in 2017, 2018 and 2019.
  - The collision in 2017 occurred at 2:20 PM in clear and daylight conditions in June. The collision involved a vehicle turning and striking a cyclist, resulting in a non-fatal injury.
  - The collision in 2018 occurred at 9:28 PM in rain and dark conditions in September. The collision involved a rear-end collision, resulting in a non-fatal injury.
  - The collision in 2019 occurred at 9:42 AM in clear and daylight conditions in July. The collision involved a vehicle travelling, striking the cyclist through an angle movement, resulting in a non-fatal injury.
- Regional Road 20 at Montrose Road – Four collisions occurred in 2017, 2018 and 2022.
  - The collision in 2017 occurred at 8:20 AM in clear and daylight conditions in July. The collision involved a vehicle turning and striking a cyclist, resulting in a non-fatal injury.
  - The collision in 2018 occurred at 8:00 PM in rainy and dark conditions in March. The collision involved a vehicle turning and striking a cyclist, resulting in a non-fatal injury.
  - A second collision occurred in June 2018 at 8:38 AM in clear and daylight conditions. The collision involved a vehicle turning and striking a cyclist, resulting in a non-fatal injury.

- The collision in 2022 occurred at 4:31 PM in clear and daylight conditions in June. The collision involved a vehicle turning and striking a cyclist, resulting in a non-fatal injury.

The approximate locations of the pedestrian collisions within the study area are illustrated in **Figure 3.3**.



Approximate Location of Cyclist Collisions

Regional Road 20 Environmental Assessment
210300

Figure 3.3

3.3.4 Cycling Focus Area

Collision severity in the study area is higher than general statistics for Niagara Falls concerning collisions involving cyclists.

The cause or causes of this are difficult to pinpoint. Eighty-five percent of the collisions occurred during clear weather conditions and on dry roads, indicating that road surface conditions were not a causative factor. Rear-end and sideswipe collisions accounted for approximately 30% of all collisions involving cyclists. These collisions are usually due to inter-user speed differentials precipitated by traffic congestion, poor signal timing, lack of exclusive turn lanes, accesses proximate to the intersection, driver distraction and limited separation/buffer between vehicles and cyclists.

However, 9 out of the 13 collisions involving cyclists (69%) did occur during the approximate peak hours of the roadways. These collisions are likely due to increased traffic congestion during peak travel periods when driver workload is likely increased. Collisions are also more prevalent in the PM peak travel period, which may indicate that traffic operations during this time are degraded, impacting safety performance.

Problem intersections are noted at Regional Road 20 and Belmont Avenue as multiple collisions involved cyclists, representing approximately 15% of all collisions reported at this intersection, as well as Regional Road 20 and Montrose Road, which accounted for 30% of all collisions involving cyclists within the study area.

The midblock segment along Regional Road 20 between Corwin Avenue and Highland Avenue is also noted as an area of concern, given this small section of roadway accounted solely for midblock collisions that involved cyclists, representing about 23% of all collisions that involved cyclists within the study area.

The most effective way to minimize (or eliminate) fatal or severe injury collisions is through active management of collision energy so that no individual road user is exposed to collision forces that are not survivable. A key strategy in this regard is to establish design criteria commensurate with the road infrastructure, the vehicles, and the traffic mix so that users are afforded the necessary level of protection.

Cyclists and motorized traffic, generally speaking, are a poor mix. When a collision occurs, the mass and speed differences between these user groups can result in kinetic energies that produce serious injuries and fatalities to the former group. In areas where the interaction between motorized traffic and cyclists is inevitable, the

speed of motorized traffic should be kept as low as possible to increase the probability of cyclists' survival in the event of a collision.

Two interrelated road safety concerns on roads with multiple user types are the “design speed” of the road and the selection of a suitable speed limit. In general, arterial roads, such as Regional Road 20, warrant a higher speed to satisfy the road’s express purpose of providing mobility. On the other hand, cyclists typically warrant slower speeds in the name of safety. In a safe system approach to road design, the design and operating speeds in a mixed-use environment should be slower.

Cyclists wishing to travel east-west along Regional Road 20 are faced with shared arrangements with high volumes of vehicle traffic or are required to divert to lower-order nearby roadways such as Barker Street to limit exposure to vehicle conflicts. Given this gap in the planned network, a continuous connection on Regional Road 20 should be considered to provide a primary east-west cycling route and local connectivity within the study area.

The Ontario Traffic Manual Book 18: Cycling Facilities (OTM Book 18) was reviewed to determine an appropriate cycling facility for Regional Road 20 based on the AADT and the posted speed limit.

According to the estimated AADT, Regional Road 20 is 23,000 in the study area. According to the nomograph (Figure 5.5 in OTM Book 18), a desirable type of bicycle facility would be a separated bicycle lane, cycle track or multi-use path.

Given this gap in the planned network, a continuous connection on Regional Road 20 to provide a primary east-west cycling route and local connectivity within the study area would provide added benefits to the cycling network. However, a physically separated bikeway along Regional Road 20 would be challenging to implement, given the significant amount of accesses along this corridor, which will generate conflicts between cyclists and motorists. Other challenges are the limited right of way and the number of utilities within the boulevards (if a cycle track is being considered).

While the ultimate design of Regional Road 20 will most likely include continuous pedestrian facilities, providing separated facilitates for cyclists is likely not feasible given the limited right-of-way.

Given the current conditions within the study area, the only viable option for cycling is to maintain the status quo and let vehicles and cyclists share the road using the existing platform width. Signing (i.e., share the road) could be utilized to highlight that the corridor

accommodates both modes of travel. While these measures are expected to provide a nominal improvement to cycling safety, they should only be implemented in accordance with regional policies.

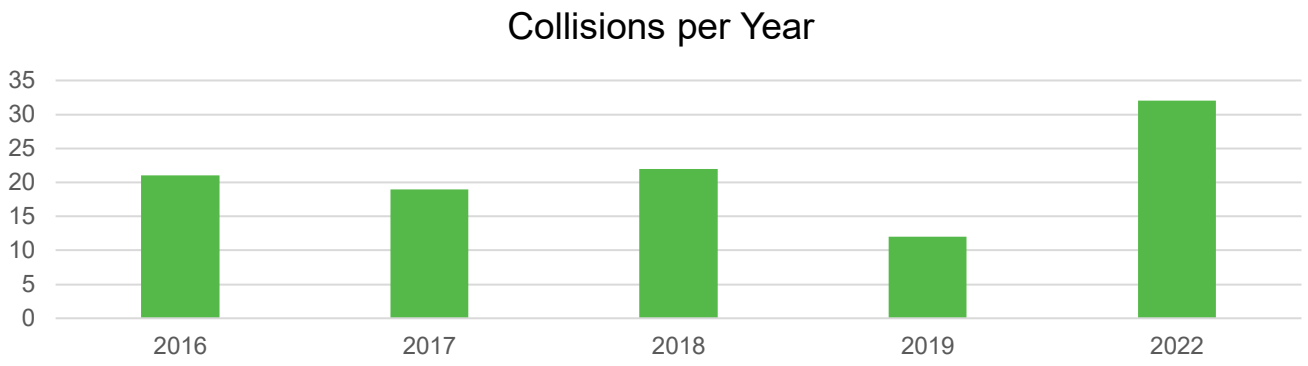
Additional wayfinding signage should also be considered to guide cyclists to the existing off-street facilities and lower classification roadways in the study area, including the Millennium Recreational Trail, which runs north-south along a hydro corridor and crosses the study area between Royal Manor Drive and Brookfield Avenue.

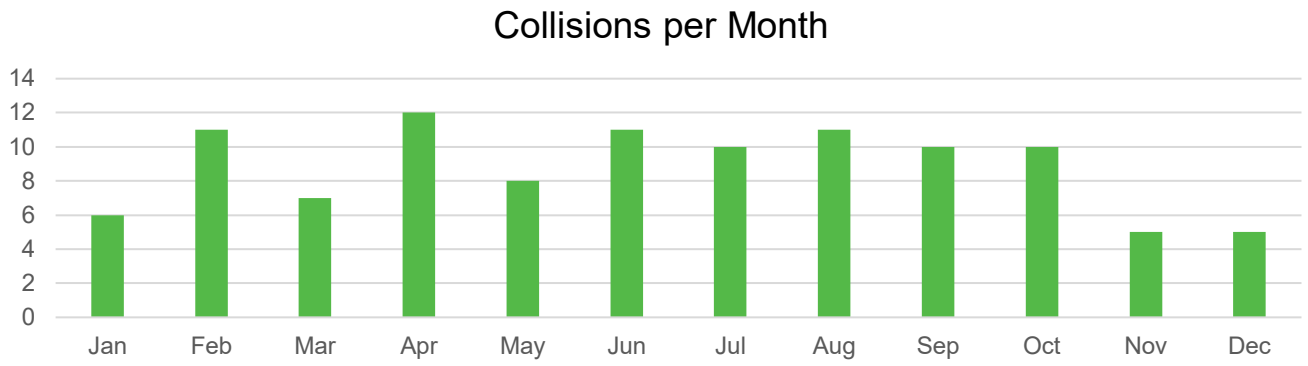
3.4 Midblock Collisions

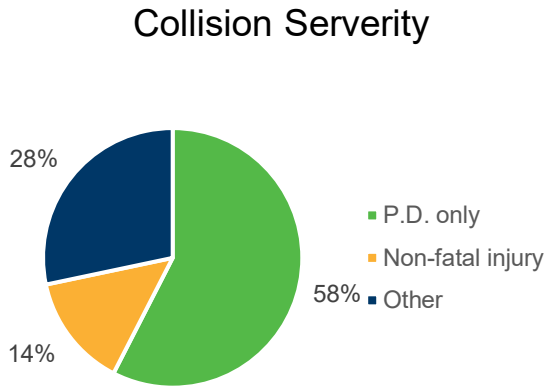
The collision information was analyzed for the midblock locations between Montrose Road and Highland Avenue. **Figure 3.4** shows a summary of the midblock collisions within the study area.

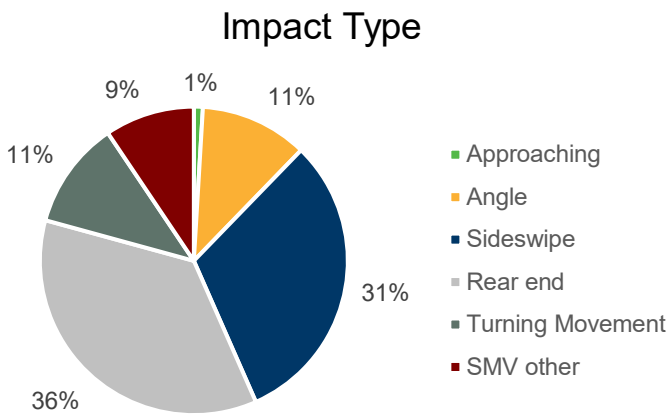
The collision history indicates that between 2016-2019 and 2022, 106 midblock collisions were reported. The environmental condition was not contributing to these collisions, as 98 of the 106 collisions occurred in a "clear" environment.

There were no fatalities during the period of data; 86% of the collisions resulted in property damage, and only 14% of collisions involved non-fatal injuries. The most common impact type was the rear end (36%) and sideswipe (31%). Other collisions included angle (11%) and turning movement (11%).









NTS
Source: Niagara Region

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Midblock Collisions Analysis Summary (2016-2019 + 2022)

A micro-analysis of the collision experience was conducted to examine individual collision events within mid-block roadway sections. The micro-analysis or "expected value analysis" is a scientifically based method for identifying abnormal crash patterns. The mid-block collisions must be tempered by the exposure (i.e. the length of the facility and the volume of traffic using the facility) since roads accommodating higher volumes experience higher collision frequencies. The volume-adjusted collision rates for a mid-block section are determined through the following formula:

$$CR = N * 10^6 / 365n * ADT * L$$

CR = Collision Rate
N = Number of Reported Collisions
'n = number of years of collision data available
ADT = Average Daily Traffic
L = Length of road section (km)

The method employs a statistical test to determine whether a crash characteristic at an intersection is significantly higher than the same crash characteristic at similar intersections or mid-block locations. Based on an analysis of the initial collision impact types, the mean and variance of each crash characteristic are calculated and used to determine the upper limit for normal occurrences (expressed as the 95th percentile).

If a collision characteristic at a problem segment exceeds the 95th percentile, the collision pattern is identified as abnormally high. A summary of the collision experience by initial impact type for the mid-block roadway sections along Regional Road 20 is provided in **Table 3.4**.

A review of the data indicates that the collision rate at the mid-block locations ranges from 0.61 to 4.54, with an average collision rate of 1.94. The abnormal upper limit at a 95% confidence level is a 2.80 collision rate.

TABLE 3.4: MIDBLOCK COLLISIONS BY INITIAL IMPACT

Segment	Segment Length (km)	ADT	Year	Approaching	Turning Movement	Angle	Rear-End	Sideswipe	SMV	Total	Average Collision/ Year	Collision Rate
RR20 between Belmont Ave & Montrose Rd	0.24	23,000	2016				2	1	1	4	3.00	1.22
			2017		1		1		2	4		
			2018				1			1		
			2019									
			2022				1	2		3		
			Total	**0**	**1**	**0**	**5**	**3**	**3**	**12**		
RRR20 between Royal Manor Drive & Belmont Avenue	0.23	23,000	2016					1		1	1.50	0.64
			2017				2			2		
			2018				1	2		3		
			2019									
			2022							0		
			Total	**0**	**0**	**0**	**3**	**3**	**0**	**6**		
RR20 between Brookfield Ave & Royal Manor Dr	0.29	23,000	2016				2			2	3.00	0.99
			2017		1		1		1	3		
			2018				2		1	3		
			2019									
			2022					4		4		
			Total	**0**	**1**	**0**	**5**	**4**	**2**	**12**		
RR20 between Mouland Avenue & Brookfield Avenue	0.10	23,000	2016				1			1	1.75	1.63
			2017					2		2		
			2018			1	2			3		
			2019									
			2022					1		1		
			Total	**0**	**0**	**1**	**3**	**3**	**0**	**7**		
RR20 between Byng Avenue & Carlton Avenue & Prince Edward Avenue	0.07	22,300	2016				3			3	3.00	4.54
			2017			1				1		
			2018				1			1		
			2019		1	1		3		5		
			2022				2			2		
			Total	**0**	**1**	**2**	**6**	**3**	**0**	**12**		
RR20 between Carlton Avenue & Prince Edward Avenue & Corwin Avenue	0.21	22,300	2016		1	1	2	3	1	8	6.75	3.20
			2017			1	1	1	1	4		
			2018				2	1	1	4		
			2019		1	1	1	1	1	5		
			2022		3	1		2		6		
			Total	**0**	**5**	**4**	**6**	**8**	**4**	**27**		
RR20 between Corwin Avenue & Depew Avenue	0.05	22,300	2016						1	1	2.00	4.10
			2017			1				1		
			2018		1		2	2		5		
			2019							0		
			2022				1			1		
			Total	**0**	**1**	**1**	**3**	**2**	**1**	**8**		
RR20 between btwn Depew Avenue & Dorchester Road	0.12	22,300	2016				1			1	0.75	0.62
			2017							0		
			2018							0		
			2019							0		
			2022			1	1			2		
			Total	**0**	**0**	**1**	**2**	**0**	**0**	**3**		
RR20 between btwn Franklin Avenue & Byng Avenue	0.07	22,300	2016							0	1.75	2.53
			2017							0		
			2018				1			1		
			2019				1			1		
			2022		2			3		5		
			Total	**0**	**2**	**0**	**2**	**3**	**0**	**7**		
RR20 between btwn Glenholme Avenue & Franklin Avenue	0.06	22,300	2016							0	1.00	1.79
			2017							0		
			2018							0		
			2019				1			1		
			2022			2	1			3		
			Total	**0**	**0**	**2**	**2**	**0**	**0**	**4**		
RR20 between Highland Avenue & Glenholme Avenue	0.09	22,300	2016								0.75	0.82
			2017									
			2018									
			2019									
			2022					3		3		
			Total	**0**	**0**	**0**	**0**	**3**	**0**	**3**		
RR20 between Dorchester Road & Mouland Avenue	0.10	22,300	2016								1.25	1.25
			2017		1	1				2		
			2018				1			1		
			2019									
			2022	1				1		2		
			Total	**1**	**1**	**1**	**1**	**1**	**0**	**5**		
-	-		Overall Total	**1**	**12**	**12**	**38**	**33**	**10**	**106**	-	-
										Average	-	1.94
										Standard Error	-	0.39
										ormal Upper Limit (95% Confidence Level)	-	**2.80**



3.4.1 Regional Road 20 Between Byng and Carlton

As the segment along Regional Road 20 between Byng Avenue and Carlton Avenue/Prince Edward Avenue is noted to have a collision rate of 4.54, this location is statistically significant.

- Further review of this midblock section indicates the segment length is approximately 65 metres, with three all-movement access points spaced relatively close on the south side of the road. The driveways do not conform to the spacing criteria outlined by the Transportation Association of Canada Geometric Design Guide for Canadian Road (TAC-GDGCR).
- The access points reflect high-volume generators during typical peak hours of the road (Retail and Fast-Food Restaurants) and would likely have significant turning movements occurring.
- Given the spacing of the driveways are relatively close, a driver's workload is increased through this section, which could contribute to higher collision rates. While installing a median along Regional Road 20 to restrict driveway and side street access could address some concerns, the number and severity of collisions are still low overall.
- Most properties within this short section have at least two access points to Regional Road 20. From a safety perspective, providing a single access point would be beneficial to reduce the number of accesses within this segment length or restrict turning movements (right in/out) if close to an adjacent intersection.

Figure 3.5 illustrates a proposed depiction of the potential access closures. As noted, there is a potential to close off two driveways and restrict one connection to right in/out operation.



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Proposed Access Closures
Lundy's Lane Between Byng and Carlton

3.4.2 Regional Road 20 Between Corwin and Depew

As the segment along Regional Road 20 between Corwin Avenue and Depew Avenue is noted to have a collision rate of 4.10, this location is statistically significant.

- Further review of this midblock section indicates the segment length is approximately 50 metres, with two all-movement access points on the road's opposite sides. The connections appear to have sufficient space not to create left-turn lockups between drivers along Regional Road 20. The driveway on the north side provides access to a relatively small animal hospital, which would typically not be a high-traffic generator.

- Rear-end and sideswipe collisions were the most notable for the segment, accounting for 63% of all collisions.

- Rear-end and sideswipe collisions in this setting could also be due to inter-user speed differentials precipitated by traffic congestion, poor signal timing, lack of exclusive turn lanes, accesses proximate to the intersection, and/or driver distraction. This typically indicates traffic congestion causing safety performance issues and could be related to queue lengths created at the upstream intersection of Regional Road 20 and Dorchester Road.

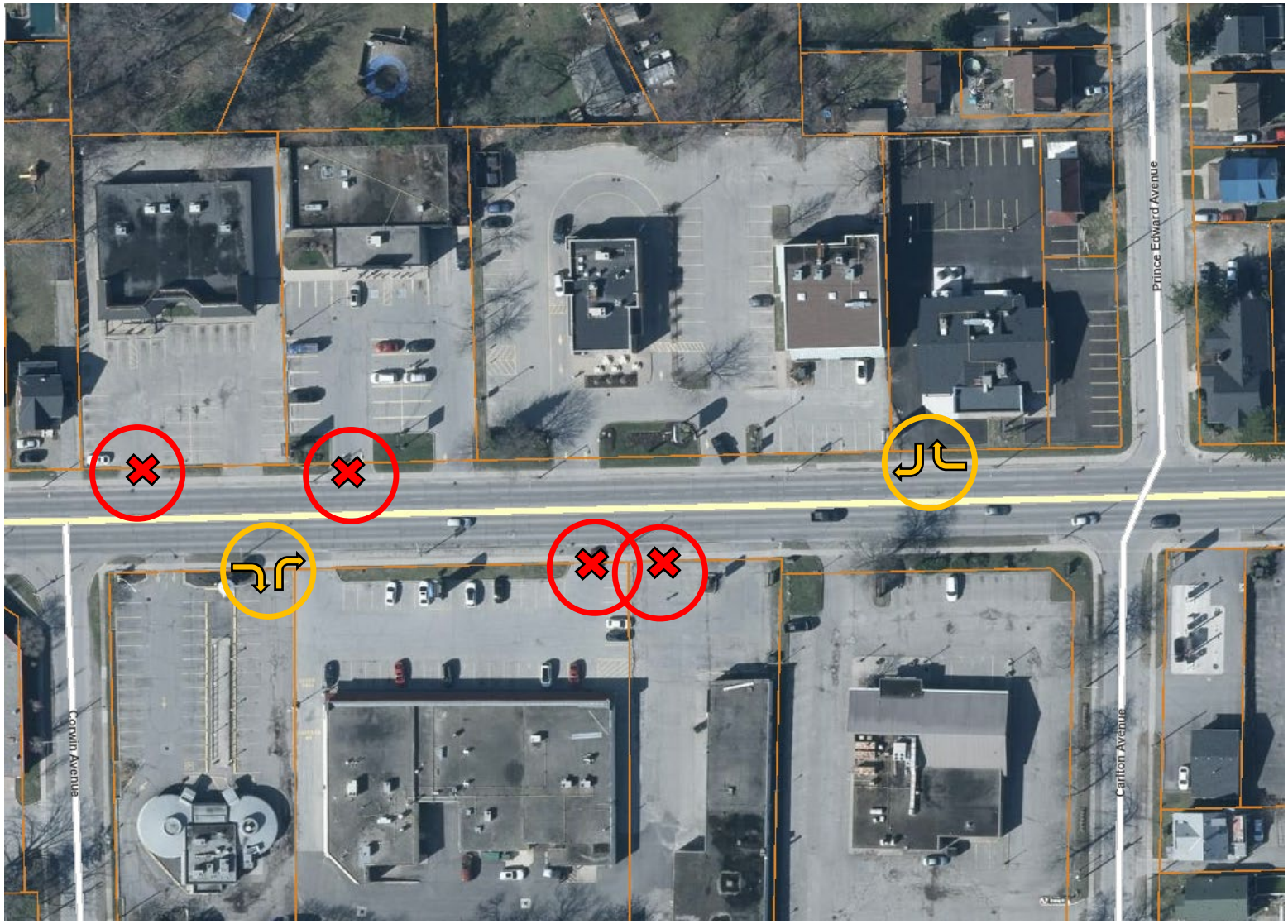
- The higher frequency of rear-end and sideswipe collisions could also likely be attributable to drivers being unaware of the access points to the handful of businesses within this section of the roadway. While separate left-turn lanes would not likely be warranted, a centre two-way left-turn lane may improve safety along Regional Road 20 by reducing the risk of rear-end collisions.

3.4.3 Regional Road 20 between Corwin and Carlton

As the segment along Regional Road 20 between Corwin Avenue and Prince Edward Avenue/Carlton Avenue is noted to have a collision rate of 3.20, this location is statistically significant.

- Further review of this midblock section indicates the segment length is approximately 207 metres, with 14 all-movement access points spaced relatively close on both sides of the road. The driveways do not conform to the spacing criteria outlined by the Transportation Association of Canada Geometric Design Guide for Canadian Road (TAC-GDGCR).
- The access points reflect high-volume generators during typical peak hours of the road (Retail and fast and Fast-Food Restaurants) and would likely have significant turning movements occurring.
- Given the spacing of the driveways are relatively close, a driver's workload is increased through this section, which could contribute to higher collision rates. While installing a median along Regional Road 20 to restrict driveway and side street access could address some concerns, the number and severity of collisions are still low overall.
- Most properties within this short section have at least two access points to Regional Road 20. It would be beneficial from a safety perspective only to provide a single access point to reduce the number of accesses within this segment's length.

Figure 3.6 illustrates a proposed depiction of the potential access closures. As noted, there is a potential to close off four driveways and restrict two other connections to right in/out operation.



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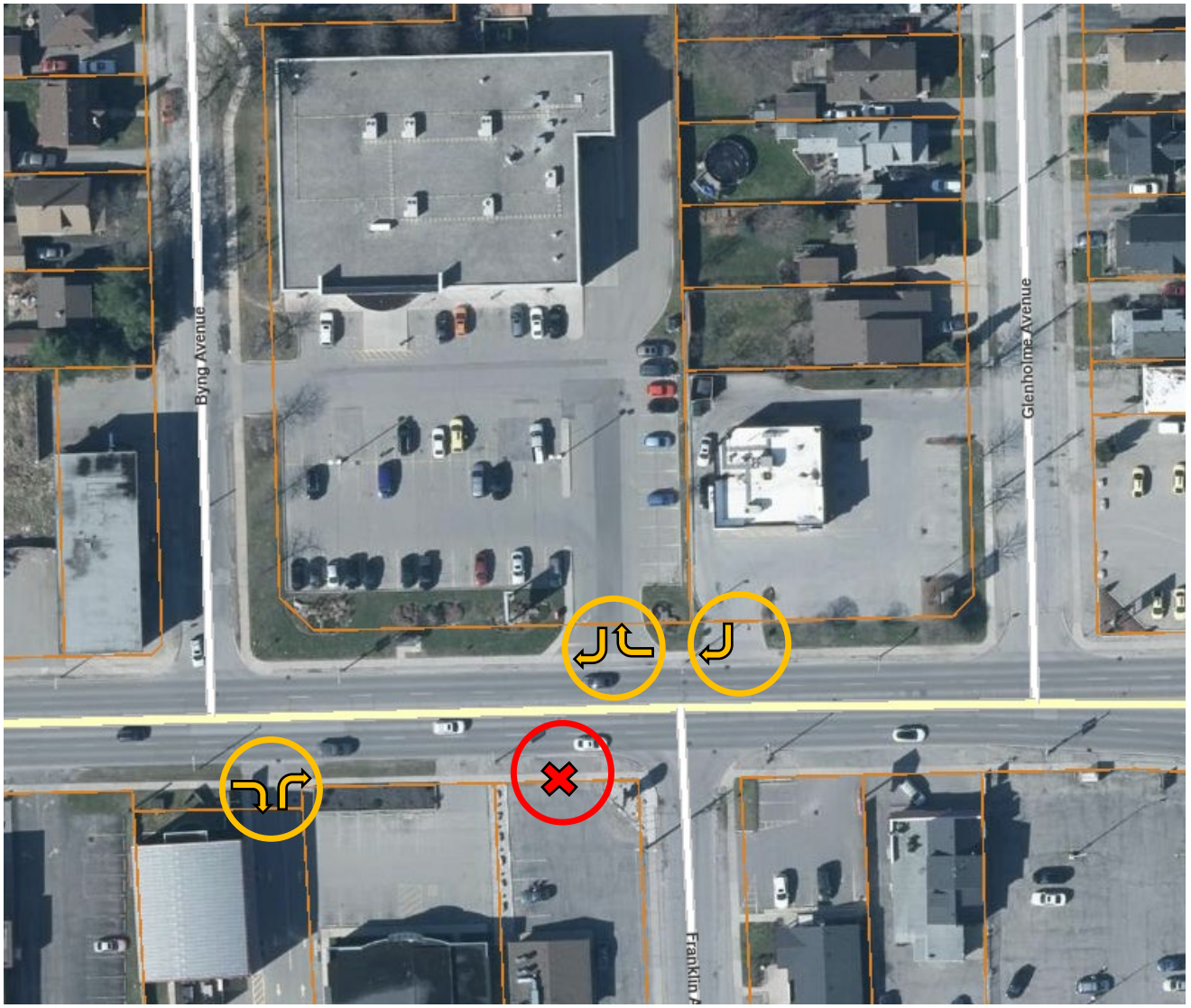
Proposed Access Closures
Lundy's Lane Between Corwin and Prince Edward

3.4.4 Regional 20 between Franklin Avenue and Byng

The segment along Regional Road 20 between Franklin Avenue and Byng Avenue is noted to have a collision rate of 2.53; this mid-block location is significant as it exceeds the average collision rate.

- Further review of this midblock section indicates the segment length is approximately 70 metres, with four all-movement access points on the road's opposite sides. The driveways do not conform to the spacing criteria outlined by (TAC-GDGCR).
- Rear-end and sideswipe collisions at this mid-block location account for approximately 71% of the reported events, indicating collisions between vehicles moving in the same direction. Turning movement collisions accounted for 29% of the total collisions. Weather does not appear to be a contributing factors, as 100% of all collisions occurred during dry conditions. Lighting, however, could be a factor, as 50% of collisions occurred during the evening hours.
- Given the spacing of the driveways are relatively close, a driver's workload is increased through this section, which could contribute to higher collision rates.
- Rear-end and sideswipe collisions in this type of setting could also be due to inter-user speed differentials precipitated by traffic congestion, poor signal timing, lack of exclusive turn lanes, accesses proximate to the intersection, and/or driver distraction. This typically indicates traffic congestion causing safety performance issues and could be related to queue lengths created at the upstream intersection of Regional Road 20 and Dorchester Road.
- Most properties within this short section have at least two access points to Regional Road 20. From a safety perspective, providing a single access point would be beneficial to reduce the number of accesses within this segment length or restrict turning movements if close to an adjacent intersection.

Figure 3.7 illustrates a proposed depiction of the potential access closures. As noted, there is a potential to close off one driveway and restrict three other connections to right in/out operation.



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Proposed Access Closures
Lundy's Lane Between Franklin and Byng Avenue

3.4.5 Midblock Impact Type Trend

Further review of the midblock collision data indicates the total number of collisions between 2016-2019 and year 2022 was 106. Of 106 midblock collisions in the study area, 71 are reported to be rear-end and sideswipe classifications.

The higher frequency of rear-end and sideswipe collisions is likely attributable to drivers being unaware of the access points, particularly for visiting tourists, coupled with large turning volumes and the absence of turning lanes. With the large presence of visitors to the area, the lack of directional signage could also be contributing to the number of rear-end collisions with drivers' inattention through missing turn-offs, slowing down to determine their way and drivers accepting short headways (e.g., drivers following too closely as they travel in platoons) during heavy volume conditions.

While separate left-turn lanes along Regional Road 20 would not likely be warranted at every intersection based on the current and projected left-turning volumes, a centre two-way left-turn lane may improve safety along Regional Road 20 by reducing the risk of rear-end collisions. The centre two-way left-turn lane may also aid side street traffic merging onto Regional Road 20 traffic, allowing for two-stage left turns. Two-stage left turns occur when a left-turning vehicle from the side street uses the centre two-way left-turn lane to accelerate and merge through traffic along the main road. Providing a two-way left-turn lane is expected to result in a 26% reduction in midblock collisions [11].

[11] NCHRP Report 420-Impacts of Access Management Techniques, 1999

3.5 Intersection Collisions

The collision information was analyzed for the intersections along Regional Road 20 between Montrose Road and Highland Avenue. **Figure 3.8** shows a summary of the intersection collisions within the study area.

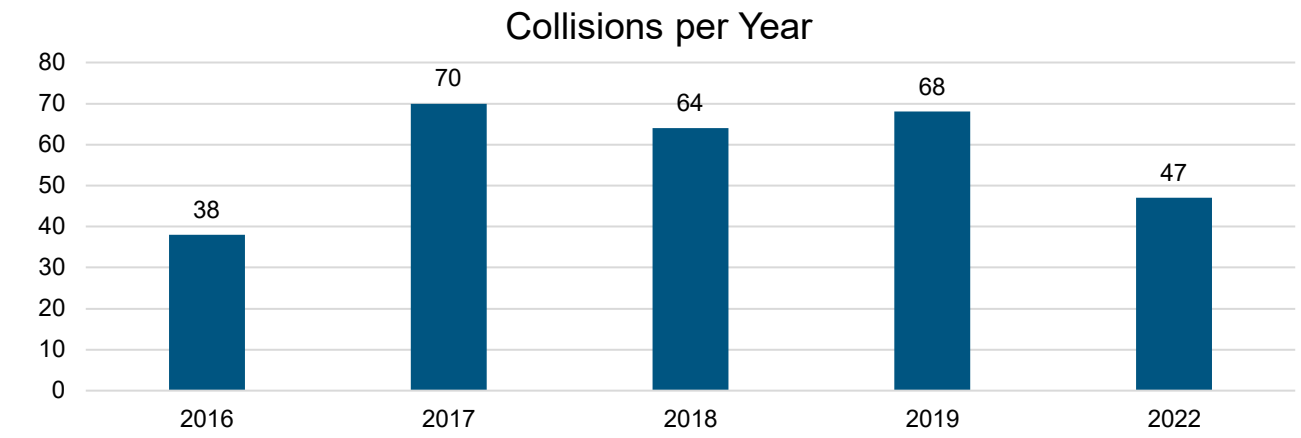
Collision history indicates that 287 intersection collisions occurred. Unsignalized intersections accounted for 26% of the total collisions, while signalized intersections accounted for 74%. The signalized intersection of Regional Road 20 and Montrose Road accounts for 32% of all intersection collisions, while Regional Road 20 at Dorchester Road accounts for 28% of all intersection collisions.

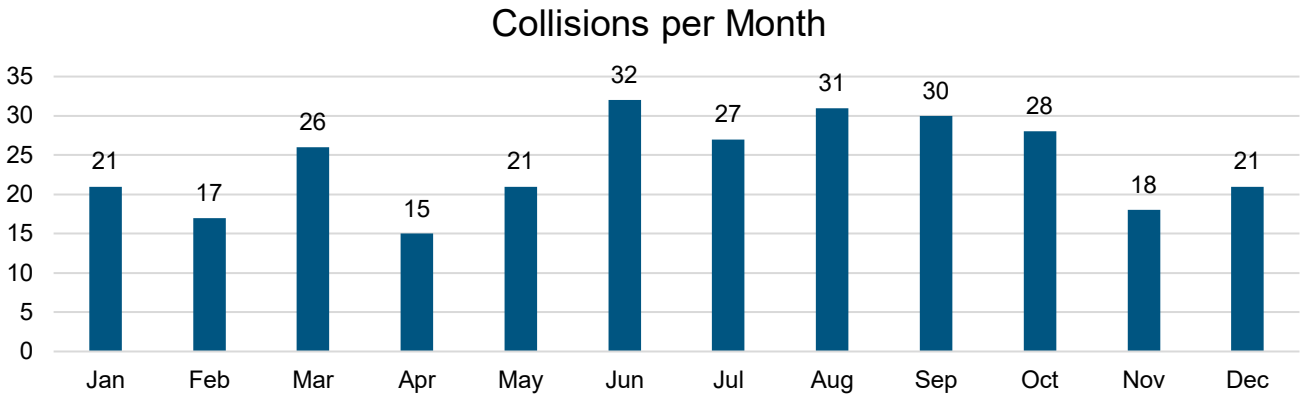
The environmental condition was a partial factor in some collisions, as 19% occurred under non-ideal conditions (i.e., rain, snow, etc.), while 81% occurred under a “clear” environment. The collisions were distributed relatively evenly throughout the week and over the spring, summer, winter and fall seasons.

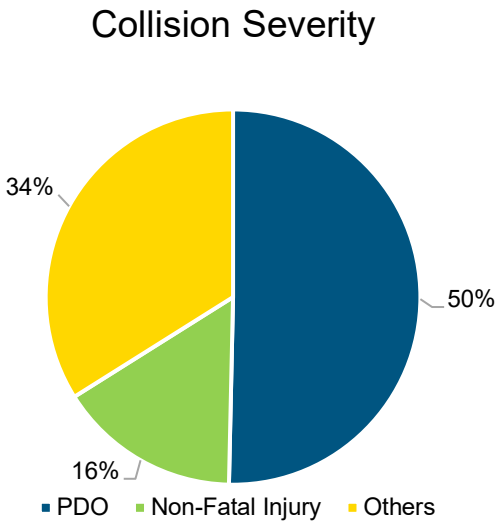
The most common impact types were rear-ended (47%) and turning movement (17%). Other notable types of collisions included angle movements (14%), sideswipe (12%) and single motor vehicle collisions (7%).

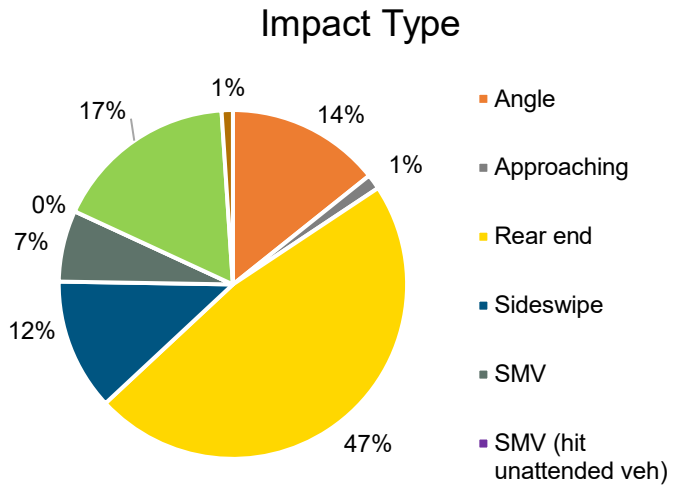
One fatality was reported at Regional Road 20 and Montrose Road intersection in 2019. The collision occurred in February with snow as the environmental conditions with the light condition noted as dark. The collision was noted as a single motor vehicle collision with the driver performing an eastbound left turn movement and losing control.

The remaining collisions were classified as property damage only (84%), and non-fatal injury was reported as 16%.









NTS
Source: Niagara Region

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Intersection Collisions Analysis Summary (2016-2019 + 2022)

A micro-analysis of the collision review was conducted to examine individual collision events at study area intersections. A summary of the collision experience by initial impact type for the unsignalized and signalized intersections is provided in **Table 3.5**.

A review of the data indicates that the average collisions per year at the unsignalized intersections range from 0.50 to 4.75, with an average frequency of 1.31 collisions per year. The abnormal upper limit at a 95% confidence level is 2.52 collisions per year.

TABLE 3.5A: UNSIGNALIZED COLLISIONS BY INITIAL IMPACT

Unsignalized Intersection	Year	Approaching	Angle	Rear-End	Sideswipe	Turning Movement	SMV	Total	Average Collision/ Year
Lundy's Lane at Mouland Avenue	2016					1		1	0.50
	2017	1						1	
	2018							0	
	2019							0	
	2022							0	
	Total	**1**	**0**	**0**	**0**	**1**	**0**	**2**	
Lundy's Lane at Brookfield Avenue	2016			1				1	0.75
	2017						1	1	
	2018					1		1	
	2019							0	
	2022							0	
	Total	**0**	**0**	**1**	**0**	**1**	**1**	**3**	
Lundy's Lane at Byng Avenue	2016					1		1	1.75
	2017		1	1	1			3	
	2018			1		1		2	
	2019					1		1	
	2022							0	
	Total	**0**	**1**	**2**	**1**	**3**	**0**	**7**	
Lundy's Lane at Depew Avenue	2016							0	0.50
	2017							0	
	2018			1		1		2	
	2019							0	
	2022							0	
	Total	**0**	**0**	**1**	**0**	**1**	**0**	**2**	
Lundy's Lane at Glenhome Avenue	2016							0	0.75
	2017							0	
	2018					1		1	
	2019		1					1	
	2022			1				1	
	Total	**0**	**1**	**1**	**0**	**1**	**0**	**3**	
Lundys' Lane at Carlton Avenue	2016							0	0.75
	2017			1				1	
	2018							0	
	2019				2			2	
	2022							0	
	Total	**0**	**0**	**1**	**2**	**0**	**0**	**3**	
Lundy's Lane at Corwin Avenue	2016				1			1	0.75
	2017							0	
	2018		1					1	
	2019							0	
	2022			1				1	
	Total	**0**	**1**	**1**	**1**	**0**	**0**	**3**	
Lundy's Lane at Franklin Avenue	2016		1	1			1	3	4.75
	2017			1	2		1	4	
	2018		1	1		1		3	
	2019		2			1	1	4	
	2022		1	2		2		5	
	Total	**0**	**5**	**5**	**2**	**4**	**3**	**19**	
-	Overall Total		**8**	**12**	**6**	**11**	**4**	**42**	-
								Average	1.31
								Standard Deviation	1.44
								Abnormal Upper Limit (95% Confidence Level)	**2.52**

TABLE 3.5B: SIGNALIZED COLLISIONS BY INITIAL IMPACT

Signalized Intersection	Year	Approaching	Angle	Rear-End	Sideswipe	Turning Movement	SMV	Total	Average Collision/ Year
Lundy's Lane at Belmont Avenue	2016			1	1			2	5.00
	2017			5		1		6	
	2018		1	1			1	3	
	2019		1	6	1			8	
	2022				1			1	
	Total	**0**	**2**	**13**	**3**	**1**	**1**	**20**	
Lundy's Lane at Royal Manor Drive	2016			3				3	6.00
	2017			7	2	1		10	
	2018				1			1	
	2019			5	2			7	
	2022		1	1		1		3	
	Total	**0**	**1**	**16**	**5**	**2**	**0**	**24**	
Lundy's Lane at Highland Avenue	2016			2		1	1	4	7.00
	2017		3	1		1	1	6	
	2018		1	6	1		3	11	
	2019		1	3				4	
	2022			1		1	1	3	
	Total	**0**	**5**	**13**	**1**	**3**	**6**	**28**	
Lundy's Lane at Dorchester Road	2016			5	2	1	2	10	20.00
	2017		8	6	1	1		16	
	2018	2	5	6	1	6	1	19	
	2019	1	1	6	4	4		15	
	2022		1	12	1	1	2	17	
	Total	**3**	**15**	**35**	**9**	**13**	**5**	**80**	
Lundy's Lane at Montrose Road	2016			6	1	4	1	12	23.25
	2017		3	12	4	2	1	22	
	2018		3	6	1	6	2	18	
	2019		2	16		5	2	25	
	2022		2	7	5	2		16	
	Total	**0**	**10**	**47**	**11**	**19**	**6**	**93**	
-	Overall Total	**3**	**33**	**124**	**29**	**38**	**18**	**245**	-
								Average	12.25
								Standard Deviation	3.87
								Abnormal Upper Limit (95% Confidence Level)	**23.01**

3.5.1 Regional Road 20 at Franklin Avenue

The unsignalized intersection of Regional Road 20 and Franklin Avenue is noted to have a collision rate of 4.75 per year, this intersection is statistically significant.

- Rear-end and sideswipe collisions at this intersection accounted for approximately 37% of the reported events, angle accounting for 26%, turning movements at 21%, and single motor vehicle at 16%.
- Weather does not appear to be a contributing factor, as 89% occur with dry conditions. Lighting could be a factor in the collisions, as 42% occurred during the evening hours; however, the intersection does appear to have overhead lamps.
- Angle collisions occur when two vehicles approaching at an angle from non-opposing directions (i.e., not a right-angle crash) collide, often due to failing to obey stop/yield signs, running a red light, etc. The high frequency of angle collisions at this intersection could be attributable to restrictive sight distance, given that a large inground sign is present within the southwest corner, which could obstruct sight distance. In addition, several parking spaces within the southeast corner are adjacent to the property line and could obstruct a driver's field of view along Franklin Avenue and looking to the east. If drivers are hesitant to move closer to Regional Road 20 to gain sufficient sight distance before initiating their turning maneuvers, the restricted sight distance could be a factor in collisions at this intersection.
- Two driveways on the north side of Regional Road 20 provide access to a fast-food restaurant and a pharmacy. Drivers at the stop-controlled intersection of Franklin Avenue and the two driveways could have difficulty determining who has the right of way to enter the Regional Road 20 corridor.
- These driveways could also be attributed to the number of rear-end and sideswipe collisions, given that no deceleration lane is provided along Regional Road 20. Deceleration lanes are advantageous because the driver of a vehicle leaving the roadway cannot slow down on the through-traffic lane if a deceleration lane is not provided. The failure to brake by the following drivers because of a lack of alertness may result in rear-end collisions. Providing a westbound right turn taper may reduce the risk of rear-end collisions at the driveways, or limiting the movements at the driveways to right turns only could reduce conflict points.
- A potential mitigation measure to reduce the number of angle collisions is providing improved sight distance at the intersection



through daylight triangles within the southeast and southwest corners. The provision of the daylight triangle would form a part of the roadway network. It would limit the placement of objects and vegetation with height restrictions to ensure the field of view is not obstructed for drivers along Franklin Avenue.

- In addition, as the driveways on the north side of the road are technically located within the functional area of the Regional Road 20 and Franklin Avenue intersection, limiting the driveways to the right out only could reduce the number of collisions by decreasing the number of decisions, drivers must make as well as reducing the number of conflict points. The fast-food restaurant and pharmacy have secondary access to Glenholme Avenue and Byng Avenue, so the restriction should not impact these sites' operation and vehicle circulation.
- While installing a median (to restrict driveway and side street access) could address some concerns, the number and severity of collisions do not likely warrant this action.

3.5.2 Regional Road 20 at Byng Avenue

The intersection of Regional Road 20 at Byng Avenue is noted to have a collision rate of 1.75 per year; this location is significant as it exceeds the average collision rate.

- Turning movement collisions at this location account for approximately 43% of all collisions, followed by rear-end and sideswipe collisions, accounting for 43%. Angle motor vehicle accidents account for 14% of the total collisions.
- Weather does not appear to be a contributing factor, as 71% of all collisions occurred during dry conditions. Lighting could be a factor, as 57% of collisions occur during evening hours; however, the intersection appears to have overhead lamps.
- Turning movement collisions occur when two vehicles approaching from opposite directions collide due to at least one vehicle attempting to make a left or U-turn in front of the opposing vehicle. A common cause of turning collisions may be obstruction of sightlines.
- These types of collisions could also be influenced by traffic congestion. Two of the three collisions occurred during the early weekday afternoon hours when volumes are likely building along the roadway before the PM peak hour. Turning movement collisions can happen more often when gaps between vehicles become smaller and less frequent, and delays increase due to traffic congestion. Potential mitigation measures may include the addition of a left-turn lane to provide additional

space and time for a vehicle to complete a left-turn without being pressured into completing a turn to “free up” the through lane.

- Rear-end and sideswipe collisions in this type of setting are usually due to inter-user speed differentials precipitated by traffic congestion, poor signal timing, lack of exclusive turn lanes, accesses proximate to the intersection, and/or driver distraction. This is typically indicative of traffic congestion causing safety performance issues.

A review of the data for signalized intersections indicated that the average collisions per year range from 5.00 to 23.25, with an average frequency of 12.25 collisions per year. The abnormal upper limit at a 95% confidence level is 23.01 collisions per year.

3.5.3 Regional Road 20 at Montrose Road

As the signalized intersection of Regional Road 20 and Montrose Road is noted to have a collision rate of 23.25 per year, this intersection is statistically significant.

- Rear-end and sideswipe collisions at this intersection accounted for approximately 62% of the reported events, with turning movements accounting for 20%, angle at 11% and single motor vehicle at 6%.
- Weather does not appear to be a contributing factors, as 73% of all collisions occurred during dry conditions. Lighting could be a factor, at 53% of collisions during evening hours; however, the intersection appears to have overhead lamps.
- Rear-end collisions occur when a leading vehicle makes a sudden or unexpected stop, causing the following vehicle to collide or when a following vehicle is travelling too closely to the leading vehicle. Possible causes for sudden stops include pedestrian crossings, multiple or closely spaced driveway accesses to adjacent land uses, a high number of turning movements, signage/traffic control visibility, non-standard amber times, and slippery road conditions.
- Rear-end collisions are more common at intersections with significant queuing when a driver unexpectedly needs to slow down. The higher frequency of rear-end collisions is likely attributable to large turning volumes for approaches at the intersection with the provided storage unable to accommodate the queue. As a result, the queue spills towards the through lane, creating an inroad conflict, which is a hazard, mainly if drivers accept short headways (e.g., drivers following too

closely as they travel in platoons) during heavy volume conditions.

- A review of the existing operational analysis indicates that during peak hours, the 95th percentile queue length for the eastbound and westbound approaches exceeds the current storage requirements.
- The intersection is also provided with a right-turn channelization for the westbound approach. Channelization separates traffic movements and minimizes conflict between movements at an intersection approach. However, the channelization also creates a merge area where right-turning vehicles have to merge with the mainline traffic of the crossing roadway. Drivers, especially older drivers, may not be comfortable with the higher speed of the turn when trying to turn their heads to look upstream while making the merging decision. Some drivers may prefer to slow down or stop at the end of the lane. This behaviour usually increases rear-end collisions, as more familiar drivers who are more comfortable with the higher speed may not anticipate the stopped vehicles. Furthermore, pedestrian safety is an issue given the free-flow right-turn movement using the channelized lane and the extra pedestrian crossing created by this lane.
- A potential mitigation measure to reduce the number of collisions is to provide for increased storage lengths for the eastbound and westbound left-turn movements. In addition, given the volume of westbound right turns during the weekday peak hour, channelization of this intersection is not required from an operational or capacity perspective. To improve the pedestrian crossing environment and reduce vehicle turning speeds, it is recommended that the channelized right turn lane be removed as part of the preferred design.

3.5.4 Regional Road 20 at Dorchester Road

As the signalized intersection of Regional Road 20 and Dorchester Road is noted to have a collision rate of 20.00 per year, this intersection significantly exceeds the average collision rate.

- Rear-end and sideswipe collisions at this intersection accounted for approximately 55% of the reported events, with angle accounting for 19%, turning movements at 16% and single motor vehicles at 6%.
- Weather and lighting do not appear to be contributing factors, as 79% of all collisions occurred during daylight hours, with 84% occurring in dry conditions.



- Excessive queuing at intersections leads to more rear-end collisions due to insufficient storage capacity for the queue, causing it to spill back towards the through lane. This poses a hazard during heavy traffic, when drivers may follow too closely. Existing analysis shows that the eastbound approach requires additional storage during peak hours.
- The approaching collision rate at this intersection is significantly higher than the Ontario Averages (1%) and the overall study areas averages (2%) for impact types. The Regional Road 20 at Dorchester Road intersection accounts for (60%) of all approach collisions within the study area. Further review of the collision data indicates that all approach collisions occurred under dry conditions and during daylight hours, ruling out weather and pavement as a variable.
- Approaching collisions occur when one vehicle proceeds through the intersection and collides with another. Possible causes for this type of collision are improper turns. Approach collisions usually involve vehicles travelling in opposite directions on the same street, with one vehicle attempting to turn left in front of the oncoming vehicle. These collisions tend to occur at signalized intersections, with confusion at the end of a green interval (when the signal light turns yellow) being a significant contributing factor in approach collisions.
- Existing left-turn lanes for the eastbound and westbound approaches are arranged through an adjacent configuration instead of an opposing arrangement. This configuration can create visibility restrictions for drivers attempting to turn left during the permissive phase when drivers in the opposite direction are trying to perform the same manoeuvre, or a through vehicle is preceding through the intersection. This is aggravated when large vehicles, such as trucks, or in some cases, large pick-up trucks, are in the opposing left-turn lanes and could contribute to the high number of approaching collisions.
- To improve this situation, shadow lanes to offset the left turn lane within pavement markings could considered part of the preferred design to enhance visibility for left turn movements.

3.6 Collision Review Mitigation Measures

Based on the collision review, the following is recommended to be considered as part of the preferred design for Regional Road 20:

- As pedestrians should be encouraged to cross at controlled crosswalks in most situations, it is recommended that a pedestrian signal or crossover be provided along Regional Road 20 between Dorchester Road and Highland Avenue.
- Cyclists wishing to travel east-west along Regional Road 20 are faced with shared arrangements with high volumes of vehicle traffic or are required to divert to lower-order nearby roadways such as Barker Street to limit exposure to vehicle conflicts.
- Given the current conditions within the study area, the only viable option for cycling is to maintain the status quo and let vehicles and cyclists share the road using the existing platform width. Signing (i.e., share the road) could be utilized to highlight that the corridor accommodates both modes of travel. While these measures are expected to provide a nominal improvement to cycling safety, they should only be implemented in accordance with regional policies.
- Additional wayfinding signage should also be considered to guide cyclists to the existing off-street facilities in the study area, including the Millennium Recreational Trail, which runs north-south along a hydro corridor and crosses the study area between Royal Manor Drive and Brookfield Avenue.
- Regional Road 20 between Byng Avenue and Carlton Avenue/Prince Edward Avenue has three all-movement access points spaced relatively close on the south side of the road. It would be beneficial from a safety perspective to close off two driveways and restrict one connection to right in/out operation to reduce conflict points.
- Regional Road 20 between Franklin Avenue and Byng Avenue has four all-movement access points spaced relatively close on the road's north and south sides. It would be beneficial from a safety perspective to close off one driveway and restrict two connections to right in/out operation and only one connection to right out.
- To reduce the number of angle collisions at the intersection of Regional Road 20 and Franklin Avenue, improved sight distance should be considered by implementing daylight triangles within the southeast and southwest corners. The provision of the daylight triangle would form a part of the roadway network. It would limit the placement of objects and

vegetation with height restrictions to ensure the field of view is not obstructed for drivers along Franklin Avenue.

- Regional Road 20 between Corwin Avenue and Prince Edward Avenue/Carlton Avenue has 14 all-movement access points spaced relatively close on the road's north and south sides. It would be beneficial from a safety perspective to close off four driveways and restrict two other connections to right in/out operation.
- A two-way centre left-turn lane can be considered as part of the overall preferred design.
- At the intersection of Regional Road 20 and Dorchester Road, the provision of shadow lanes for the eastbound approach should be considered as part of the preferred design to improve visibility for left-turn movements.
- At the intersection of Regional Road 20 and Montrose Road, storage lengths for the eastbound and westbound left-turn movements be increased. To improve the pedestrian crossing environment and reduce vehicle turning speeds, it is recommended that the channelized right turn lane be removed as part of the preferred design.

4 Future Demand

To be consistent with the Niagara Region TMP, the horizon year of 2041 has been used for traffic forecasting and analysis.

4.1 Future Population Employment Growth

Traffic volume growth is closely tied to population and employment growth in the surrounding area. As outlined in the Niagara Region TMP, Niagara Region is forecast to show a significant increase between 2016 and 2041, [12] with an annual growth in residents projected at a rate of 1.2% per year and yearly employment growth projected at a rate of 1.1% per year.

The steady growth in population and employment in the Region is likely reflected in the traffic growth along major road corridors.

4.2 Traffic Forecasts

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.

Traffic growth in the study corridor is based on forecasts from the Niagara Region Travel Forecasting Model, a tool used to forecast and analyze travel patterns across the Niagara Region and the Greater Toronto and Hamilton Area (GTHA). The model considers growth in population and employment, road and transit infrastructure improvements, mode choice, and transportation policies when forecasting future demand patterns.

Traffic growth rates on Regional Road 20 were calculated using traffic volumes forecast for the model base year (2011) and horizon year (2041).

Table 4.1 summarizes the traffic growth rates forecast along Regional Road 20 for the AM and PM peak hours. Volumes in the corridor are forecast to grow between 0.7% and 2.1% in the peak direction (eastbound in the AM and westbound in the PM) during the AM and PM peak hours, with an average annual growth rate of 1.6% in the AM peak hour and 1.2% in the PM peak hour.

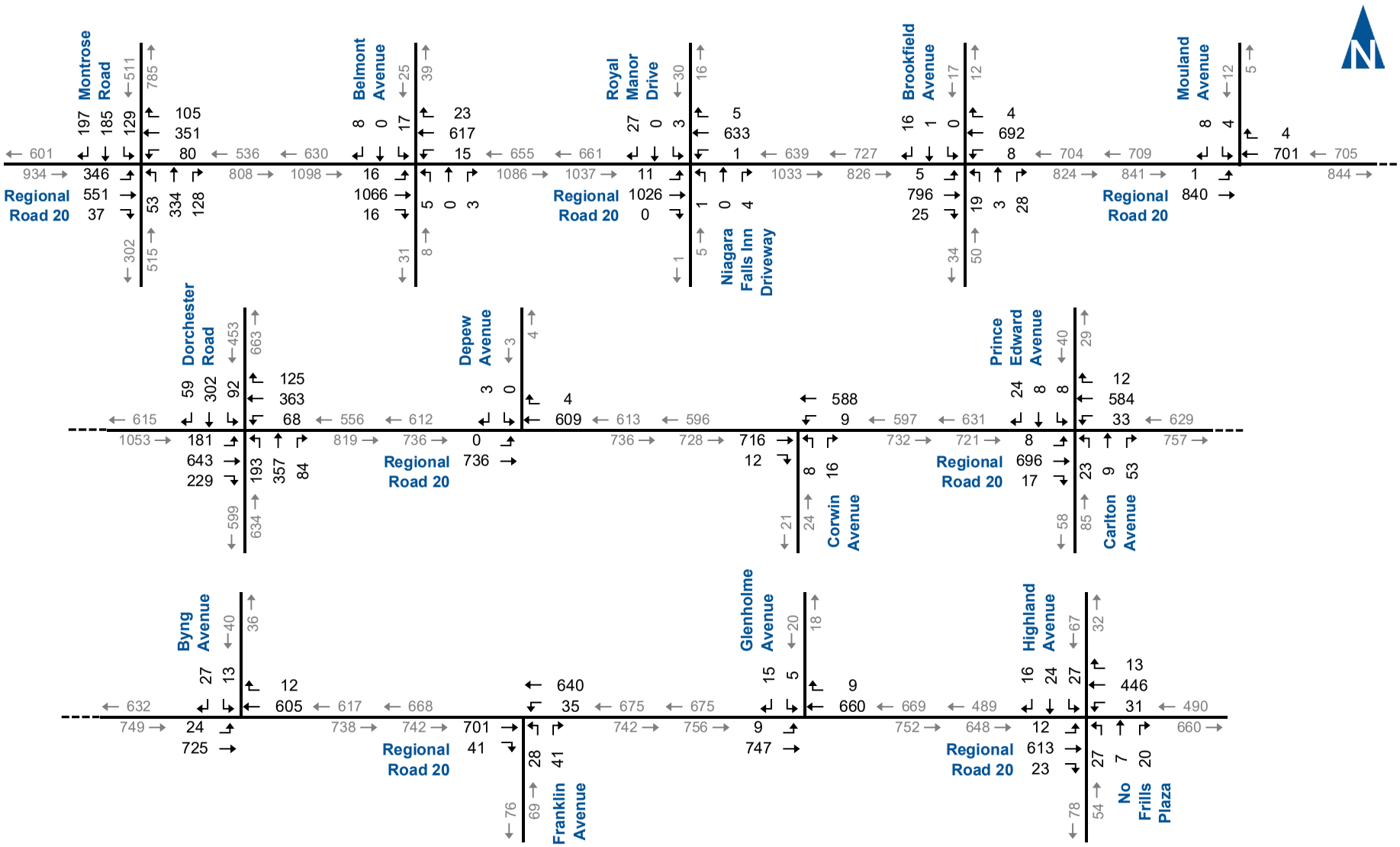
[12] Niagara Region TMP 2017



Based on these forecasts, a growth rate of 1.6% is utilized to grow the base volumes to the 2041 horizon year. **Figure 4.1** and **Figure 4.2** illustrate the forecast traffic demand in the study corridor.

TABLE 4.1: RR 20 FORECAST TRAFFIC GROWTH RATE (2011-2041)

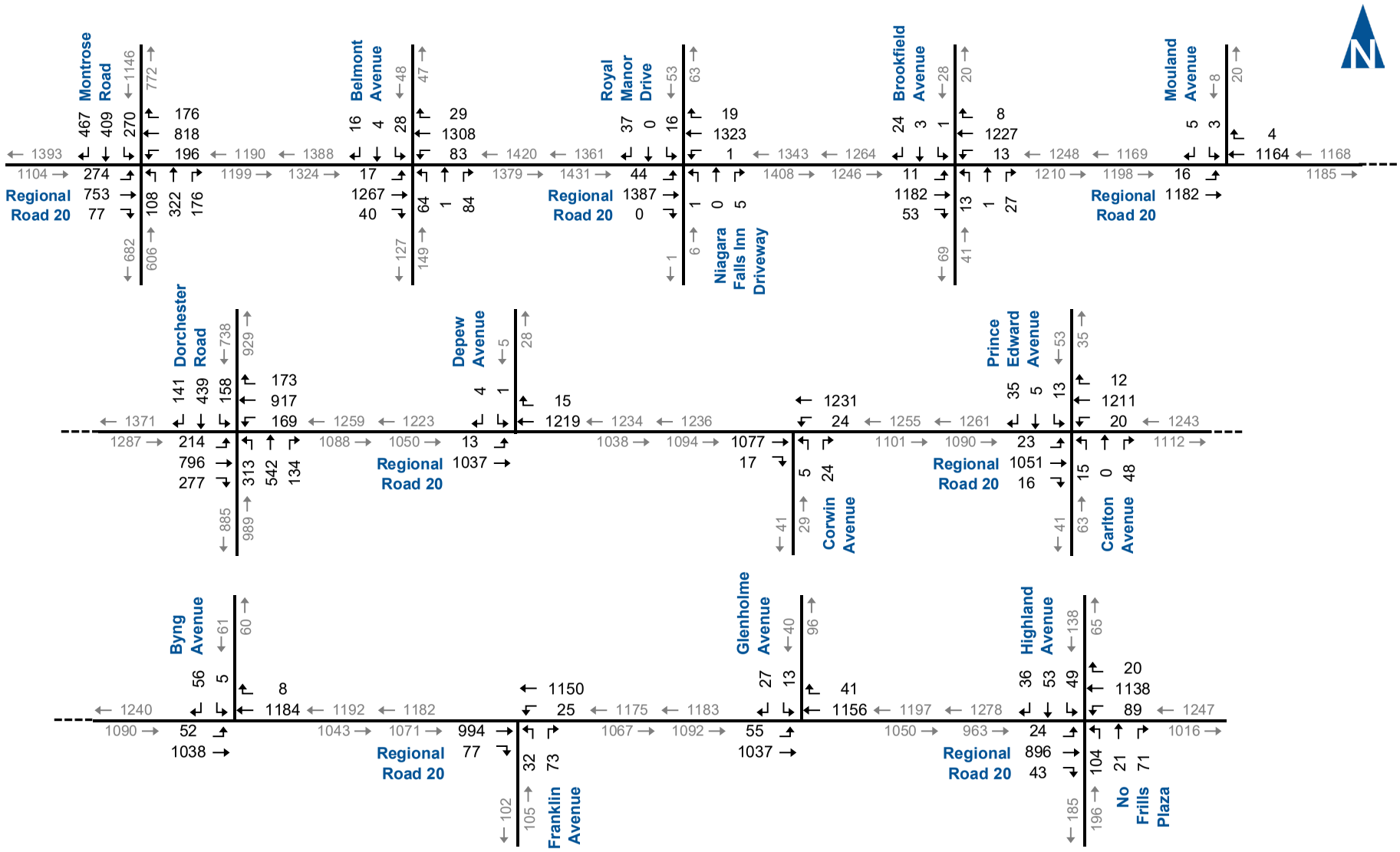
Regional Road 20 Road Section		Annual Growth					
		AM Peak Hour			PM Peak Hour		
From	To	EB	WB	Total	EB	WB	Total
RR98	Belmont Ave	1.4%	0.4%	1.0%	-0.3%	1.1%	0.5%
Belmont Ave	Dorchester Rd	1.5%	0.3%	0.9%	-0.2%	1.0%	0.5%
Dorchester Rd	Prince Edward Ave	1.2%	0.6%	0.9%	-0.6%	0.7%	0.2%
Prince Edward Ave	Franklin Ave	1.9%	2.7%	2.2%	0.8%	2.1%	1.6%
Franklin Ave	Highland Ave	2.0%	-0.1%	1.0%	-0.6%	1.3%	0.7%
Average		**1.6%**	**0.7%**	**1.2%**	**-0.2%**	**1.2%**	**0.7%**



Future 2041 Traffic Volumes
AM Peak Hour

Regional Road 20 Environmental Assessment
210300

Figure 4.1



Future 2041 Traffic Volumes
PM Peak Hour

Figure 4.2

5 Alternative Designs

For the redevelopment of the Regional Road 20 corridor, various goals are considered:

- Address existing safety issues;
- Increasing vehicle capacity;
- Addressing operational issues (number of accesses, left-turns from through lanes, Lane changing, accidents, intersection queues, etc.);
- Addressing pavement structural deficiencies;
- Promoting active transportation; and
- Enhance the streetscape and attractiveness of Regional Road 20 for visitors and businesses.

For this study, alternatives that represented the main configurations of the Regional Road 20 cross-section were identified. These alternatives were devised to analyze the impacts of the reduction in through lanes along Regional Road 20 for allocation to other transportation infrastructure and implement a centre two-way left-turn lane to address operational issues. Three alternative designs are assessed from a traffic operations perspective:

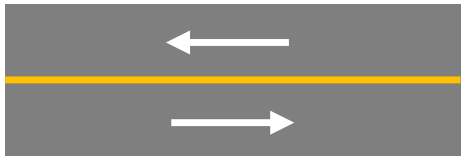
- **Alternative 1**: Two-lane cross-section;
- **Alternative 2**: Three-lane cross-section (one Lane in each direction and a centre two-way left-turn lane);
- **Alternative 3**: Five-lane cross-section (two lanes in each direction and centre two-way left-turn lane); and
- **Alternative 4**: Four-lane cross section (existing configuration).

Figure 5.1 illustrates the general lane configuration.

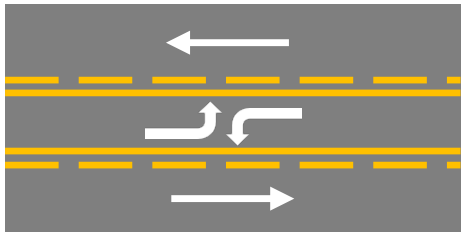
The 2041 forecasted traffic volumes are consistent across all four alternatives. While alternative designs may include bus bays, bike lanes, or multi-use trails, the impacts of those elements on traffic volumes are not included in this analysis. The study area intersection operations analysis for the Alternative scenarios followed the same methodology used for the existing traffic conditions. As a baseline improvement in all scenarios, signal timings were optimized to improve traffic operations through the corridor.

Existing left-turn lanes are assumed to remain in place in future scenarios.

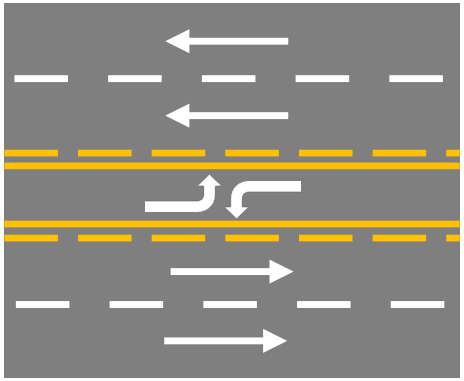
Alternative 1
2-Lane Cross Section



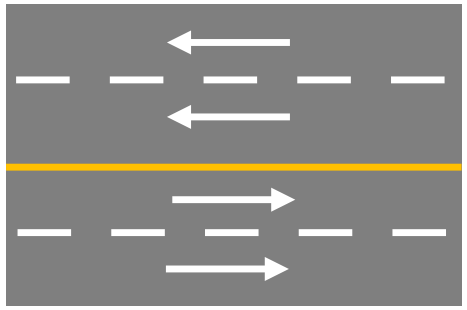
Alternative 2
3-Lane Cross Section



Alternative 3
5-Lane Cross Section



Alternative 4
4-Lane Cross Section



paradigm TRANSPORTATION SOLUTIONS LIMITED

Alternative Cross Section Design

5.1 Alternative Traffic Operations

Figures 5.2 to 5.5 summarize the intersection LOS throughout the corridor for the various alternatives.

Appendix D contains the detailed Synchro reports.

5.1.1 Alternative 1 (Two-Lane Cross-section)

Alternative 1 decreases the number of through lanes in the corridor from four to two lanes. Overall, the decrease in through capacity increases delays in the east/west direction. In the AM peak hour, the notable shifts in LOS occur at Belmont Avenue and Franklin Avenue intersections, which degrade from LOS B-D to LOS E-F, and Dorchester Road, which degrades from LOS D to LOS F.

In the PM peak hour, the through-lane reduction significantly impacts intersection LOS, with most intersections forecasted to operate in the LOS E-F range.

The reduction in through lanes results in additional delays along Regional Road 20. At unsignalized intersections, the high volumes of east-west traffic concentrated into one Lane in each direction results in fewer gaps for side street vehicles to enter Regional Road 20.

5.1.2 Alternative 2 (Three-Lane Cross-section)

The Operations of Alternative 2 are similar to Alternative 1 for Signalized intersections. Generally, delays increase with the reduction in through lanes. In the AM peak hour, Belmont Avenue and Franklin Avenue intersections degrade from LOS B-C to LOS E-F. Similarly, Dorchester Road degrades from LOS D to LOS F. In the PM peak hour, most intersections are forecasted to operate in the LOS E-F range.

Operations improve slightly over Alternative 1 for left-turn movements as the centre two-way left-turn lane provides additional vehicle storage. In the AM peak hour, five study area intersections show improvements in overall intersection LOS, including a centre two-way left-turn lane. The most significant change is forecast at Franklin Avenue, where the inclusion of a centre two-way left-turn lane improves the operations from LOS E in Alternative 1 to LOS C in Alternative 2.

During the PM peak hour, the centre two-way left-turn lane improves operations at Brookfield Avenue, Mouland Avenue, Corwin Avenue, and Prince Edward Avenue, shifting from LOS F in Alternative 1 to LOS D-E in Alternative 2.

At unsignalized intersections, left-turn movements from Regional Road 20 improve due to the centre two-way left-turn lane. However, the decrease in through lanes significantly increases delays for side street movements compared to the existing four-lane configuration, particularly in the PM peak hour.

The need for auxiliary turning lanes at the various unsignalized intersections in the study area is assessed based on the requirements and procedures detailed in the Ministry of Transportation Geometric Design Manual [13].

The warrants for eastbound/westbound left-turn lanes have been calculated using the nomographs for left-turn lanes on a two-lane undivided highway at an unsignalized intersection with a design speed of 10 kilometres per hour over the posted speed limit (60 km/h). The nomographs consider the percentage of left turns turning onto the side streets, advancing traffic impeded by left turns, and opposing traffic delaying left turns. A threshold of 5% of left-turning vehicles is considered the minimum threshold for consideration for a left-turn lane. Most unsignalized intersections do not warrant a left-turn lane based on the percentage of left turns. The exceptions are Byng Avenue and Glenholme Avenue.

While eastbound/westbound left-turn lanes are not warranted at every intersection based on left-turning volumes, the centre two-way left-turn lane may improve safety along Regional Road 20 by reducing the risk of rear-end collisions. The centre two-way left-turn lane may also aid side street traffic merging onto Regional Road 20 traffic, allowing for two-stage left turns. Two-stage left turns occur when a left-turning vehicle from the side street uses the centre two-way left-turn lane to accelerate and merge through traffic along the main road.

5.1.3 Alternative 3 (Five-Lane Cross-section)

Alternative 3 is forecast to operate similarly to the Background scenario. Localized congestion occurs at study area intersections during the AM and PM peak hours. Generally, the congestion is localized to Montrose Road and the Dorchester Road intersection. In the PM peak hour, all approaches at these intersections are forecast to experience delays in the LOS E/F range.

At unsignalized intersections, left-turn movements from Regional Road 20 improve due to the centre two-way left-turn Lane. In the Background scenario, left-turn movements along Regional Road 20 at unsignalized intersections did not experience significant delay. The

[13] Geometric Design Manual for Ontario Highways, Ministry of Transportation of Ontario, Queen's Printer for Ontario, 1986

centre two-way left-turn lane shows improvements to northbound/southbound PM peak hour delays at the unsignalized intersections of Franklin Avenue and Glenholme Avenue, which improve from LOS D-E range to LOS B-C.

The centre two-way left-turn lane may improve safety along Regional Road 20 by reducing the risk of rear-end collisions. The centre two-way left-turn lane may also aid side street traffic merging onto Regional Road 20 traffic, allowing for two-stage left turns. Two-stage left turns occur when a left-turning vehicle from the side street uses the centre two-way left-turn lane to accelerate and merge through traffic along the main road.

5.1.4 Alternative 4 (Four-Lane Cross-section)

Alternative 4 operates similarly to Alternative 3. Localized congestion occurs at study area intersections during the AM and PM peak hours. Generally, the congestion is localized to Montrose Road and the Dorchester Road intersection. In the PM peak hour, all approaches at these intersections are forecast to experience delays in the LOS E/F range.

Without changes to the existing lane configurations, the Regional Road 20 corridor is forecast to operate at acceptable service levels for most intersections.



5.2 Preferred Alternative

The preferred alternative is Alternative 3 (five-lane cross-section) based on the traffic operations. Overall, the decrease in through capacity in Alternative 1 and 2 results in increased delays in the east/west direction. The capacity is exceptionally constrained in the PM peak hour. In addition, due to the nature of the study area, there is a significant volume of turning movement into/out of developments along this section of Regional Road 20.

As such, the addition of the two-way left-turn lane will provide a refuge area for vehicles to make left-turns safely while at the same time limiting delay to through traffic along the corridor. In addition, thee centre two-way left-turn lane will benefit the corridor by providing additional left-turn lane storage at signalized intersections, reducing the risk of collisions, and enabling two-stage left turns from side streets at unsignalized intersections.

The preferred alternative considers the Region's Operation Policy [14] of the Transportation Master Plan. The policy identifies that the goal of the Region is to maintain adequate traffic flow on its roadways. The key objective is to provide safe access, consistent with the function and operation of the public road system and the access needs of adjacent land uses. With the volume increase on Regional Road, mid-block turning movement conflicts will increase (access to private driveways).

A two-way left turn will mitigate these conflicts and provide safe access opportunities for private driveways, keeping with the objective and intent of the Region's Policy Statement. As there are several existing access points provided to Regional Road 20, these connections are to be provided safely without impacting the capacity of the roadway while at the same time balancing the needs of all road users.

Given the high frequency of driveway access to commercial properties, loss of the centre-turn lane would likely affect through capacity as left-turning vehicles would stop in the through lane, creating bottlenecks in the network. Lengthy delays could divert arterial traffic to parallel neighbourhood streets (such as Barker Street), leading to additional safety concerns for the local road network.

Emergency response times could also be impacted. The two-way left-turn lane also affords additional space to allow an emergency vehicle to travel through the corridor under constraint conditions. Accordingly,

[14] Niagara Region Transportation Master Plan – Operating Policies Review Technical Paper, IBI Group, June 2017.

trade-offs are inevitable when designing for complete streets. Selecting the appropriate number of vehicle lanes and contemporary (i.e., narrower) lane widths are part of the overall preferred design to help free up space for road/street completeness.

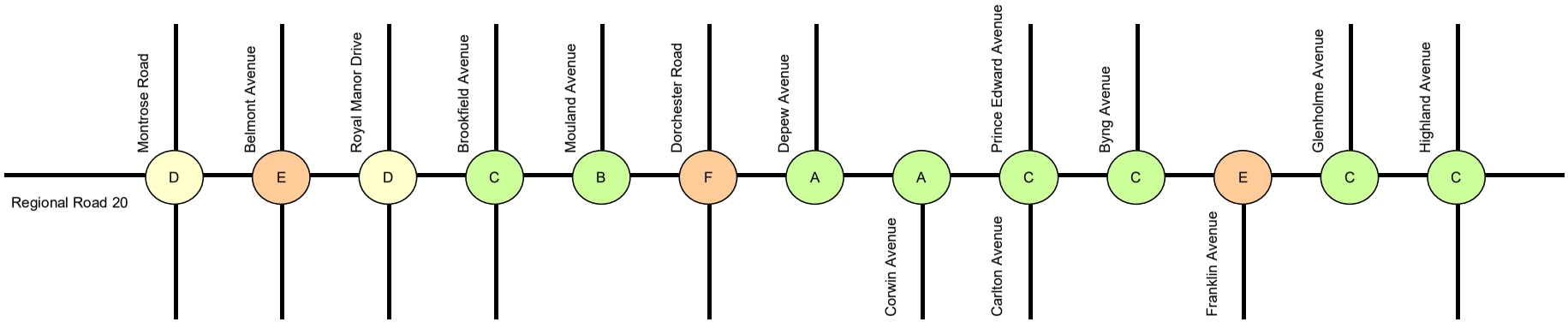
National Cooperative Highway Research Program (NCHRP) Report 420 [15] discusses methods for predicting and analyzing selected access management techniques' safety and traffic operational effects. As noted, compared to an undivided roadway with the provision of left-turn lanes, a two-way left-turn lane is projected to experience a 26% reduction in collisions. In contrast, a raised median is predicted to experience a 46% reduction in collisions. Considering the collision history in the corridor, implementing a two-way left turn lane may also help reduce the number of rear-end and sideswipe collisions in the corridor.

Further, regarding access management, the number of collisions between Byng Avenue & Carlton Avenue/Prince Edward Avenue highlights this area as a potential candidate for access management (i.e. driveway consolidation, driveway relocation, etc.) and should be considered as part of the preferred alternative.

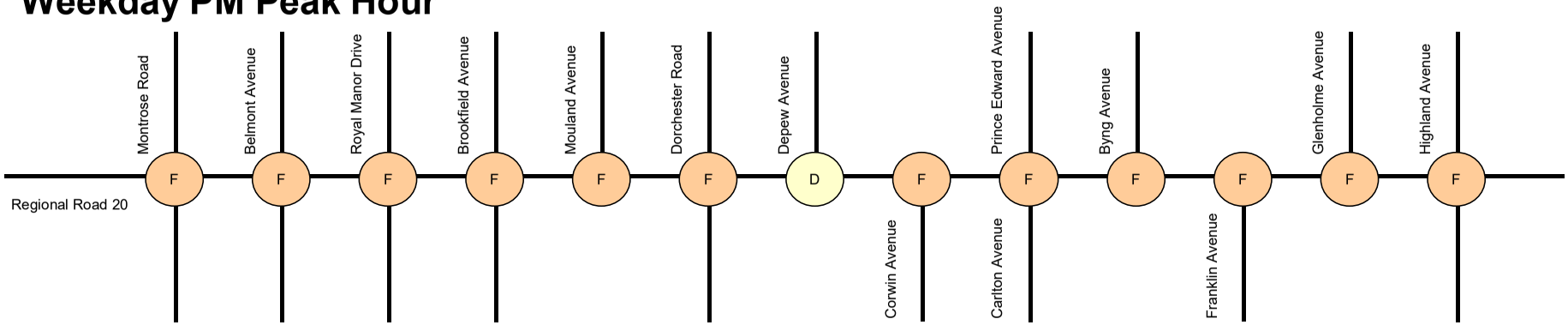
While a five-lane cross-section design may appear to retain an automobile-orientated design, various design aspects may be considered in the corridor design to improve transit travel times and promote active transportation, transit signal priority may be implemented throughout the corridor; bus stops may be enhanced for a better user experience or queue jump lanes could be provided at signalized intersections to allow transit vehicles to bypass queues and enter intersections ahead of traffic.

[15] NCHRP Report 420 – Impact of Access Management Techniques, 1999

Weekday AM Peak Hour

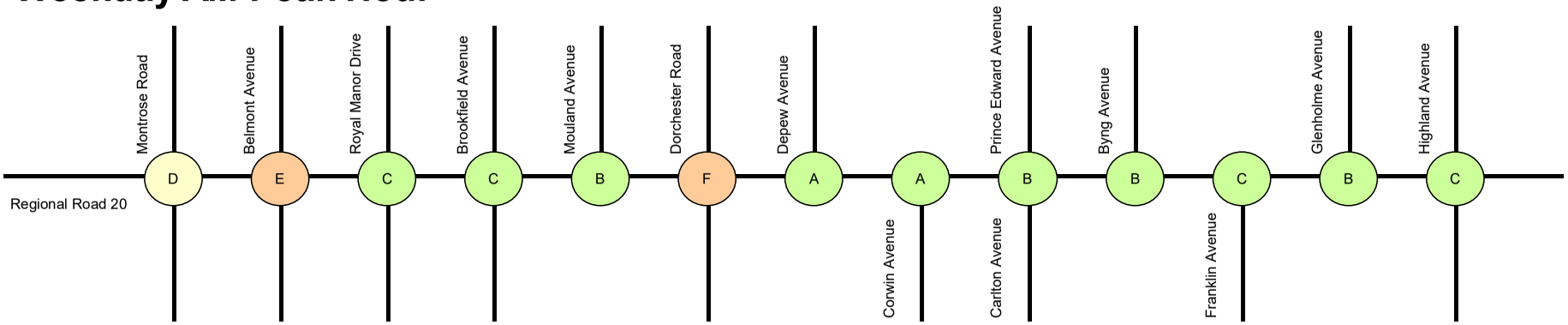


Weekday PM Peak Hour

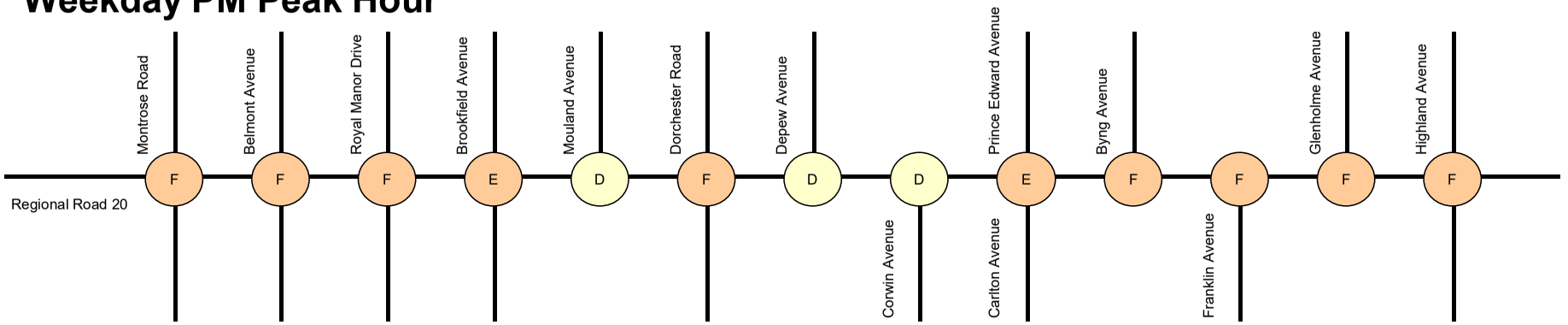


2041 Traffic Peak Hour LOS Alternative 1 (Two-Lane)

Weekday AM Peak Hour

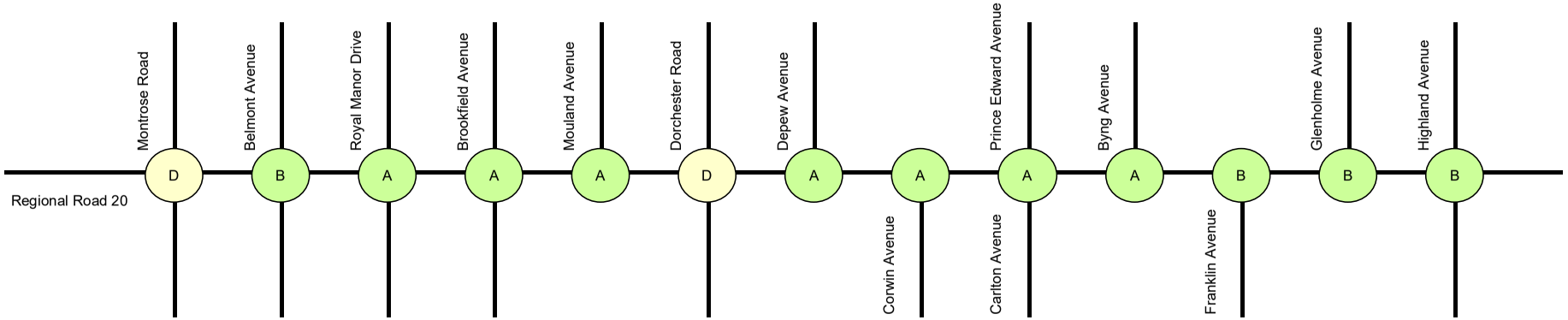


Weekday PM Peak Hour

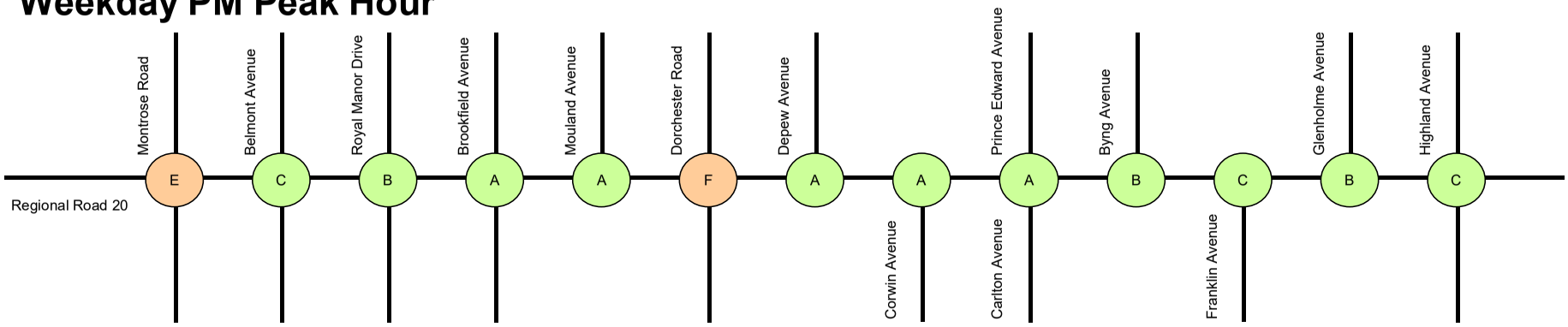


2041 Traffic Peak Hour LOS Alternative 2 (Three-Lane)

Weekday AM Peak Hour

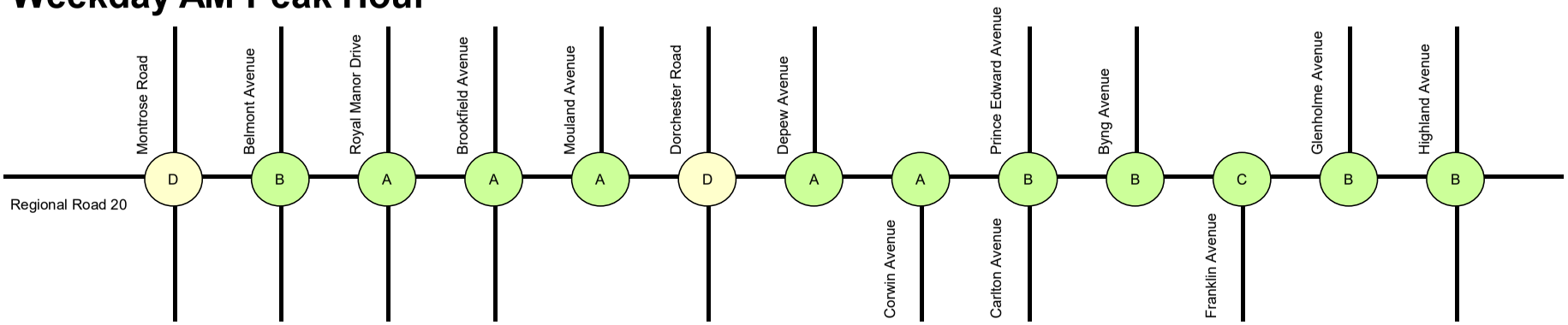


Weekday PM Peak Hour

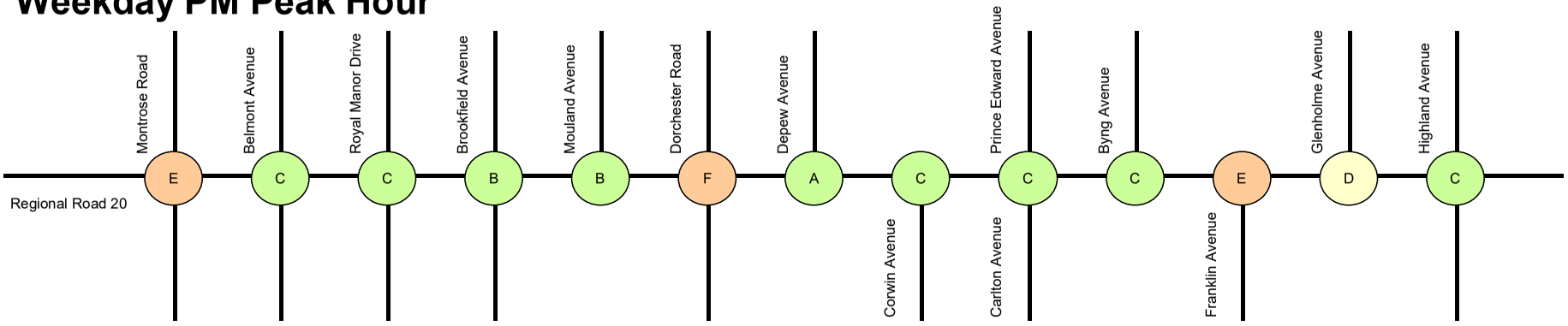


2041 Traffic Peak Hour LOS
Alternative 3 (Five-Lane)

Weekday AM Peak Hour



Weekday PM Peak Hour



2041 Traffic Peak Hour LOS Alternative 4 (Four-Lane)

5.3 Left-Turn Lane Storage Requirements

The storage requirements for left-turn lanes at the signalized intersections within the study area are based on the methodology defined in the MTO Geometric Design Standards for Ontario Highways. The vehicle arrival rates and green plus amber times for urban/commuter intersections were utilized, as noted in Table B7-5 of the manual. **Table 5.1** summarizes the results of the left-turn lane warrant analyses.

- Regional Road 20 at Montrose Road
  - Eastbound left-turn lane: 68-metre storage
  - Westbound left-turn lane: 45-metre storage
  - Northbound left-turn lane: 45-metre storage
  - Southbound left-turn lane: 80-metre storage
- Regional Road 20 at Belmont Avenue/Niagara Falls Inn
  - Eastbound left-turn lane: 15-metre storage
  - Westbound left-turn lane: 30-metre storage
  - Northbound left-turn lane: 25-metre storage
- Regional Road 20 at Royal Manor Drive
  - Eastbound left-turn lane: 15-metre storage
  - Westbound left-turn lane: 15-metre storage
- Regional Road 20 at Dorchester Road
  - Eastbound left-turn lane: 53-metre storage
  - Westbound left-turn lane: 45-metre storage
  - Northbound left-turn lane: 75-metre storage
  - Southbound left-turn lane: 45-metre storage
- Regional Road 20 at Highland Avenue/No Frills Plaza
  - Eastbound left-turn lane: 55-metre storage
  - Westbound left-turn lane: 35-metre storage
  - Northbound left-turn lane: 45-metre storage

A standard 63-metre taper length should be provided based on a 60 km/h design speed and an 18:1 ratio for all turn-lanes.

TABLE 5.1: LEFT-TURN LANE ANALYSIS (SIGNALIZED)

Regional Road 20 at Montrose Road								
Approach Direction	Eastbound		Westbound		Northbound		Southbound	
Peak Hour	AM	PM	AM	PM	AM	PM	AM	PM
Current Left Turn Storage (m)	55	55	35	35	45	45	80	80
Current Cycle Length (sec)	135	135	135	135	135	135	135	135
Base Year Left-Turn Volume	346	274	80	196	53	108	129	270
Vehicles per cycle	5.1	4.1	1.2	2.9	0.8	1.6	1.9	4.0
Number of Vehicles (From Table B7-5)	9	8	3	6	2	4	4	8
Projected Storage	**68**	**60**	**23**	**45**	**15**	**30**	**30**	**60**
Regional Road 20 at Niagara Falls Inn/Belmont Avenue								
Approach Direction	Eastbound		Westbound		Northbound		Southbound	
Peak Hour	AM	PM	AM	PM	AM	PM	AM	PM
Current Left Turn Storage (m)	15	15	15	15	-	-	-	-
Current Cycle Length (sec)	110	110	110	110	110	110	110	110
Base Year Left-Turn Volume	16	17	15	83	5	64	-	-
Vehicles per cycle	0.3	0.3	0.3	1.5	0.1	1.2	-	-
Number of Vehicles (From Table B7-5)	1	1	1	4	1	3	-	-
Projected Storage	**8**	**8**	**8**	**30**	**8**	**23**	**-**	**-**
Regional Road 20 at Royal Manor Drive								
Approach Direction	Eastbound		Westbound		Northbound		Southbound	
Peak Hour	AM	PM	AM	PM	AM	PM	AM	PM
Current Left Turn Storage (m)	15	15	15	15	-	-	-	-
Current Cycle Length (sec)	110	110	110	110	110	110	110	110
Base Year Left-Turn Volume	11	44	1	1	-	-	-	-
Vehicles per cycle	0.2	0.8	0.0	0.0	-	-	-	-
Number of Vehicles (From Table B7-5)	1	2	1	1	-	-	-	-
Projected Storage	**8**	**15**	**8**	**8**	**-**	**-**	**-**	**-**
Regional Road 20 at Dorchester Road								
Approach Direction	Eastbound		Westbound		Northbound		Southbound	
Peak Hour	AM	PM	AM	PM	AM	PM	AM	PM
Current Left Turn Storage (m)	40	40	45	45	50	50	30	30
Current Cycle Length (sec)	110	110	110	110	110	110	110	110
Base Year Left-Turn Volume	181	214	68	169	193	313	92	158
Vehicles per cycle	3.3	3.9	1.2	3.1	3.5	5.7	1.7	2.9
Number of Vehicles (From Table B7-5)	7	7	3	6	7	10	4	6
Projected Storage	**53**	**53**	**23**	**45**	**53**	**75**	**30**	**45**
Regional Road 20 at Highland Avenue/No Frills Plaza								
Approach Direction	Eastbound		Westbound		Northbound		Southbound	
Peak Hour	AM	PM	AM	PM	AM	PM	AM	PM
Current Left Turn Storage (m)	55	55	35	35	45	45	-	-
Current Cycle Length (sec)	110	110	110	110	110	110	110	110
Base Year Left-Turn Volume	12	24	31	89	27	104	-	-
Vehicles per cycle	0.2	0.4	0.6	1.6	0.5	1.9	-	-
Number of Vehicles (From Table B7-5)	1	2	2	4	2	4	-	-
Projected Storage	**8**	**15**	**15**	**30**	**15**	**30**	**-**	**-**

Based on MTO Geometric Design Standards For Ontario Highw ays - 1985

5.3.1 SimTraffic Simulation

Paradigm has reviewed the SimTraffic queue assessment as contained in **Appendix D** to provide additional input into the calculated storage requirements based on the MTO methodology. Microscopic models, such as SimTraffic, individually track each vehicle in the study road network through the model and collect comprehensive operational measures of effectiveness (MOEs) for every vehicle for every 0.1 seconds of the simulation. This allows SimTraffic to measure the full impact of queuing and blocking. The analysis consisted of ten iterations of 60-minute simulations to forecast the delay per vehicle in seconds. The SimTraffic results indicated the following modifications to the storage requirements:

- Regional Road 20 at Montrose Road
  - Eastbound left-turn lane: ~~68~~ 85-metre storage
  - Westbound left-turn lane: ~~45~~ 55-metre storage
  - Northbound left-turn lane: ~~45~~ 70-metre storage
  - Southbound left-turn lane: ~~80~~ 110-metre storage
- Regional Road 20 at Belmont Avenue/Niagara Falls Inn
  - Eastbound left-turn lane: ~~15~~ 20-metre storage
  - Westbound left-turn lane: 30-metre storage
  - Northbound left-turn lane: ~~25~~ 30-metre storage
- Regional Road 20 at Royal Manor Drive
  - Eastbound left-turn lane: ~~15~~ 25-metre storage
  - Westbound left-turn lane: 15-metre storage
- Regional Road 20 at Dorchester Road
  - Eastbound left-turn lane: ~~53~~ 60-metre storage
  - Westbound left-turn lane: ~~45~~ 65-metre storage
  - Northbound left-turn lane: 75-metre storage
  - Southbound left-turn lane: ~~45~~ 50-metre storage
- Regional Road 20 at Highland Avenue/No Frills Plaza
  - Eastbound left-turn lane: 55-metre storage
  - Westbound left-turn lane: 35-metre storage
  - Northbound left-turn lane: 45-metre storage



5.4 Right Turn Lanes

Right turn lanes are exclusive vehicle lanes allowing a right turn movement to occur outside the through lane. Deceleration lanes are advantageous on higher-speed roads, because the driver of a vehicle leaving the highway has no choice but to slow down on the through-traffic lane if a deceleration lane is not provided. The failure to brake by the following drivers, because of a lack of alertness may result in rear-end collisions.

The Federal Highway Administration (FHWA) studied the safety impact of exclusive right turn lanes, and based on their review, collisions can be expected to decrease from 4% to 27%, depending on the circumstances [16]. However, similar research shows that left-turn lanes provide approximately four times the safety benefit of right-turn lanes.

5.4.1 Unsignalized intersections

Per the Transportation Association of Canada (TAC) Geometric Design Guide for Canadian Roads (GFGCR), June 2017, a right-turn auxiliary lane on an urban or rural road should be implemented at unsignalized intersections when the volume of decelerating or accelerating vehicles compared with the through traffic volume causes undue hazard.

A typical guideline is that an auxiliary right-turn lane should be provided at an unsignalized intersection where right-turn volumes exceed 60 vehicles per hour. The forecasted volumes along Regional Road 20 indicate that the following unsignalized intersection exceeds the 60 vehicles per hour threshold:

- Regional Road 20 at Franklin Avenue
  - Eastbound approach right turn taper should conform to the design guidelines outlined in the TAC-GDGCR. Based on a review of these standards, the eastbound right turn taper along Regional Road 20 at Franklin Avenue should consist of a 63-metre taper based on a 60 km/h design speed and 18:1 ratio.

However, based on the operational assessment completed, the intersection of Regional Road 20 and Franklin Avenue is operating with acceptable operations with a shared through/right turn lane for the eastbound approach. As a result, a right-turn taper is not recommended.

[16] Federal Highway Administration, Safety Effectiveness of Intersection Left-and Right-Turn Lanes

5.4.2 Signalized intersections

While vehicle operations can be improved with right-turn lanes at signalized intersections, other modes of travel can be negatively impacted. The additional lane creates a higher potential for vehicle conflicts with bicycle traffic riding in the street. Pedestrians crossing the road are exposed to traffic for more time because of the wider crossing distance on roads with right turn lanes. Traffic operations may also impact pedestrians and bicyclists if the right turn lane allows free movement onto the cross street, particularly if separated by a channelizing island, which can make crossing less safe.

The need for right-turn lanes at signalized intersections was assessed based on the methods described within the TAC-GDGCR. The TAC-GDGCR recommends the provision of exclusive right turn lanes at signalized intersections based on the following:

- Without separate signal indication when the volume of right turning traffic is 10%-20% of the total approaching volume; or
- With separate indication when right-turning traffic is greater than 20% of the total approaching volume.

The TAC-GDGCR further sates that “in urban areas, other factors such as pedestrian and cyclists’ accommodation and safety must be considered.

Table 5.2 summarizes the warranted right-turn lanes and tapers at signalized intersections based on TAC guidelines.

TABLE 5.2: RIGHT-TURN LANES AT SIGNALIZED INTERSECTION

Signalized Intersection	Right-Turn Lane Taper Recommended Based On TAC-GDGCR			
	Eastbound	Westbound	Northbound	Southbound
Lundy's Lane at Belmont Avenue	No	No	Yes	Yes
Lundy's Lane at Royal Manor Drive	No	No	Yes	Yes
Lundy's Lane at Highland Avenue	No	No	Yes	Yes
Lundy's Lane at Dorchester Road	Yes	Yes	Yes	Yes
Lundy's Lane at Montrose Road	No	Yes	Yes	Yes

Other research on the need for right-turn lanes at signalized intersections [17] suggests exclusive lanes may be appropriate when approach volumes exceed 250 vehicles (for a one-lane approach) or 500 vehicles (for a two-lane approach), and right-turning volumes represent a minimum of 10% of the approach volume. This guidance is generally consistent with the methodology in the TAC Guide.

[17] Perez, Richard A. *Guidelines for Right-turn Treatments at Signalized Intersections.* Published in ITE Journal, February 1995.

Although warranted based on the guidelines, the decision to provide exclusive right-turn lanes at the signalized intersections should carefully consider the trade-offs between the potential advantages and disadvantages listed in **Table 5.3**. While beneficial to vehicular traffic operations (particularly for heavy vehicles), right-turn lanes can pose safety concerns for pedestrians and cyclists and tend to increase capital and ongoing maintenance costs.

TABLE 5.3: RIGHT-TURN LANES – PROS & CONS

Factor	Advantage	Disadvantage
Safety	Separation of right-turn vehicles	Higher speeds of right-turning vehicles increases risk to pedestrians and cyclists
Operations	Higher right-turn capacity Shorter green time Less delay for following through vehicles Additional storage for approach queues	Potential for off-tracking of large vehicles
Multimodal	None identified	Longer pedestrian crossing distance, time, and exposure Increased risk of 'right-hook' collisions for cyclists
Physical	None identified	Larger intersection footprint
Socioeconomic	None identified	Additional right-of-way/construction costs Access restrictions to property
Enforcement, Education, and Maintenance	None identified	Periodic enforcement may be needed to prevent red light violations, especially if right turns on red are prohibited. Ongoing maintenance costs due to additional pavement width

(Source: Signalized Intersections Informational Guide (2013). Exhibit 11-22)

A sensitivity analysis has been completed to assess the identified impacts by adding right turn lanes for the north and south approaches at the intersections of Regional Road 20 with Montrose Road and Dorchester Road for the 2041 traffic conditions. **Table 5.4** summarizes the results of the sensitivity analysis. **Appendix E** contains the detailed Synchro reports.

Overall, the intersection of Regional Road 20 with Montrose Road is expected to see significant improvements, while the intersection of Regional Road 20 with Dorchester Road is expected to see marginal improvements.

TABLE 5.4: SENSITIVITY ANALYSIS

Analysis Period	Intersection	Control Type	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	
AM Peak Hour	1- Regional Road 20 & Regional Road 98	TCS	Without Right Turn Lanes	LOS	D	D	>	D	D	D	D	D	C	E	>	D	C	C	C	C	D
				Delay	40	36	>	38	37	47	40	44	26	56	>	52	30	30	28	29	40
				V/C	0.83	0.55	>		0.36	0.51	0.08		0.14	0.86	>		0.57	0.31	0.16		
				Q	101	93	>		24	67	13		17	193	>		36	61	17		
				Ex	55	-	>		35	-	-		45	-	>		80	-	70		
				Avail.	-46	-	>		11	-	-		28	-	>		44	-	53		
			With Right Turn Lanes	LOS	D	D	>	D	D	D	D	D	C	D	C	C	C	C	C	C	C
				Delay	53	29	>	38	22	28	25	27	20	36	24	31	24	20	26	23	31
				V/C	0.94	0.6	>		0.33	0.41	0.08		0.14	0.69	0.10		0.44	0.36	0.16		
				Q	97.5	73	>		18	44	12		13	95	13		28	50	16		
				Ex	55	-	>		18	-	-		13	-	-		28	-	-		
				Avail.	-43	-	>		0	-	-		0	-	-		0	-	-		
	6 - Regional Road 20 & Dorchester Road	TCS	Without Right Turn Lanes	LOS	C	E	>	E	C	D	>	D	C	D	>	C	C	D	>	C	D
				Delay	32	60	>	56	30	37	>	36	23	39	>	34	22	35	>	33	43
				V/C	0.60	0.93	>		0.47	0.63	>		0.60	0.77	>		0.38	0.65	>		
				Q	61	143	>		18	70	>		44	152	>		23	112	>		
				Ex	40	-	>		45	-	>		50	-	>		30	-	>		
				Avail.	-21	-	>		27	-	>		6	-	>		7	-	>		
			With Right Turn Lanes	LOS	C	D	>	D	C	C	>	C	C	C	C	C	B	C	C	C	D
				Delay	28	55	>	50	25	30	>	29	21	30	20	26	19	28	21	26	36
				V/C	0.66	0.96	>		0.45	0.55	>		0.54	0.61	0.06		0.38	0.65	0.05		
				Q	40	140	>		17	59	>		40	101	9		21	81	3		
				Ex	40	-	>		45	-	>		50	-			30	-			
				Avail.	0	-	>		28	-	>		10	-			9	-			
PM Peak Hour	1- Regional Road 20 & Regional Road 98	TCS	Without Right Turn Lanes	LOS	F	E	>	E	E	E	D	E	C	F	>	F	F	D	D	E	E
				Delay	129	57	>	75	78	80	38	73	34	135	>	117	120	42	38	59	76
				V/C	1.11	0.90	>		0.95	1.00	0.18		0.44	1.14	>		1.08	0.70	0.58		
				Q	139	166	>		89	179	25		30	246	>		134	146	84		
				Ex	55	-	>		35	-	-		45	-	>		80	-	70		
				Avail.	-84	-	>		-54	-	-		15	-	>		-54	-	-14		
			With Right Turn Lanes	LOS	F	D	>	D	E	E	C	E	D	D	C	D	F	C	C	D	D
				Delay	80	38	>	49	65	65	27	59	39	41	27	36	81	30	28	41	48
				V/C	1.00	0.84	>		0.93	0.99	0.14		0.53	0.72	0.13		1.00	0.67	0.58		
				Q	99	115	>		64	139	16		40	98	16		90	109	69		
				Ex	55	-	>		35	-	-		45	-	-		80	-	70		
				Avail.	-44	-	>		-29	-	-		5	-	-		-10	-	1		
	6 - Regional Road 20 & Dorchester Road	TCS	Without Right Turn Lanes	LOS	F	F	>	F	F	F	>	F	F	F	>	F	F	F	>	F	F
				Delay	230	168	>	178	117	168	>	161	330	124	>	189	112	89	>	94	161
				V/C	1.34	1.24	>		1.06	1.27	>		1.62	1.16	>		1.06	1.06	>		
				Q	90	214	>		74	221	>		153	271	>		71	226	>		
				Ex	40	-	>		45	-	>		50	-	>		30	-	>		
				Avail.	-50	-	>		-29	-	>		-103	-	>		-41	-	>		
			With Right Turn Lanes	LOS	F	F	>	F	F	F	>	F	F	E	C	F	F	E	C	E	F
				Delay	154	96	>	106	120	131	>	129	159	67	26	91	110	60	30	65	102
				V/C	1.18	1.09	>		1.08	1.18	>		1.23	0.97	0.13		1.02	0.90	0.11		
				Q	105	212	>		81	228	>		134	218	18		69	176	15		
				Ex	40	-	>		45	-	>		50	-			30	-			
				Avail.	-65	-	>		-36	-	>		-84	-			-39	-			

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

From a traffic operations perspective, right-turn lanes would benefit Regional Road 20 with Montrose Road, while marginal operational benefits would be realized for Regional Road 20 and Dorchester Road. However, given the limited operational benefits, providing right turn lanes at the Dorchester Road approaches to Regional Road 20 could be challenging with acquiring land for implementation along the Dorchester Road right-of-way.

To determine the storage length requirements for the right turn lanes, the 95th percentile queue estimates as generated by Synchro have been reviewed:

- Regional Road 20 at Montrose Road
  - Southbound right-turn lane: 100 metres (Synchro)
  - Northbound right-turn lane: 15 metres (Synchro)
- Regional Road 20 at Dorchester Road
  - Southbound right-turn lane: 15 metres (Synchro)
  - Northbound right-turn lane: 20 metres (Synchro)

Paradigm has also completed a queue assessment utilizing SimTraffic, as Synchro is ideal for determining the level of service and delay at the macro level but has trouble with assessments simulating real-world conditions. Microscopic models, such as SimTraffic, individually track each vehicle in the study road network through the model and collect comprehensive operational measures of effectiveness (MOEs) for every vehicle for every 0.1 seconds of the simulation. This allows SimTraffic to measure the full impact of queuing and blocking.

The analysis consisted of ten iterations of 60-minute simulations to forecast the delay per vehicle in seconds. **Appendix E** provides the SimTraffic results; the following is noted:

- Regional Road 20 at Montrose Road
  - Southbound right-turn lane: 145 metres (SimTraffic)
  - Northbound right-turn lane: 35 metres (SimTraffic)
  - Southbound left-turn lane: *205 metres (SimTraffic)
  - Northbound left-turn lane: 50 metres (SimTraffic)

    *Turn Lane is an extension of the through lane
- Regional Road 20 at Dorchester Road
  - Southbound right-turn lane: 30 metres (SimTraffic)
  - Northbound right-turn lane: 195 metres (SimTraffic)
  - Southbound left-turn lane: 75 metres (SimTraffic)
  - Northbound left-turn lane: 155 metres (SimTraffic)

The SimTraffic estimates are noted to require significantly more storage requirements as the analysis considers lane blockages (i.e., preventing vehicles from accessing the turn lane due to queues from adjacent lanes). Specifically, with respect to the northbound right turn lane at Regional Road 20 and Dorchester Road, the SimTraffic estimates indicate the 95th percentile queue length to be 195 metres. In comparison, the Synchro estimates suggest that the 95th percentile queue is only 20 metres.

The difference between these two methodologies (Synchro and SimTraffic) largely stems from the modelling completed as part of the SimTraffic simulation, which considers the queue lengths from adjacent intersections (northbound left-turn lane and northbound through lane). As a result, the right turn lane needs to be of sufficient length to have any real value and facilitate traffic in the turn lane without being blocked by the queue of adjacent lanes. If long queue lengths were not generated by the additional lanes for the northbound approach, the storage requirements would be similar to what Synchro has estimated.

In summary, the following is noted with respect to the right-turn lane requirements for the intersections of Regional Road 20 with Montrose Road and Dorchester Road.

- Regional Road 20 at Montrose Road
  - The southbound right turn lane should consist of 145 metres of storage. Concerning the taper, as the right-turn lane is intended to be used mainly for storage during peak hours (slower travel speeds), a reduced taper 49-metre on a 60 km/h design speed and 14:1 ratio could be considered.
  - The northbound right turn lane should consist of 35 metres of storage. A standard 63-metre taper length should be provided based on a 60 km/h design speed and 18:1 ratio.
  - The southbound left turn lane should consist of 80 metres of storage. It is noted that even though the SimTraffic estimates projected the 95th percentile queue length to be 205 metres, the turn lane is an extension of the inside through lane. A standard 63-metre taper length should be provided based on a 60 km/h design speed and 18:1 ratio.
  - The northbound left turn lane should consist of 50 metres of storage. A standard 63-metre taper length should be provided based on a 60 km/h design speed and 18:1 ratio.
- Regional Road 20 at Dorchester Road
  - The southbound right turn lane should consist of 30 metres of storage. A standard 63-metre taper length should be provided based on a 60 km/h design speed and 18:1 ratio.
  - The northbound right turn lane should consist of 195 metres of storage. Concerning the taper, as the right-turn lane is intended to be used mainly for storage during peak hours (slower travel speeds), a reduced taper 49-metre on a 60 km/h design speed and 14:1 ratio could be considered.
  - The southbound left turn lane should consist of 75 metres of storage. A standard 63-metre taper length should be provided based on a 60 km/h design speed and 18:1 ratio.
  - The northbound left turn lane should consist of 155 metres of storage. A standard 63-metre taper length should be provided based on a 60 km/h design speed and 18:1 ratio.

6 Conclusions

Given current and future transportation needs, this study evaluated the potential for improvement and upgrades to the existing intersections within the proposed study area.

Overall Collisions

- From 2016 to 2019 and 2022, there were 393 reported collisions. Only one resulted in a fatality (0.2%), 15.3% caused non-fatal injuries, and 84.5% resulted in no reported injuries. Rear-end collisions were the most common (44%), followed by sideswipe (17%) and turning movement (16%). Property damage accounted for 85%. Environmental conditions were not a contributing factor.
- The comparison of expected and actual collisions within the study area has suggested a number of issues that should be considered and addressed in the Class EA process. Specifically:
  - Collision severity (fatal and injury) in the study area is elevated at two signalized intersections (Regional Road 20 at Dorchester Road and Regional Road 20 at Montrose Road) compared to general Collison predictions for Niagara Regional roads.

Vulnerable Road Users - Collisions

- 15.6% of all collisions have resulted in some form of injury, with the majority being minor injuries (15.3%). However, when this is broken down by mode of travel, pedestrian and cyclist collisions represent 0% of all serious/fatal collisions and 28.4% of minor injury collisions.
- Approximately 77.8% of pedestrian and 76.9% of cyclist collisions result in some form of injury, versus only 11.6% of motor vehicle collisions.
- Pedestrian and cyclist collisions only represent 5.6% of total collisions within the study area.
- Two mid-block collisions involved pedestrians along Regional Road 20 between Carlton Avenue and Prince Edward Avenue/Corwin Avenue. The number of collisions does not reflect a high number (i.e. 2 collisions over 5 years), and the severity was noted to reflect non-fatal injuries. This midblock segment's spacing between controlled crossings is 175-300 metres.



- As pedestrians should be encouraged to cross at controlled crosswalks in most situations, this section of Regional Road 20 could provide added benefits for pedestrians by providing a pedestrian signal or crossover.
- There were 7 collisions reported that involved a pedestrian at intersections, and 4 of these instances resulted from drivers completing their turn improperly. The remaining 3 collisions identified the drivers of the vehicles were driving properly, while one instance identified a pedestrian was crossing improperly.
- Based on the collision data supplied, no trends indicate that these collisions have occurred due to poor roadway geometrics or visibility issues, given that the collisions reflect less than one collision per year at an intersection involving a pedestrian.
- Thirteen collisions involved cyclists (approximately 3% of the total collisions), and the severity was noted to be reflective of non-fatal injuries.
- The distribution of collisions involving cyclists is slightly elevated than the number of collisions that involved cyclists overall in Niagara Region in 2019 (1.1%)
- The cause or causes of collisions involving cyclists are difficult to pinpoint. Eighty-five percent of the collisions occurred during clear weather conditions and on dry roads, indicating that road surface conditions were not a causative factor. Rear-end and sideswipe collisions accounted for approximately 30% of all collisions involving cyclists.
- It is noted that 9 out of the 13 collisions that involved cyclists (69%) did occur during the approximate peak hours of the roadways.
- Collisions are also more prevalent with cyclists during the PM peak travel period, which may indicate that traffic operations are degraded, impacting safety performance.
- Problem intersections are noted at Regional Road 20 and Belmont Avenue as multiple collisions involved cyclists, representing approximately 15% of all collisions reported at this intersection, as well as Regional Road 20 and Montrose Road, which accounted for 30% of all collisions involving cyclists within the study area.
- The midblock segment along Regional Road 20 between Corwin Avenue and Highland Avenue is also noted as an area of concern, given this small section of roadway accounted solely for midblock collisions that involved cyclists, representing about 23% of all collisions that involved cyclists within the study area.

- Cyclists wishing to travel east-west along Regional Road 20 are faced with shared arrangements with high volumes of vehicle traffic or are required to divert to lower-order nearby roadways such as Barker Street to limit exposure to vehicle conflicts.
- The Ontario Traffic Manual Book 18: Cycling Facilities (OTM Book 18) indicated that a desirable type of bicycle facility would be a separated bicycle lane, cycle track or multi-use path.

Midblock Sections - Collisions

- Mid-block locations have an average of 1.94 collisions rate. The abnormal upper collision rate is 2.80 at a 95% confidence level.
- Regional Road 20 segment between Byng Ave and Carlton/Prince Edward Ave has a statistically significant collision rate of 4.54. This section is 65 metres long, with three access points on the south side that are too close together.
- The Regional Road 20 segment between Corwin Avenue and Depew Avenue has a statistically significant collision rate of 4.10. This section is 50 metres long with two access points on the opposite sides of the road. The connections appear to have sufficient space not to create left-turn lockups between drivers along Regional Road 20. The driveway on the north side provides access to a relatively small animal hospital, which would typically not be a high-traffic generator.
- The Regional Road 20 segment between Corwin Avenue and Prince Edward Avenue/Carlton Avenue has a statistically significant collision rate of 3.20. This section is 207 metres long with 14 access points on the opposite sides of the road that are too close together.
- The Regional Road 20 segment between Franklin Avenue and Byng Avenue has a statistically significant collision rate of 2.53. This section is 70 metres long with four access points on the opposite sides of the road that are too close together.
- The high density of driveways may contribute to higher collision rates. A median could help, but collisions are still low overall and likely do not necessitate this mitigation measure. Most properties within this short section have at least two access points to Regional Road 20. From a safety perspective, providing a single access point would be beneficial to reduce the number of accesses within this segment length or restrict turning movements (right in/out) if close to an adjacent intersection.

- Most mid-block collisions in the study area between 2016-2019 and 2022 were rear-end and sideswipe collisions. Of 106 midblock collisions in the study area, 71 (67%) are reported to be rear-end and sideswipe classifications.
- This is likely due to drivers not knowing access points and lacking auxiliary turning lanes. Lack of wayfinding signage and heavy traffic could also be contributing factors. A center two-way left-turn lane could reduce collisions and aid merging traffic. Implementing this is expected to decrease midblock collisions by 26%.

Unsignalized Intersections - Collisions

- Unsignalized intersections have an average collision rate of 1.31, with a 95% confidence level that the abnormal upper collision rate is 2.52.
- The unsignalized intersection of Regional Road 20 and Franklin Avenue is statistically significant, with a collision rate of 4.75.
  - Rear-end and sideswipe collisions at this intersection accounted for approximately 37% of the reported events, angle accounting for 26%, turning movements at 21%, and single motor vehicle at 16%.
  - Weather does not appear to contribute, as 89% occur with dry conditions. Lighting could be a factor in the collisions, as 42% occurred during the evening hours; however, the intersection does appear to have overhead lamps.
  - Franklin Avenue could be subjected to restricted sight distance caused by a sizeable inground sign in the southwest corner and parking spaces in the southeast corner. Two driveways on the north side of Regional Road 20, providing access to a fast-food restaurant and a pharmacy, could also confuse drivers in determining who has the right of way when entering Regional Road 20.
  - Daylight triangles could be implemented in the southeast and southwest corners to improve sight distance.
  - Restricting the driveways to right in/out could also reduce the number of collisions by limiting the number of decisions drivers must make and conflict points. While installing a median (to restrict driveway and side street access) could address some concerns, the number and severity of collisions do not likely warrant this action.
- The unsignalized intersection of Regional Road 20 and Byng Avenue is statistically significant with a collision rate of 1.75.

- Turning movement collisions at this location account for approximately 43% of all collisions, followed by rear-end and sideswipe collisions, accounting for 43%. Angle motor vehicle accidents account for 14% of the total collisions.
- Weather does not appear to contribute, as 71% of all collisions occurred during dry conditions. Lighting could be a factor in 57% of collisions during evening hours; however, the intersection appears to have overhead lamps.
- Turning movement collisions occur when two vehicles approaching from opposite directions collide due to at least one vehicle attempting to make a left or U-turn in front of the opposing vehicle. A common cause of turning-motion collisions may be obstruction of sightlines.
- Two of the three collisions occurred during the early weekday afternoon hours when volumes are likely building along the roadway before the PM peak hour. Turning movement collisions can typically occur more often when gaps between vehicles become smaller and less frequent, and delays increase due to traffic congestion that forces motorists to accept fewer gaps, creating an increased risk for a collision.
- Potential mitigation measures at this location could include the addition of a left-turn lane to provide additional space and time for a vehicle to complete a left-turn without being pressured into completing a turn to “free up” the through lane.

Signalized Intersection - Collisions

- Signalized intersections have an average collision rate of 12.25, with a 95% confidence level that the abnormal upper collision rate is 23.01 collisions per year.
- Regional Road 20 and Montrose Road intersection has a statistically significant collision rate of 23.25, half associated with rear-end collisions and almost a quarter to turning movements.
  - Weather and lighting are not contributing factors, as most collisions occur during daylight hours and in dry conditions.
  - Intersections with heavy traffic and limited storage capacity are more prone to rear-end collisions. This is often due to unexpected slowdowns and queues spilling back into the through lane.

- The intersection has a right-turn channelization, which can increase the likelihood of collisions and is also noted as a pedestrian safety concern.
- To mitigate collisions, an increase to the left-turn storage and removal of the channelized right-turn lane could be considered.

- The signalized intersection of Regional Road 20 and Dorchester Road is noted to have a collision rate of 20.00 per year; this intersection significantly exceeds the average collision rate.
  - Rear-end and sideswipe collisions at this intersection accounted for approximately 55% of the reported events, with angle accounting for 19%, turning movements at 16% and single motor vehicles at 6%.
  - Weather and lighting are not contributing factors, as most collisions occur during daylight hours and in dry conditions.
  - Excessive queuing may lead to more rear-end collisions during heavy traffic.
  - Approaching collisions is also a concern. The existing left-turn lanes create visibility issues, given the created offset. To mitigate this, shadow lanes within pavement markings could improve visibility for left-turn movements.
- As part of the collision review, the summary results were compared against Ontario averages (2020) to determine if there were any differing profile trends for the distribution of collisions within the Regional Road 20 corridor. The summary noted the following:
  - The one fatal collision reported within the study area was as expected with the Ontario average, while the non-fatal injury collisions were lower, and property damage was only modestly higher than the Ontario average.
  - The study area has a higher percentage of collisions at intersections than Ontario averages. Rear-end collisions are almost double the Ontario average, while single motor vehicle impacts are significantly lower.
  - Collisions occurring during rainy conditions are higher than Ontario averages, while those during daylight, dawn/dusk and dark conditions are relatively close to the Ontario averages.
  - Collisions during the spring months are higher than Ontario averages, which could be due to sudden weather changes and major storms that impact roadway conditions.

- The percentage of fatal injury collisions within the study corridor is lower than the Niagara Falls average.

Collision Mitigation

- Based on the collision review, the following is recommended to be considered as part of the preferred design for Regional Road 20:
  - As pedestrians should be encouraged to cross at controlled crosswalks in most situations, it is recommended that a pedestrian signal or crossover be provided along Regional Road 20 between Dorchester Road and Highland Avenue.
  - Cyclists wishing to travel east-west along Regional Road 20 are faced with shared arrangements with high volumes of vehicle traffic or are required to divert to lower-order nearby roadways such as Barker Street to limit exposure to vehicle conflicts.
  - While the ultimate design of Regional Road 20 will most likely include continuous facilities for pedestrians, providing separated facilitates for cyclists is likely not feasible given a protected bicycle lane, cycle track, or multi-use pathway would be required given the speed and volume along Regional Road 20.
  - Signing (i.e., sharing the road) could be utilized to highlight that the corridor accommodates both modes of travel. While these measures are expected to provide a nominal improvement to cycling safety, they should only be implemented in accordance with regional policies.
  - Additional wayfinding signage should be considered to guide cyclists to the existing off-street facilities and adjacent lower classification roadways in the study area, including the Millennium Recreational Trail, which runs north-south along a hydro corridor and crosses the study area between Royal Manor Drive and Brookfield Avenue.
  - Regional Road 20 between Byng Avenue and Carlton Avenue/Prince Edward Avenue has three all-movement access points spaced relatively close on the south side of the road. It would be beneficial from a safety perspective to close off two driveways and restrict one connection to right in/out operation to reduce conflict points.
  - Regional Road 20 between Franklin Avenue and Byng Avenue has four all-movement access points spaced relatively close on the road's north and south sides. It would be beneficial from a safety perspective to close off one

driveway and restrict three other connections to right in/out operation.

- Regional Road 20 between Corwin Avenue and Prince Edward Avenue/Carlton Avenue has 14 all-movement access points spaced relatively close on the road's north and south sides. It would be beneficial from a safety perspective to close off four driveways and restrict two other connections to right in/out operation.
- A two-way centre left-turn lane can be considered as part of the overall preferred design.
- At the intersection of Regional Road 20 and Dorchester Road, the provision of shadow lanes for the eastbound approach should be considered as part of the preferred design to improve visibility for left-turn movements.
- At the Regional Road 20 and Montrose Road intersection, increased storage lengths for the eastbound and westbound left-turn movements are required. To improve the pedestrian crossing environment and reduce vehicle turning speeds, it is recommended that the channelized right turn lane be removed as part of the preferred design.

Operational Review

- Overall, the 2041 traffic conditions reveal localized congestion at study area intersections during the AM and PM peak hours. Generally, the congestion is localized to Montrose Road and the Dorchester Road intersection. In the PM peak hour, all approaches at these intersections are forecast to experience delays in the LOS E/F range.
- Four alternative cross-section configurations were analyzed based on 2041 traffic operations. The preferred alternative is Alternative 3 (five-lane cross-section) based on the traffic operations. Overall, the decrease in through capacity in Alternatives 1 and 2 increases delays in the east/west direction. The capacity is exceptionally constrained in the PM peak hour.
- Alternative 3 (five-lane) and Alternative 4 (four-lane) provide adequate LOS for most study area intersections. However, with Alternative 3 (five-lane), adding a centre TWLTL will reduce delay for through movements by removing left-turn disruptions to through traffic.
- The centre two-way left-turn lane will also benefit the corridor by providing additional left-turn lane storage at signalized intersections (i.e. storage can spillback to the TWLT and avoid

blocking through lanes), reducing the risk of collisions and enabling two-stage left turns at unsignalized intersections.

Preferred Alterative

- The preferred alternative considers the Region's Operation Policy of the Transportation Master Plan. The policy states that the Region aims to maintain smooth traffic flow on its roadways. The main objective is to ensure safe access in line with the function and operation of the public road system and the access needs of adjacent land uses.
- With the increase in traffic on Regional Road, conflicts during mid-block turning movements (access to private driveways) will also increase. Implementing a two-way left turn will help resolve these conflicts and provide safe access to private driveways, aligning with the objective and intent of the Region's Policy Statement. As there are already several existing access points to Regional Road 20, these connections should be provided in a manner that ensures safety without affecting the capacity of the roadway, while also considering the needs of all road users.
- Emergency response times could also be improved as the two-way left-turn lane provides extra space for an emergency vehicle to navigate through the corridor under constrained conditions.
- Based on this, Alternative 3 (Five-Lane Cross-Section) is the preferred alternative.

Signalized Auxiliary Turn Lane Requirements

- Unless otherwise specified, a standard 63-metre taper length should be provided based on a 60 km/h design speed and 18:1 ratio for all turn lanes.
- Regional Road 20 at Montrose Road should
  - Eastbound left-turn lane 85-metre storage
  - Westbound left-turn lane 55-metre storage
  - Northbound left-turn lane 45-metre storage
  - Southbound left-turn lane 80-metre storage
  - Northbound right right-turn lane with 35-metre storage
  - Southbound right-turn lane with 145-metre storage and 49-metre taper
- Regional Road 20 at Belmont Avenue/Niagara Falls Inn



- Eastbound left-turn lane 20-metre storage
- Westbound left-turn lane 30-metre storage
- Northbound left-turn lane 30-metre storage

- Regional Road 20 at Royal Manor Drive
  - Eastbound left-turn lane 25-metre storage
  - Westbound left-turn lane 15-metre storage

- Regional Road 20 at Dorchester Road
  - Eastbound left-turn lane 60-metre storage
  - Westbound left-turn lane 65-metre storage
  - Northbound left-turn lane 75-metre storage
  - Southbound left-turn lane 45-metre storage
  - Northbound right-turn lane with 195-metre storage and 49-metre taper
  - Southbound right-turn lane with 30-metre storage

- Regional Road 20 at Highland Avenue/No Frills Plaza should be provided within the following turn lanes
  - Eastbound left-turn lane 55-metre storage
  - Westbound left-turn lane 35-metre storage
  - Northbound left-turn lane 45-metre storage

Active Transportation Review

- Active transportation facilities in the corridor show room for growth. Pedestrian infrastructure in the corridor is sufficient, with sidewalks on both sides of the road for most of the study corridor streets; the exceptions are Montrose Road and Brookfield Avenue, which have sidewalks on one side of the road. All signalized intersections include pedestrian pushbuttons, pedestrian signal heads, and delineated crosswalks.
- Cycling infrastructure in the corridor consists of bike lanes on Montrose Road south of Regional Road 20 and wide paved shoulders on Dorchester Road. Off-street facilities in the study area include the Millennium Recreational Trail, which runs north-south along a hydro corridor and crosses the study area between Royal Manor Drive and Brookfield Avenue.

- Active transportation usage in the corridor shows room for growth. Based on existing traffic counts, the pedestrian activity level is relatively low within the corridor, with pedestrian crossing volumes reaching between 60 to 70 pedestrians per hour in the AM and PM periods at the busiest intersections (Regional Road 20 and Montrose Road).
- Similarly, cycling volumes along Regional Road 20 were less than 10 cyclists per hour during peak AM and PM periods, with up to 30 cyclists observed during the day. This observation was taken during October, which is not the peak tourist season; thus, it could result in an underestimation of cyclist volumes. In addition, the lack of on-street cycling facilities and the volume of vehicles along Regional Road 20 may dissuade cyclists from travelling along Regional Road 20.
- Even though cycling is not prohibited along Regional Road 20 through a shared arrangement with vehicle traffic, the All Ages and Abilities (AAA) design philosophy is to be encouraged. The goal of AAA in infrastructure planning is to encourage people of all ages and abilities to cycle more often and mitigate conflicts through facility design to the greatest extent possible.
- This philosophy implies that infrastructure should be safe and comfortable and provide equitable access to cycling facilities and essential community amenities. Applying these criteria is vital to improving and supporting community road safety goals.
- The existing cycling network, specifically along Regional Road 20, is limited. As such, cyclists wishing to travel east-west along Regional Road 20 are faced with shared arrangements with high volumes of vehicle traffic or are required to divert to lower-order roadways such as Barker Street to limit exposure to vehicle conflicts.
- Given this gap in the planned network, a continuous connection on Regional Road 20 through a physically separated facility would benefit connectivity through an east-west cycling route; however, given limited right-of-way, this is likely not feasible.
- Wayfinding signage should be considered to guide cyclists to the existing off-street facilities and lower classification roadways in the study area, including the Millennium Recreational Trail, which runs north-south along a hydro corridor and crosses the study area between Royal Manor Drive and Brookfield Avenue.



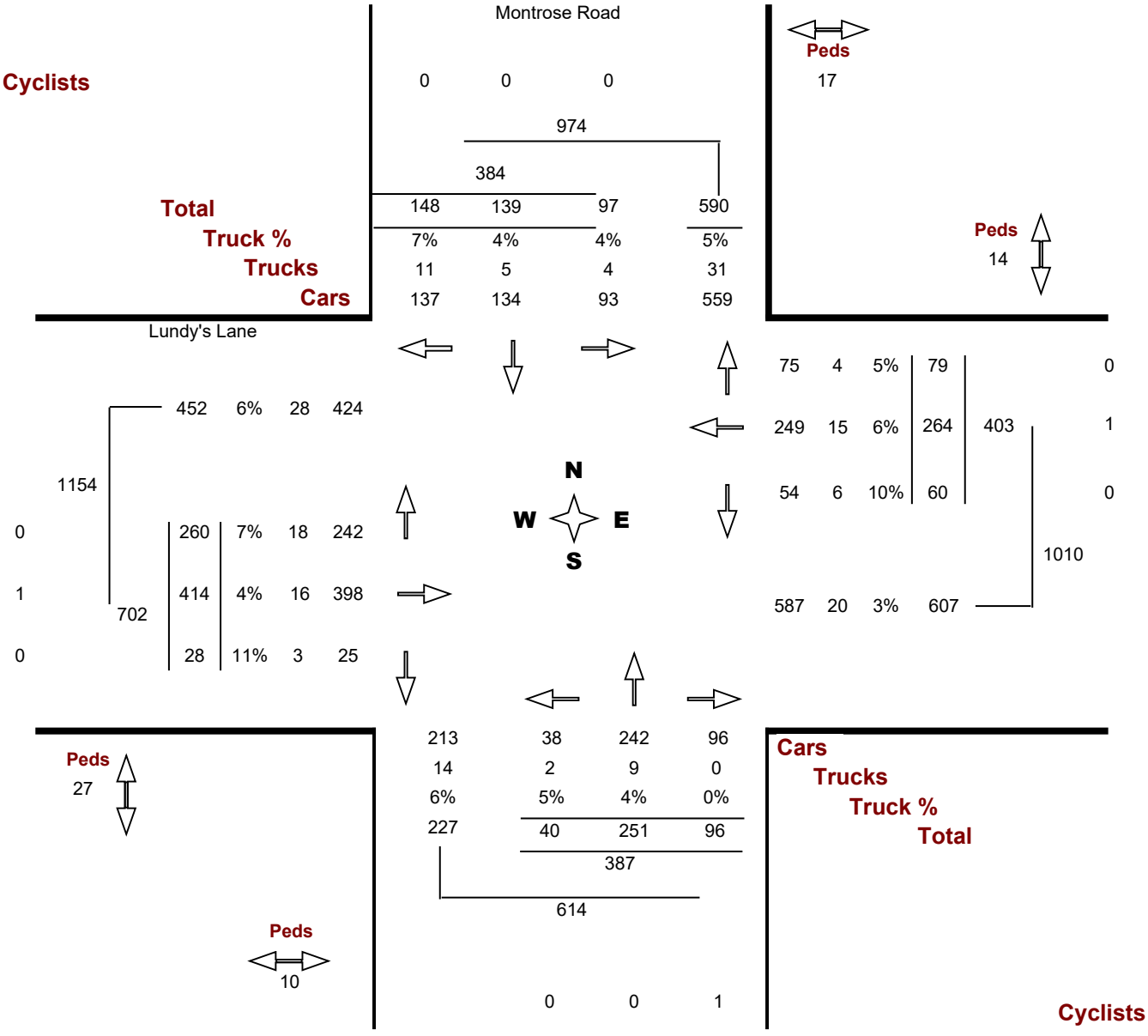
Appendix A

Existing Data

Turning Movements Report - AM Period

Location..... Lundy's Lane @ Montrose Road
Municipality. NIAGARA FALLS
Traffic Cont.
Major Dir..... East west

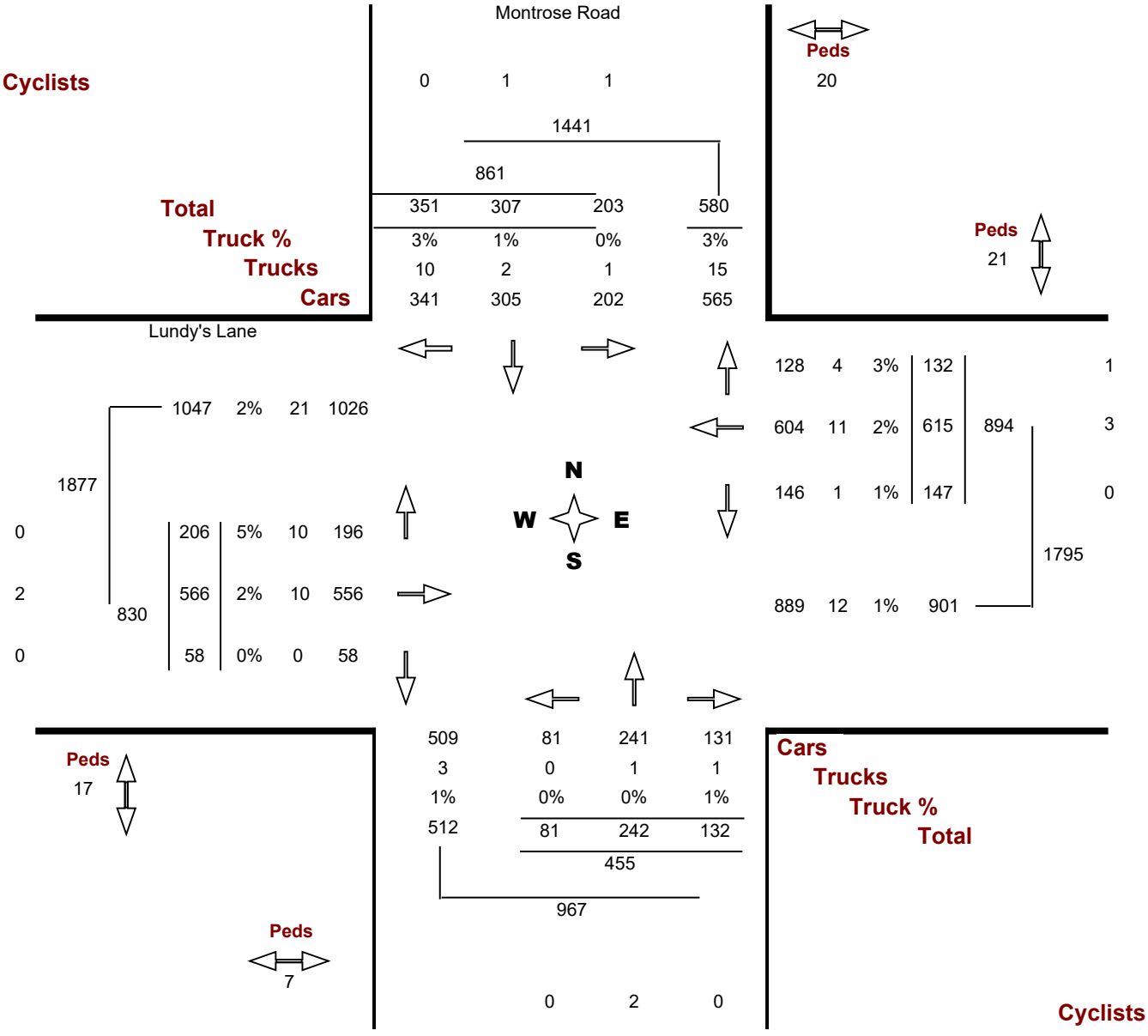
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Count Date. Wednesday, 17 July, 2019
Count Time. 07:00 AM — 09:00 AM
Peak Hour.. 08:00 AM — 09:00 AM



Turning Movements Report - PM Period

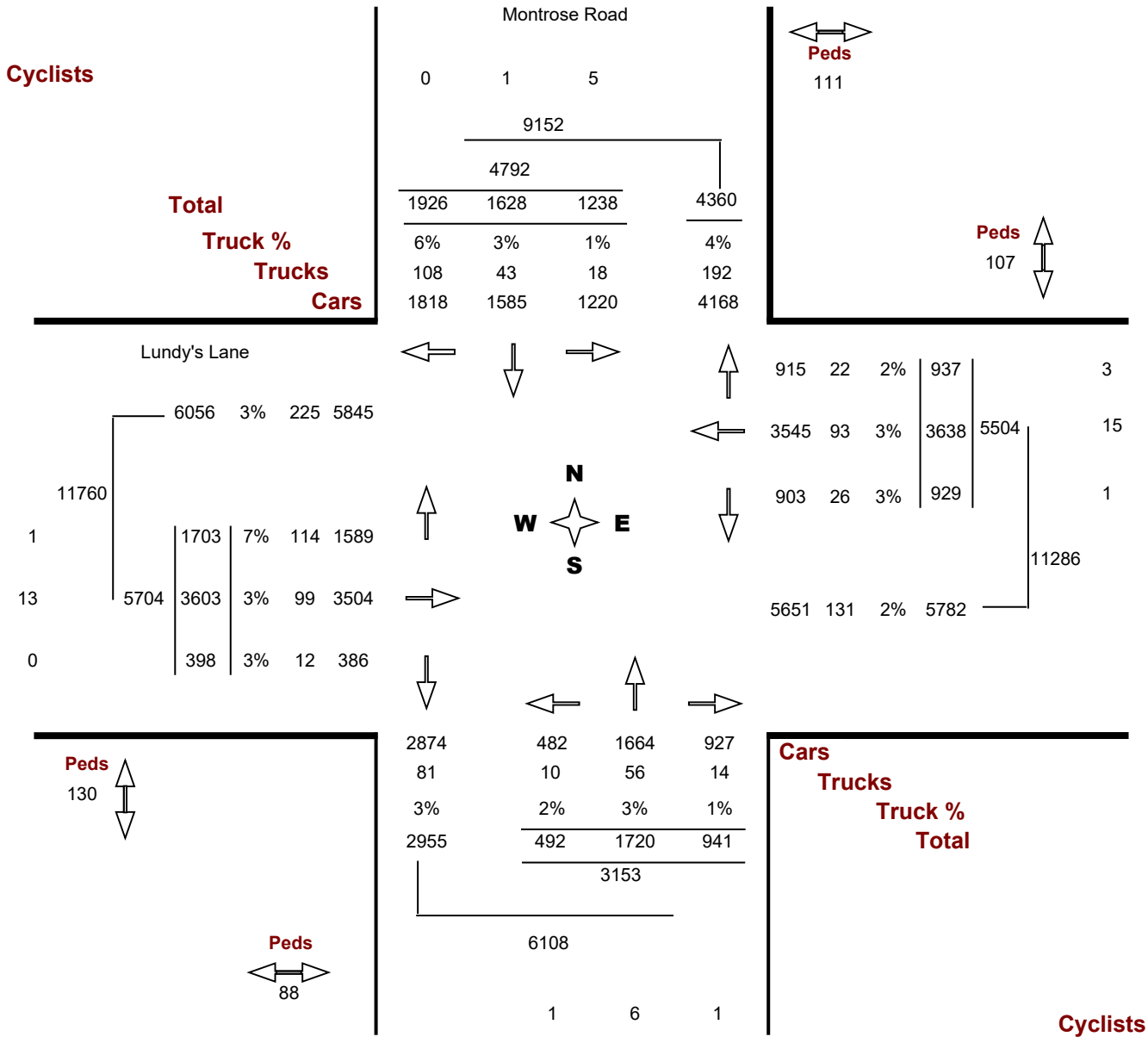
Location..... Lundy's Lane @ Montrose Road
Municipality. NIAGARA FALLS
Traffic Cont.
Major Dir..... East west

GeoID..... 01594
Count Date. Wednesday, 17 July, 2019
Count Time. 03:00 PM — 06:00 PM
Peak Hour.. 04:30 PM — 05:30 PM



Turning Movement Count Report
Full Study

Location..... Lundy's Lane @ Montrose Road
Municipality..... NIAGARA FALLS
GeoID..... 01594
Count Date..... Wednesday, 17 July, 2019



Turning Movement Count - Details Report (15 min)

Location..... Lundy's Lane @ Montrose Road

Municipality..... NIAGARA FALLS

Count Date..... Wednesday, July 17, 2019

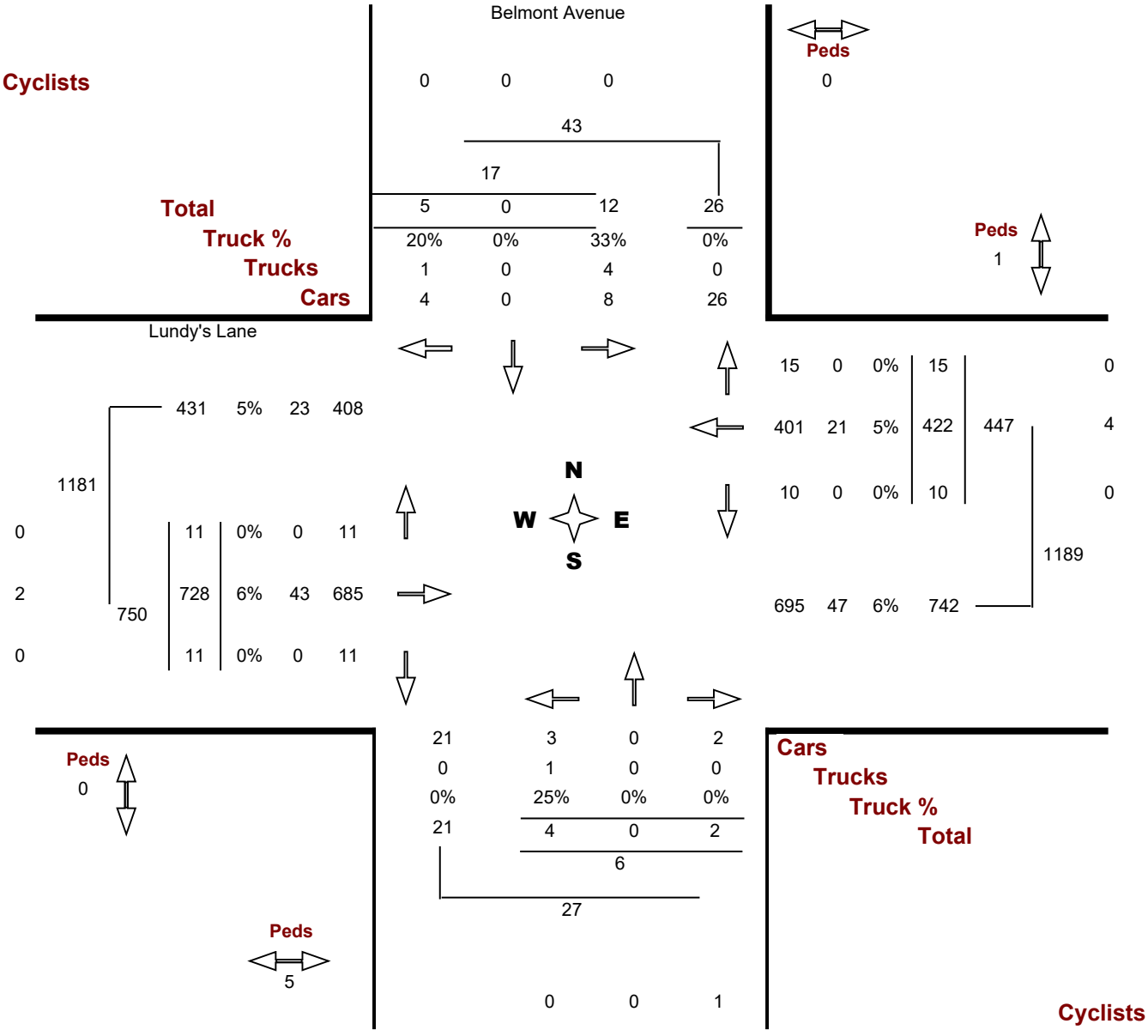
		Montrose Road										Lundy's Lane									
		North Approach					South Approach					East Approach					West Approach				
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Hourly Total		59	102	123	0	284	33	190	77	0	300	54	188	48	0	290	226	292	23	0	541
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13:30	13:45	45	60	62	0	167	15	45	33	0	93	31	102	36	0	169	58	95	13	0	166
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15:30	15:45	46	69	56	0	171	15	47	30	0	92	42	145	35	0	222	49	139	15	0	203
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16:00	16:15	38	60	84	0	182	27	55	30	0	112	35	140	32	0	207	54	98	17	0	169

		Montrose Road										Lundy's Lane									
		North Approach					South Approach					East Approach					West Approach				
Time Period		LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT
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Grand Total		1238	1628	1926	0	4792	492	1720	941	0	3153	929	3638	937	0	5504	1703	3603	398	0	5704
Truck %		1%	3%	6%	0%	4%	2%	3%	1%	0%	3%	3%	3%	2%	0%	3%	7%	3%	3%	0%	4%

Turning Movements Report - AM Period

Location..... Belmont Avenue @ Lundy's Lane
Municipality. NIAGARA FALLS
Traffic Cont.
Major Dir..... East west

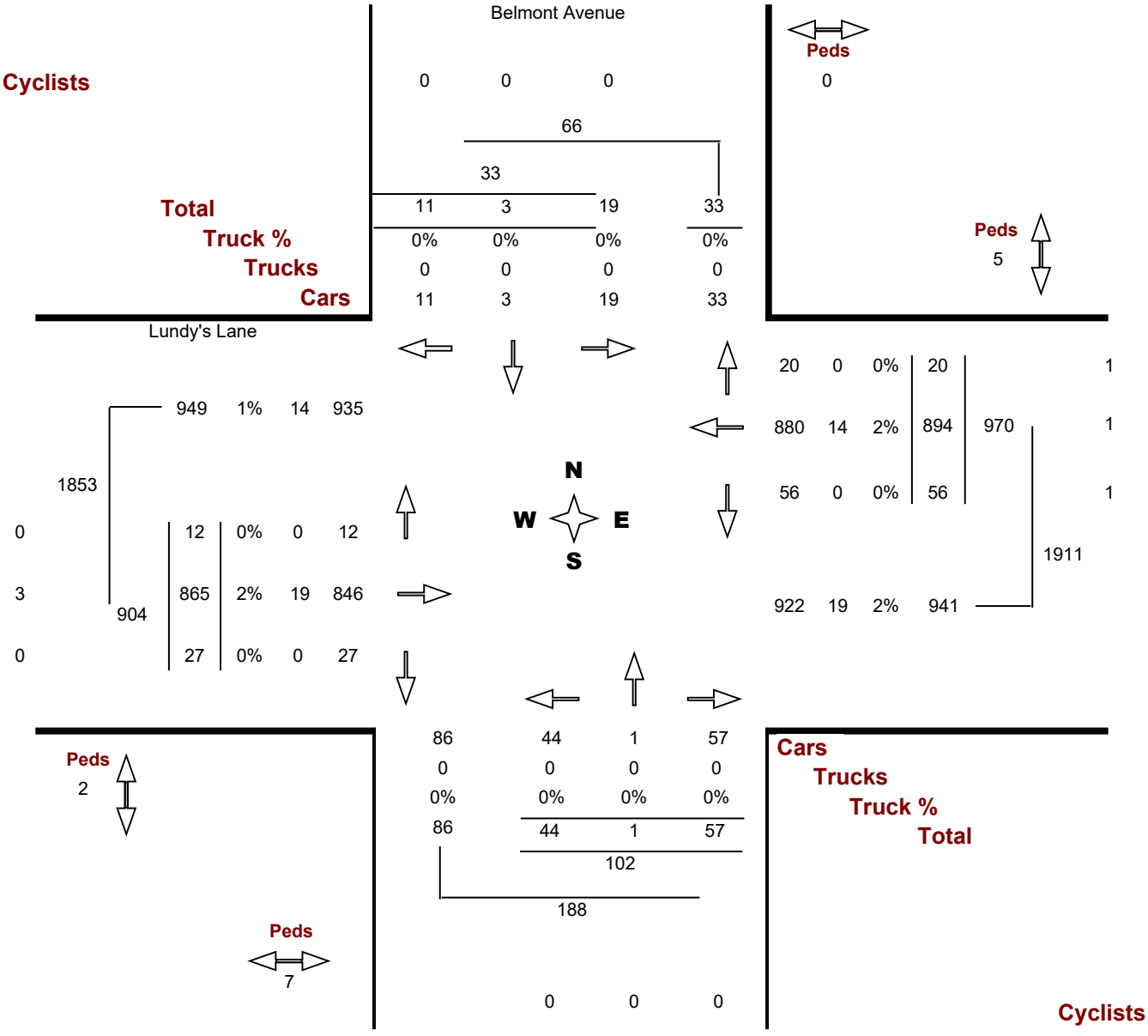
GeoID..... 01595
Count Date. Tuesday, 08 October, 2019
Count Time. 07:00 AM — 09:00 AM
Peak Hour.. 08:00 AM — 09:00 AM



Turning Movements Report - PM Period

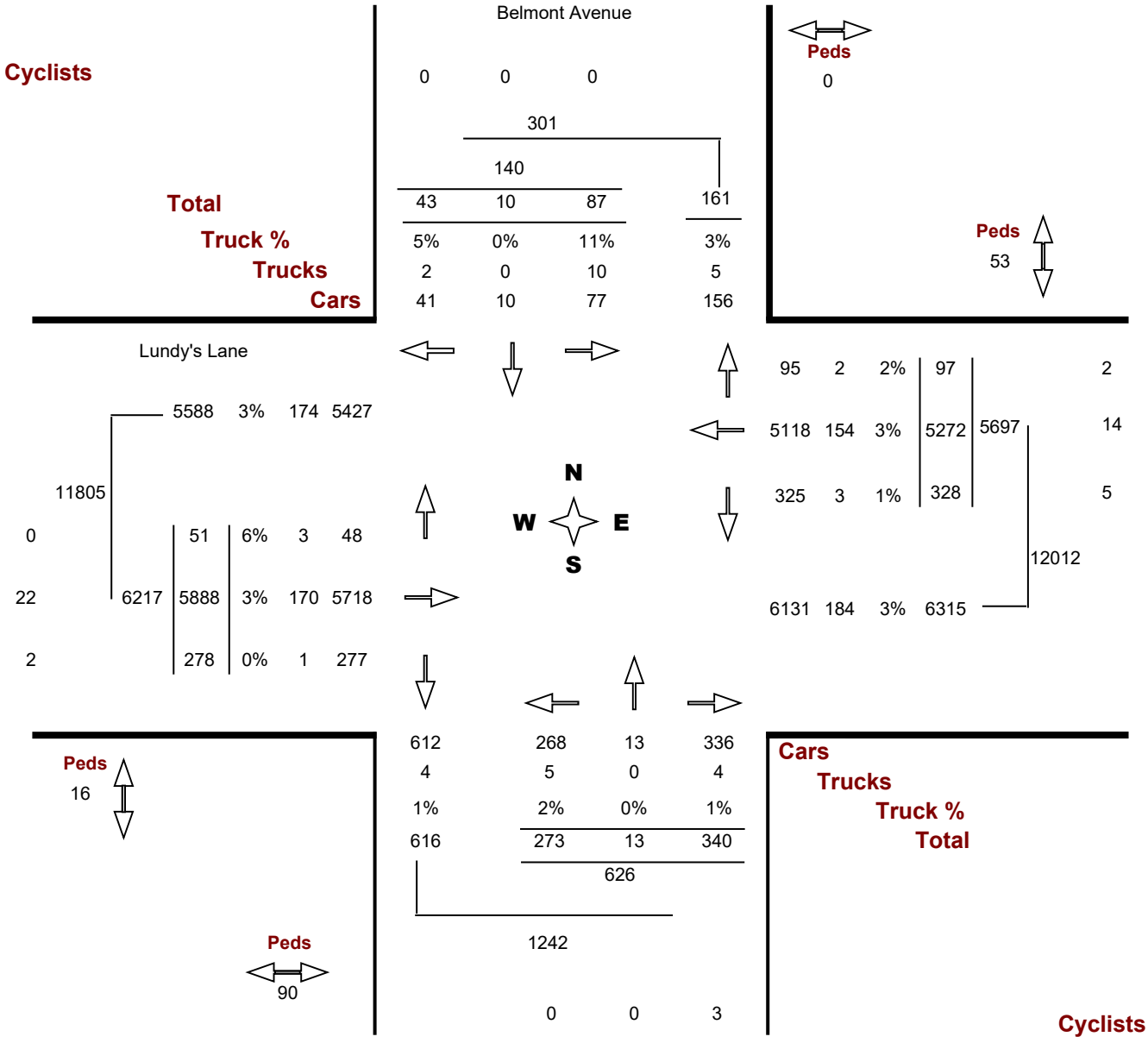
Location..... Belmont Avenue @ Lundy's Lane
Municipality. NIAGARA FALLS
Traffic Cont.
Major Dir..... East west

GeoID..... 01595
Count Date. Tuesday, 08 October, 2019
Count Time. 03:00 PM — 06:00 PM
Peak Hour.. 03:45 PM — 04:45 PM



Turning Movement Count Report
Full Study

Location..... Belmont Avenue @ Lundy's Lane
Municipality..... NIAGARA FALLS
GeoID..... 01595
Count Date..... Tuesday, 08 October, 2019



Niagara Region

Turning Movement Count - Details Report (15 min)

Location..... Belmont Avenue @ Lundy's Lane

Municipality..... NIAGARA FALLS

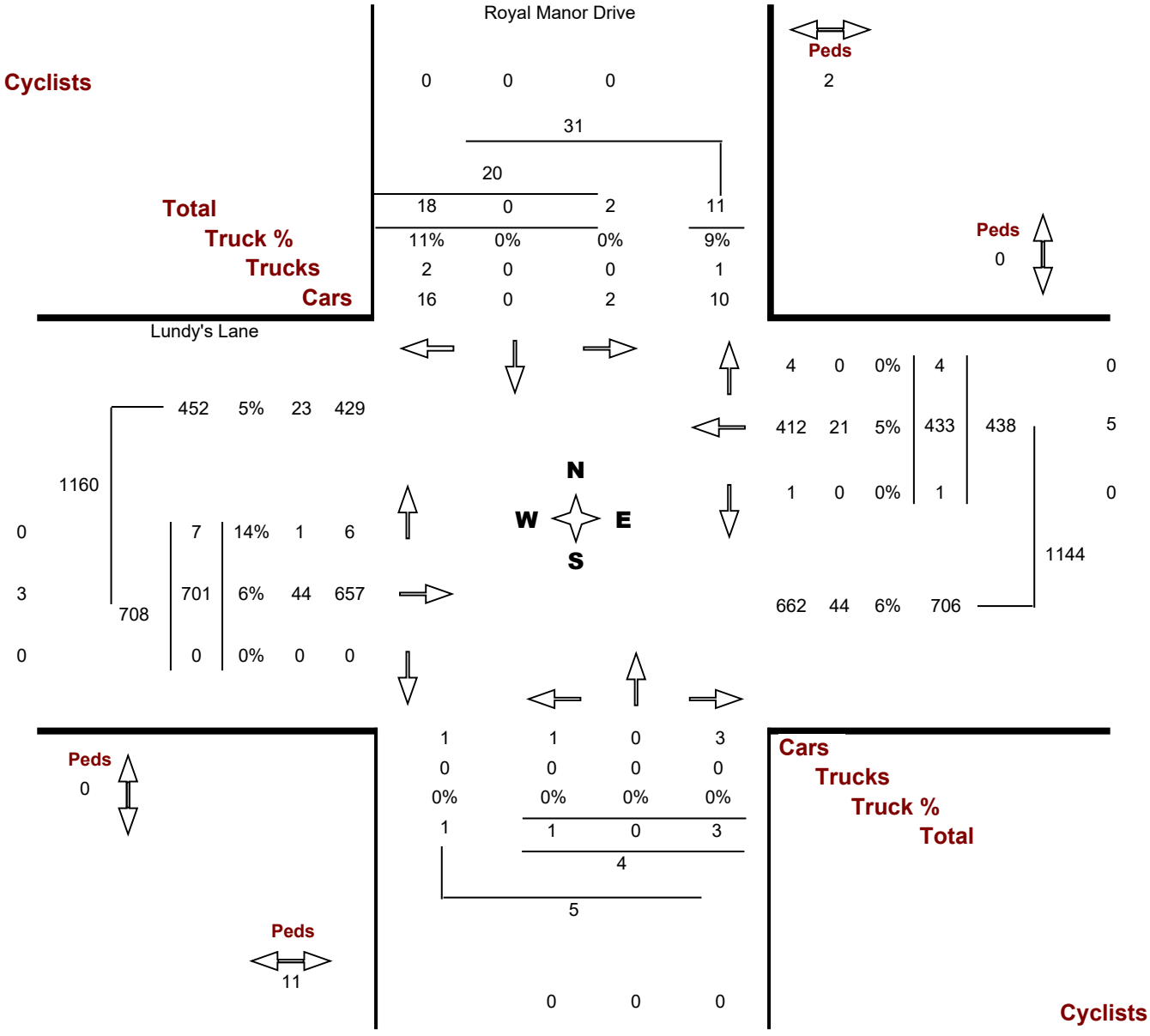
Count Date..... Tuesday, October 08, 2019

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		North Approach					South Approach					East Approach					West Approach				
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07:45	08:00	1	1	0	0	2	1	0	0	0	1	0	112	1	0	113	1	133	4	0	138
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Hourly Total		12	0	5	0	17	4	0	2	0	6	10	422	15	0	447	11	728	11	0	750
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11:30	11:45	2	0	1	0	3	7	2	14	0	23	11	154	1	0	166	1	153	14	0	168
11:45	12:00	2	0	1	0	3	7	0	13	0	20	16	191	3	0	210	2	192	18	0	212
Hourly Total		8	0	4	0	12	29	2	47	0	78	40	623	8	0	671	4	723	51	0	778
12:00	12:15	2	0	0	0	2	16	0	13	0	29	21	172	6	0	199	2	192	14	0	208
12:15	12:30	0	0	2	0	2	13	0	13	0	26	18	189	3	0	210	1	188	14	0	203
12:30	12:45	3	0	1	0	4	13	1	22	0	36	13	177	1	0	191	2	199	12	0	213
12:45	13:00	0	0	1	0	1	7	0	17	0	24	12	159	3	0	174	1	190	16	0	207
Hourly Total		5	0	4	0	9	49	1	65	0	115	64	697	13	0	774	6	769	56	0	831
13:00	13:15	4	2	1	0	7	19	0	11	0	30	19	182	2	0	203	0	181	14	0	195
13:15	13:30	2	0	1	0	3	9	1	19	0	29	19	177	2	0	198	3	216	12	0	231
13:30	13:45	3	0	0	0	3	14	1	14	0	29	22	172	7	0	201	1	195	11	0	207
13:45	14:00	4	0	0	0	4	11	0	20	0	31	9	165	3	0	177	1	201	11	0	213
Hourly Total		13	2	2	0	17	53	2	64	0	119	69	696	14	0	779	5	793	48	0	846
15:00	15:15	1	0	2	0	3	12	0	15	0	27	12	199	4	0	215	2	214	4	0	220
15:15	15:30	1	0	5	0	6	18	1	12	0	31	10	196	5	0	211	3	206	13	0	222
15:30	15:45	4	0	2	0	6	12	0	17	0	29	10	200	5	0	215	1	185	12	0	198
15:45	16:00	3	0	1	0	4	6	0	17	0	23	16	233	2	0	251	3	191	7	0	201
Hourly Total		9	0	10	0	19	48	1	61	0	110	48	828	16	0	892	9	796	36	0	841
16:00	16:15	5	1	4	0	10	9	1	10	0	20	9	222	5	0	236	0	191	5	0	196

		Belmont Avenue										Lundy's Lane									
		North Approach					South Approach					East Approach					West Approach				
Time Period		LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT
16:15	16:30	1	0	3	0	4	17	0	20	0	37	20	210	6	0	236	3	235	7	0	245
16:30	16:45	10	2	3	0	15	12	0	10	0	22	11	229	7	0	247	6	248	8	0	262
16:45	17:00	6	2	2	0	10	9	1	9	0	19	9	214	3	0	226	2	202	10	0	214
Hourly Total		22	5	12	0	39	47	2	49	0	98	49	875	21	0	945	11	876	30	0	917
17:00	17:15	2	1	1	0	4	10	3	16	0	29	12	194	1	0	207	0	216	12	0	228
17:15	17:30	3	0	1	0	4	9	1	9	0	19	9	215	0	0	224	0	210	10	0	220
17:30	17:45	4	0	2	0	6	15	1	14	0	30	14	196	5	0	215	2	195	3	0	200
17:45	18:00	5	1	1	0	7	8	0	11	0	19	12	173	2	0	187	2	178	15	0	195
Hourly Total		14	2	5	0	21	42	5	50	0	97	47	778	8	0	833	4	799	40	0	843
Grand Total		87	10	43	0	140	273	13	340	0	626	328	5272	97	0	5697	51	5888	278	0	6217
Truck %		11%	0%	5%	0%	9%	2%	0%	1%	0%	1%	1%	3%	2%	0%	3%	6%	3%	0%	0%	3%

Turning Movements Report - AM Period

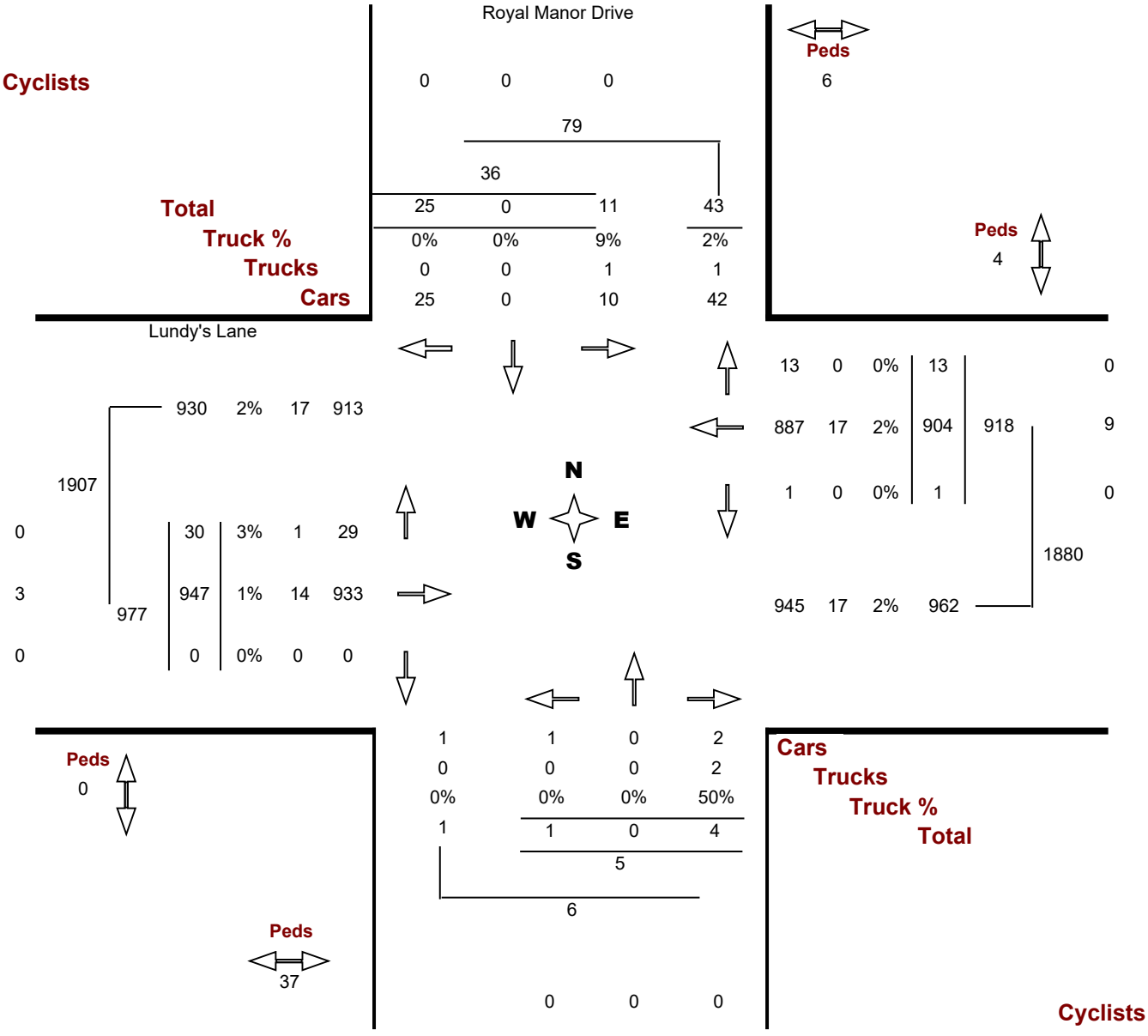
Location..... Lundy's Lane @ Royal Manor Drive
GeoID..... 01596
Municipality. NIAGARA FALLS
Count Date. Tuesday, 08 October, 2019
Traffic Cont.
Count Time. 07:00 AM — 09:00 AM
Major Dir..... East west
Peak Hour.. 08:00 AM — 09:00 AM



Turning Movements Report - PM Period

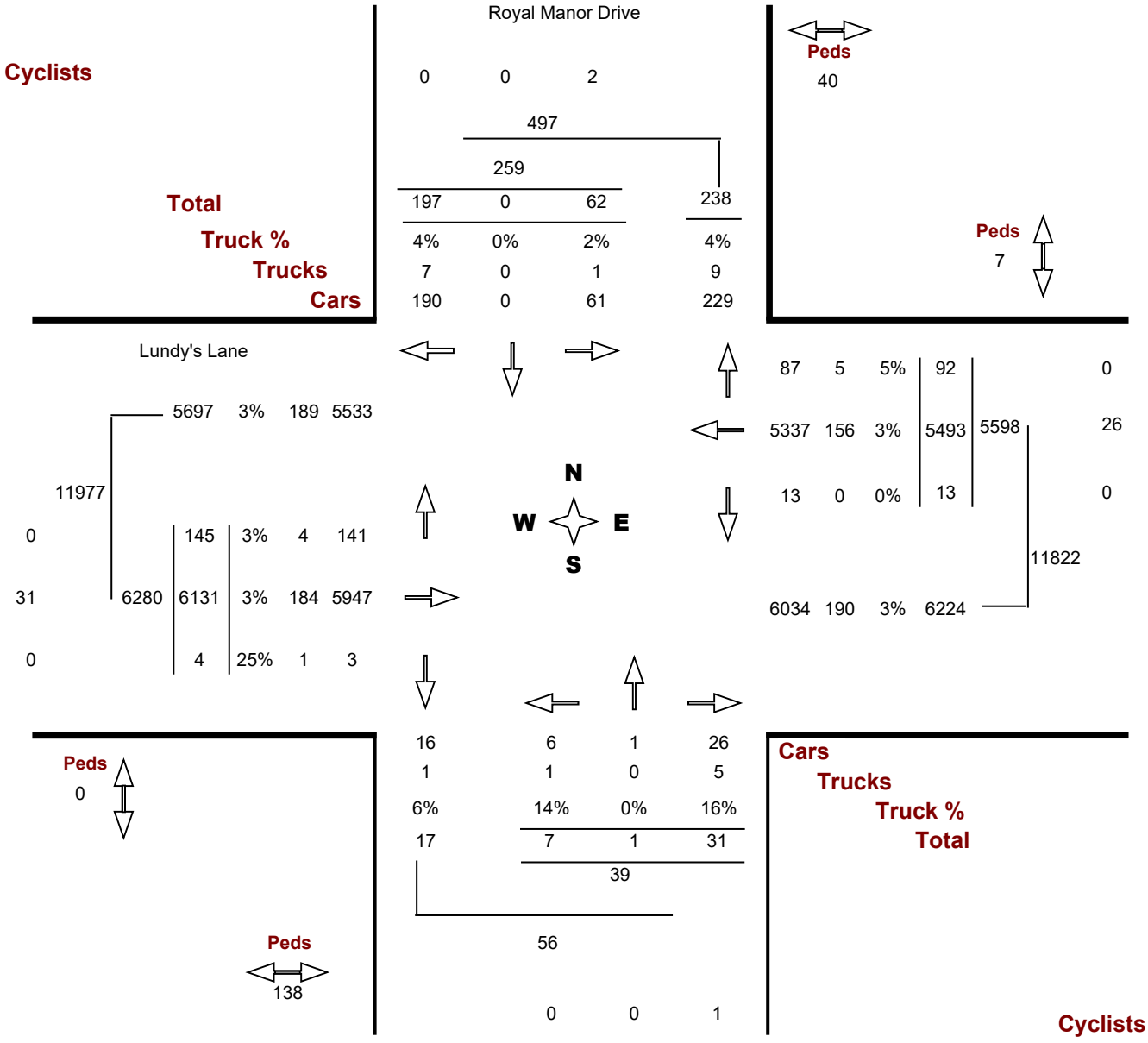
Location..... Lundy's Lane @ Royal Manor Drive
Municipality. NIAGARA FALLS
Traffic Cont.
Major Dir..... East west

GeoID..... 01596
Count Date. Tuesday, 08 October, 2019
Count Time. 03:00 PM — 06:00 PM
Peak Hour.. 04:15 PM — 05:15 PM



Turning Movement Count Report
Full Study

Location..... Lundy's Lane @ Royal Manor Drive
Municipality..... NIAGARA FALLS
GeoID..... 01596
Count Date..... Tuesday, 08 October, 2019



Turning Movement Count - Details Report (15 min)

Location..... Lundy's Lane @ Royal Manor Drive

Municipality..... NIAGARA FALLS

Count Date..... Tuesday, October 08, 2019

		Royal Manor Drive										Lundy's Lane									
		North Approach					South Approach					East Approach					West Approach				
Time Period		LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT
07:00	07:15	0	0	0	0	0	0	0	1	0	1	0	51	0	0	51	0	69	0	0	69
07:15	07:30	1	0	2	0	3	1	0	0	0	1	0	75	0	0	75	0	79	0	0	79
07:30	07:45	0	0	5	0	5	1	0	1	0	2	0	93	1	0	94	0	112	1	0	113
07:45	08:00	1	0	3	0	4	0	0	2	0	2	1	101	0	0	102	1	141	0	0	142
Hourly Total		2	0	10	0	12	2	0	4	0	6	1	320	1	0	322	1	401	1	0	403
08:00	08:15	1	0	4	0	5	0	0	0	0	0	0	97	2	0	99	1	137	0	0	138
08:15	08:30	1	0	3	0	4	0	0	1	0	1	0	103	0	0	103	3	166	0	0	169
08:30	08:45	0	0	6	0	6	1	0	1	0	2	1	107	1	0	109	0	181	0	0	181
08:45	09:00	0	0	5	0	5	0	0	1	0	1	0	126	1	0	127	3	217	0	0	220
Hourly Total		2	0	18	0	20	1	0	3	0	4	1	433	4	0	438	7	701	0	0	708
11:00	11:15	3	0	5	0	8	0	0	2	0	2	1	115	3	0	119	6	210	0	0	216
11:15	11:30	4	0	7	0	11	1	0	0	0	1	0	149	3	0	152	2	191	0	0	193
11:30	11:45	0	0	6	0	6	0	0	0	0	0	0	167	5	0	172	5	162	0	0	167
11:45	12:00	0	0	13	0	13	0	0	0	0	0	0	183	1	0	184	8	206	0	0	214
Hourly Total		7	0	31	0	38	1	0	2	0	3	1	614	12	0	627	21	769	0	0	790
12:00	12:15	1	0	6	0	7	0	0	0	0	0	0	199	2	0	201	9	191	2	0	202
12:15	12:30	2	0	8	0	10	1	0	4	0	5	1	203	0	0	204	9	201	0	0	210
12:30	12:45	6	0	2	0	8	0	0	0	0	0	3	191	3	0	197	5	209	0	0	214
12:45	13:00	2	0	8	0	10	0	1	2	0	3	0	165	6	0	171	5	191	0	0	196
Hourly Total		11	0	24	0	35	1	1	6	0	8	4	758	11	0	773	28	792	2	0	822
13:00	13:15	4	0	13	0	17	0	0	0	0	0	0	187	6	0	193	8	197	0	0	205
13:15	13:30	3	0	5	0	8	0	0	1	0	1	2	181	6	0	189	6	240	1	0	247
13:30	13:45	3	0	9	0	12	0	0	0	0	0	1	190	6	0	197	7	201	0	0	208
13:45	14:00	2	0	6	0	8	0	0	0	0	0	0	187	4	0	191	4	224	0	0	228
Hourly Total		12	0	33	0	45	0	0	1	0	1	3	745	22	0	770	25	862	1	0	888
15:00	15:15	2	0	6	0	8	0	0	1	0	1	1	206	3	0	210	6	219	0	0	225
15:15	15:30	1	0	7	0	8	1	0	1	0	2	1	204	2	0	207	2	224	0	0	226
15:30	15:45	8	0	9	0	17	0	0	0	0	0	0	221	4	0	225	6	185	0	0	191
15:45	16:00	1	0	10	0	11	0	0	1	0	1	0	230	4	0	234	3	234	0	0	237
Hourly Total		12	0	32	0	44	1	0	3	0	4	2	861	13	0	876	17	862	0	0	879
16:00	16:15	2	0	7	0	9	0	0	3	0	3	0	222	6	0	228	4	171	0	0	175

		Royal Manor Drive										Lundy's Lane									
		North Approach					South Approach					East Approach					West Approach				
Time Period		LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT
16:15	16:30	3	0	4	0	7	0	0	0	0	0	0	238	2	0	240	9	256	0	0	265
16:30	16:45	4	0	10	0	14	1	0	3	0	4	0	250	2	0	252	5	237	0	0	242
16:45	17:00	3	0	4	0	7	0	0	0	0	0	1	218	4	0	223	5	250	0	0	255
Hourly Total		12	0	25	0	37	1	0	6	0	7	1	928	14	0	943	23	914	0	0	937
17:00	17:15	1	0	7	0	8	0	0	1	0	1	0	198	5	0	203	11	204	0	0	215
17:15	17:30	1	0	4	0	5	0	0	3	0	3	0	238	3	0	241	4	237	0	0	241
17:30	17:45	1	0	7	0	8	0	0	2	0	2	0	201	4	0	205	6	202	0	0	208
17:45	18:00	1	0	6	0	7	0	0	0	0	0	0	197	3	0	200	2	187	0	0	189
Hourly Total		4	0	24	0	28	0	0	6	0	6	0	834	15	0	849	23	830	0	0	853
Grand Total		62	0	197	0	259	7	1	31	0	39	13	5493	92	0	5598	145	6131	4	0	6280
Truck %		2%	0%	4%	0%	3%	14%	0%	16%	0%	15%	0%	3%	5%	0%	3%	3%	3%	25%	0%	3%

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Regional Road 20 & Brookfield Avenue
Site Code: 210300
Start Date: 11/09/2021

Turning Movement Data

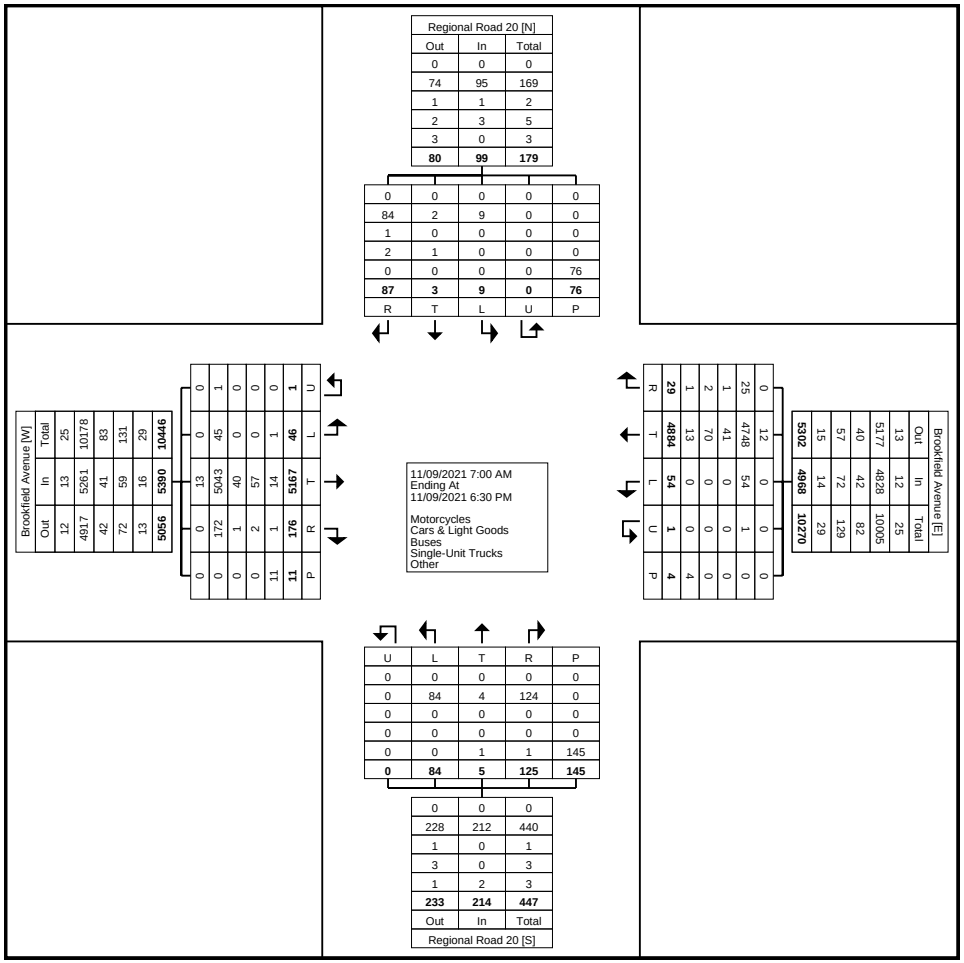
Start Time	Brookfield Avenue Eastbound						Brookfield Avenue Westbound						Regional Road 20 Northbound						Regional Road 20 Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	0	80	2	0	1	82	0	57	1	0	0	58	0	0	3	0	1	3	0	0	1	0	1	1	144
7:15 AM	1	92	3	0	0	96	2	81	1	0	0	84	4	0	1	0	1	5	0	0	1	0	3	1	186
7:30 AM	1	107	2	0	1	110	1	88	0	0	0	89	4	1	4	0	3	9	0	0	1	0	2	1	209
7:45 AM	1	123	7	0	0	131	1	81	0	0	1	82	4	0	5	0	1	9	1	0	3	0	2	4	226
Hourly Total	3	402	14	0	2	419	4	307	2	0	1	313	12	1	13	0	6	26	1	0	6	0	8	7	765
8:00 AM	0	105	0	0	2	105	1	95	0	0	0	96	2	0	9	0	3	11	0	0	4	0	2	4	216
8:15 AM	0	153	5	0	0	158	1	102	1	0	0	104	2	0	4	0	2	6	0	0	1	0	0	1	269
8:30 AM	1	163	3	0	0	167	4	69	1	0	0	74	3	0	1	0	2	4	0	0	1	0	1	1	246
8:45 AM	1	135	7	0	0	143	1	108	0	0	0	109	3	0	2	0	1	5	1	0	4	0	0	5	262
Hourly Total	2	556	15	0	2	573	7	374	2	0	0	383	10	0	16	0	8	26	1	0	10	0	3	11	993
9:00 AM	1	159	2	0	0	162	2	116	1	0	1	119	2	0	5	0	1	7	0	0	2	0	1	2	290
9:15 AM	0	122	6	0	0	128	1	111	1	0	0	113	5	1	4	0	5	10	0	0	2	0	2	2	253
9:30 AM	2	134	5	0	1	141	0	116	0	0	0	116	3	1	7	0	2	11	0	1	4	0	2	5	273
9:45 AM	1	129	4	0	1	134	2	130	1	0	1	133	3	0	3	0	4	6	0	0	3	0	0	3	276
Hourly Total	4	544	17	0	2	565	5	473	3	0	2	481	13	2	19	0	12	34	0	1	11	0	5	12	1092
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	3	175	10	1	0	189	2	156	1	0	0	159	3	0	2	0	7	5	0	0	4	0	5	4	357
11:15 AM	0	166	11	0	0	177	1	188	0	0	0	189	1	0	3	0	2	4	0	0	5	0	3	5	375
11:30 AM	2	185	6	0	0	193	0	156	2	0	0	158	1	0	7	0	7	8	0	0	2	0	3	2	361
11:45 AM	0	203	3	0	0	206	2	181	1	0	0	184	4	0	4	0	2	8	0	0	2	0	2	2	400
Hourly Total	5	729	30	1	0	765	5	681	4	0	0	690	9	0	16	0	18	25	0	0	13	0	13	13	1493
12:00 PM	2	179	7	0	0	188	0	194	1	0	0	195	2	0	9	0	5	11	2	0	0	0	0	2	396
12:15 PM	3	172	1	0	0	176	3	183	0	0	0	186	1	0	1	0	5	2	2	0	4	0	6	6	370
12:30 PM	1	198	3	0	1	202	1	159	1	0	0	161	4	1	2	0	10	7	0	0	5	0	4	5	375
12:45 PM	0	186	6	0	0	192	2	176	3	0	0	181	4	0	5	0	9	9	0	0	5	0	6	5	387
Hourly Total	6	735	17	0	1	758	6	712	5	0	0	723	11	1	17	0	29	29	4	0	14	0	16	18	1528
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:30 PM	0	183	9	0	0	192	4	220	1	0	0	225	5	0	4	0	3	9	0	0	6	0	2	6	432
3:45 PM	5	179	6	0	0	190	0	214	1	0	0	215	5	0	7	0	8	12	0	0	4	0	7	4	421
Hourly Total	5	362	15	0	0	382	4	434	2	0	0	440	10	0	11	0	11	21	0	0	10	0	9	10	853
4:00 PM	0	211	13	0	2	224	1	215	3	0	0	219	2	1	8	0	13	11	0	1	5	0	1	6	460
4:15 PM	1	193	9	0	1	203	3	204	0	0	0	207	2	0	1	0	13	3	0	0	2	0	8	2	415
4:30 PM	4	195	5	0	0	204	2	207	1	0	0	210	2	0	5	0	7	7	0	1	4	0	2	5	426
4:45 PM	2	208	9	0	0	219	3	212	1	0	0	216	3	0	4	0	5	7	1	0	5	0	2	6	448
Hourly Total	7	807	36	0	3	850	9	838	5	0	0	852	9	1	18	0	38	28	1	2	16	0	13	19	1749

5:00 PM	2	196	8	0	1	206	5	200	0	0	0	205	1	0	4	0	1	5	0	0	2	0	3	2	418
5:15 PM	2	172	10	0	0	184	3	215	3	0	0	221	2	0	2	0	7	4	1	0	2	0	0	3	412
5:30 PM	1	168	5	0	0	174	3	177	0	1	0	181	1	0	4	0	6	5	1	0	0	0	4	1	361
5:45 PM	4	180	2	0	0	186	0	168	1	0	0	169	1	0	1	0	2	2	0	0	1	0	1	1	358
Hourly Total	9	716	25	0	1	750	11	760	4	1	0	776	5	0	11	0	16	16	2	0	5	0	8	7	1549
6:00 PM	3	162	5	0	0	170	1	161	1	0	0	163	3	0	3	0	1	6	0	0	0	0	0	0	339
6:15 PM	2	154	2	0	0	158	2	144	1	0	1	147	2	0	1	0	6	3	0	0	2	0	1	2	310
Grand Total	46	5167	176	1	11	5390	54	4884	29	1	4	4968	84	5	125	0	145	214	9	3	87	0	76	99	10671
Approach %	0.9	95.9	3.3	0.0	-	-	1.1	98.3	0.6	0.0	-	-	39.3	2.3	58.4	0.0	-	-	9.1	3.0	87.9	0.0	-	-	-
Total %	0.4	48.4	1.6	0.0	-	50.5	0.5	45.8	0.3	0.0	-	46.6	0.8	0.0	1.2	0.0	-	2.0	0.1	0.0	0.8	0.0	-	0.9	-
Motorcycles	0	13	0	0	-	13	0	12	0	0	-	12	0	0	0	0	-	0	0	0	0	0	-	0	25
% Motorcycles	0.0	0.3	0.0	0.0	-	0.2	0.0	0.2	0.0	0.0	-	0.2	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.2
Cars & Light Goods	45	5043	172	1	-	5261	54	4748	25	1	-	4828	84	4	124	0	-	212	9	2	84	0	-	95	10396
% Cars & Light Goods	97.8	97.6	97.7	100.0	-	97.6	100.0	97.2	86.2	100.0	-	97.2	100.0	80.0	99.2	-	-	99.1	100.0	66.7	96.6	-	-	96.0	97.4
Buses	0	40	1	0	-	41	0	41	1	0	-	42	0	0	0	0	-	0	0	0	1	0	-	1	84
% Buses	0.0	0.8	0.6	0.0	-	0.8	0.0	0.8	3.4	0.0	-	0.8	0.0	0.0	0.0	-	-	0.0	0.0	0.0	1.1	-	-	1.0	0.8
Single-Unit Trucks	0	57	2	0	-	59	0	70	2	0	-	72	0	0	0	0	-	0	0	1	2	0	-	3	134
% Single-Unit Trucks	0.0	1.1	1.1	0.0	-	1.1	0.0	1.4	6.9	0.0	-	1.4	0.0	0.0	0.0	-	-	0.0	0.0	33.3	2.3	-	-	3.0	1.3
Articulated Trucks	0	11	0	0	-	11	0	7	0	0	-	7	0	0	0	0	-	0	0	0	0	0	-	0	18
% Articulated Trucks	0.0	0.2	0.0	0.0	-	0.2	0.0	0.1	0.0	0.0	-	0.1	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.2
Bicycles on Road	1	3	1	0	-	5	0	6	1	0	-	7	0	1	1	0	-	2	0	0	0	0	-	0	14
% Bicycles on Road	2.2	0.1	0.6	0.0	-	0.1	0.0	0.1	3.4	0.0	-	0.1	0.0	20.0	0.8	-	-	0.9	0.0	0.0	0.0	-	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	-	3	-	-	-	-	-	0	-	-	-	-	-	30	-	-	-	-	-	18	-	-
% Bicycles on Crosswalk	-	-	-	-	27.3	-	-	-	-	-	0.0	-	-	-	-	-	20.7	-	-	-	-	-	23.7	-	-
Pedestrians	-	-	-	-	8	-	-	-	-	-	4	-	-	-	-	-	115	-	-	-	-	-	58	-	-
% Pedestrians	-	-	-	-	72.7	-	-	-	-	-	100.0	-	-	-	-	-	79.3	-	-	-	-	-	76.3	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Regional Road 20 & Brookfield Avenue
Site Code: 210300
Start Date: 11/09/2021



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: Regional Road 20 & Brookfield Avenue
Site Code: 210300
Start Date: 11/09/2021

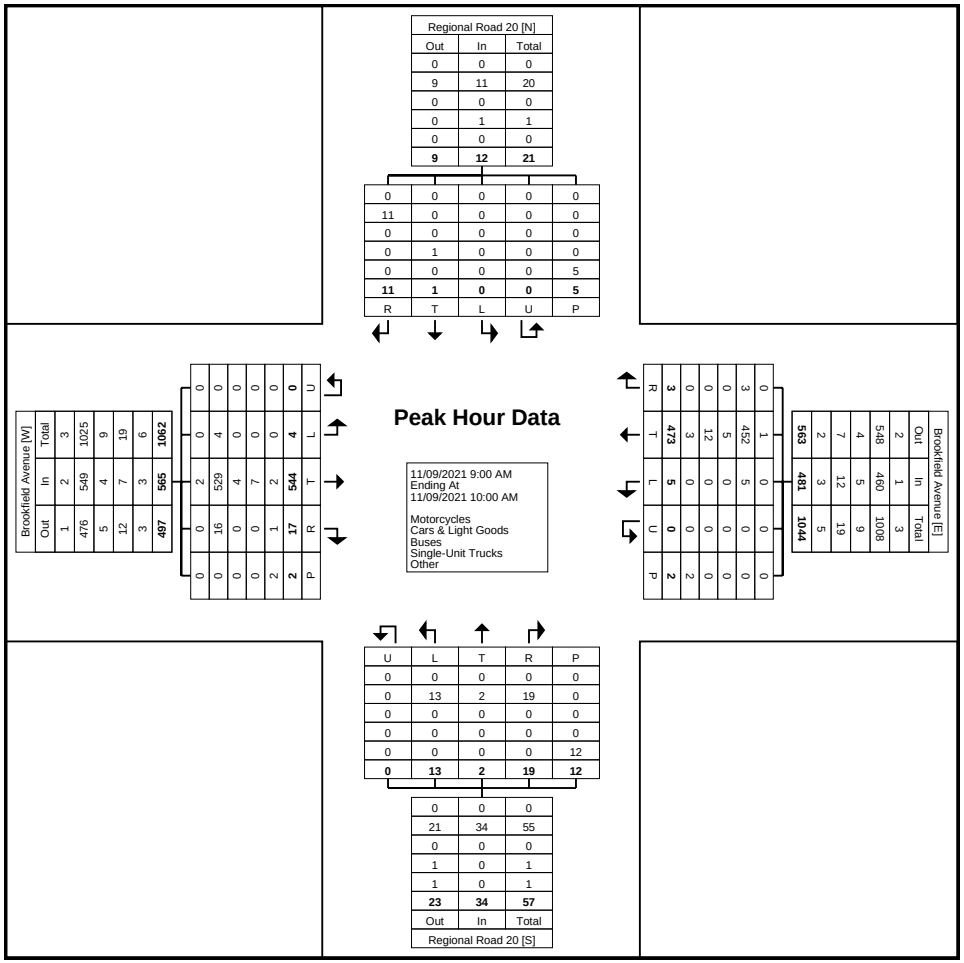
Turning Movement Peak Hour Data (9:00 AM)

Start Time	Brookfield Avenue Eastbound						Brookfield Avenue Westbound						Regional Road 20 Northbound						Regional Road 20 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	
9:00 AM	1	159	2	0	0	162	2	116	1	0	1	119	2	0	5	0	1	7	0	0	2	0	1	2	290
9:15 AM	0	122	6	0	0	128	1	111	1	0	0	113	5	1	4	0	5	10	0	0	2	0	2	2	253
9:30 AM	2	134	5	0	1	141	0	116	0	0	0	116	3	1	7	0	2	11	0	1	4	0	2	5	273
9:45 AM	1	129	4	0	1	134	2	130	1	0	1	133	3	0	3	0	4	6	0	0	3	0	0	3	276
Total	4	544	17	0	2	565	5	473	3	0	2	481	13	2	19	0	12	34	0	1	11	0	5	12	1092
Approach %	0.7	96.3	3.0	0.0	-	-	1.0	98.3	0.6	0.0	-	-	38.2	5.9	55.9	0.0	-	-	0.0	8.3	91.7	0.0	-	-	-
Total %	0.4	49.8	1.6	0.0	-	51.7	0.5	43.3	0.3	0.0	-	44.0	1.2	0.2	1.7	0.0	-	3.1	0.0	0.1	1.0	0.0	-	1.1	-
PHF	0.500	0.855	0.708	0.000	-	0.872	0.625	0.910	0.750	0.000	-	0.904	0.650	0.500	0.679	0.000	-	0.773	0.000	0.250	0.688	0.000	-	0.600	0.941
Motorcycles	0	2	0	0	-	2	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	3
% Motorcycles	0.0	0.4	0.0	-	-	0.4	0.0	0.2	0.0	-	-	0.2	0.0	0.0	0.0	-	-	0.0	-	0.0	0.0	-	-	0.0	0.3
Cars & Light Goods	4	529	16	0	-	549	5	452	3	0	-	460	13	2	19	0	-	34	0	0	11	0	-	11	1054
% Cars & Light Goods	100.0	97.2	94.1	-	-	97.2	100.0	95.6	100.0	-	-	95.6	100.0	100.0	100.0	-	-	100.0	-	0.0	100.0	-	-	91.7	96.5
Buses	0	4	0	0	-	4	0	5	0	0	-	5	0	0	0	0	-	0	0	0	0	0	-	0	9
% Buses	0.0	0.7	0.0	-	-	0.7	0.0	1.1	0.0	-	-	1.0	0.0	0.0	0.0	-	-	0.0	-	0.0	0.0	-	-	0.0	0.8
Single-Unit Trucks	0	7	0	0	-	7	0	12	0	0	-	12	0	0	0	0	-	0	0	1	0	0	-	1	20
% Single-Unit Trucks	0.0	1.3	0.0	-	-	1.2	0.0	2.5	0.0	-	-	2.5	0.0	0.0	0.0	-	-	0.0	-	100.0	0.0	-	-	8.3	1.8
Articulated Trucks	0	1	0	0	-	1	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	2
% Articulated Trucks	0.0	0.2	0.0	-	-	0.2	0.0	0.2	0.0	-	-	0.2	0.0	0.0	0.0	-	-	0.0	-	0.0	0.0	-	-	0.0	0.2
Bicycles on Road	0	1	1	0	-	2	0	2	0	0	-	2	0	0	0	0	-	0	0	0	0	0	-	0	4
% Bicycles on Road	0.0	0.2	5.9	-	-	0.4	0.0	0.4	0.0	-	-	0.4	0.0	0.0	0.0	-	-	0.0	-	0.0	0.0	-	-	0.0	0.4
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	1	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	8.3	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	2	-	-	-	-	-	2	-	-	-	-	-	11	-	-	-	-	-	5	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	91.7	-	-	-	-	-	100.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Regional Road 20 & Brookfield Avenue
Site Code: 210300
Start Date: 11/09/2021



Turning Movement Peak Hour Data Plot (9:00 AM)

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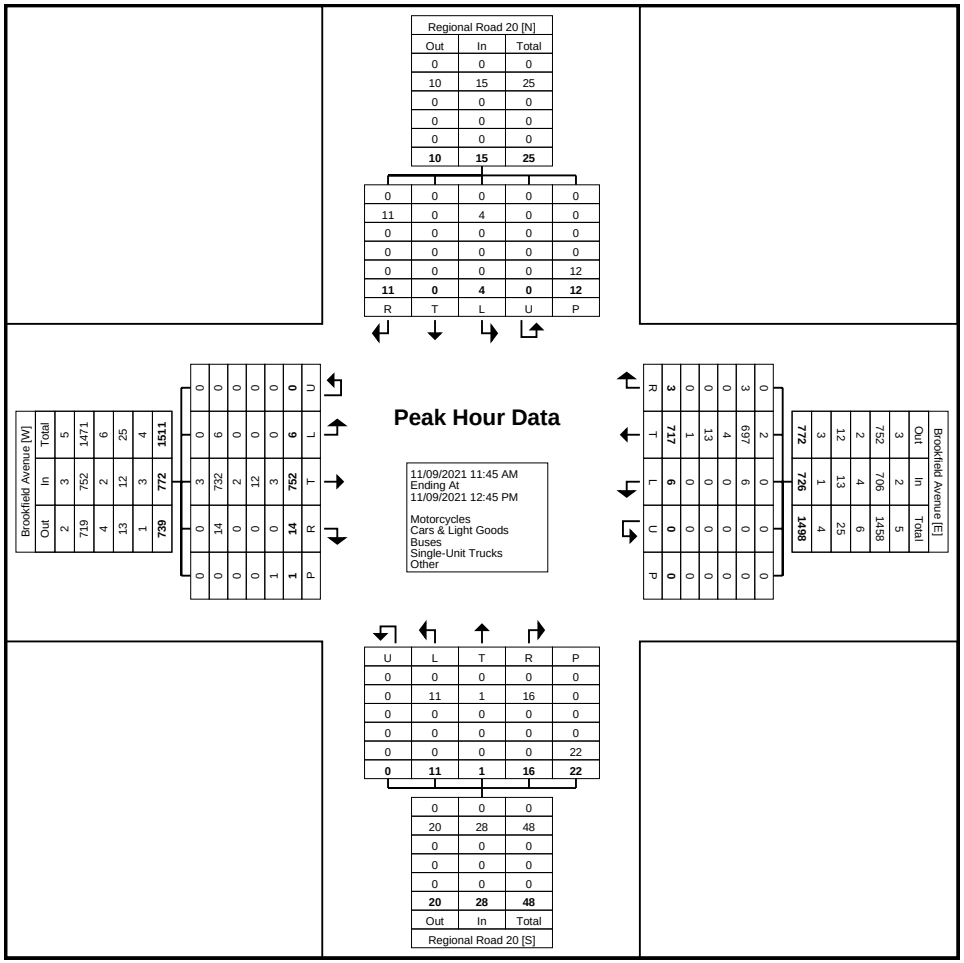
Turning Movement Peak Hour Data (11:45 AM)

Start Time	Brookfield Avenue Eastbound						Brookfield Avenue Westbound						Regional Road 20 Northbound						Regional Road 20 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	
11:45 AM	0	203	3	0	0	206	2	181	1	0	0	184	4	0	4	0	2	8	0	0	2	0	2	2	400
12:00 PM	2	179	7	0	0	188	0	194	1	0	0	195	2	0	9	0	5	11	2	0	0	0	0	2	396
12:15 PM	3	172	1	0	0	176	3	183	0	0	0	186	1	0	1	0	5	2	2	0	4	0	6	6	370
12:30 PM	1	198	3	0	1	202	1	159	1	0	0	161	4	1	2	0	10	7	0	0	5	0	4	5	375
Total	6	752	14	0	1	772	6	717	3	0	0	726	11	1	16	0	22	28	4	0	11	0	12	15	1541
Approach %	0.8	97.4	1.8	0.0	-	-	0.8	98.8	0.4	0.0	-	-	39.3	3.6	57.1	0.0	-	-	26.7	0.0	73.3	0.0	-	-	-
Total %	0.4	48.8	0.9	0.0	-	50.1	0.4	46.5	0.2	0.0	-	47.1	0.7	0.1	1.0	0.0	-	1.8	0.3	0.0	0.7	0.0	-	1.0	-
PHF	0.500	0.926	0.500	0.000	-	0.937	0.500	0.924	0.750	0.000	-	0.931	0.688	0.250	0.444	0.000	-	0.636	0.500	0.000	0.550	0.000	-	0.625	0.963
Motorcycles	0	3	0	0	-	3	0	2	0	0	-	2	0	0	0	0	-	0	0	0	0	0	-	0	5
% Motorcycles	0.0	0.4	0.0	-	-	0.4	0.0	0.3	0.0	-	-	0.3	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.3
Cars & Light Goods	6	732	14	0	-	752	6	697	3	0	-	706	11	1	16	0	-	28	4	0	11	0	-	15	1501
% Cars & Light Goods	100.0	97.3	100.0	-	-	97.4	100.0	97.2	100.0	-	-	97.2	100.0	100.0	100.0	-	-	100.0	100.0	-	100.0	-	-	100.0	97.4
Buses	0	2	0	0	-	2	0	4	0	0	-	4	0	0	0	0	-	0	0	0	0	0	-	0	6
% Buses	0.0	0.3	0.0	-	-	0.3	0.0	0.6	0.0	-	-	0.6	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.4
Single-Unit Trucks	0	12	0	0	-	12	0	13	0	0	-	13	0	0	0	0	-	0	0	0	0	0	-	0	25
% Single-Unit Trucks	0.0	1.6	0.0	-	-	1.6	0.0	1.8	0.0	-	-	1.8	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	1.6
Articulated Trucks	0	3	0	0	-	3	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	4
% Articulated Trucks	0.0	0.4	0.0	-	-	0.4	0.0	0.1	0.0	-	-	0.1	0.0	0.0	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	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
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	6	-	-	-	-	-	2	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	27.3	-	-	-	-	-	16.7	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	16	-	-	-	-	-	10	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	72.7	-	-	-	-	-	83.3	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Regional Road 20 & Brookfield Avenue
Site Code: 210300
Start Date: 11/09/2021



Turning Movement Peak Hour Data Plot (11:45 AM)

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Count Name: Regional Road 20 & Brookfield Avenue
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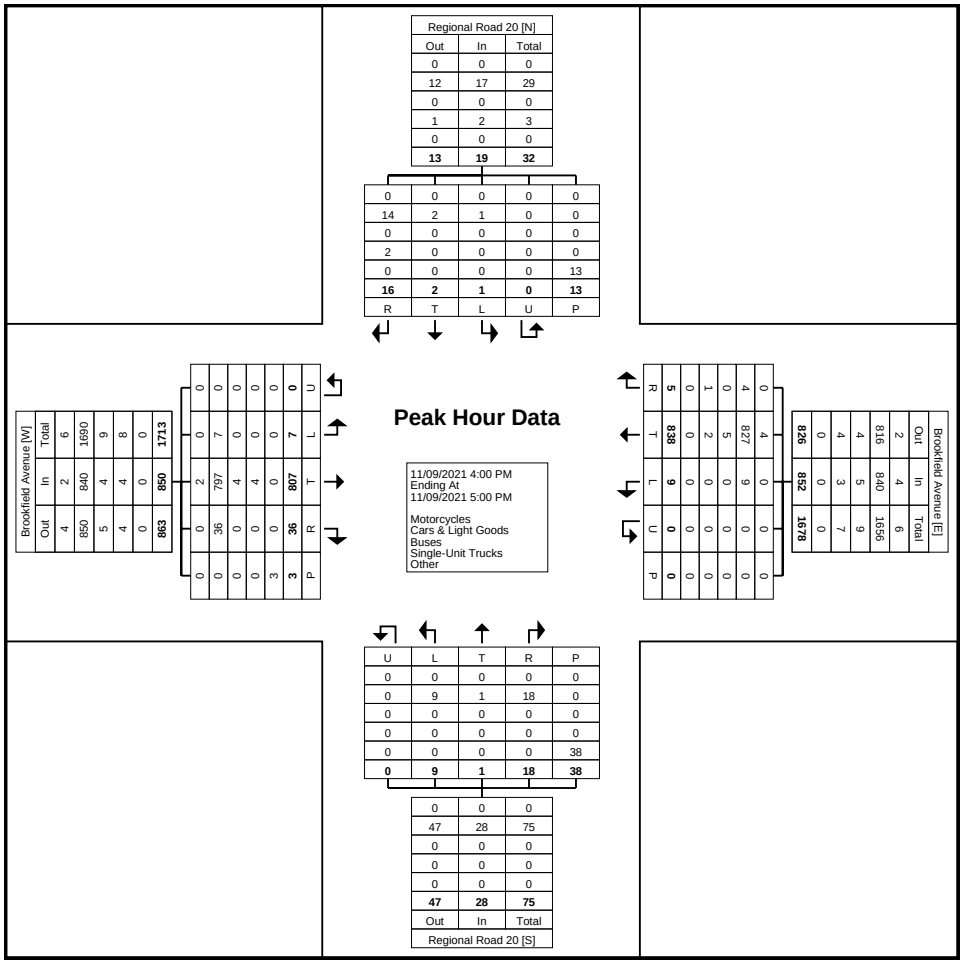
Turning Movement Peak Hour Data (4:00 PM)

Start Time	Brookfield Avenue Eastbound						Brookfield Avenue Westbound						Regional Road 20 Northbound						Regional Road 20 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	
4:00 PM	0	211	13	0	2	224	1	215	3	0	0	219	2	1	8	0	13	11	0	1	5	0	1	6	460
4:15 PM	1	193	9	0	1	203	3	204	0	0	0	207	2	0	1	0	13	3	0	0	2	0	8	2	415
4:30 PM	4	195	5	0	0	204	2	207	1	0	0	210	2	0	5	0	7	7	0	1	4	0	2	5	426
4:45 PM	2	208	9	0	0	219	3	212	1	0	0	216	3	0	4	0	5	7	1	0	5	0	2	6	448
Total	7	807	36	0	3	850	9	838	5	0	0	852	9	1	18	0	38	28	1	2	16	0	13	19	1749
Approach %	0.8	94.9	4.2	0.0	-	-	1.1	98.4	0.6	0.0	-	-	32.1	3.6	64.3	0.0	-	-	5.3	10.5	84.2	0.0	-	-	-
Total %	0.4	46.1	2.1	0.0	-	48.6	0.5	47.9	0.3	0.0	-	48.7	0.5	0.1	1.0	0.0	-	1.6	0.1	0.1	0.9	0.0	-	1.1	-
PHF	0.438	0.956	0.692	0.000	-	0.949	0.750	0.974	0.417	0.000	-	0.973	0.750	0.250	0.563	0.000	-	0.636	0.250	0.500	0.800	0.000	-	0.792	0.951
Motorcycles	0	2	0	0	-	2	0	4	0	0	-	4	0	0	0	0	-	0	0	0	0	0	-	0	6
% Motorcycles	0.0	0.2	0.0	-	-	0.2	0.0	0.5	0.0	-	-	0.5	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.3
Cars & Light Goods	7	797	36	0	-	840	9	827	4	0	-	840	9	1	18	0	-	28	1	2	14	0	-	17	1725
% Cars & Light Goods	100.0	98.8	100.0	-	-	98.8	100.0	98.7	80.0	-	-	98.6	100.0	100.0	100.0	-	-	100.0	100.0	100.0	87.5	-	-	89.5	98.6
Buses	0	4	0	0	-	4	0	5	0	0	-	5	0	0	0	0	-	0	0	0	0	0	-	0	9
% Buses	0.0	0.5	0.0	-	-	0.5	0.0	0.6	0.0	-	-	0.6	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.5
Single-Unit Trucks	0	4	0	0	-	4	0	2	1	0	-	3	0	0	0	0	-	0	0	0	2	0	-	2	9
% Single-Unit Trucks	0.0	0.5	0.0	-	-	0.5	0.0	0.2	20.0	-	-	0.4	0.0	0.0	0.0	-	-	0.0	0.0	0.0	12.5	-	-	10.5	0.5
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	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	5	-	-	-	-	-	4	-	-
% Bicycles on Crosswalk	-	-	-	-	33.3	-	-	-	-	-	-	-	-	-	-	-	13.2	-	-	-	-	-	30.8	-	-
Pedestrians	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	33	-	-	-	-	-	9	-	-
% Pedestrians	-	-	-	-	66.7	-	-	-	-	-	-	-	-	-	-	-	86.8	-	-	-	-	-	69.2	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
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Count Name: Regional Road 20 & Brookfield Avenue
Site Code: 210300
Start Date: 11/09/2021



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: Regional Road 20 & Mouland Avenue
Site Code: 210300
Start Date: 11/09/2021

Turning Movement Data

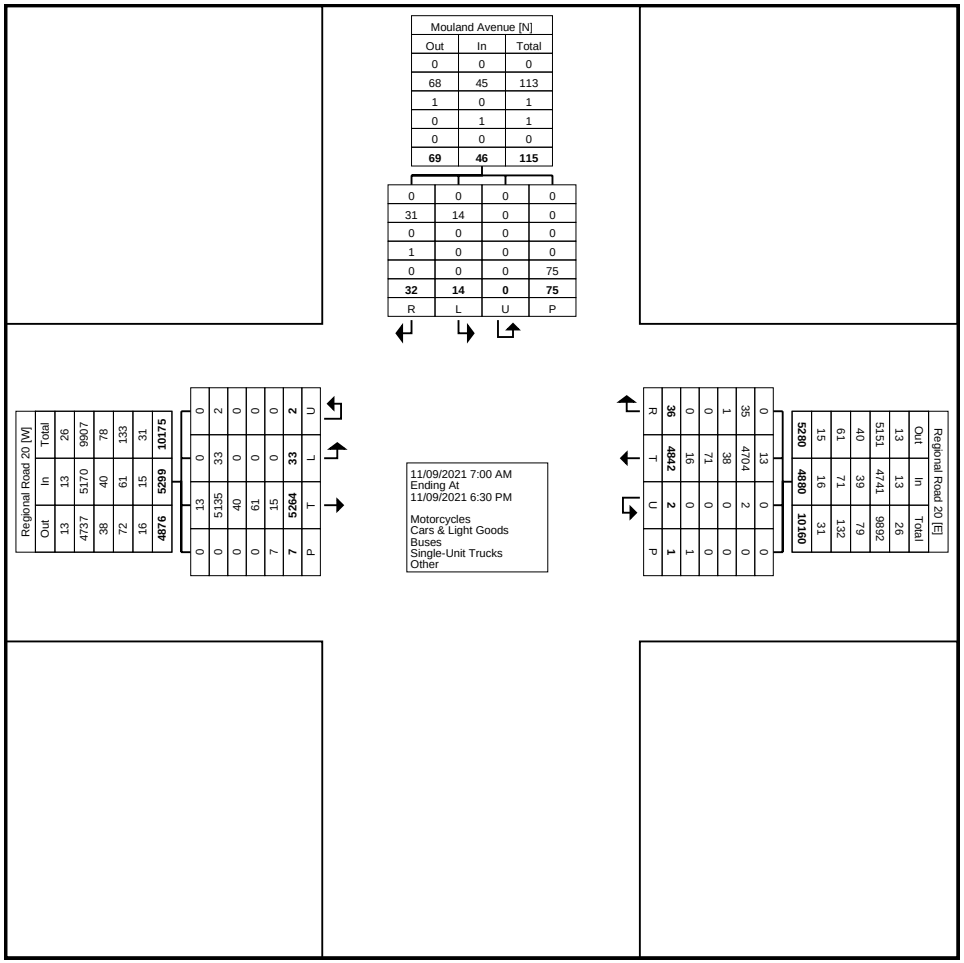
Start Time	Regional Road 20 Eastbound					Regional Road 20 Westbound					Mouland Avenue Southbound					Int. Total
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
7:00 AM	0	82	0	0	82	61	0	0	0	61	0	0	0	3	0	143
7:15 AM	0	91	0	0	91	82	0	0	0	82	1	1	0	0	2	175
7:30 AM	1	110	0	0	111	89	0	0	0	89	0	1	0	1	1	201
7:45 AM	1	124	0	0	125	85	1	0	0	86	0	1	0	2	1	212
Hourly Total	2	407	0	0	409	317	1	0	0	318	1	3	0	6	4	731
8:00 AM	0	112	0	0	112	96	1	0	0	97	0	1	0	1	1	210
8:15 AM	0	157	0	0	157	100	0	0	0	100	0	0	0	0	0	257
8:30 AM	1	165	0	0	166	73	1	0	0	74	0	2	0	1	2	242
8:45 AM	0	136	0	0	136	112	1	0	0	113	0	1	0	2	1	250
Hourly Total	1	570	0	0	571	381	3	0	0	384	0	4	0	4	4	959
9:00 AM	0	172	0	0	172	118	2	0	0	120	2	0	0	1	2	294
9:15 AM	1	126	0	0	127	115	1	0	0	116	0	0	0	2	0	243
9:30 AM	0	145	0	0	145	115	0	0	0	115	0	0	0	1	0	260
9:45 AM	0	131	0	0	131	131	0	0	0	131	1	5	0	1	6	268
Hourly Total	1	574	0	0	575	479	3	0	0	482	3	5	0	5	8	1065
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	0	179	0	0	179	157	3	0	0	160	0	3	0	5	3	342
11:15 AM	1	169	0	0	170	191	4	0	0	195	0	4	0	3	4	369
11:30 AM	2	183	0	0	185	160	1	0	0	161	1	1	0	1	2	348
11:45 AM	1	208	0	0	209	188	2	0	0	190	0	1	0	1	1	400
Hourly Total	4	739	0	0	743	696	10	0	0	706	1	9	0	10	10	1459
12:00 PM	2	186	0	0	188	192	2	0	0	194	2	0	0	0	2	384
12:15 PM	1	175	0	2	176	184	2	0	0	186	1	0	0	4	1	363
12:30 PM	2	200	1	3	203	155	3	1	1	159	0	0	0	6	0	362
12:45 PM	0	186	0	2	186	173	0	0	0	173	1	0	0	4	1	360
Hourly Total	5	747	1	7	753	704	7	1	1	712	4	0	0	14	4	1469
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:30 PM	2	185	0	0	187	206	2	0	0	208	0	0	0	5	0	395
3:45 PM	1	191	0	0	192	196	0	0	0	196	0	0	0	6	0	388
Hourly Total	3	376	0	0	379	402	2	0	0	404	0	0	0	11	0	783
4:00 PM	4	213	1	0	218	197	0	0	0	197	0	2	0	5	2	417
4:15 PM	2	192	0	0	194	188	2	0	0	190	0	1	0	4	1	385
4:30 PM	3	191	0	0	194	195	0	1	0	196	2	1	0	3	3	393
4:45 PM	2	211	0	0	213	215	1	0	0	216	0	0	0	1	0	429
Hourly Total	11	807	1	0	819	795	3	1	0	799	2	4	0	13	6	1624
5:00 PM	0	202	0	0	202	189	0	0	0	189	1	3	0	2	4	395

5:15 PM	3	165	0	0	168	222	0	0	0	222	1	0	0	0	1	391
5:30 PM	0	179	0	0	179	180	3	0	0	183	1	1	0	5	2	364
5:45 PM	0	181	0	0	181	171	1	0	0	172	0	0	0	2	0	353
Hourly Total	3	727	0	0	730	762	4	0	0	766	3	4	0	9	7	1503
6:00 PM	2	160	0	0	162	165	1	0	0	166	0	1	0	1	1	329
6:15 PM	1	157	0	0	158	141	2	0	0	143	0	2	0	2	2	303
Grand Total	33	5264	2	7	5299	4842	36	2	1	4880	14	32	0	75	46	10225
Approach %	0.6	99.3	0.0	-	-	99.2	0.7	0.0	-	-	30.4	69.6	0.0	-	-	-
Total %	0.3	51.5	0.0	-	51.8	47.4	0.4	0.0	-	47.7	0.1	0.3	0.0	-	0.4	-
Motorcycles	0	13	0	-	13	13	0	0	-	13	0	0	0	-	0	26
% Motorcycles	0.0	0.2	0.0	-	0.2	0.3	0.0	0.0	-	0.3	0.0	0.0	-	-	0.0	0.3
Cars & Light Goods	33	5135	2	-	5170	4704	35	2	-	4741	14	31	0	-	45	9956
% Cars & Light Goods	100.0	97.5	100.0	-	97.6	97.1	97.2	100.0	-	97.2	100.0	96.9	-	-	97.8	97.4
Buses	0	40	0	-	40	38	1	0	-	39	0	0	0	-	0	79
% Buses	0.0	0.8	0.0	-	0.8	0.8	2.8	0.0	-	0.8	0.0	0.0	-	-	0.0	0.8
Single-Unit Trucks	0	61	0	-	61	71	0	0	-	71	0	1	0	-	1	133
% Single-Unit Trucks	0.0	1.2	0.0	-	1.2	1.5	0.0	0.0	-	1.5	0.0	3.1	-	-	2.2	1.3
Articulated Trucks	0	11	0	-	11	10	0	0	-	10	0	0	0	-	0	21
% Articulated Trucks	0.0	0.2	0.0	-	0.2	0.2	0.0	0.0	-	0.2	0.0	0.0	-	-	0.0	0.2
Bicycles on Road	0	4	0	-	4	6	0	0	-	6	0	0	0	-	0	10
% Bicycles on Road	0.0	0.1	0.0	-	0.1	0.1	0.0	0.0	-	0.1	0.0	0.0	-	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	14	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	18.7	-	-
Pedestrians	-	-	-	7	-	-	-	-	1	-	-	-	-	61	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	81.3	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Regional Road 20 & Mouland Avenue
Site Code: 210300
Start Date: 11/09/2021



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
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Count Name: Regional Road 20 & Mouland Avenue
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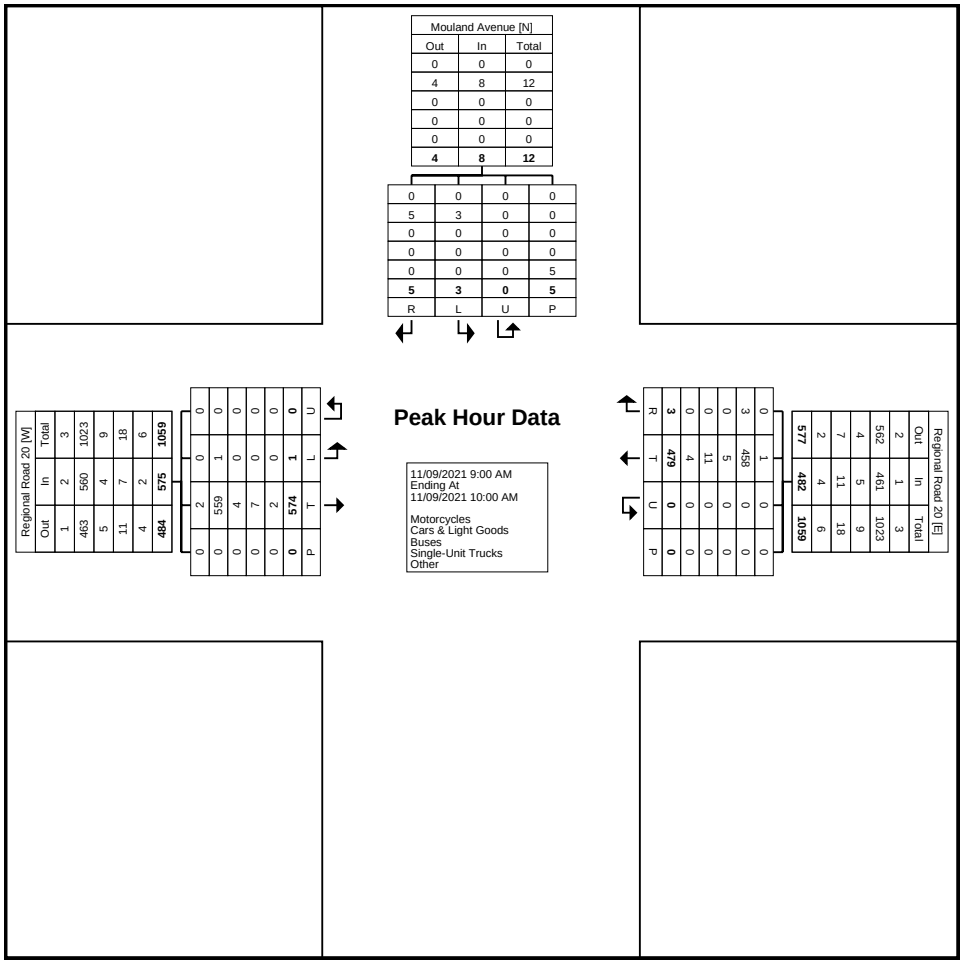
Turning Movement Peak Hour Data (9:00 AM)

Start Time	Regional Road 20 Eastbound					Regional Road 20 Westbound					Mouland Avenue Southbound					
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
9:00 AM	0	172	0	0	172	118	2	0	0	120	2	0	0	1	2	294
9:15 AM	1	126	0	0	127	115	1	0	0	116	0	0	0	2	0	243
9:30 AM	0	145	0	0	145	115	0	0	0	115	0	0	0	1	0	260
9:45 AM	0	131	0	0	131	131	0	0	0	131	1	5	0	1	6	268
Total	1	574	0	0	575	479	3	0	0	482	3	5	0	5	8	1065
Approach %	0.2	99.8	0.0	-	-	99.4	0.6	0.0	-	-	37.5	62.5	0.0	-	-	-
Total %	0.1	53.9	0.0	-	54.0	45.0	0.3	0.0	-	45.3	0.3	0.5	0.0	-	0.8	-
PHF	0.250	0.834	0.000	-	0.836	0.914	0.375	0.000	-	0.920	0.375	0.250	0.000	-	0.333	0.906
Motorcycles	0	2	0	-	2	1	0	0	-	1	0	0	0	-	0	3
% Motorcycles	0.0	0.3	-	-	0.3	0.2	0.0	-	-	0.2	0.0	0.0	-	-	0.0	0.3
Cars & Light Goods	1	559	0	-	560	458	3	0	-	461	3	5	0	-	8	1029
% Cars & Light Goods	100.0	97.4	-	-	97.4	95.6	100.0	-	-	95.6	100.0	100.0	-	-	100.0	96.6
Buses	0	4	0	-	4	5	0	0	-	5	0	0	0	-	0	9
% Buses	0.0	0.7	-	-	0.7	1.0	0.0	-	-	1.0	0.0	0.0	-	-	0.0	0.8
Single-Unit Trucks	0	7	0	-	7	11	0	0	-	11	0	0	0	-	0	18
% Single-Unit Trucks	0.0	1.2	-	-	1.2	2.3	0.0	-	-	2.3	0.0	0.0	-	-	0.0	1.7
Articulated Trucks	0	1	0	-	1	3	0	0	-	3	0	0	0	-	0	4
% Articulated Trucks	0.0	0.2	-	-	0.2	0.6	0.0	-	-	0.6	0.0	0.0	-	-	0.0	0.4
Bicycles on Road	0	1	0	-	1	1	0	0	-	1	0	0	0	-	0	2
% Bicycles on Road	0.0	0.2	-	-	0.2	0.2	0.0	-	-	0.2	0.0	0.0	-	-	0.0	0.2
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	20.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	4	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	80.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Regional Road 20 & Mouland Avenue
Site Code: 210300
Start Date: 11/09/2021



Turning Movement Peak Hour Data Plot (9:00 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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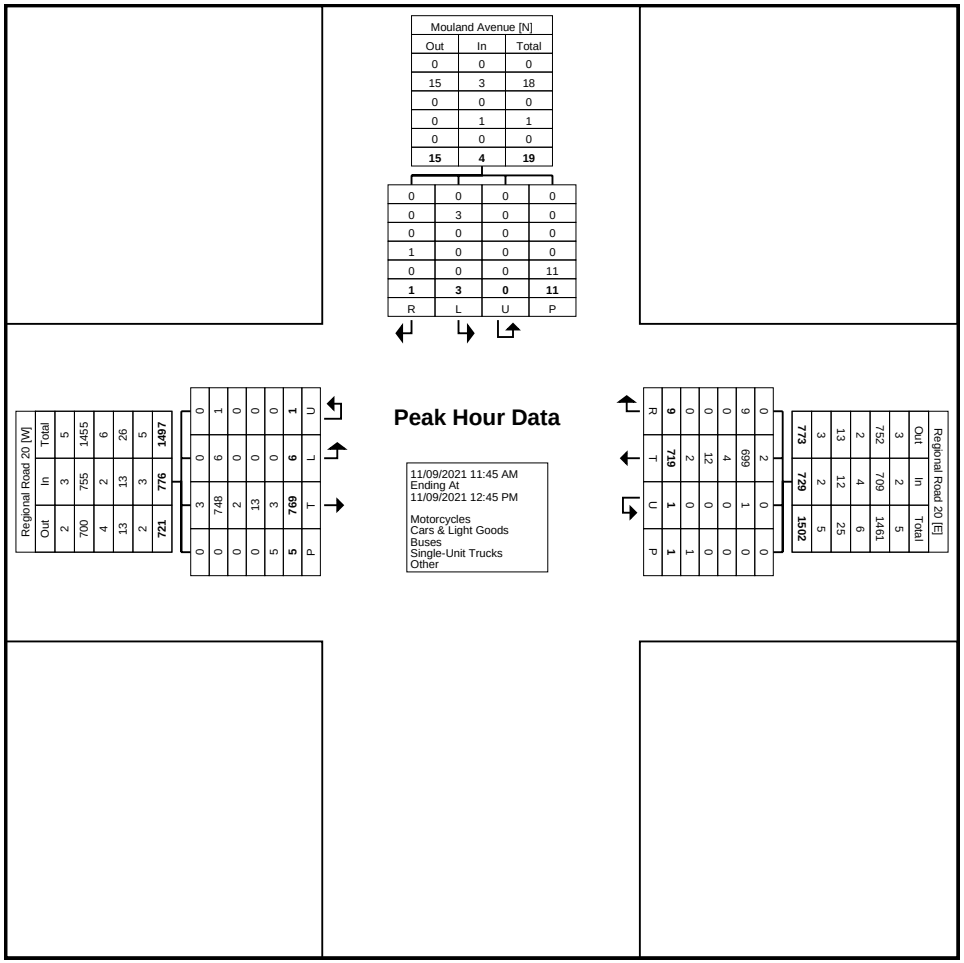
Turning Movement Peak Hour Data (11:45 AM)

Start Time	Regional Road 20 Eastbound					Regional Road 20 Westbound					Mouland Avenue Southbound					
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
11:45 AM	1	208	0	0	209	188	2	0	0	190	0	1	0	1	1	400
12:00 PM	2	186	0	0	188	192	2	0	0	194	2	0	0	0	2	384
12:15 PM	1	175	0	2	176	184	2	0	0	186	1	0	0	4	1	363
12:30 PM	2	200	1	3	203	155	3	1	1	159	0	0	0	6	0	362
Total	6	769	1	5	776	719	9	1	1	729	3	1	0	11	4	1509
Approach %	0.8	99.1	0.1	-	-	98.6	1.2	0.1	-	-	75.0	25.0	0.0	-	-	-
Total %	0.4	51.0	0.1	-	51.4	47.6	0.6	0.1	-	48.3	0.2	0.1	0.0	-	0.3	-
PHF	0.750	0.924	0.250	-	0.928	0.936	0.750	0.250	-	0.939	0.375	0.250	0.000	-	0.500	0.943
Motorcycles	0	3	0	-	3	2	0	0	-	2	0	0	0	-	0	5
% Motorcycles	0.0	0.4	0.0	-	0.4	0.3	0.0	0.0	-	0.3	0.0	0.0	-	-	0.0	0.3
Cars & Light Goods	6	748	1	-	755	699	9	1	-	709	3	0	0	-	3	1467
% Cars & Light Goods	100.0	97.3	100.0	-	97.3	97.2	100.0	100.0	-	97.3	100.0	0.0	-	-	75.0	97.2
Buses	0	2	0	-	2	4	0	0	-	4	0	0	0	-	0	6
% Buses	0.0	0.3	0.0	-	0.3	0.6	0.0	0.0	-	0.5	0.0	0.0	-	-	0.0	0.4
Single-Unit Trucks	0	13	0	-	13	12	0	0	-	12	0	1	0	-	1	26
% Single-Unit Trucks	0.0	1.7	0.0	-	1.7	1.7	0.0	0.0	-	1.6	0.0	100.0	-	-	25.0	1.7
Articulated Trucks	0	2	0	-	2	2	0	0	-	2	0	0	0	-	0	4
% Articulated Trucks	0.0	0.3	0.0	-	0.3	0.3	0.0	0.0	-	0.3	0.0	0.0	-	-	0.0	0.3
Bicycles on Road	0	1	0	-	1	0	0	0	-	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.1	0.0	-	0.1	0.0	0.0	0.0	-	0.0	0.0	0.0	-	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	2	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	18.2	-	-
Pedestrians	-	-	-	5	-	-	-	-	1	-	-	-	-	9	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	81.8	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

Cambridge, Ontario, Canada N1R 8J8
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Count Name: Regional Road 20 & Mouland Avenue
Site Code: 210300
Start Date: 11/09/2021



Turning Movement Peak Hour Data Plot (11:45 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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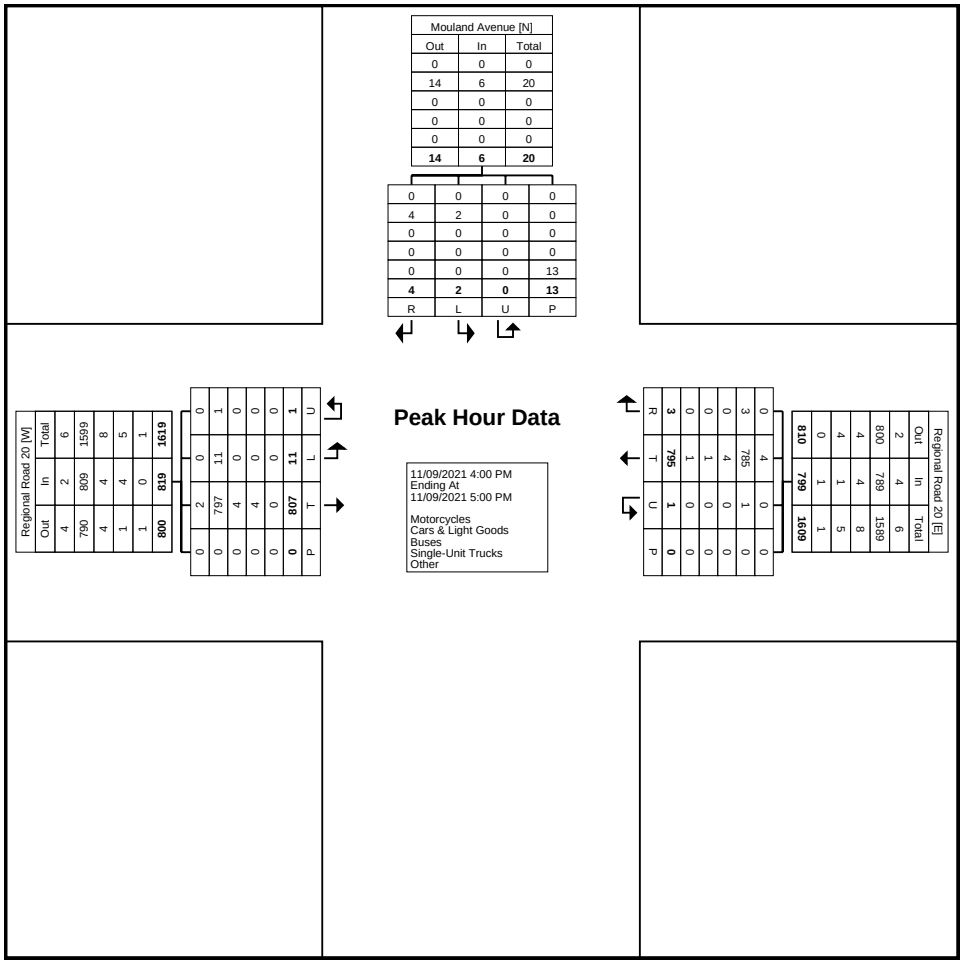
Turning Movement Peak Hour Data (4:00 PM)

Start Time	Regional Road 20 Eastbound					Regional Road 20 Westbound					Mouland Avenue Southbound					
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
4:00 PM	4	213	1	0	218	197	0	0	0	197	0	2	0	5	2	417
4:15 PM	2	192	0	0	194	188	2	0	0	190	0	1	0	4	1	385
4:30 PM	3	191	0	0	194	195	0	1	0	196	2	1	0	3	3	393
4:45 PM	2	211	0	0	213	215	1	0	0	216	0	0	0	1	0	429
Total	11	807	1	0	819	795	3	1	0	799	2	4	0	13	6	1624
Approach %	1.3	98.5	0.1	-	-	99.5	0.4	0.1	-	-	33.3	66.7	0.0	-	-	-
Total %	0.7	49.7	0.1	-	50.4	49.0	0.2	0.1	-	49.2	0.1	0.2	0.0	-	0.4	-
PHF	0.688	0.947	0.250	-	0.939	0.924	0.375	0.250	-	0.925	0.250	0.500	0.000	-	0.500	0.946
Motorcycles	0	2	0	-	2	4	0	0	-	4	0	0	0	-	0	6
% Motorcycles	0.0	0.2	0.0	-	0.2	0.5	0.0	0.0	-	0.5	0.0	0.0	-	-	0.0	0.4
Cars & Light Goods	11	797	1	-	809	785	3	1	-	789	2	4	0	-	6	1604
% Cars & Light Goods	100.0	98.8	100.0	-	98.8	98.7	100.0	100.0	-	98.7	100.0	100.0	-	-	100.0	98.8
Buses	0	4	0	-	4	4	0	0	-	4	0	0	0	-	0	8
% Buses	0.0	0.5	0.0	-	0.5	0.5	0.0	0.0	-	0.5	0.0	0.0	-	-	0.0	0.5
Single-Unit Trucks	0	4	0	-	4	1	0	0	-	1	0	0	0	-	0	5
% Single-Unit Trucks	0.0	0.5	0.0	-	0.5	0.1	0.0	0.0	-	0.1	0.0	0.0	-	-	0.0	0.3
Articulated Trucks	0	0	0	-	0	1	0	0	-	1	0	0	0	-	0	1
% Articulated Trucks	0.0	0.0	0.0	-	0.0	0.1	0.0	0.0	-	0.1	0.0	0.0	-	-	0.0	0.1
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	0.0
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	2	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	15.4	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	11	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	84.6	-	-

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5A-150 Pinebush Rd

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Count Name: Regional Road 20 & Mouland Avenue
Site Code: 210300
Start Date: 11/09/2021

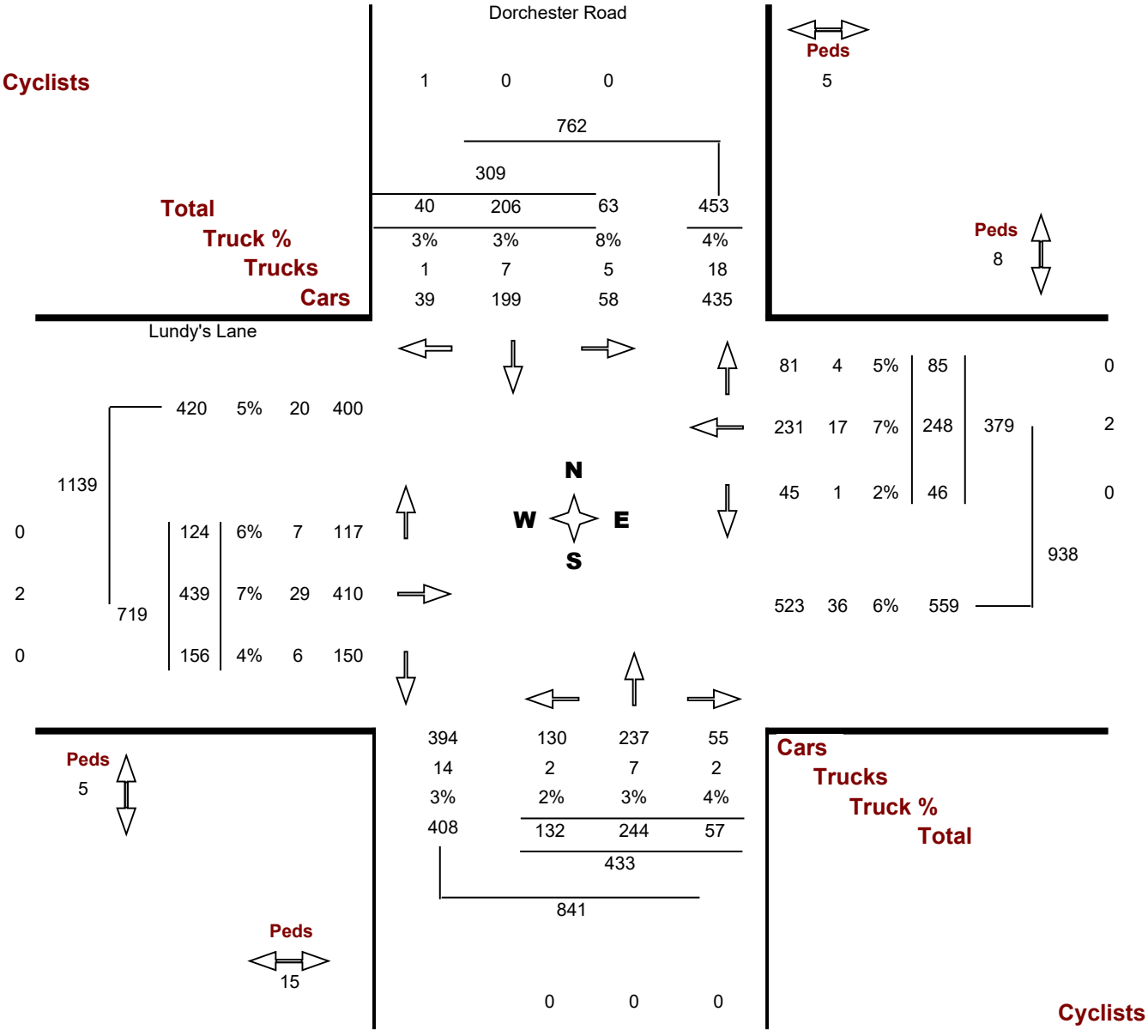


Turning Movement Peak Hour Data Plot (4:00 PM)

Turning Movements Report - AM Period

Location..... Dorchester Road @ Lundy's Lane
Municipality. NIAGARA FALLS
Traffic Cont.
Major Dir..... East west

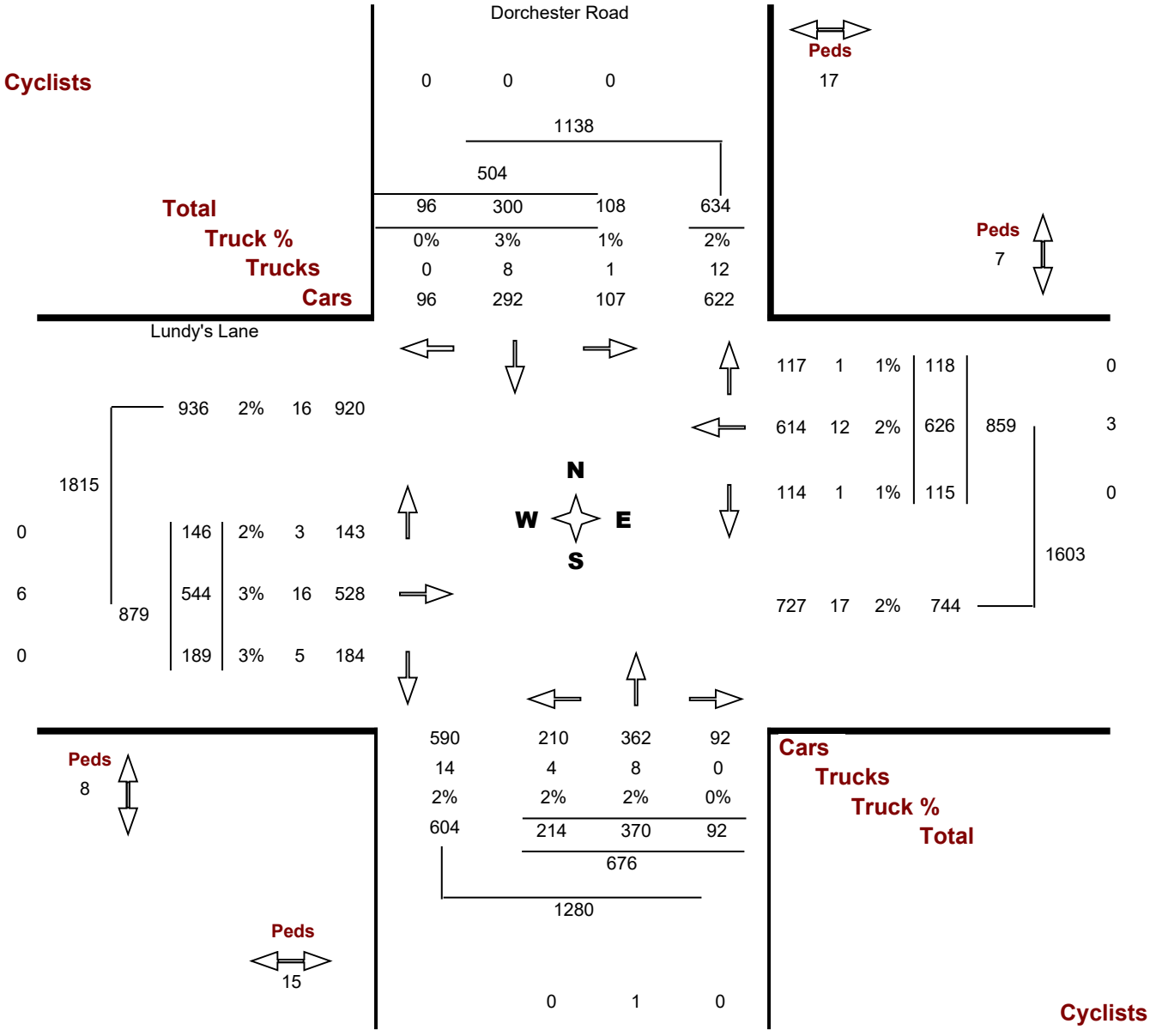
GeoID..... 01599
Count Date. Tuesday, 08 October, 2019
Count Time. 07:00 AM — 09:00 AM
Peak Hour.. 08:00 AM — 09:00 AM



Turning Movements Report - PM Period

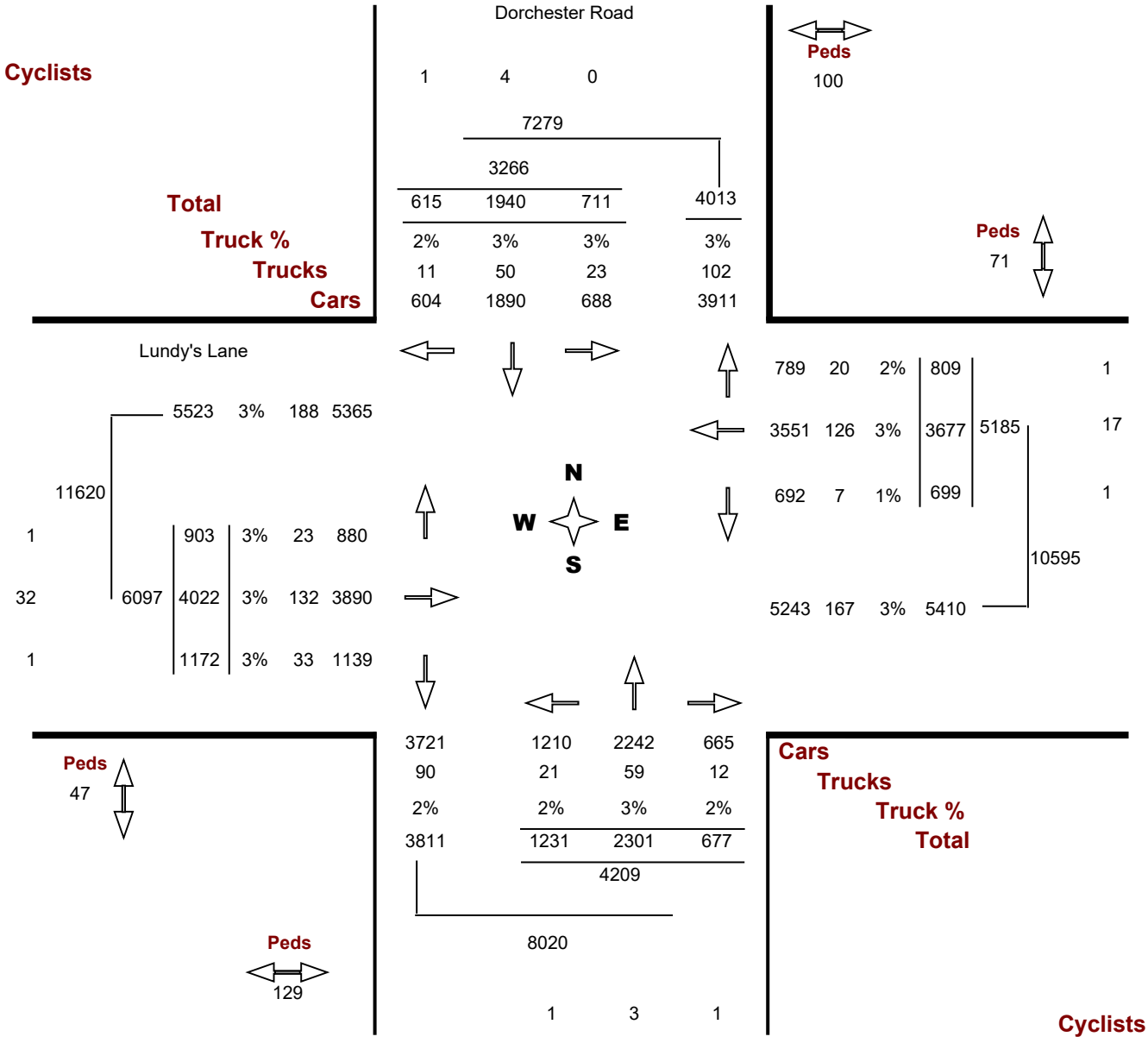
Location..... Dorchester Road @ Lundy's Lane
Municipality. NIAGARA FALLS
Traffic Cont.
Major Dir..... East west

GeoID..... 01599
Count Date. Tuesday, 08 October, 2019
Count Time. 03:00 PM — 06:00 PM
Peak Hour.. 03:45 PM — 04:45 PM



Turning Movement Count Report
Full Study

Location..... Dorchester Road @ Lundy's Lane
Municipality..... NIAGARA FALLS
GeoID..... 01599
Count Date..... Tuesday, 08 October, 2019



Turning Movement Count - Details Report (15 min)

Location..... Dorchester Road @ Lundy's Lane

Municipality..... NIAGARA FALLS

Count Date..... Tuesday, October 08, 2019

		Dorchester Road										Lundy's Lane									
		North Approach					South Approach					East Approach					West Approach				
Time Period		LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT
07:00	07:15	6	17	4	0	27	14	30	3	0	47	3	35	9	0	47	16	53	9	0	78
07:15	07:30	6	26	3	0	35	15	44	9	0	68	2	52	10	0	64	9	52	16	0	77
07:30	07:45	8	35	13	0	56	28	44	8	0	80	8	48	9	0	65	14	75	18	0	107
07:45	08:00	10	39	12	0	61	31	62	9	0	102	12	57	14	0	83	23	95	26	0	144
Hourly Total		30	117	32	0	179	88	180	29	0	297	25	192	42	0	259	62	275	69	0	406
08:00	08:15	14	38	8	0	60	31	49	10	0	90	7	44	21	0	72	29	88	30	0	147
08:15	08:30	10	44	8	0	62	37	56	17	0	110	11	61	21	0	93	32	105	29	0	166
08:30	08:45	18	50	11	0	79	22	70	12	0	104	11	72	22	0	105	29	121	38	0	188
08:45	09:00	21	74	13	0	108	42	69	18	0	129	17	71	21	0	109	34	125	59	0	218
Hourly Total		63	206	40	0	309	132	244	57	0	433	46	248	85	0	379	124	439	156	0	719
11:00	11:15	26	53	10	0	89	23	62	31	0	116	25	92	21	0	138	24	155	32	0	211
11:15	11:30	31	64	21	0	116	27	76	19	0	122	15	107	26	0	148	22	128	46	0	196
11:30	11:45	24	59	21	0	104	37	68	22	0	127	31	105	29	0	165	16	112	27	0	155
11:45	12:00	31	73	21	0	125	40	75	27	0	142	14	137	19	0	170	36	120	28	0	184
Hourly Total		112	249	73	0	434	127	281	99	0	507	85	441	95	0	621	98	515	133	0	746
12:00	12:15	29	69	28	0	126	38	62	30	0	130	23	121	28	0	172	21	149	30	0	200
12:15	12:30	29	54	25	0	108	44	69	24	0	137	30	128	25	0	183	23	148	38	0	209
12:30	12:45	22	53	12	0	87	43	65	28	0	136	28	140	47	0	215	33	152	37	0	222
12:45	13:00	23	61	29	0	113	27	87	19	0	133	35	121	30	0	186	30	126	34	0	190
Hourly Total		103	237	94	0	434	152	283	101	0	536	116	510	130	0	756	107	575	139	0	821
13:00	13:15	32	65	23	0	120	45	72	25	0	142	25	126	22	0	173	37	121	36	0	194
13:15	13:30	28	57	15	0	100	40	66	31	0	137	17	140	41	0	198	31	165	41	0	237
13:30	13:45	25	59	24	0	108	38	75	29	0	142	32	138	24	0	194	26	133	35	0	194
13:45	14:00	20	60	26	0	106	34	86	20	0	140	28	132	33	0	193	29	148	47	0	224
Hourly Total		105	241	88	0	434	157	299	105	0	561	102	536	120	0	758	123	567	159	0	849
15:00	15:15	25	84	19	0	128	33	71	22	0	126	31	152	28	0	211	30	140	45	0	215
15:15	15:30	24	68	18	0	110	52	69	21	0	142	28	145	33	0	206	27	146	46	0	219
15:30	15:45	26	77	21	0	124	57	104	23	0	184	21	137	36	0	194	30	121	35	0	186
15:45	16:00	29	79	29	0	137	54	97	29	0	180	30	152	35	0	217	39	139	53	0	231
Hourly Total		104	308	87	0	499	196	341	95	0	632	110	586	132	0	828	126	546	179	0	851
16:00	16:15	30	68	19	0	117	47	82	20	0	149	26	158	33	0	217	25	109	39	0	173

		Dorchester Road										Lundy's Lane									
		North Approach					South Approach					East Approach					West Approach				
Time Period		LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT
16:15	16:30	19	85	28	0	132	54	100	22	0	176	29	152	25	0	206	38	155	49	0	242
16:30	16:45	30	68	20	0	118	59	91	21	0	171	30	164	25	0	219	44	141	48	0	233
16:45	17:00	36	71	20	0	127	51	84	30	0	165	28	153	15	0	196	36	166	42	0	244
Hourly Total		115	292	87	0	494	211	357	93	0	661	113	627	98	0	838	143	571	178	0	892
17:00	17:15	16	71	27	0	114	40	73	21	0	134	35	133	27	0	195	34	129	35	0	198
17:15	17:30	29	74	33	0	136	47	82	28	0	157	31	144	21	0	196	33	150	51	0	234
17:30	17:45	17	79	28	0	124	44	83	24	0	151	22	133	32	0	187	29	139	33	0	201
17:45	18:00	17	66	26	0	109	37	78	25	0	140	14	127	27	0	168	24	116	40	0	180
Hourly Total		79	290	114	0	483	168	316	98	0	582	102	537	107	0	746	120	534	159	0	813
Grand Total		711	1940	615	0	3266	1231	2301	677	0	4209	699	3677	809	0	5185	903	4022	1172	0	6097
Truck %		3%	3%	2%	0%	3%	2%	3%	2%	0%	2%	1%	3%	2%	0%	3%	3%	3%	3%	0%	3%

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Regional Road 20 & Depew Avenue
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Start Date: 11/09/2021

Turning Movement Data

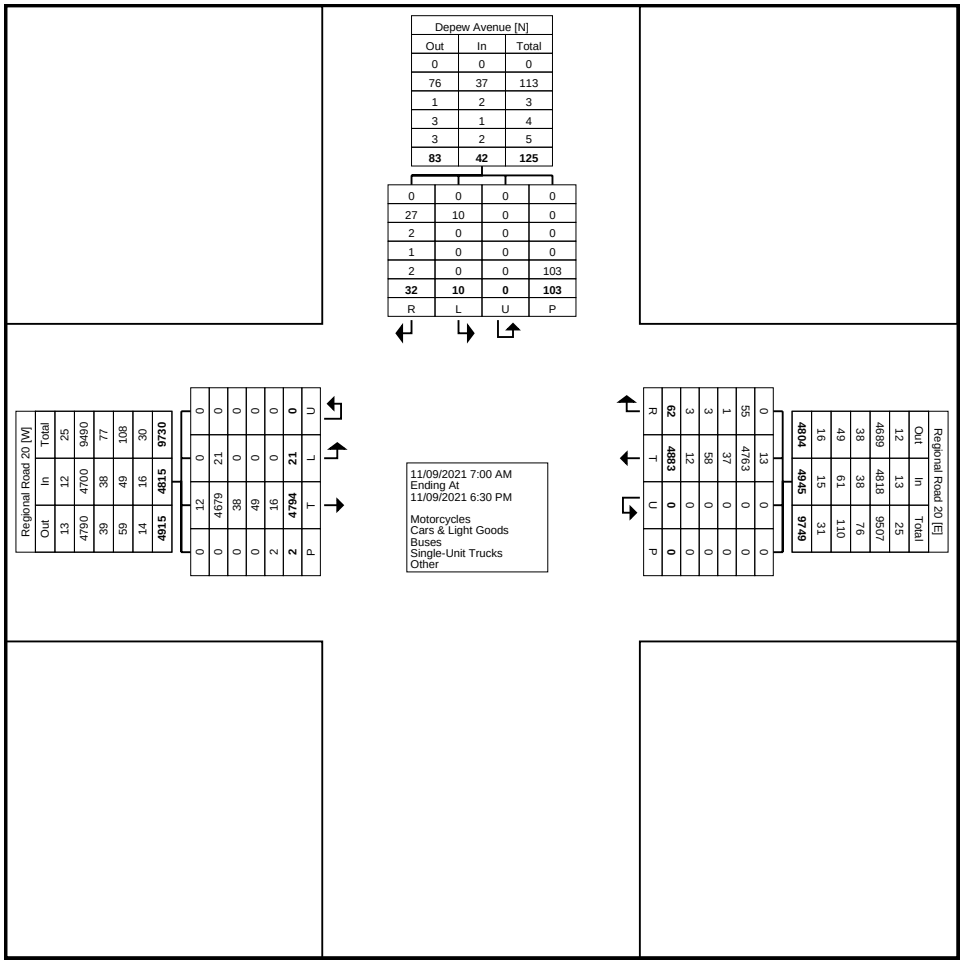
Start Time	Regional Road 20 Eastbound					Regional Road 20 Westbound					Depew Avenue Southbound					
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
7:00 AM	0	64	0	0	64	63	0	0	0	63	1	0	0	3	1	128
7:15 AM	0	80	0	0	80	65	0	0	0	65	0	1	0	0	1	146
7:30 AM	0	90	0	0	90	77	2	0	0	79	1	3	0	1	4	173
7:45 AM	1	108	0	0	109	70	0	0	0	70	0	0	0	3	0	179
Hourly Total	1	342	0	0	343	275	2	0	0	277	2	4	0	7	6	626
8:00 AM	0	83	0	0	83	65	0	0	0	65	1	2	0	2	3	151
8:15 AM	0	122	0	0	122	85	1	0	0	86	0	1	0	0	1	209
8:30 AM	0	134	0	0	134	77	0	0	0	77	0	3	0	3	3	214
8:45 AM	0	110	0	0	110	97	0	0	0	97	0	2	0	1	2	209
Hourly Total	0	449	0	0	449	324	1	0	0	325	1	8	0	6	9	783
9:00 AM	0	132	0	0	132	96	0	0	0	96	0	1	0	2	1	229
9:15 AM	0	110	0	0	110	97	0	0	0	97	0	0	0	1	0	207
9:30 AM	0	138	0	0	138	108	3	0	0	111	0	0	0	2	0	249
9:45 AM	0	123	0	0	123	115	0	0	0	115	0	1	0	2	1	239
Hourly Total	0	503	0	0	503	416	3	0	0	419	0	2	0	7	2	924
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	1	179	0	0	180	168	4	0	0	172	0	0	0	6	0	352
11:15 AM	3	156	0	0	159	196	0	0	0	196	0	0	0	3	0	355
11:30 AM	0	177	0	0	177	183	3	0	0	186	0	2	0	5	2	365
11:45 AM	1	214	0	1	215	200	2	0	0	202	0	2	0	1	2	419
Hourly Total	5	726	0	1	731	747	9	0	0	756	0	4	0	15	4	1491
12:00 PM	1	190	0	0	191	205	3	0	0	208	0	2	0	2	2	401
12:15 PM	0	185	0	0	185	195	7	0	0	202	2	1	0	3	3	390
12:30 PM	0	193	0	0	193	171	2	0	0	173	0	1	0	2	1	367
12:45 PM	1	188	0	0	189	187	4	0	0	191	0	0	0	6	0	380
Hourly Total	2	756	0	0	758	758	16	0	0	774	2	4	0	13	6	1538
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:30 PM	1	173	0	0	174	217	3	0	0	220	1	0	0	5	1	395
3:45 PM	0	161	0	1	161	201	1	0	0	202	0	0	0	6	0	363
Hourly Total	1	334	0	1	335	418	4	0	0	422	1	0	0	11	1	758
4:00 PM	0	170	0	0	170	215	4	0	0	219	1	1	0	8	2	391
4:15 PM	3	177	0	0	180	205	2	0	0	207	0	0	0	3	0	387
4:30 PM	2	171	0	0	173	203	2	0	0	205	0	2	0	5	2	380
4:45 PM	1	183	0	0	184	203	3	0	0	206	1	1	0	6	2	392
Hourly Total	6	701	0	0	707	826	11	0	0	837	2	4	0	22	6	1550
5:00 PM	3	177	0	0	180	222	3	0	0	225	0	0	0	3	0	405

5:15 PM	1	165	0	0	166	208	1	0	0	209	0	0	0	3	0	375
5:30 PM	1	155	0	0	156	186	5	0	0	191	2	2	0	4	4	351
5:45 PM	0	180	0	0	180	177	1	0	0	178	0	2	0	4	2	360
Hourly Total	5	677	0	0	682	793	10	0	0	803	2	4	0	14	6	1491
6:00 PM	0	165	0	0	165	158	5	0	0	163	0	1	0	3	1	329
6:15 PM	1	141	0	0	142	168	1	0	0	169	0	1	0	5	1	312
Grand Total	21	4794	0	2	4815	4883	62	0	0	4945	10	32	0	103	42	9802
Approach %	0.4	99.6	0.0	-	-	98.7	1.3	0.0	-	-	23.8	76.2	0.0	-	-	-
Total %	0.2	48.9	0.0	-	49.1	49.8	0.6	0.0	-	50.4	0.1	0.3	0.0	-	0.4	-
Motorcycles	0	12	0	-	12	13	0	0	-	13	0	0	0	-	0	25
% Motorcycles	0.0	0.3	-	-	0.2	0.3	0.0	-	-	0.3	0.0	0.0	-	-	0.0	0.3
Cars & Light Goods	21	4679	0	-	4700	4763	55	0	-	4818	10	27	0	-	37	9555
% Cars & Light Goods	100.0	97.6	-	-	97.6	97.5	88.7	-	-	97.4	100.0	84.4	-	-	88.1	97.5
Buses	0	38	0	-	38	37	1	0	-	38	0	2	0	-	2	78
% Buses	0.0	0.8	-	-	0.8	0.8	1.6	-	-	0.8	0.0	6.3	-	-	4.8	0.8
Single-Unit Trucks	0	49	0	-	49	58	3	0	-	61	0	1	0	-	1	111
% Single-Unit Trucks	0.0	1.0	-	-	1.0	1.2	4.8	-	-	1.2	0.0	3.1	-	-	2.4	1.1
Articulated Trucks	0	11	0	-	11	10	0	0	-	10	0	1	0	-	1	22
% Articulated Trucks	0.0	0.2	-	-	0.2	0.2	0.0	-	-	0.2	0.0	3.1	-	-	2.4	0.2
Bicycles on Road	0	5	0	-	5	2	3	0	-	5	0	1	0	-	1	11
% Bicycles on Road	0.0	0.1	-	-	0.1	0.0	4.8	-	-	0.1	0.0	3.1	-	-	2.4	0.1
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	22	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	-	-	-	-	-	21.4	-	-
Pedestrians	-	-	-	2	-	-	-	-	0	-	-	-	-	81	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	78.6	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Regional Road 20 & Depew Avenue
Site Code: 210300
Start Date: 11/09/2021



Turning Movement Data Plot

Paradigm Transportation Solutions Limited
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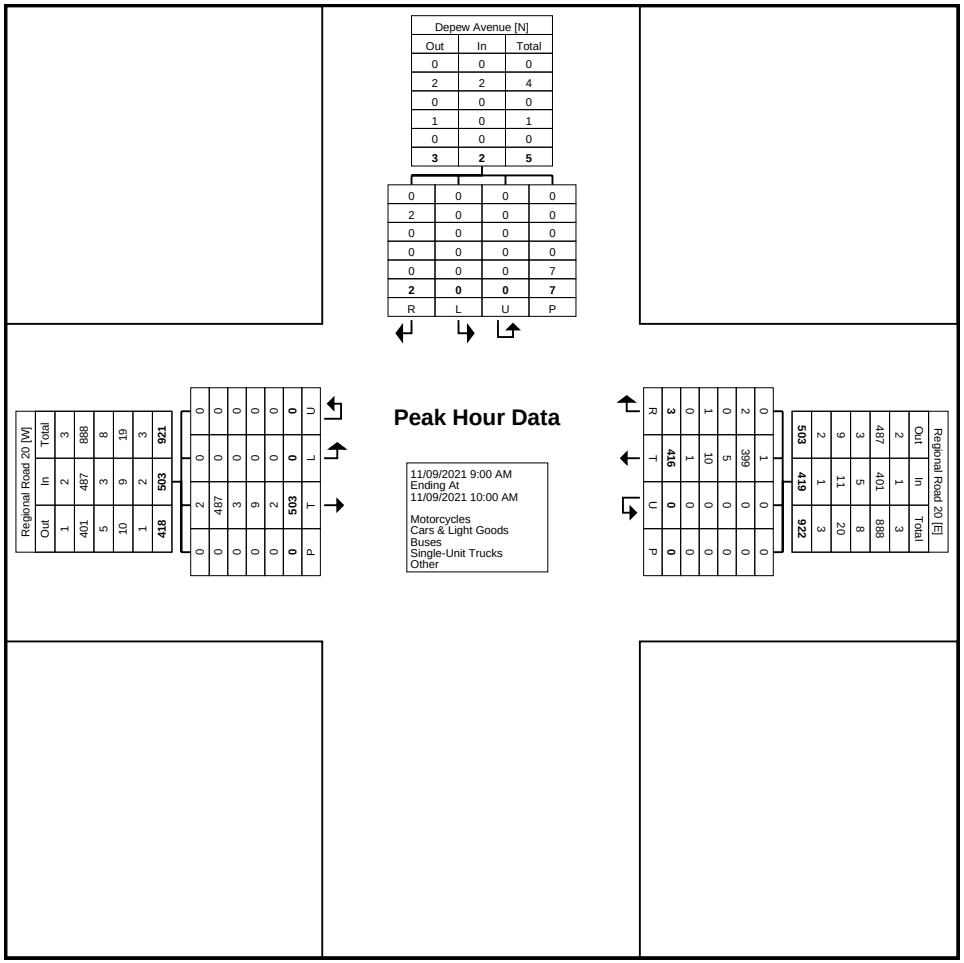
Turning Movement Peak Hour Data (9:00 AM)

Start Time	Regional Road 20 Eastbound					Regional Road 20 Westbound					Depew Avenue Southbound					
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
9:00 AM	0	132	0	0	132	96	0	0	0	96	0	1	0	2	1	229
9:15 AM	0	110	0	0	110	97	0	0	0	97	0	0	0	1	0	207
9:30 AM	0	138	0	0	138	108	3	0	0	111	0	0	0	2	0	249
9:45 AM	0	123	0	0	123	115	0	0	0	115	0	1	0	2	1	239
Total	0	503	0	0	503	416	3	0	0	419	0	2	0	7	2	924
Approach %	0.0	100.0	0.0	-	-	99.3	0.7	0.0	-	-	0.0	100.0	0.0	-	-	-
Total %	0.0	54.4	0.0	-	54.4	45.0	0.3	0.0	-	45.3	0.0	0.2	0.0	-	0.2	-
PHF	0.000	0.911	0.000	-	0.911	0.904	0.250	0.000	-	0.911	0.000	0.500	0.000	-	0.500	0.928
Motorcycles	0	2	0	-	2	1	0	0	-	1	0	0	0	-	0	3
% Motorcycles	-	0.4	-	-	0.4	0.2	0.0	-	-	0.2	-	0.0	-	-	0.0	0.3
Cars & Light Goods	0	487	0	-	487	399	2	0	-	401	0	2	0	-	2	890
% Cars & Light Goods	-	96.8	-	-	96.8	95.9	66.7	-	-	95.7	-	100.0	-	-	100.0	96.3
Buses	0	3	0	-	3	5	0	0	-	5	0	0	0	-	0	8
% Buses	-	0.6	-	-	0.6	1.2	0.0	-	-	1.2	-	0.0	-	-	0.0	0.9
Single-Unit Trucks	0	9	0	-	9	10	1	0	-	11	0	0	0	-	0	20
% Single-Unit Trucks	-	1.8	-	-	1.8	2.4	33.3	-	-	2.6	-	0.0	-	-	0.0	2.2
Articulated Trucks	0	1	0	-	1	0	0	0	-	0	0	0	0	-	0	1
% Articulated Trucks	-	0.2	-	-	0.2	0.0	0.0	-	-	0.0	-	0.0	-	-	0.0	0.1
Bicycles on Road	0	1	0	-	1	1	0	0	-	1	0	0	0	-	0	2
% Bicycles on Road	-	0.2	-	-	0.2	0.2	0.0	-	-	0.2	-	0.0	-	-	0.0	0.2
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	14.3	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	6	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	85.7	-	-

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Start Date: 11/09/2021



Turning Movement Peak Hour Data Plot (9:00 AM)

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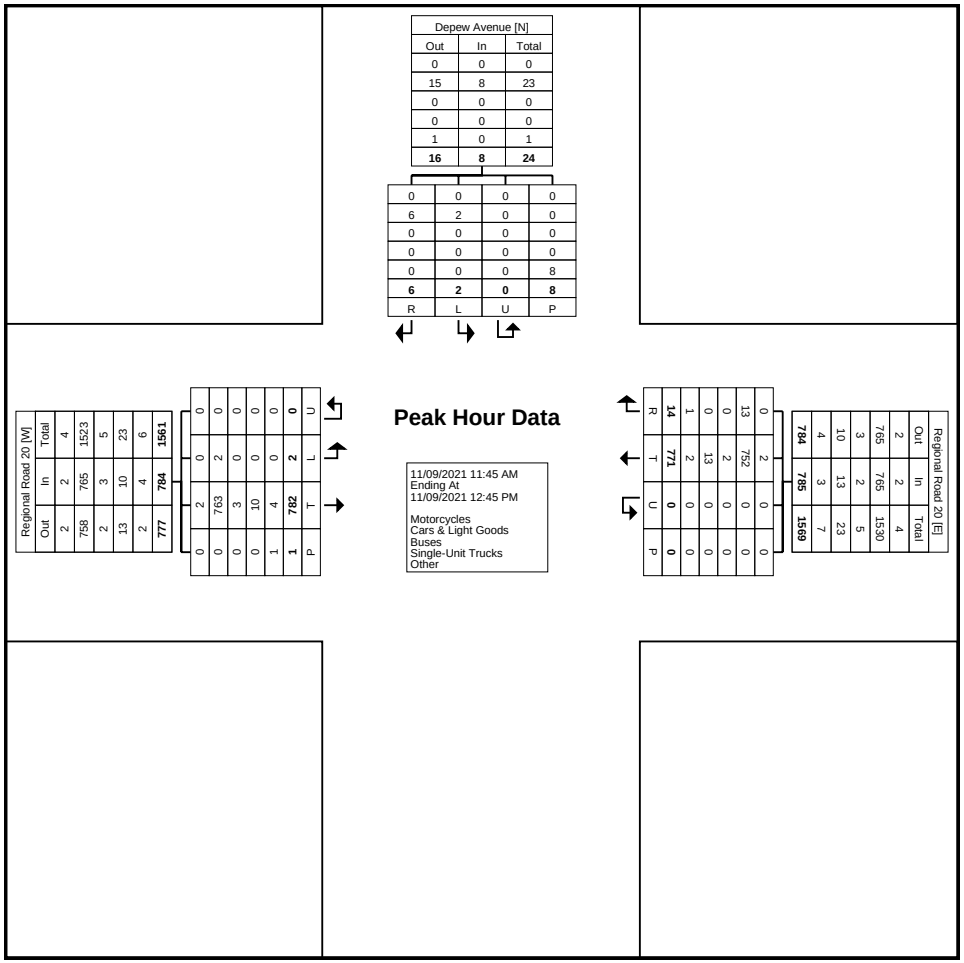
Turning Movement Peak Hour Data (11:45 AM)

Start Time	Regional Road 20 Eastbound					Regional Road 20 Westbound					Depew Avenue Southbound					
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
11:45 AM	1	214	0	1	215	200	2	0	0	202	0	2	0	1	2	419
12:00 PM	1	190	0	0	191	205	3	0	0	208	0	2	0	2	2	401
12:15 PM	0	185	0	0	185	195	7	0	0	202	2	1	0	3	3	390
12:30 PM	0	193	0	0	193	171	2	0	0	173	0	1	0	2	1	367
Total	2	782	0	1	784	771	14	0	0	785	2	6	0	8	8	1577
Approach %	0.3	99.7	0.0	-	-	98.2	1.8	0.0	-	-	25.0	75.0	0.0	-	-	-
Total %	0.1	49.6	0.0	-	49.7	48.9	0.9	0.0	-	49.8	0.1	0.4	0.0	-	0.5	-
PHF	0.500	0.914	0.000	-	0.912	0.940	0.500	0.000	-	0.944	0.250	0.750	0.000	-	0.667	0.941
Motorcycles	0	2	0	-	2	2	0	0	-	2	0	0	0	-	0	4
% Motorcycles	0.0	0.3	-	-	0.3	0.3	0.0	-	-	0.3	0.0	0.0	-	-	0.0	0.3
Cars & Light Goods	2	763	0	-	765	752	13	0	-	765	2	6	0	-	8	1538
% Cars & Light Goods	100.0	97.6	-	-	97.6	97.5	92.9	-	-	97.5	100.0	100.0	-	-	100.0	97.5
Buses	0	3	0	-	3	2	0	0	-	2	0	0	0	-	0	5
% Buses	0.0	0.4	-	-	0.4	0.3	0.0	-	-	0.3	0.0	0.0	-	-	0.0	0.3
Single-Unit Trucks	0	10	0	-	10	13	0	0	-	13	0	0	0	-	0	23
% Single-Unit Trucks	0.0	1.3	-	-	1.3	1.7	0.0	-	-	1.7	0.0	0.0	-	-	0.0	1.5
Articulated Trucks	0	3	0	-	3	2	0	0	-	2	0	0	0	-	0	5
% Articulated Trucks	0.0	0.4	-	-	0.4	0.3	0.0	-	-	0.3	0.0	0.0	-	-	0.0	0.3
Bicycles on Road	0	1	0	-	1	0	1	0	-	1	0	0	0	-	0	2
% Bicycles on Road	0.0	0.1	-	-	0.1	0.0	7.1	-	-	0.1	0.0	0.0	-	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	3	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	-	-	-	-	-	37.5	-	-
Pedestrians	-	-	-	1	-	-	-	-	0	-	-	-	-	5	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	62.5	-	-

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Turning Movement Peak Hour Data Plot (11:45 AM)

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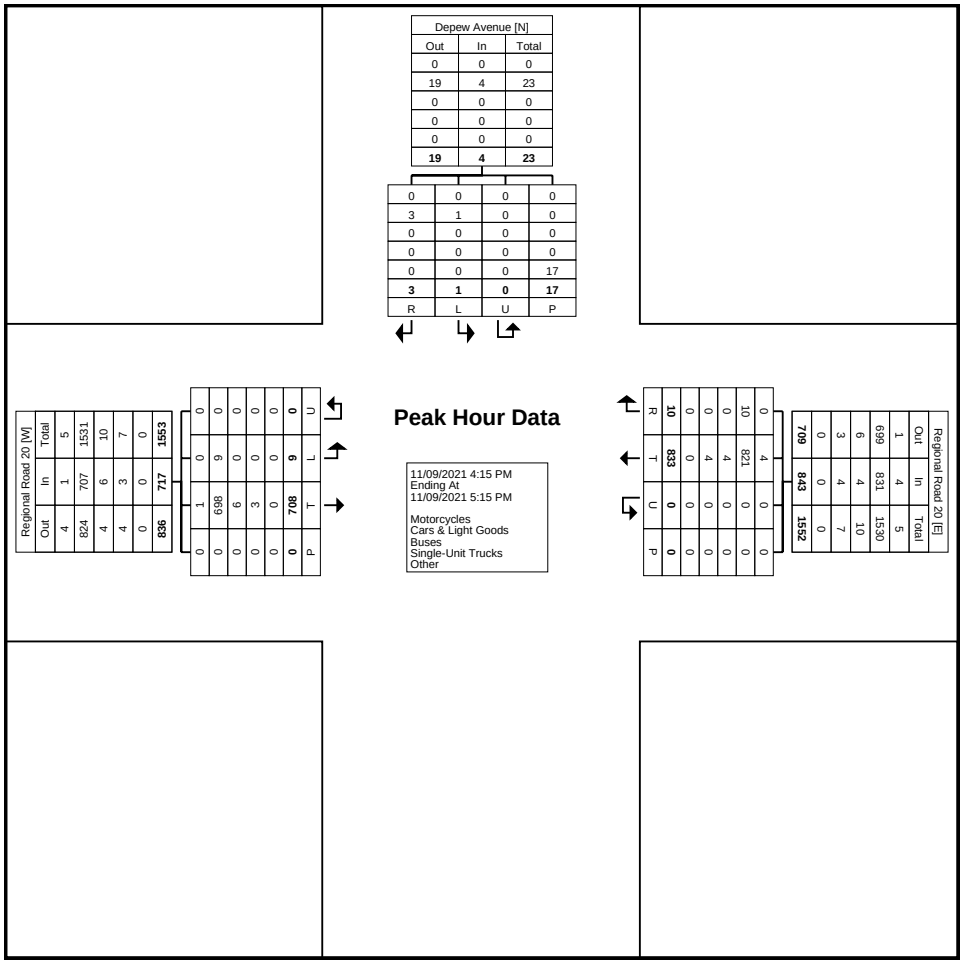
Turning Movement Peak Hour Data (4:15 PM)

Start Time	Regional Road 20 Eastbound					Regional Road 20 Westbound					Depew Avenue Southbound					
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
4:15 PM	3	177	0	0	180	205	2	0	0	207	0	0	0	3	0	387
4:30 PM	2	171	0	0	173	203	2	0	0	205	0	2	0	5	2	380
4:45 PM	1	183	0	0	184	203	3	0	0	206	1	1	0	6	2	392
5:00 PM	3	177	0	0	180	222	3	0	0	225	0	0	0	3	0	405
Total	9	708	0	0	717	833	10	0	0	843	1	3	0	17	4	1564
Approach %	1.3	98.7	0.0	-	-	98.8	1.2	0.0	-	-	25.0	75.0	0.0	-	-	-
Total %	0.6	45.3	0.0	-	45.8	53.3	0.6	0.0	-	53.9	0.1	0.2	0.0	-	0.3	-
PHF	0.750	0.967	0.000	-	0.974	0.938	0.833	0.000	-	0.937	0.250	0.375	0.000	-	0.500	0.965
Motorcycles	0	1	0	-	1	4	0	0	-	4	0	0	0	-	0	5
% Motorcycles	0.0	0.1	-	-	0.1	0.5	0.0	-	-	0.5	0.0	0.0	-	-	0.0	0.3
Cars & Light Goods	9	698	0	-	707	821	10	0	-	831	1	3	0	-	4	1542
% Cars & Light Goods	100.0	98.6	-	-	98.6	98.6	100.0	-	-	98.6	100.0	100.0	-	-	100.0	98.6
Buses	0	6	0	-	6	4	0	0	-	4	0	0	0	-	0	10
% Buses	0.0	0.8	-	-	0.8	0.5	0.0	-	-	0.5	0.0	0.0	-	-	0.0	0.6
Single-Unit Trucks	0	3	0	-	3	4	0	0	-	4	0	0	0	-	0	7
% Single-Unit Trucks	0.0	0.4	-	-	0.4	0.5	0.0	-	-	0.5	0.0	0.0	-	-	0.0	0.4
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	-	-	-	-	3	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	17.6	-	-
Pedestrians	-	-	-	0	-	-	-	-	0	-	-	-	-	14	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	82.4	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Regional Road 20 & Depew Avenue
Site Code: 210300
Start Date: 11/09/2021



Turning Movement Peak Hour Data Plot (4:15 PM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Regional Road 20 & Corwin Avenue
Site Code: 210300
Start Date: 11/09/2021

Turning Movement Data

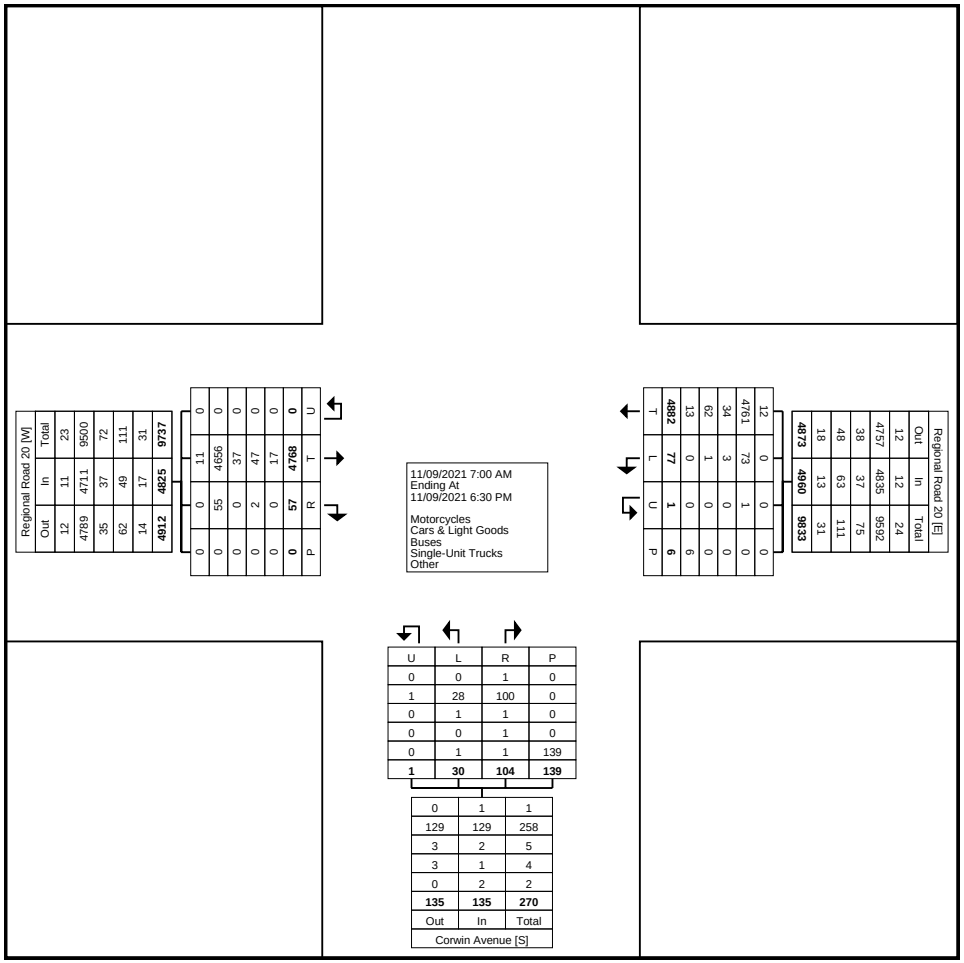
Start Time	Regional Road 20 Eastbound					Regional Road 20 Westbound					Corwin Avenue Northbound					Int. Total
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	
7:00 AM	65	0	0	0	65	0	64	0	0	64	0	0	0	1	0	129
7:15 AM	80	0	0	0	80	0	65	0	0	65	0	0	0	0	0	145
7:30 AM	90	1	0	0	91	1	77	0	0	78	3	1	0	1	4	173
7:45 AM	105	3	0	0	108	1	68	0	0	69	0	4	0	3	4	181
Hourly Total	340	4	0	0	344	2	274	0	0	276	3	5	0	5	8	628
8:00 AM	78	0	0	0	78	3	63	0	0	66	0	1	0	3	1	145
8:15 AM	122	0	0	0	122	2	83	0	0	85	1	1	0	1	2	209
8:30 AM	126	1	0	0	127	0	74	0	0	74	0	4	0	4	4	205
8:45 AM	110	0	0	0	110	3	95	0	0	98	2	5	0	2	7	215
Hourly Total	436	1	0	0	437	8	315	0	0	323	3	11	0	10	14	774
9:00 AM	127	4	0	0	131	4	96	0	0	100	0	3	0	1	3	234
9:15 AM	108	1	0	0	109	0	90	0	0	90	1	3	0	3	4	203
9:30 AM	135	2	0	0	137	1	109	0	0	110	0	3	0	3	3	250
9:45 AM	119	1	0	0	120	1	107	0	1	108	3	2	1	5	6	234
Hourly Total	489	8	0	0	497	6	402	0	1	408	4	11	1	12	16	921
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	174	1	0	0	175	2	168	0	0	170	2	6	0	4	8	353
11:15 AM	152	2	0	0	154	4	196	0	0	200	0	5	0	3	5	359
11:30 AM	174	1	0	0	175	3	186	0	0	189	0	3	0	4	3	367
11:45 AM	204	7	0	0	211	2	202	0	1	204	1	6	0	9	7	422
Hourly Total	704	11	0	0	715	11	752	0	1	763	3	20	0	20	23	1501
12:00 PM	188	0	0	0	188	3	206	0	1	209	4	6	0	4	10	407
12:15 PM	180	1	0	0	181	2	203	0	0	205	1	2	0	4	3	389
12:30 PM	194	0	0	0	194	5	170	1	1	176	3	4	0	8	7	377
12:45 PM	184	3	0	0	187	3	192	0	0	195	0	5	0	7	5	387
Hourly Total	746	4	0	0	750	13	771	1	2	785	8	17	0	23	25	1560
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:30 PM	181	5	0	0	186	5	218	0	2	223	1	4	0	4	5	414
3:45 PM	182	1	0	0	183	6	200	0	0	206	2	6	0	7	8	397
Hourly Total	363	6	0	0	369	11	418	0	2	429	3	10	0	11	13	811
4:00 PM	183	5	0	0	188	3	217	0	0	220	1	3	0	13	4	412
4:15 PM	189	1	0	0	190	2	206	0	0	208	0	3	0	6	3	401
4:30 PM	172	2	0	0	174	5	207	0	0	212	2	6	0	5	8	394
4:45 PM	182	2	0	0	184	2	203	0	0	205	0	2	0	9	2	391
Hourly Total	726	10	0	0	736	12	833	0	0	845	3	14	0	33	17	1598
5:00 PM	174	2	0	0	176	3	224	0	0	227	0	4	0	2	4	407

5:15 PM	161	2	0	0	163	3	205	0	0	208	0	3	0	9	3	374
5:30 PM	150	2	0	0	152	3	186	0	0	189	0	1	0	4	1	342
5:45 PM	183	3	0	0	186	0	173	0	0	173	2	4	0	4	6	365
Hourly Total	668	9	0	0	677	9	788	0	0	797	2	12	0	19	14	1488
6:00 PM	161	1	0	0	162	3	160	0	0	163	1	2	0	3	3	328
6:15 PM	135	3	0	0	138	2	169	0	0	171	0	2	0	3	2	311
Grand Total	4768	57	0	0	4825	77	4882	1	6	4960	30	104	1	139	135	9920
Approach %	98.8	1.2	0.0	-	-	1.6	98.4	0.0	-	-	22.2	77.0	0.7	-	-	-
Total %	48.1	0.6	0.0	-	48.6	0.8	49.2	0.0	-	50.0	0.3	1.0	0.0	-	1.4	-
Motorcycles	11	0	0	-	11	0	12	0	-	12	0	1	0	-	1	24
% Motorcycles	0.2	0.0	-	-	0.2	0.0	0.2	0.0	-	0.2	0.0	1.0	0.0	-	0.7	0.2
Cars & Light Goods	4656	55	0	-	4711	73	4761	1	-	4835	28	100	1	-	129	9675
% Cars & Light Goods	97.7	96.5	-	-	97.6	94.8	97.5	100.0	-	97.5	93.3	96.2	100.0	-	95.6	97.5
Buses	37	0	0	-	37	3	34	0	-	37	1	1	0	-	2	76
% Buses	0.8	0.0	-	-	0.8	3.9	0.7	0.0	-	0.7	3.3	1.0	0.0	-	1.5	0.8
Single-Unit Trucks	47	2	0	-	49	1	62	0	-	63	0	1	0	-	1	113
% Single-Unit Trucks	1.0	3.5	-	-	1.0	1.3	1.3	0.0	-	1.3	0.0	1.0	0.0	-	0.7	1.1
Articulated Trucks	12	0	0	-	12	0	9	0	-	9	0	0	0	-	0	21
% Articulated Trucks	0.3	0.0	-	-	0.2	0.0	0.2	0.0	-	0.2	0.0	0.0	0.0	-	0.0	0.2
Bicycles on Road	5	0	0	-	5	0	4	0	-	4	1	1	0	-	2	11
% Bicycles on Road	0.1	0.0	-	-	0.1	0.0	0.1	0.0	-	0.1	3.3	1.0	0.0	-	1.5	0.1
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	34	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	0.0	-	-	-	-	24.5	-	-
Pedestrians	-	-	-	0	-	-	-	-	6	-	-	-	-	105	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	75.5	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Regional Road 20 & Corwin Avenue
Site Code: 210300
Start Date: 11/09/2021



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: Regional Road 20 & Corwin Avenue
Site Code: 210300
Start Date: 11/09/2021

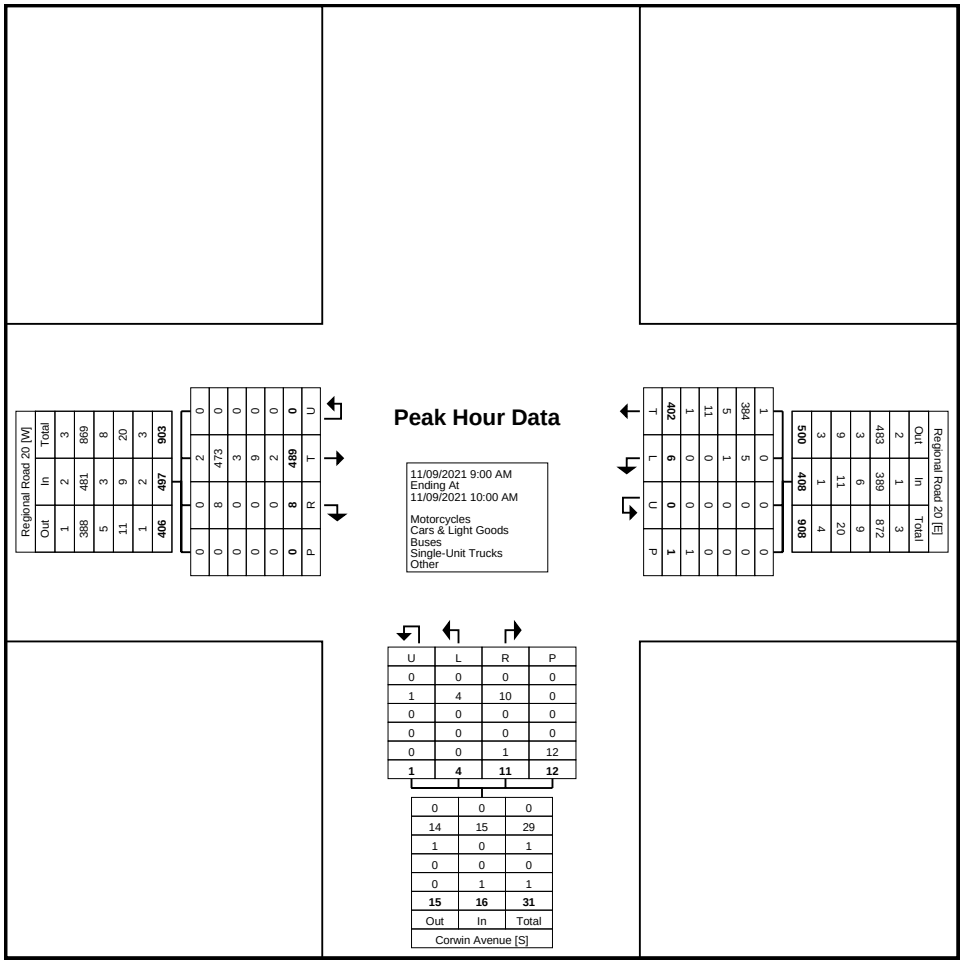
Turning Movement Peak Hour Data (9:00 AM)

Start Time	Regional Road 20 Eastbound					Regional Road 20 Westbound					Corwin Avenue Northbound					
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
9:00 AM	127	4	0	0	131	4	96	0	0	100	0	3	0	1	3	234
9:15 AM	108	1	0	0	109	0	90	0	0	90	1	3	0	3	4	203
9:30 AM	135	2	0	0	137	1	109	0	0	110	0	3	0	3	3	250
9:45 AM	119	1	0	0	120	1	107	0	1	108	3	2	1	5	6	234
Total	489	8	0	0	497	6	402	0	1	408	4	11	1	12	16	921
Approach %	98.4	1.6	0.0	-	-	1.5	98.5	0.0	-	-	25.0	68.8	6.3	-	-	-
Total %	53.1	0.9	0.0	-	54.0	0.7	43.6	0.0	-	44.3	0.4	1.2	0.1	-	1.7	-
PHF	0.906	0.500	0.000	-	0.907	0.375	0.922	0.000	-	0.927	0.333	0.917	0.250	-	0.667	0.921
Motorcycles	2	0	0	-	2	0	1	0	-	1	0	0	0	-	0	3
% Motorcycles	0.4	0.0	-	-	0.4	0.0	0.2	-	-	0.2	0.0	0.0	0.0	-	0.0	0.3
Cars & Light Goods	473	8	0	-	481	5	384	0	-	389	4	10	1	-	15	885
% Cars & Light Goods	96.7	100.0	-	-	96.8	83.3	95.5	-	-	95.3	100.0	90.9	100.0	-	93.8	96.1
Buses	3	0	0	-	3	1	5	0	-	6	0	0	0	-	0	9
% Buses	0.6	0.0	-	-	0.6	16.7	1.2	-	-	1.5	0.0	0.0	0.0	-	0.0	1.0
Single-Unit Trucks	9	0	0	-	9	0	11	0	-	11	0	0	0	-	0	20
% Single-Unit Trucks	1.8	0.0	-	-	1.8	0.0	2.7	-	-	2.7	0.0	0.0	0.0	-	0.0	2.2
Articulated Trucks	1	0	0	-	1	0	0	0	-	0	0	0	0	-	0	1
% Articulated Trucks	0.2	0.0	-	-	0.2	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	0.0	0.1
Bicycles on Road	1	0	0	-	1	0	1	0	-	1	0	1	0	-	1	3
% Bicycles on Road	0.2	0.0	-	-	0.2	0.0	0.2	-	-	0.2	0.0	9.1	0.0	-	6.3	0.3
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	5	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	0.0	-	-	-	-	41.7	-	-
Pedestrians	-	-	-	0	-	-	-	-	1	-	-	-	-	7	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	58.3	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Regional Road 20 & Corwin Avenue
Site Code: 210300
Start Date: 11/09/2021



Turning Movement Peak Hour Data Plot (9:00 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Regional Road 20 & Corwin Avenue
Site Code: 210300
Start Date: 11/09/2021

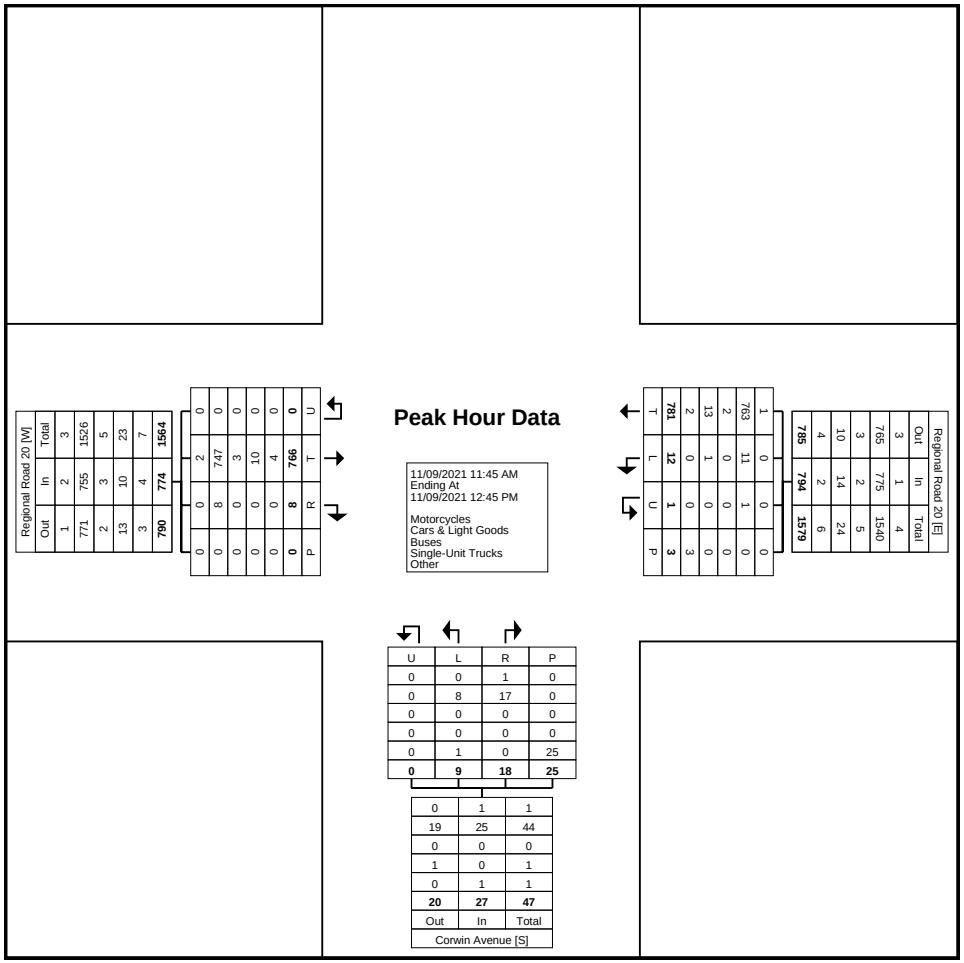
Turning Movement Peak Hour Data (11:45 AM)

Start Time	Regional Road 20 Eastbound					Regional Road 20 Westbound					Corwin Avenue Northbound					
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
11:45 AM	204	7	0	0	211	2	202	0	1	204	1	6	0	9	7	422
12:00 PM	188	0	0	0	188	3	206	0	1	209	4	6	0	4	10	407
12:15 PM	180	1	0	0	181	2	203	0	0	205	1	2	0	4	3	389
12:30 PM	194	0	0	0	194	5	170	1	1	176	3	4	0	8	7	377
Total	766	8	0	0	774	12	781	1	3	794	9	18	0	25	27	1595
Approach %	99.0	1.0	0.0	-	-	1.5	98.4	0.1	-	-	33.3	66.7	0.0	-	-	-
Total %	48.0	0.5	0.0	-	48.5	0.8	49.0	0.1	-	49.8	0.6	1.1	0.0	-	1.7	-
PHF	0.939	0.286	0.000	-	0.917	0.600	0.948	0.250	-	0.950	0.563	0.750	0.000	-	0.675	0.945
Motorcycles	2	0	0	-	2	0	1	0	-	1	0	1	0	-	1	4
% Motorcycles	0.3	0.0	-	-	0.3	0.0	0.1	0.0	-	0.1	0.0	5.6	-	-	3.7	0.3
Cars & Light Goods	747	8	0	-	755	11	763	1	-	775	8	17	0	-	25	1555
% Cars & Light Goods	97.5	100.0	-	-	97.5	91.7	97.7	100.0	-	97.6	88.9	94.4	-	-	92.6	97.5
Buses	3	0	0	-	3	0	2	0	-	2	0	0	0	-	0	5
% Buses	0.4	0.0	-	-	0.4	0.0	0.3	0.0	-	0.3	0.0	0.0	-	-	0.0	0.3
Single-Unit Trucks	10	0	0	-	10	1	13	0	-	14	0	0	0	-	0	24
% Single-Unit Trucks	1.3	0.0	-	-	1.3	8.3	1.7	0.0	-	1.8	0.0	0.0	-	-	0.0	1.5
Articulated Trucks	3	0	0	-	3	0	2	0	-	2	0	0	0	-	0	5
% Articulated Trucks	0.4	0.0	-	-	0.4	0.0	0.3	0.0	-	0.3	0.0	0.0	-	-	0.0	0.3
Bicycles on Road	1	0	0	-	1	0	0	0	-	0	1	0	0	-	1	2
% Bicycles on Road	0.1	0.0	-	-	0.1	0.0	0.0	0.0	-	0.0	11.1	0.0	-	-	3.7	0.1
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	6	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	0.0	-	-	-	-	24.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	3	-	-	-	-	19	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	76.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Regional Road 20 & Corwin Avenue
Site Code: 210300
Start Date: 11/09/2021



Turning Movement Peak Hour Data Plot (11:45 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Regional Road 20 & Corwin Avenue
Site Code: 210300
Start Date: 11/09/2021

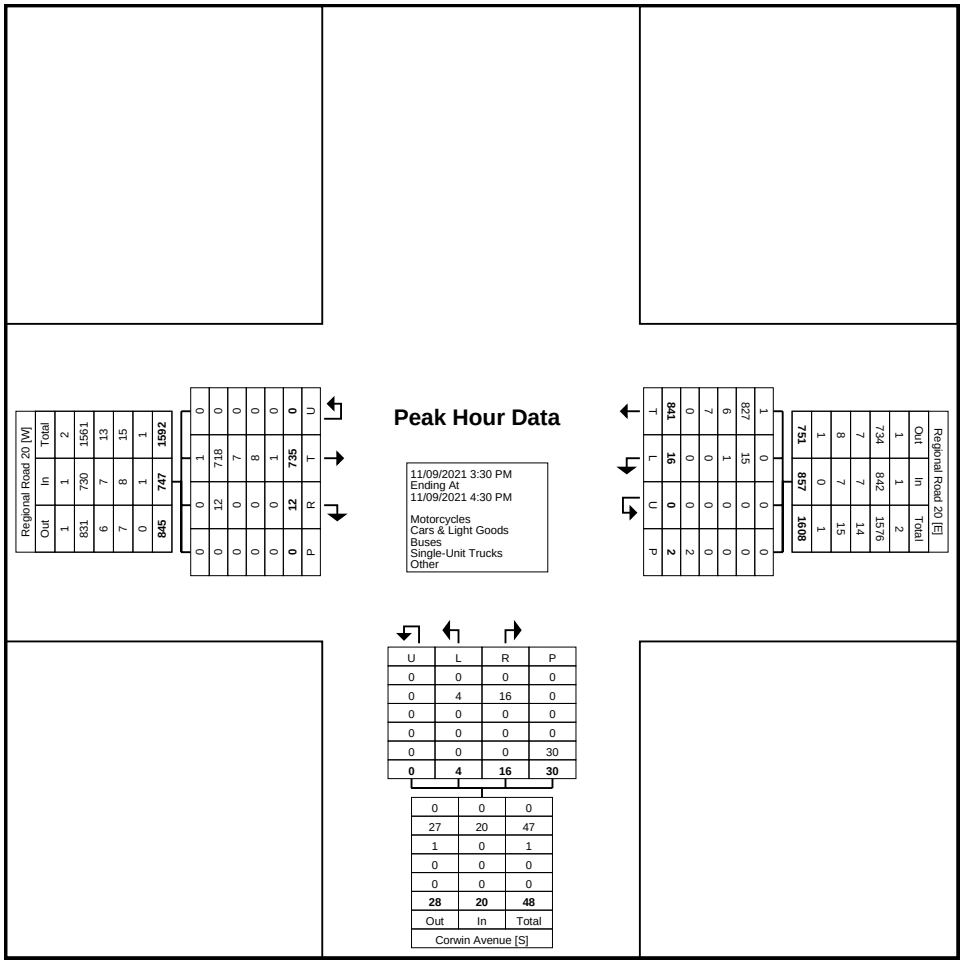
Turning Movement Peak Hour Data (3:30 PM)

Start Time	Regional Road 20 Eastbound					Regional Road 20 Westbound					Corwin Avenue Northbound					
	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
3:30 PM	181	5	0	0	186	5	218	0	2	223	1	4	0	4	5	414
3:45 PM	182	1	0	0	183	6	200	0	0	206	2	6	0	7	8	397
4:00 PM	183	5	0	0	188	3	217	0	0	220	1	3	0	13	4	412
4:15 PM	189	1	0	0	190	2	206	0	0	208	0	3	0	6	3	401
Total	735	12	0	0	747	16	841	0	2	857	4	16	0	30	20	1624
Approach %	98.4	1.6	0.0	-	-	1.9	98.1	0.0	-	-	20.0	80.0	0.0	-	-	-
Total %	45.3	0.7	0.0	-	46.0	1.0	51.8	0.0	-	52.8	0.2	1.0	0.0	-	1.2	-
PHF	0.972	0.600	0.000	-	0.983	0.667	0.964	0.000	-	0.961	0.500	0.667	0.000	-	0.625	0.981
Motorcycles	1	0	0	-	1	0	1	0	-	1	0	0	0	-	0	2
% Motorcycles	0.1	0.0	-	-	0.1	0.0	0.1	-	-	0.1	0.0	0.0	-	-	0.0	0.1
Cars & Light Goods	718	12	0	-	730	15	827	0	-	842	4	16	0	-	20	1592
% Cars & Light Goods	97.7	100.0	-	-	97.7	93.8	98.3	-	-	98.2	100.0	100.0	-	-	100.0	98.0
Buses	7	0	0	-	7	1	6	0	-	7	0	0	0	-	0	14
% Buses	1.0	0.0	-	-	0.9	6.3	0.7	-	-	0.8	0.0	0.0	-	-	0.0	0.9
Single-Unit Trucks	8	0	0	-	8	0	7	0	-	7	0	0	0	-	0	15
% Single-Unit Trucks	1.1	0.0	-	-	1.1	0.0	0.8	-	-	0.8	0.0	0.0	-	-	0.0	0.9
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	1	0	0	-	1	0	0	0	-	0	0	0	0	-	0	1
% Bicycles on Road	0.1	0.0	-	-	0.1	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	6	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	0.0	-	-	-	-	20.0	-	-
Pedestrians	-	-	-	0	-	-	-	-	2	-	-	-	-	24	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	80.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Regional Road 20 & Corwin Avenue
Site Code: 210300
Start Date: 11/09/2021



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: Regional Road 20 & Prince Edward Avenue/Carlton Avenue
Site Code: 210300
Start Date: 11/09/2021

Turning Movement Data

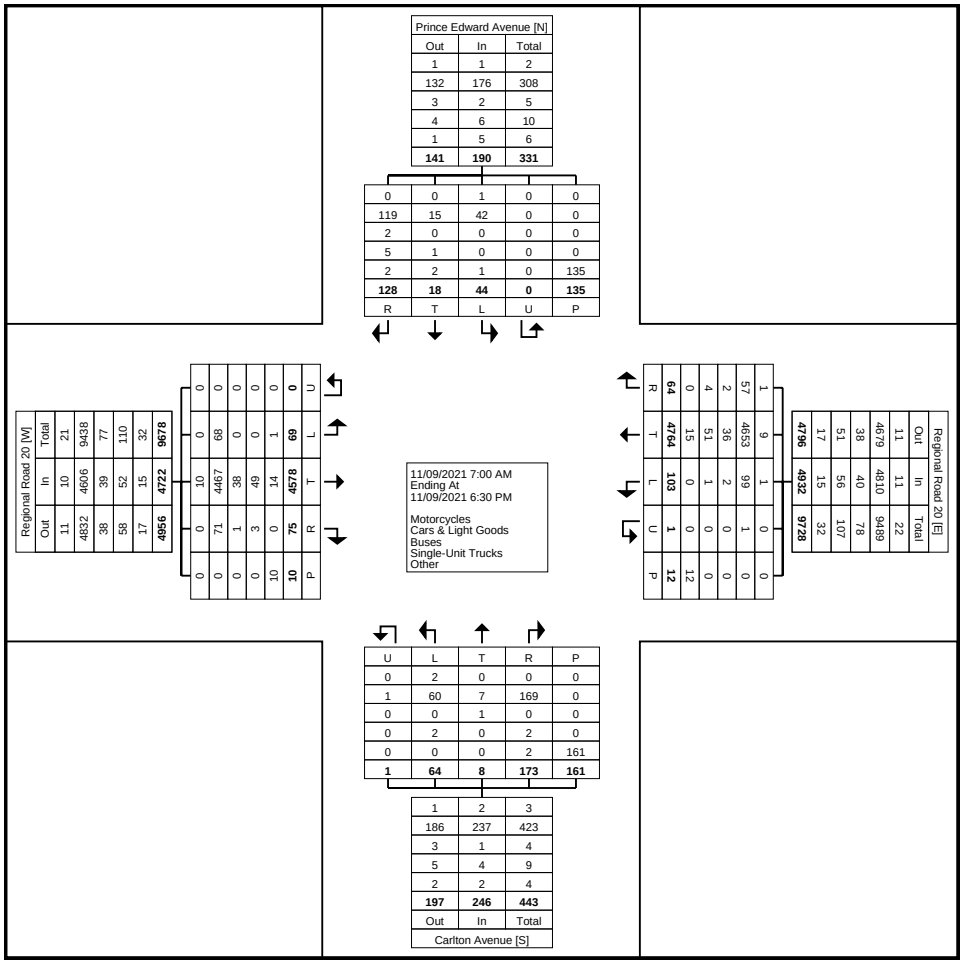
Start Time	Regional Road 20 Eastbound						Regional Road 20 Westbound						Carlton Avenue Northbound						Prince Edward Avenue Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	2	61	1	0	0	64	0	61	0	0	0	61	0	0	2	0	1	2	1	0	2	0	3	3	130
7:15 AM	0	73	1	0	0	74	0	67	0	0	0	67	1	0	3	0	1	4	1	0	0	0	0	1	146
7:30 AM	1	79	2	0	0	82	0	75	2	0	0	77	1	0	2	0	1	3	0	1	2	0	3	3	165
7:45 AM	1	108	0	0	0	109	4	71	0	0	1	75	2	0	5	0	3	7	0	0	1	0	3	1	192
Hourly Total	4	321	4	0	0	329	4	274	2	0	1	280	4	0	12	0	6	16	2	1	5	0	9	8	633
8:00 AM	1	85	1	0	0	87	1	69	4	0	0	74	0	0	3	0	2	3	0	1	0	0	1	1	165
8:15 AM	0	115	2	0	0	117	4	87	2	0	0	93	1	0	3	0	2	4	3	0	0	0	3	3	217
8:30 AM	1	118	3	0	1	122	6	76	0	0	0	82	2	0	14	0	1	16	1	1	2	0	3	4	224
8:45 AM	2	112	4	0	0	118	11	98	2	0	0	111	1	1	8	0	2	10	1	4	3	0	1	8	247
Hourly Total	4	430	10	0	1	444	22	330	8	0	0	360	4	1	28	0	7	33	5	6	5	0	8	16	853
9:00 AM	3	125	4	0	0	132	6	90	2	0	0	98	6	3	18	1	3	28	2	0	5	0	0	7	265
9:15 AM	0	111	1	0	0	112	1	90	1	0	0	92	5	1	7	0	3	13	2	0	2	0	1	4	221
9:30 AM	0	127	3	0	0	130	5	121	3	0	0	129	2	1	3	0	4	6	0	1	6	0	1	7	272
9:45 AM	0	115	0	0	1	115	3	106	2	0	0	111	0	0	5	0	5	5	2	0	0	0	2	2	233
Hourly Total	3	478	8	0	1	489	15	407	8	0	0	430	13	5	33	1	15	52	6	1	13	0	4	20	991
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	5	170	2	0	0	177	3	155	2	0	0	160	2	1	3	0	7	6	2	1	4	0	5	7	350
11:15 AM	2	150	1	0	0	153	2	187	3	0	1	192	2	0	6	0	3	8	0	0	4	0	4	4	357
11:30 AM	4	158	3	0	0	165	3	180	3	0	0	186	1	0	6	0	6	7	2	0	4	0	6	6	364
11:45 AM	5	192	0	0	0	197	4	195	4	0	0	203	0	0	6	0	8	6	0	0	3	0	5	3	409
Hourly Total	16	670	6	0	0	692	12	717	12	0	1	741	5	1	21	0	24	27	4	1	15	0	20	20	1480
12:00 PM	1	173	1	0	0	175	6	203	2	0	1	211	2	0	2	0	8	4	1	0	7	0	6	8	398
12:15 PM	4	172	4	0	0	180	4	202	1	1	1	208	1	0	3	0	5	4	3	0	1	0	6	4	396
12:30 PM	3	189	8	0	0	200	4	171	3	0	0	178	3	0	6	0	10	9	1	0	3	0	1	4	391
12:45 PM	2	186	1	0	1	189	2	175	2	0	0	179	1	0	5	0	8	6	2	0	5	0	8	7	381
Hourly Total	10	720	14	0	1	744	16	751	8	1	2	776	7	0	16	0	31	23	7	0	16	0	21	23	1566
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:30 PM	6	178	3	0	2	187	2	207	3	0	2	212	6	0	21	0	5	27	1	1	6	0	7	8	434
3:45 PM	5	176	6	0	0	187	3	204	2	0	0	209	3	0	6	0	9	9	3	0	5	0	7	8	413
Hourly Total	11	354	9	0	2	374	5	411	5	0	2	421	9	0	27	0	14	36	4	1	11	0	14	16	847
4:00 PM	2	183	1	0	0	186	6	216	1	0	0	223	0	0	3	0	7	3	2	2	9	0	8	13	425
4:15 PM	2	181	1	0	0	184	3	200	2	0	1	205	1	0	3	0	5	4	3	1	4	0	5	8	401
4:30 PM	1	163	1	0	1	165	5	202	2	0	1	209	4	0	3	0	7	7	1	0	5	0	7	6	387
4:45 PM	1	153	3	0	1	157	6	180	3	0	3	189	2	0	2	0	10	4	0	2	10	0	9	12	362
Hourly Total	6	680	6	0	2	692	20	798	8	0	5	826	7	0	11	0	29	18	6	5	28	0	29	39	1575

5:00 PM	3	162	3	0	0	168	4	206	2	0	1	212	3	0	7	0	11	10	1	1	8	0	7	10	400
5:15 PM	3	161	6	0	0	170	1	201	1	0	0	203	1	0	3	0	9	4	0	0	4	0	9	4	381
5:30 PM	1	147	1	0	1	149	0	173	5	0	0	178	4	0	3	0	6	7	2	0	7	0	6	9	343
5:45 PM	5	161	3	0	1	169	0	173	2	0	0	175	2	1	4	0	4	7	3	0	6	0	4	9	360
Hourly Total	12	631	13	0	2	656	5	753	10	0	1	768	10	1	17	0	30	28	6	1	25	0	26	32	1484
6:00 PM	2	158	3	0	1	163	3	171	1	0	0	175	4	0	6	0	3	10	0	0	2	0	1	2	350
6:15 PM	1	136	2	0	0	139	1	152	2	0	0	155	1	0	2	0	2	3	4	2	8	0	3	14	311
Grand Total	69	4578	75	0	10	4722	103	4764	64	1	12	4932	64	8	173	1	161	246	44	18	128	0	135	190	10090
Approach %	1.5	97.0	1.6	0.0	-	-	2.1	96.6	1.3	0.0	-	-	26.0	3.3	70.3	0.4	-	-	23.2	9.5	67.4	0.0	-	-	-
Total %	0.7	45.4	0.7	0.0	-	46.8	1.0	47.2	0.6	0.0	-	48.9	0.6	0.1	1.7	0.0	-	2.4	0.4	0.2	1.3	0.0	-	1.9	-
Motorcycles	0	10	0	0	-	10	1	9	1	0	-	11	2	0	0	0	-	2	1	0	0	0	-	1	24
% Motorcycles	0.0	0.2	0.0	-	-	0.2	1.0	0.2	1.6	0.0	-	0.2	3.1	0.0	0.0	0.0	-	0.8	2.3	0.0	0.0	-	-	0.5	0.2
Cars & Light Goods	68	4467	71	0	-	4606	99	4653	57	1	-	4810	60	7	169	1	-	237	42	15	119	0	-	176	9829
% Cars & Light Goods	98.6	97.6	94.7	-	-	97.5	96.1	97.7	89.1	100.0	-	97.5	93.8	87.5	97.7	100.0	-	96.3	95.5	83.3	93.0	-	-	92.6	97.4
Buses	0	38	1	0	-	39	2	36	2	0	-	40	0	1	0	0	-	1	0	0	2	0	-	2	82
% Buses	0.0	0.8	1.3	-	-	0.8	1.9	0.8	3.1	0.0	-	0.8	0.0	12.5	0.0	0.0	-	0.4	0.0	0.0	1.6	-	-	1.1	0.8
Single-Unit Trucks	0	49	3	0	-	52	1	51	4	0	-	56	2	0	2	0	-	4	0	1	5	0	-	6	118
% Single-Unit Trucks	0.0	1.1	4.0	-	-	1.1	1.0	1.1	6.3	0.0	-	1.1	3.1	0.0	1.2	0.0	-	1.6	0.0	5.6	3.9	-	-	3.2	1.2
Articulated Trucks	1	11	0	0	-	12	0	11	0	0	-	11	0	0	2	0	-	2	1	0	1	0	-	2	27
% Articulated Trucks	1.4	0.2	0.0	-	-	0.3	0.0	0.2	0.0	0.0	-	0.2	0.0	0.0	1.2	0.0	-	0.8	2.3	0.0	0.8	-	-	1.1	0.3
Bicycles on Road	0	3	0	0	-	3	0	4	0	0	-	4	0	0	0	0	-	0	0	2	1	0	-	3	10
% Bicycles on Road	0.0	0.1	0.0	-	-	0.1	0.0	0.1	0.0	0.0	-	0.1	0.0	0.0	0.0	0.0	-	0.0	0.0	11.1	0.8	-	-	1.6	0.1
Bicycles on Crosswalk	-	-	-	-	2	-	-	-	-	-	0	-	-	-	-	-	36	-	-	-	-	-	25	-	-
% Bicycles on Crosswalk	-	-	-	-	20.0	-	-	-	-	-	0.0	-	-	-	-	-	22.4	-	-	-	-	-	18.5	-	-
Pedestrians	-	-	-	-	8	-	-	-	-	-	12	-	-	-	-	-	125	-	-	-	-	-	110	-	-
% Pedestrians	-	-	-	-	80.0	-	-	-	-	-	100.0	-	-	-	-	-	77.6	-	-	-	-	-	81.5	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Regional Road 20 & Prince Edward Avenue/Carlton Avenue
Site Code: 210300
Start Date: 11/09/2021



Turning Movement Data Plot

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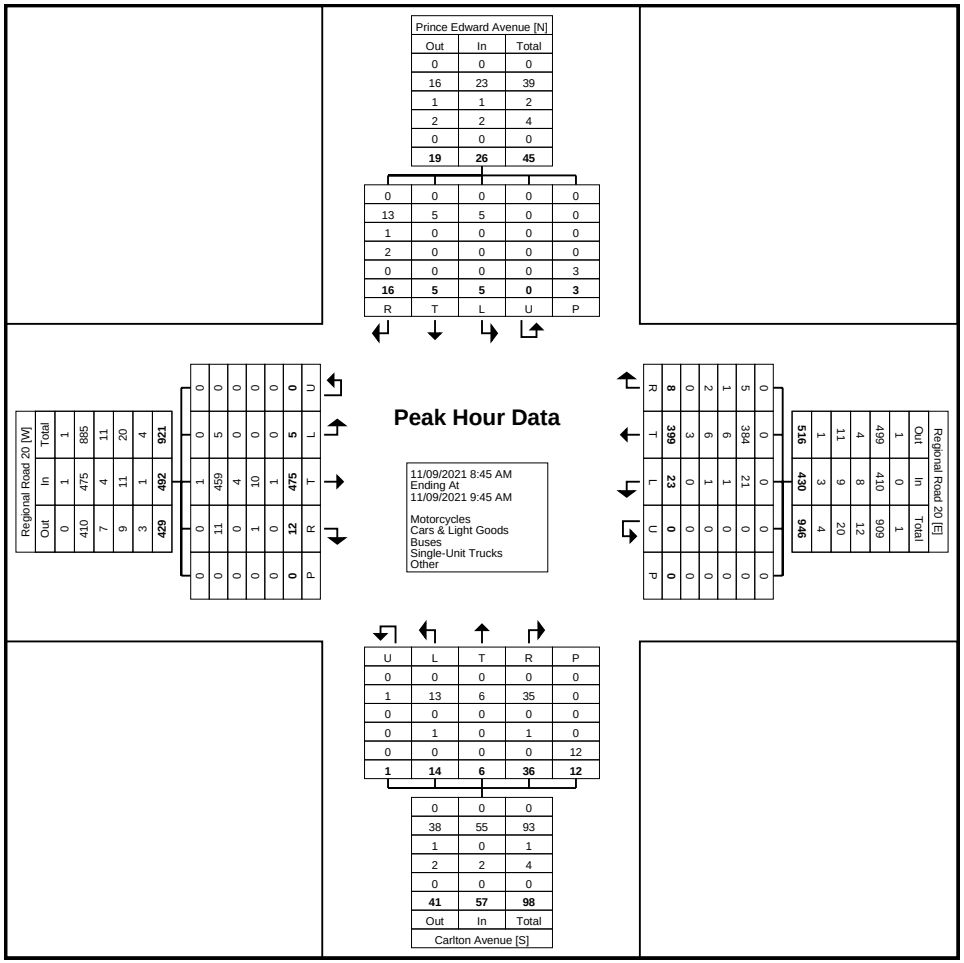
Turning Movement Peak Hour Data (8:45 AM)

Start Time	Regional Road 20 Eastbound						Regional Road 20 Westbound						Carlton Avenue Northbound						Prince Edward Avenue 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	
8:45 AM	2	112	4	0	0	118	11	98	2	0	0	111	1	1	8	0	2	10	1	4	3	0	1	8	247
9:00 AM	3	125	4	0	0	132	6	90	2	0	0	98	6	3	18	1	3	28	2	0	5	0	0	7	265
9:15 AM	0	111	1	0	0	112	1	90	1	0	0	92	5	1	7	0	3	13	2	0	2	0	1	4	221
9:30 AM	0	127	3	0	0	130	5	121	3	0	0	129	2	1	3	0	4	6	0	1	6	0	1	7	272
Total	5	475	12	0	0	492	23	399	8	0	0	430	14	6	36	1	12	57	5	5	16	0	3	26	1005
Approach %	1.0	96.5	2.4	0.0	-	-	5.3	92.8	1.9	0.0	-	-	24.6	10.5	63.2	1.8	-	-	19.2	19.2	61.5	0.0	-	-	-
Total %	0.5	47.3	1.2	0.0	-	49.0	2.3	39.7	0.8	0.0	-	42.8	1.4	0.6	3.6	0.1	-	5.7	0.5	0.5	1.6	0.0	-	2.6	-
PHF	0.417	0.935	0.750	0.000	-	0.932	0.523	0.824	0.667	0.000	-	0.833	0.583	0.500	0.500	0.250	-	0.509	0.625	0.313	0.667	0.000	-	0.813	0.924
Motorcycles	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	0	0	-	0	1
% Motorcycles	0.0	0.2	0.0	-	-	0.2	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
Cars & Light Goods	5	459	11	0	-	475	21	384	5	0	-	410	13	6	35	1	-	55	5	5	13	0	-	23	963
% Cars & Light Goods	100.0	96.6	91.7	-	-	96.5	91.3	96.2	62.5	-	-	95.3	92.9	100.0	97.2	100.0	-	96.5	100.0	100.0	81.3	-	-	88.5	95.8
Buses	0	4	0	0	-	4	1	6	1	0	-	8	0	0	0	0	-	0	0	0	1	0	-	1	13
% Buses	0.0	0.8	0.0	-	-	0.8	4.3	1.5	12.5	-	-	1.9	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	6.3	-	-	3.8	1.3
Single-Unit Trucks	0	10	1	0	-	11	1	6	2	0	-	9	1	0	1	0	-	2	0	0	2	0	-	2	24
% Single-Unit Trucks	0.0	2.1	8.3	-	-	2.2	4.3	1.5	25.0	-	-	2.1	7.1	0.0	2.8	0.0	-	3.5	0.0	0.0	12.5	-	-	7.7	2.4
Articulated Trucks	0	1	0	0	-	1	0	2	0	0	-	2	0	0	0	0	-	0	0	0	0	0	-	0	3
% Articulated Trucks	0.0	0.2	0.0	-	-	0.2	0.0	0.5	0.0	-	-	0.5	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.3
Bicycles on Road	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.3	0.0	-	-	0.2	0.0	0.0	0.0	0.0	-	0.0	0.0	0.0	0.0	-	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	3	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	25.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	9	-	-	-	-	-	3	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	75.0	-	-	-	-	-	100.0	-	-

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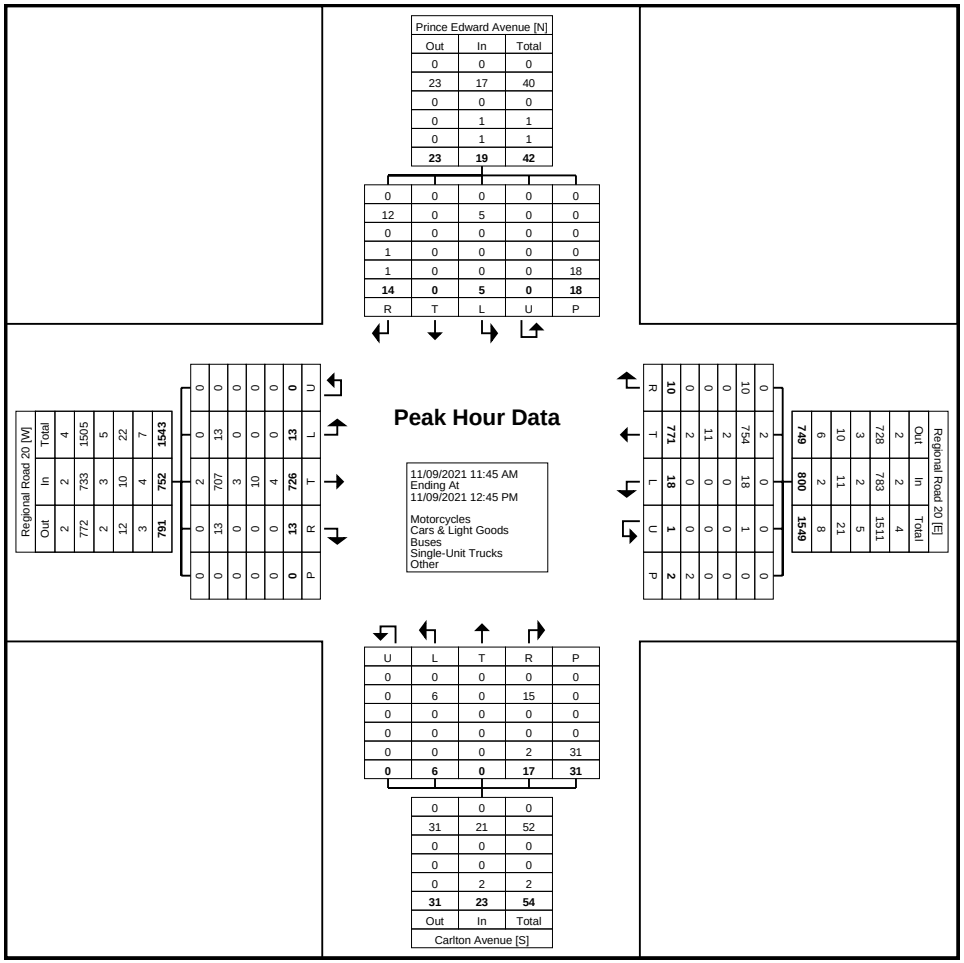
Turning Movement Peak Hour Data (11:45 AM)

Start Time	Regional Road 20 Eastbound						Regional Road 20 Westbound						Carlton Avenue Northbound						Prince Edward Avenue 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	
11:45 AM	5	192	0	0	0	197	4	195	4	0	0	203	0	0	6	0	8	6	0	0	3	0	5	3	409
12:00 PM	1	173	1	0	0	175	6	203	2	0	1	211	2	0	2	0	8	4	1	0	7	0	6	8	398
12:15 PM	4	172	4	0	0	180	4	202	1	1	1	208	1	0	3	0	5	4	3	0	1	0	6	4	396
12:30 PM	3	189	8	0	0	200	4	171	3	0	0	178	3	0	6	0	10	9	1	0	3	0	1	4	391
Total	13	726	13	0	0	752	18	771	10	1	2	800	6	0	17	0	31	23	5	0	14	0	18	19	1594
Approach %	1.7	96.5	1.7	0.0	-	-	2.3	96.4	1.3	0.1	-	-	26.1	0.0	73.9	0.0	-	-	26.3	0.0	73.7	0.0	-	-	-
Total %	0.8	45.5	0.8	0.0	-	47.2	1.1	48.4	0.6	0.1	-	50.2	0.4	0.0	1.1	0.0	-	1.4	0.3	0.0	0.9	0.0	-	1.2	-
PHF	0.650	0.945	0.406	0.000	-	0.940	0.750	0.950	0.625	0.250	-	0.948	0.500	0.000	0.708	0.000	-	0.639	0.417	0.000	0.500	0.000	-	0.594	0.974
Motorcycles	0	2	0	0	-	2	0	2	0	0	-	2	0	0	0	0	-	0	0	0	0	0	-	0	4
% Motorcycles	0.0	0.3	0.0	-	-	0.3	0.0	0.3	0.0	0.0	-	0.3	0.0	-	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.3
Cars & Light Goods	13	707	13	0	-	733	18	754	10	1	-	783	6	0	15	0	-	21	5	0	12	0	-	17	1554
% Cars & Light Goods	100.0	97.4	100.0	-	-	97.5	100.0	97.8	100.0	100.0	-	97.9	100.0	-	88.2	-	-	91.3	100.0	-	85.7	-	-	89.5	97.5
Buses	0	3	0	0	-	3	0	2	0	0	-	2	0	0	0	0	-	0	0	0	0	0	-	0	5
% Buses	0.0	0.4	0.0	-	-	0.4	0.0	0.3	0.0	0.0	-	0.3	0.0	-	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.3
Single-Unit Trucks	0	10	0	0	-	10	0	11	0	0	-	11	0	0	0	0	-	0	0	0	1	0	-	1	22
% Single-Unit Trucks	0.0	1.4	0.0	-	-	1.3	0.0	1.4	0.0	0.0	-	1.4	0.0	-	0.0	-	-	0.0	0.0	-	7.1	-	-	5.3	1.4
Articulated Trucks	0	3	0	0	-	3	0	2	0	0	-	2	0	0	2	0	-	2	0	0	0	0	-	0	7
% Articulated Trucks	0.0	0.4	0.0	-	-	0.4	0.0	0.3	0.0	0.0	-	0.3	0.0	-	11.8	-	-	8.7	0.0	-	0.0	-	-	0.0	0.4
Bicycles on Road	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	0	0	1	0	-	1	2
% Bicycles on Road	0.0	0.1	0.0	-	-	0.1	0.0	0.0	0.0	0.0	-	0.0	0.0	-	0.0	-	-	0.0	0.0	-	7.1	-	-	5.3	0.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	6	-	-	-	-	-	4	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	19.4	-	-	-	-	-	22.2	-	-
Pedestrians	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	25	-	-	-	-	-	14	-	-
% Pedestrians	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	80.6	-	-	-	-	-	77.8	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Regional Road 20 & Prince Edward Avenue/Carlton Avenue
Site Code: 210300
Start Date: 11/09/2021



Turning Movement Peak Hour Data Plot (11:45 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Regional Road 20 & Prince Edward Avenue/Carlton Avenue
Site Code: 210300
Start Date: 11/09/2021

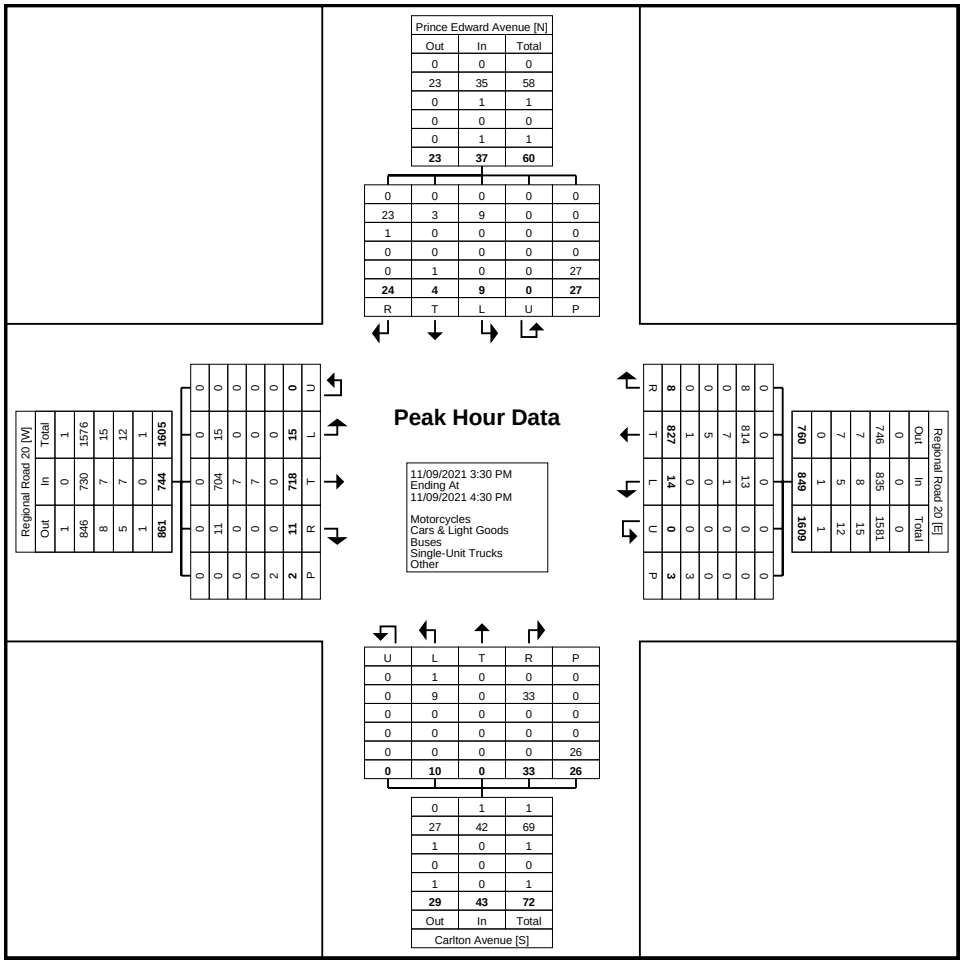
Turning Movement Peak Hour Data (3:30 PM)

Start Time	Regional Road 20 Eastbound						Regional Road 20 Westbound						Carlton Avenue Northbound						Prince Edward Avenue 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	
3:30 PM	6	178	3	0	2	187	2	207	3	0	2	212	6	0	21	0	5	27	1	1	6	0	7	8	434
3:45 PM	5	176	6	0	0	187	3	204	2	0	0	209	3	0	6	0	9	9	3	0	5	0	7	8	413
4:00 PM	2	183	1	0	0	186	6	216	1	0	0	223	0	0	3	0	7	3	2	2	9	0	8	13	425
4:15 PM	2	181	1	0	0	184	3	200	2	0	1	205	1	0	3	0	5	4	3	1	4	0	5	8	401
Total	15	718	11	0	2	744	14	827	8	0	3	849	10	0	33	0	26	43	9	4	24	0	27	37	1673
Approach %	2.0	96.5	1.5	0.0	-	-	1.6	97.4	0.9	0.0	-	-	23.3	0.0	76.7	0.0	-	-	24.3	10.8	64.9	0.0	-	-	-
Total %	0.9	42.9	0.7	0.0	-	44.5	0.8	49.4	0.5	0.0	-	50.7	0.6	0.0	2.0	0.0	-	2.6	0.5	0.2	1.4	0.0	-	2.2	-
PHF	0.625	0.981	0.458	0.000	-	0.995	0.583	0.957	0.667	0.000	-	0.952	0.417	0.000	0.393	0.000	-	0.398	0.750	0.500	0.667	0.000	-	0.712	0.964
Motorcycles	0	0	0	0	-	0	0	0	0	0	-	0	1	0	0	0	-	1	0	0	0	0	-	0	1
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	10.0	-	0.0	-	-	2.3	0.0	0.0	0.0	-	-	0.0	0.1
Cars & Light Goods	15	704	11	0	-	730	13	814	8	0	-	835	9	0	33	0	-	42	9	3	23	0	-	35	1642
% Cars & Light Goods	100.0	98.1	100.0	-	-	98.1	92.9	98.4	100.0	-	-	98.4	90.0	-	100.0	-	-	97.7	100.0	75.0	95.8	-	-	94.6	98.1
Buses	0	7	0	0	-	7	1	7	0	0	-	8	0	0	0	0	-	0	0	0	1	0	-	1	16
% Buses	0.0	1.0	0.0	-	-	0.9	7.1	0.8	0.0	-	-	0.9	0.0	-	0.0	-	-	0.0	0.0	0.0	4.2	-	-	2.7	1.0
Single-Unit Trucks	0	7	0	0	-	7	0	5	0	0	-	5	0	0	0	0	-	0	0	0	0	0	-	0	12
% Single-Unit Trucks	0.0	1.0	0.0	-	-	0.9	0.0	0.6	0.0	-	-	0.6	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	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
Bicycles on Road	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	0	1	0	0	-	1	2
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.1	0.0	-	-	0.1	0.0	-	0.0	-	-	0.0	0.0	25.0	0.0	-	-	2.7	0.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	7	-	-	-	-	-	7	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	26.9	-	-	-	-	-	25.9	-	-
Pedestrians	-	-	-	-	2	-	-	-	-	-	3	-	-	-	-	-	19	-	-	-	-	-	20	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	73.1	-	-	-	-	-	74.1	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Regional Road 20 & Prince Edward Avenue/Carlton Avenue
Site Code: 210300
Start Date: 11/09/2021



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

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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519-896-3163 cbowness@ptsl.com

Count Name: Regional Road 20 & Byng Avenue
Site Code: 210300
Start Date: 11/09/2021

Turning Movement Data

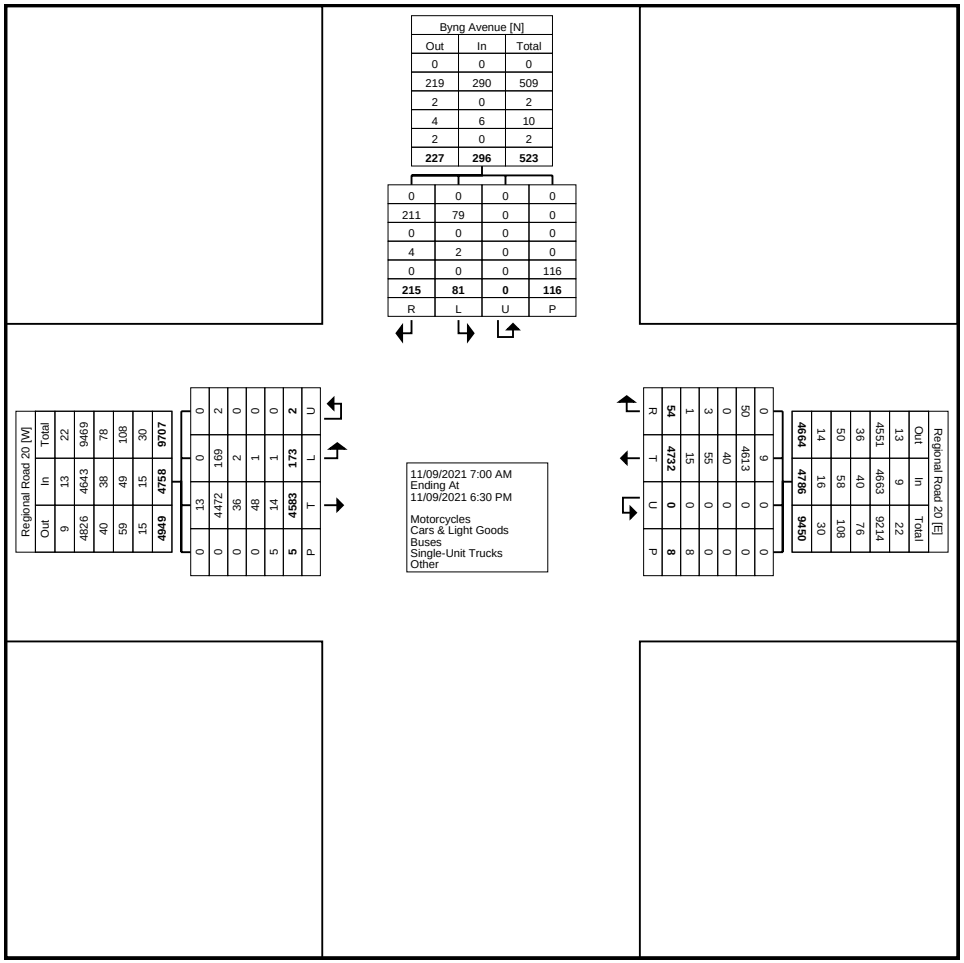
Start Time	Regional Road 20 Eastbound					Regional Road 20 Westbound					Byng Avenue Southbound					
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
7:00 AM	3	62	0	0	65	58	0	0	0	58	1	4	0	3	5	128
7:15 AM	2	72	0	0	74	64	0	0	0	64	0	3	0	0	3	141
7:30 AM	1	81	0	0	82	76	1	0	0	77	1	3	0	1	4	163
7:45 AM	3	118	0	0	121	74	2	0	0	76	3	2	0	2	5	202
Hourly Total	9	333	0	0	342	272	3	0	0	275	5	12	0	6	17	634
8:00 AM	1	88	0	0	89	69	4	0	0	73	1	6	0	1	7	169
8:15 AM	1	117	0	0	118	92	1	0	0	93	1	4	0	3	5	216
8:30 AM	4	129	0	0	133	77	1	0	1	78	4	4	0	3	8	219
8:45 AM	4	117	0	0	121	102	1	0	1	103	1	8	0	1	9	233
Hourly Total	10	451	0	0	461	340	7	0	2	347	7	22	0	8	29	837
9:00 AM	7	134	0	0	141	91	3	0	0	94	0	6	0	0	6	241
9:15 AM	2	118	0	0	120	89	3	0	0	92	3	6	0	0	9	221
9:30 AM	4	118	0	1	122	122	0	0	0	122	1	4	0	1	5	249
9:45 AM	3	125	0	1	128	112	2	0	0	114	5	2	0	2	7	249
Hourly Total	16	495	0	2	511	414	8	0	0	422	9	18	0	3	27	960
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	9	159	0	0	168	154	1	0	0	155	1	6	0	4	7	330
11:15 AM	2	146	0	0	148	184	3	0	0	187	4	11	0	2	15	350
11:30 AM	6	165	0	1	171	179	2	0	0	181	6	11	0	6	17	369
11:45 AM	7	193	0	0	200	192	1	0	0	193	1	4	0	5	5	398
Hourly Total	24	663	0	1	687	709	7	0	0	716	12	32	0	17	44	1447
12:00 PM	6	163	0	0	169	206	5	0	0	211	1	7	0	6	8	388
12:15 PM	7	168	0	0	175	203	2	0	0	205	7	7	0	3	14	394
12:30 PM	5	186	0	1	191	178	2	0	2	180	3	7	0	2	10	381
12:45 PM	10	189	0	0	199	169	2	0	0	171	0	4	0	7	4	374
Hourly Total	28	706	0	1	734	756	11	0	2	767	11	25	0	18	36	1537
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:30 PM	11	187	0	0	198	197	0	0	0	197	2	12	0	6	14	409
3:45 PM	7	175	0	0	182	195	1	0	1	196	1	12	0	7	13	391
Hourly Total	18	362	0	0	380	392	1	0	1	393	3	24	0	13	27	800
4:00 PM	11	170	0	0	181	210	3	0	0	213	1	11	0	3	12	406
4:15 PM	6	177	1	0	184	207	1	0	0	208	0	3	0	3	3	395
4:30 PM	12	151	0	0	163	204	4	0	0	208	2	9	0	10	11	382
4:45 PM	4	150	0	1	154	185	1	0	1	186	5	7	0	8	12	352
Hourly Total	33	648	1	1	682	806	9	0	1	815	8	30	0	24	38	1535
5:00 PM	5	158	1	0	164	204	1	0	1	205	4	10	0	6	14	383

5:15 PM	6	163	0	0	169	195	2	0	0	197	4	10	0	9	14	380
5:30 PM	6	147	0	0	153	171	2	0	0	173	2	10	0	4	12	338
5:45 PM	5	162	0	0	167	165	1	0	0	166	5	6	0	4	11	344
Hourly Total	22	630	1	0	653	735	6	0	1	741	15	36	0	23	51	1445
6:00 PM	6	156	0	0	162	165	2	0	1	167	4	9	0	2	13	342
6:15 PM	7	139	0	0	146	143	0	0	0	143	7	7	0	2	14	303
Grand Total	173	4583	2	5	4758	4732	54	0	8	4786	81	215	0	116	296	9840
Approach %	3.6	96.3	0.0	-	-	98.9	1.1	0.0	-	-	27.4	72.6	0.0	-	-	-
Total %	1.8	46.6	0.0	-	48.4	48.1	0.5	0.0	-	48.6	0.8	2.2	0.0	-	3.0	-
Motorcycles	0	13	0	-	13	9	0	0	-	9	0	0	0	-	0	22
% Motorcycles	0.0	0.3	0.0	-	0.3	0.2	0.0	-	-	0.2	0.0	0.0	-	-	0.0	0.2
Cars & Light Goods	169	4472	2	-	4643	4613	50	0	-	4663	79	211	0	-	290	9596
% Cars & Light Goods	97.7	97.6	100.0	-	97.6	97.5	92.6	-	-	97.4	97.5	98.1	-	-	98.0	97.5
Buses	2	36	0	-	38	40	0	0	-	40	0	0	0	-	0	78
% Buses	1.2	0.8	0.0	-	0.8	0.8	0.0	-	-	0.8	0.0	0.0	-	-	0.0	0.8
Single-Unit Trucks	1	48	0	-	49	55	3	0	-	58	2	4	0	-	6	113
% Single-Unit Trucks	0.6	1.0	0.0	-	1.0	1.2	5.6	-	-	1.2	2.5	1.9	-	-	2.0	1.1
Articulated Trucks	1	11	0	-	12	10	1	0	-	11	0	0	0	-	0	23
% Articulated Trucks	0.6	0.2	0.0	-	0.3	0.2	1.9	-	-	0.2	0.0	0.0	-	-	0.0	0.2
Bicycles on Road	0	3	0	-	3	5	0	0	-	5	0	0	0	-	0	8
% Bicycles on Road	0.0	0.1	0.0	-	0.1	0.1	0.0	-	-	0.1	0.0	0.0	-	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	23	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	19.8	-	-
Pedestrians	-	-	-	5	-	-	-	-	8	-	-	-	-	93	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	80.2	-	-

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5A-150 Pinebush Rd

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Count Name: Regional Road 20 & Byng Avenue
Site Code: 210300
Start Date: 11/09/2021



Turning Movement Data Plot

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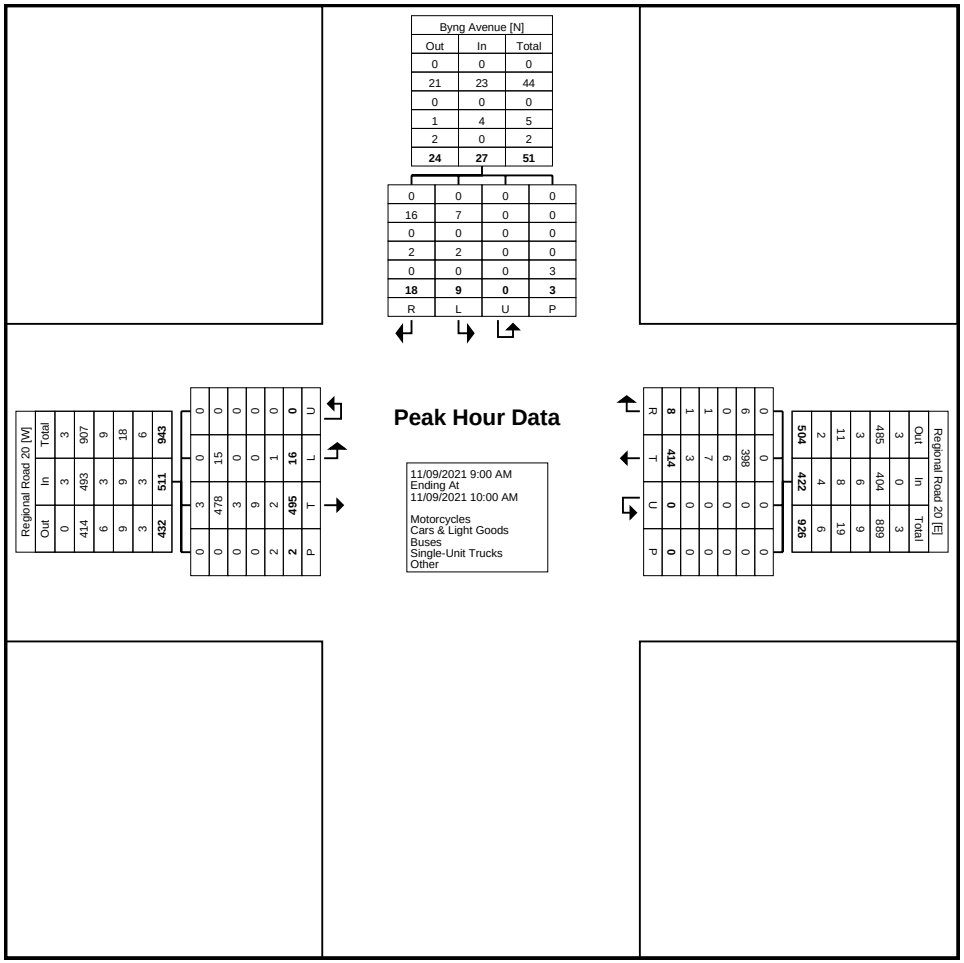
Turning Movement Peak Hour Data (9:00 AM)

Start Time	Regional Road 20 Eastbound					Regional Road 20 Westbound					Byng Avenue Southbound					
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
9:00 AM	7	134	0	0	141	91	3	0	0	94	0	6	0	0	6	241
9:15 AM	2	118	0	0	120	89	3	0	0	92	3	6	0	0	9	221
9:30 AM	4	118	0	1	122	122	0	0	0	122	1	4	0	1	5	249
9:45 AM	3	125	0	1	128	112	2	0	0	114	5	2	0	2	7	249
Total	16	495	0	2	511	414	8	0	0	422	9	18	0	3	27	960
Approach %	3.1	96.9	0.0	-	-	98.1	1.9	0.0	-	-	33.3	66.7	0.0	-	-	-
Total %	1.7	51.6	0.0	-	53.2	43.1	0.8	0.0	-	44.0	0.9	1.9	0.0	-	2.8	-
PHF	0.571	0.924	0.000	-	0.906	0.848	0.667	0.000	-	0.865	0.450	0.750	0.000	-	0.750	0.964
Motorcycles	0	3	0	-	3	0	0	0	-	0	0	0	0	-	0	3
% Motorcycles	0.0	0.6	-	-	0.6	0.0	0.0	-	-	0.0	0.0	0.0	-	-	0.0	0.3
Cars & Light Goods	15	478	0	-	493	398	6	0	-	404	7	16	0	-	23	920
% Cars & Light Goods	93.8	96.6	-	-	96.5	96.1	75.0	-	-	95.7	77.8	88.9	-	-	85.2	95.8
Buses	0	3	0	-	3	6	0	0	-	6	0	0	0	-	0	9
% Buses	0.0	0.6	-	-	0.6	1.4	0.0	-	-	1.4	0.0	0.0	-	-	0.0	0.9
Single-Unit Trucks	0	9	0	-	9	7	1	0	-	8	2	2	0	-	4	21
% Single-Unit Trucks	0.0	1.8	-	-	1.8	1.7	12.5	-	-	1.9	22.2	11.1	-	-	14.8	2.2
Articulated Trucks	1	1	0	-	2	1	1	0	-	2	0	0	0	-	0	4
% Articulated Trucks	6.3	0.2	-	-	0.4	0.2	12.5	-	-	0.5	0.0	0.0	-	-	0.0	0.4
Bicycles on Road	0	1	0	-	1	2	0	0	-	2	0	0	0	-	0	3
% Bicycles on Road	0.0	0.2	-	-	0.2	0.5	0.0	-	-	0.5	0.0	0.0	-	-	0.0	0.3
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	2	-	-	-	-	0	-	-	-	-	3	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	-	-	-	-	-	100.0	-	-

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Turning Movement Peak Hour Data Plot (9:00 AM)

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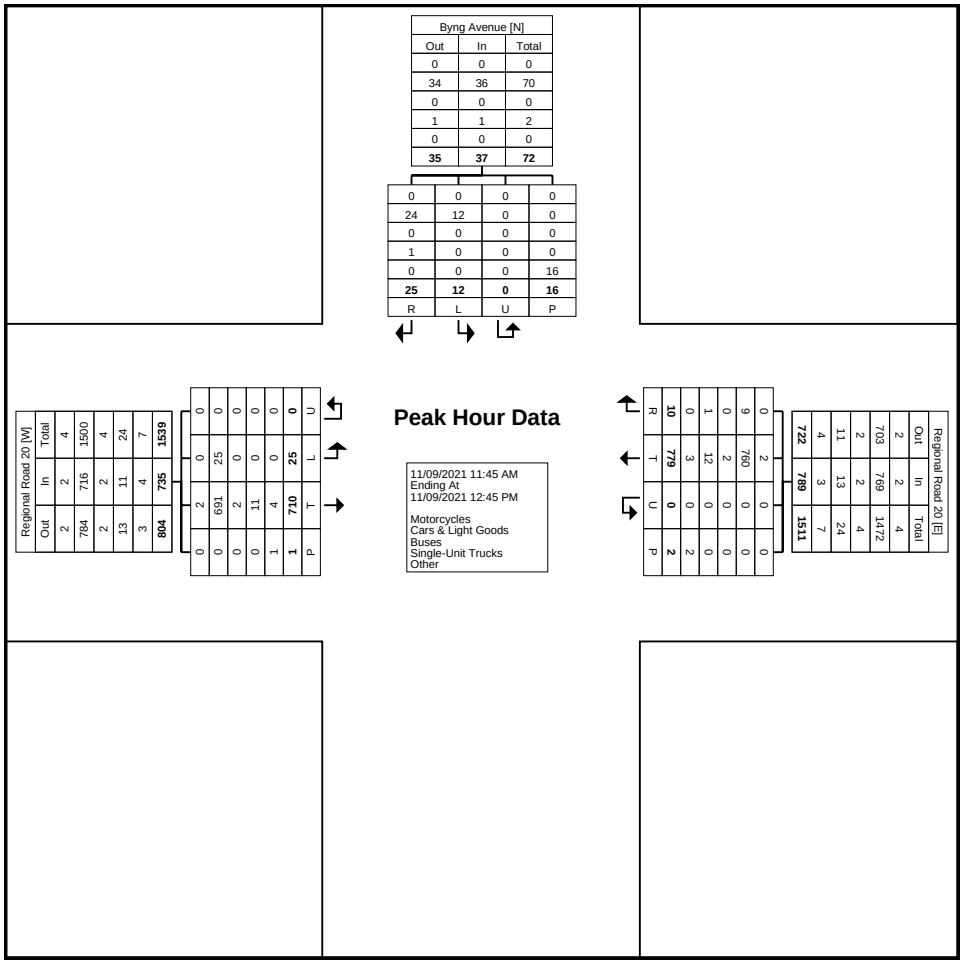
Turning Movement Peak Hour Data (11:45 AM)

Start Time	Regional Road 20 Eastbound					Regional Road 20 Westbound					Byng Avenue Southbound					
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
11:45 AM	7	193	0	0	200	192	1	0	0	193	1	4	0	5	5	398
12:00 PM	6	163	0	0	169	206	5	0	0	211	1	7	0	6	8	388
12:15 PM	7	168	0	0	175	203	2	0	0	205	7	7	0	3	14	394
12:30 PM	5	186	0	1	191	178	2	0	2	180	3	7	0	2	10	381
Total	25	710	0	1	735	779	10	0	2	789	12	25	0	16	37	1561
Approach %	3.4	96.6	0.0	-	-	98.7	1.3	0.0	-	-	32.4	67.6	0.0	-	-	-
Total %	1.6	45.5	0.0	-	47.1	49.9	0.6	0.0	-	50.5	0.8	1.6	0.0	-	2.4	-
PHF	0.893	0.920	0.000	-	0.919	0.945	0.500	0.000	-	0.935	0.429	0.893	0.000	-	0.661	0.981
Motorcycles	0	2	0	-	2	2	0	0	-	2	0	0	0	-	0	4
% Motorcycles	0.0	0.3	-	-	0.3	0.3	0.0	-	-	0.3	0.0	0.0	-	-	0.0	0.3
Cars & Light Goods	25	691	0	-	716	760	9	0	-	769	12	24	0	-	36	1521
% Cars & Light Goods	100.0	97.3	-	-	97.4	97.6	90.0	-	-	97.5	100.0	96.0	-	-	97.3	97.4
Buses	0	2	0	-	2	2	0	0	-	2	0	0	0	-	0	4
% Buses	0.0	0.3	-	-	0.3	0.3	0.0	-	-	0.3	0.0	0.0	-	-	0.0	0.3
Single-Unit Trucks	0	11	0	-	11	12	1	0	-	13	0	1	0	-	1	25
% Single-Unit Trucks	0.0	1.5	-	-	1.5	1.5	10.0	-	-	1.6	0.0	4.0	-	-	2.7	1.6
Articulated Trucks	0	3	0	-	3	2	0	0	-	2	0	0	0	-	0	5
% Articulated Trucks	0.0	0.4	-	-	0.4	0.3	0.0	-	-	0.3	0.0	0.0	-	-	0.0	0.3
Bicycles on Road	0	1	0	-	1	1	0	0	-	1	0	0	0	-	0	2
% Bicycles on Road	0.0	0.1	-	-	0.1	0.1	0.0	-	-	0.1	0.0	0.0	-	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	3	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	18.8	-	-
Pedestrians	-	-	-	1	-	-	-	-	2	-	-	-	-	13	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	81.3	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Regional Road 20 & Byng Avenue
Site Code: 210300
Start Date: 11/09/2021



Turning Movement Peak Hour Data Plot (11:45 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Regional Road 20 & Byng Avenue
Site Code: 210300
Start Date: 11/09/2021

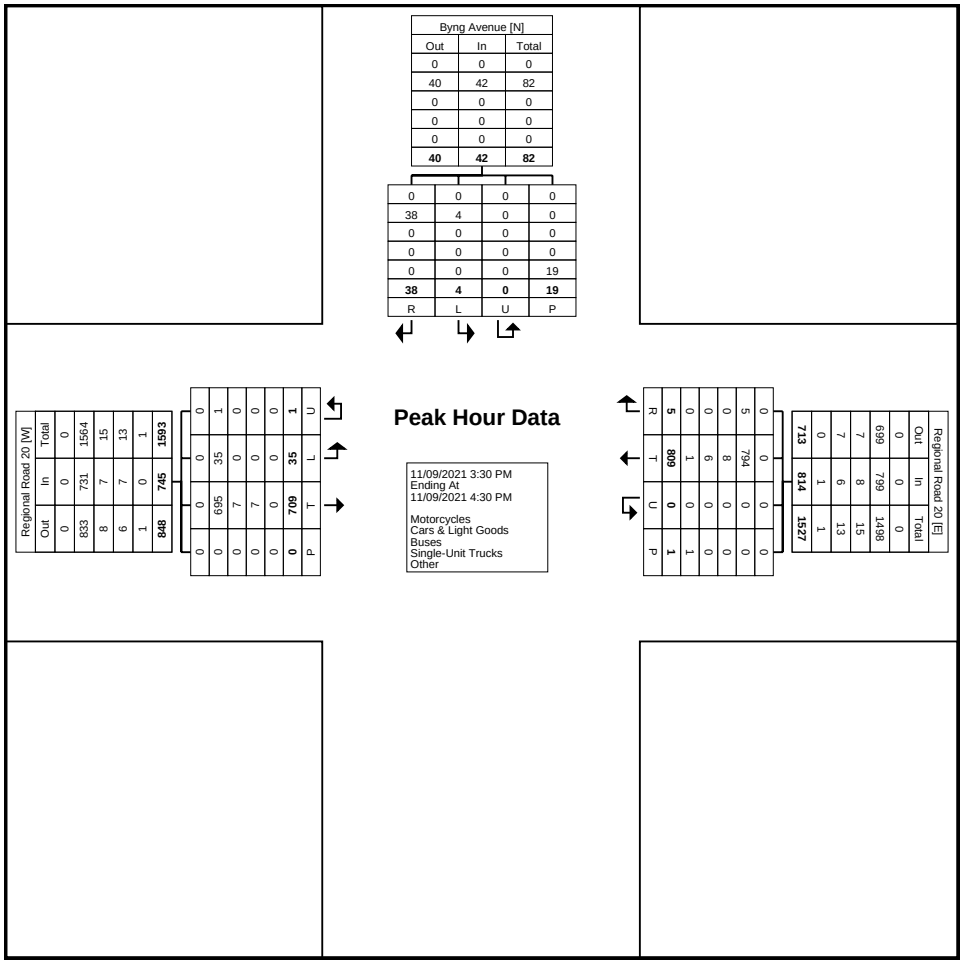
Turning Movement Peak Hour Data (3:30 PM)

Start Time	Regional Road 20 Eastbound					Regional Road 20 Westbound					Byng Avenue Southbound					
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
3:30 PM	11	187	0	0	198	197	0	0	0	197	2	12	0	6	14	409
3:45 PM	7	175	0	0	182	195	1	0	1	196	1	12	0	7	13	391
4:00 PM	11	170	0	0	181	210	3	0	0	213	1	11	0	3	12	406
4:15 PM	6	177	1	0	184	207	1	0	0	208	0	3	0	3	3	395
Total	35	709	1	0	745	809	5	0	1	814	4	38	0	19	42	1601
Approach %	4.7	95.2	0.1	-	-	99.4	0.6	0.0	-	-	9.5	90.5	0.0	-	-	-
Total %	2.2	44.3	0.1	-	46.5	50.5	0.3	0.0	-	50.8	0.2	2.4	0.0	-	2.6	-
PHF	0.795	0.948	0.250	-	0.941	0.963	0.417	0.000	-	0.955	0.500	0.792	0.000	-	0.750	0.979
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	0.0
Cars & Light Goods	35	695	1	-	731	794	5	0	-	799	4	38	0	-	42	1572
% Cars & Light Goods	100.0	98.0	100.0	-	98.1	98.1	100.0	-	-	98.2	100.0	100.0	-	-	100.0	98.2
Buses	0	7	0	-	7	8	0	0	-	8	0	0	0	-	0	15
% Buses	0.0	1.0	0.0	-	0.9	1.0	0.0	-	-	1.0	0.0	0.0	-	-	0.0	0.9
Single-Unit Trucks	0	7	0	-	7	6	0	0	-	6	0	0	0	-	0	13
% Single-Unit Trucks	0.0	1.0	0.0	-	0.9	0.7	0.0	-	-	0.7	0.0	0.0	-	-	0.0	0.8
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
Bicycles on Road	0	0	0	-	0	1	0	0	-	1	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	0.0	-	0.0	0.1	0.0	-	-	0.1	0.0	0.0	-	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	5	-	-
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	0.0	-	-	-	-	26.3	-	-
Pedestrians	-	-	-	0	-	-	-	-	1	-	-	-	-	14	-	-
% Pedestrians	-	-	-	-	-	-	-	-	100.0	-	-	-	-	73.7	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Regional Road 20 & Byng Avenue
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Start Date: 11/09/2021



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: Regional Road 20 & Franklin Avenue
Site Code: 210300
Start Date: 11/09/2021

Turning Movement Data

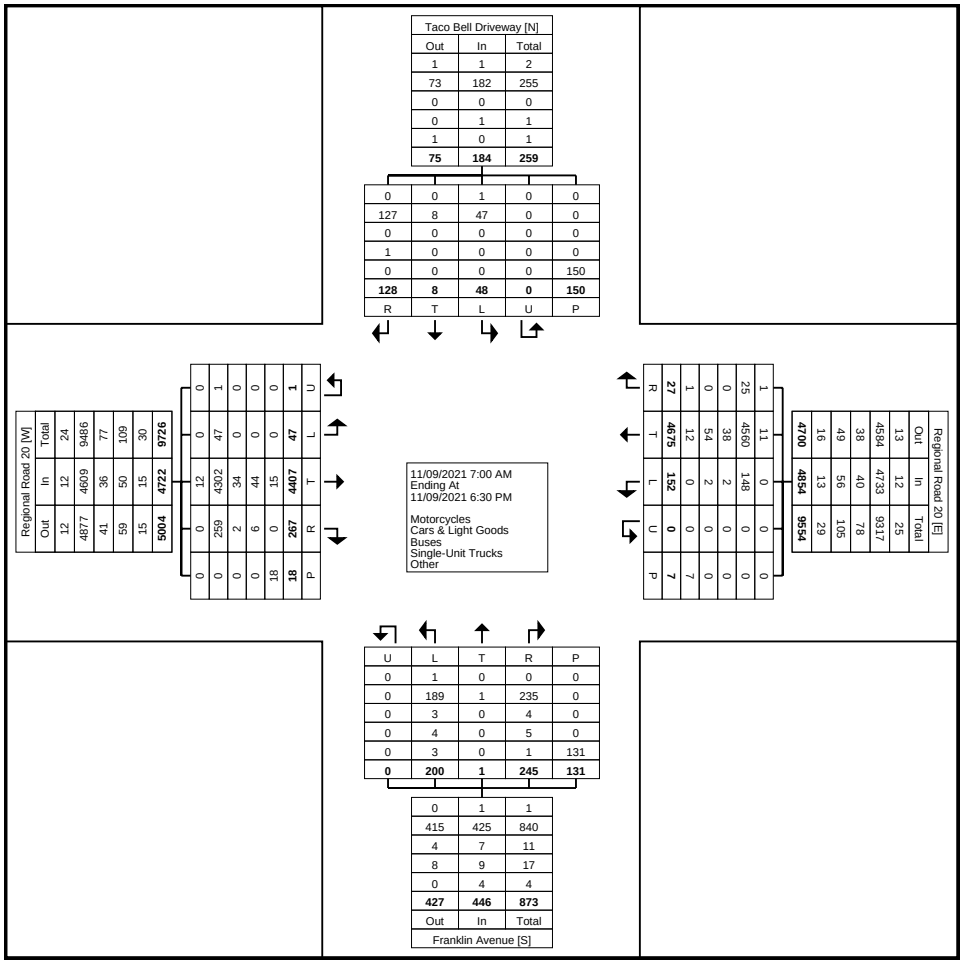
Start Time	Regional Road 20 Eastbound						Regional Road 20 Westbound						Franklin Avenue Northbound						Taco Bell Driveway Southbound						Int. Total
	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	Left	Thru	Right	U-Turn	Peds	App. Total	
7:00 AM	0	61	1	0	0	62	1	56	0	0	1	57	6	0	3	0	1	9	0	0	0	0	4	0	128
7:15 AM	0	70	3	0	0	73	1	66	0	0	0	67	2	0	4	0	0	6	0	0	0	0	0	0	146
7:30 AM	0	79	2	0	0	81	2	77	1	0	0	80	6	0	3	0	2	9	0	0	0	0	1	0	170
7:45 AM	0	116	1	0	0	117	1	71	0	0	0	72	8	0	5	0	1	13	0	0	0	0	4	0	202
Hourly Total	0	326	7	0	0	333	5	270	1	0	1	276	22	0	15	0	4	37	0	0	0	0	9	0	646
8:00 AM	0	88	1	0	0	89	5	71	0	0	0	76	6	0	5	0	3	11	0	0	1	0	0	1	177
8:15 AM	0	109	6	0	0	115	7	89	0	0	0	96	5	0	5	0	3	10	1	0	0	0	3	1	222
8:30 AM	0	127	9	0	0	136	3	80	0	0	0	83	3	0	7	0	3	10	0	0	0	0	5	0	229
8:45 AM	0	111	8	0	0	119	10	108	0	0	1	118	5	0	11	0	2	16	0	0	0	0	3	0	253
Hourly Total	0	435	24	0	0	459	25	348	0	0	1	373	19	0	28	0	11	47	1	0	1	0	11	2	881
9:00 AM	2	126	6	0	0	134	8	100	0	0	0	108	3	0	11	0	3	14	0	0	0	0	3	0	256
9:15 AM	0	118	6	0	0	124	7	96	0	0	0	103	5	1	9	0	3	15	0	0	1	0	0	1	243
9:30 AM	0	116	7	0	1	123	4	124	0	0	0	128	4	0	5	0	4	9	0	0	1	0	4	1	261
9:45 AM	0	119	9	0	0	128	5	117	0	0	0	122	7	0	3	0	1	10	0	0	0	0	3	0	260
Hourly Total	2	479	28	0	1	509	24	437	0	0	0	461	19	1	28	0	11	48	0	0	2	0	10	2	1020
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	1	154	6	0	0	161	6	155	1	0	0	162	7	0	6	0	5	13	1	0	4	0	5	5	341
11:15 AM	1	144	8	0	1	153	6	184	0	0	0	190	5	0	8	0	5	13	0	1	6	0	4	7	363
11:30 AM	1	168	10	0	3	179	2	177	0	0	0	179	10	0	10	0	5	20	0	0	1	0	6	1	379
11:45 AM	1	186	8	0	1	195	6	189	1	0	0	196	5	0	7	0	3	12	1	1	3	0	7	5	408
Hourly Total	4	652	32	0	5	688	20	705	2	0	0	727	27	0	31	0	18	58	2	2	14	0	22	18	1491
12:00 PM	3	147	13	0	1	163	4	212	3	0	2	219	5	0	11	0	5	16	2	0	5	0	6	7	405
12:15 PM	7	165	8	0	1	180	6	198	3	0	0	207	12	0	7	0	6	19	7	1	5	0	1	13	419
12:30 PM	3	182	9	1	2	195	7	169	0	0	0	176	6	0	8	0	4	14	3	0	8	0	4	11	396
12:45 PM	3	175	11	0	0	189	6	148	2	0	0	156	11	0	10	0	10	21	1	0	7	0	7	8	374
Hourly Total	16	669	41	1	4	727	23	727	8	0	2	758	34	0	36	0	25	70	13	1	25	0	18	39	1594
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:30 PM	3	170	13	0	1	186	9	196	1	0	0	206	5	0	20	0	3	25	2	0	6	0	5	8	425
3:45 PM	1	175	13	0	0	189	3	198	1	0	0	202	5	0	15	0	1	20	2	0	5	0	9	7	418
Hourly Total	4	345	26	0	1	375	12	394	2	0	0	408	10	0	35	0	4	45	4	0	11	0	14	15	843
4:00 PM	2	172	11	0	2	185	2	206	0	0	2	208	3	0	9	0	7	12	1	0	8	0	6	9	414
4:15 PM	3	162	16	0	0	181	3	185	3	0	0	191	9	0	6	0	7	15	3	0	6	0	6	9	396
4:30 PM	1	145	15	0	0	161	3	199	3	0	0	205	8	0	13	0	5	21	4	1	6	0	8	11	398
4:45 PM	0	145	10	0	0	155	6	185	1	0	0	192	3	0	5	0	8	8	4	0	6	0	14	10	365
Hourly Total	6	624	52	0	2	682	14	775	7	0	2	796	23	0	33	0	27	56	12	1	26	0	34	39	1573

5:00 PM	2	148	11	0	3	161	7	202	2	0	0	211	6	0	8	0	10	14	2	0	7	0	11	9	395
5:15 PM	0	165	6	0	0	171	2	194	2	0	0	198	8	0	9	0	3	17	2	1	7	0	9	10	396
5:30 PM	2	142	9	0	2	153	4	168	2	0	0	174	8	0	5	0	11	13	6	1	9	0	2	16	356
5:45 PM	2	148	11	0	0	161	7	155	1	0	1	163	9	0	6	0	6	15	4	1	12	0	5	17	356
Hourly Total	6	603	37	0	5	646	20	719	7	0	1	746	31	0	28	0	30	59	14	3	35	0	27	52	1503
6:00 PM	4	148	9	0	0	161	5	158	0	0	0	163	10	0	5	0	0	15	1	0	8	0	2	9	348
6:15 PM	5	126	11	0	0	142	4	142	0	0	0	146	5	0	6	0	1	11	1	1	6	0	3	8	307
Grand Total	47	4407	267	1	18	4722	152	4675	27	0	7	4854	200	1	245	0	131	446	48	8	128	0	150	184	10206
Approach %	1.0	93.3	5.7	0.0	-	-	3.1	96.3	0.6	0.0	-	-	44.8	0.2	54.9	0.0	-	-	26.1	4.3	69.6	0.0	-	-	-
Total %	0.5	43.2	2.6	0.0	-	46.3	1.5	45.8	0.3	0.0	-	47.6	2.0	0.0	2.4	0.0	-	4.4	0.5	0.1	1.3	0.0	-	1.8	-
Motorcycles	0	12	0	0	-	12	0	11	1	0	-	12	1	0	0	0	-	1	1	0	0	0	-	1	26
% Motorcycles	0.0	0.3	0.0	0.0	-	0.3	0.0	0.2	3.7	-	-	0.2	0.5	0.0	0.0	-	-	0.2	2.1	0.0	0.0	-	-	0.5	0.3
Cars & Light Goods	47	4302	259	1	-	4609	148	4560	25	0	-	4733	189	1	235	0	-	425	47	8	127	0	-	182	9949
% Cars & Light Goods	100.0	97.6	97.0	100.0	-	97.6	97.4	97.5	92.6	-	-	97.5	94.5	100.0	95.9	-	-	95.3	97.9	100.0	99.2	-	-	98.9	97.5
Buses	0	34	2	0	-	36	2	38	0	0	-	40	3	0	4	0	-	7	0	0	0	0	-	0	83
% Buses	0.0	0.8	0.7	0.0	-	0.8	1.3	0.8	0.0	-	-	0.8	1.5	0.0	1.6	-	-	1.6	0.0	0.0	0.0	-	-	0.0	0.8
Single-Unit Trucks	0	44	6	0	-	50	2	54	0	0	-	56	4	0	5	0	-	9	0	0	1	0	-	1	116
% Single-Unit Trucks	0.0	1.0	2.2	0.0	-	1.1	1.3	1.2	0.0	-	-	1.2	2.0	0.0	2.0	-	-	2.0	0.0	0.0	0.8	-	-	0.5	1.1
Articulated Trucks	0	11	0	0	-	11	0	7	0	0	-	7	3	0	0	0	-	3	0	0	0	0	-	0	21
% Articulated Trucks	0.0	0.2	0.0	0.0	-	0.2	0.0	0.1	0.0	-	-	0.1	1.5	0.0	0.0	-	-	0.7	0.0	0.0	0.0	-	-	0.0	0.2
Bicycles on Road	0	4	0	0	-	4	0	5	1	0	-	6	0	0	1	0	-	1	0	0	0	0	-	0	11
% Bicycles on Road	0.0	0.1	0.0	0.0	-	0.1	0.0	0.1	3.7	-	-	0.1	0.0	0.0	0.4	-	-	0.2	0.0	0.0	0.0	-	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	19	-	-	-	-	-	14	-	-
% Bicycles on Crosswalk	-	-	-	-	5.6	-	-	-	-	-	0.0	-	-	-	-	-	14.5	-	-	-	-	-	9.3	-	-
Pedestrians	-	-	-	-	17	-	-	-	-	-	7	-	-	-	-	-	112	-	-	-	-	-	136	-	-
% Pedestrians	-	-	-	-	94.4	-	-	-	-	-	100.0	-	-	-	-	-	85.5	-	-	-	-	-	90.7	-	-

Paradigm Transportation Solutions Limited
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Count Name: Regional Road 20 & Franklin Avenue
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Start Date: 11/09/2021



Turning Movement Data Plot

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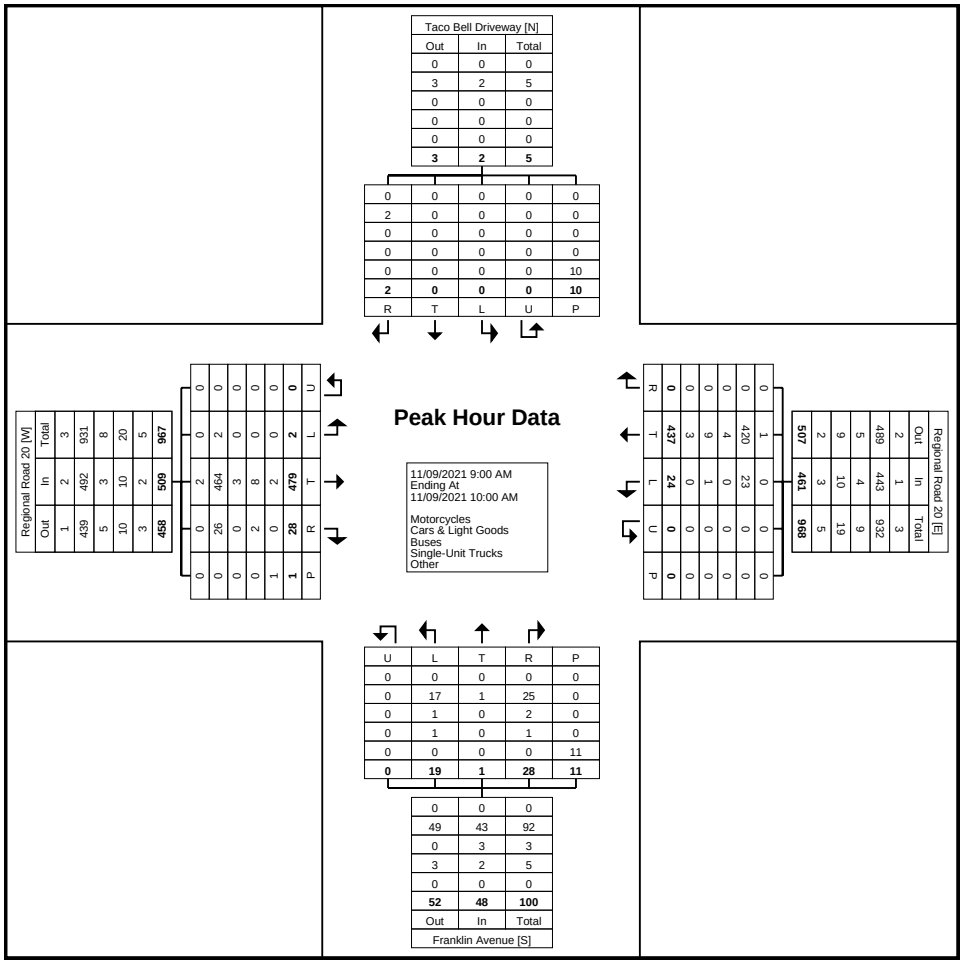
Turning Movement Peak Hour Data (9:00 AM)

Start Time	Regional Road 20 Eastbound						Regional Road 20 Westbound						Franklin Avenue Northbound						Taco Bell Driveway 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	
9:00 AM	2	126	6	0	0	134	8	100	0	0	0	108	3	0	11	0	3	14	0	0	0	0	3	0	256
9:15 AM	0	118	6	0	0	124	7	96	0	0	0	103	5	1	9	0	3	15	0	0	1	0	0	1	243
9:30 AM	0	116	7	0	1	123	4	124	0	0	0	128	4	0	5	0	4	9	0	0	1	0	4	1	261
9:45 AM	0	119	9	0	0	128	5	117	0	0	0	122	7	0	3	0	1	10	0	0	0	0	3	0	260
Total	2	479	28	0	1	509	24	437	0	0	0	461	19	1	28	0	11	48	0	0	2	0	10	2	1020
Approach %	0.4	94.1	5.5	0.0	-	-	5.2	94.8	0.0	0.0	-	-	39.6	2.1	58.3	0.0	-	-	0.0	0.0	100.0	0.0	-	-	-
Total %	0.2	47.0	2.7	0.0	-	49.9	2.4	42.8	0.0	0.0	-	45.2	1.9	0.1	2.7	0.0	-	4.7	0.0	0.0	0.2	0.0	-	0.2	-
PHF	0.250	0.950	0.778	0.000	-	0.950	0.750	0.881	0.000	0.000	-	0.900	0.679	0.250	0.636	0.000	-	0.800	0.000	0.000	0.500	0.000	-	0.500	0.977
Motorcycles	0	2	0	0	-	2	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	3
% Motorcycles	0.0	0.4	0.0	-	-	0.4	0.0	0.2	-	-	-	0.2	0.0	0.0	0.0	-	-	0.0	-	-	0.0	-	-	0.0	0.3
Cars & Light Goods	2	464	26	0	-	492	23	420	0	0	-	443	17	1	25	0	-	43	0	0	2	0	-	2	980
% Cars & Light Goods	100.0	96.9	92.9	-	-	96.7	95.8	96.1	-	-	-	96.1	89.5	100.0	89.3	-	-	89.6	-	-	100.0	-	-	100.0	96.1
Buses	0	3	0	0	-	3	0	4	0	0	-	4	1	0	2	0	-	3	0	0	0	0	-	0	10
% Buses	0.0	0.6	0.0	-	-	0.6	0.0	0.9	-	-	-	0.9	5.3	0.0	7.1	-	-	6.3	-	-	0.0	-	-	0.0	1.0
Single-Unit Trucks	0	8	2	0	-	10	1	9	0	0	-	10	1	0	1	0	-	2	0	0	0	0	-	0	22
% Single-Unit Trucks	0.0	1.7	7.1	-	-	2.0	4.2	2.1	-	-	-	2.2	5.3	0.0	3.6	-	-	4.2	-	-	0.0	-	-	0.0	2.2
Articulated Trucks	0	1	0	0	-	1	0	2	0	0	-	2	0	0	0	0	-	0	0	0	0	0	-	0	3
% Articulated Trucks	0.0	0.2	0.0	-	-	0.2	0.0	0.5	-	-	-	0.4	0.0	0.0	0.0	-	-	0.0	-	-	0.0	-	-	0.0	0.3
Bicycles on Road	0	1	0	0	-	1	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	2
% Bicycles on Road	0.0	0.2	0.0	-	-	0.2	0.0	0.2	-	-	-	0.2	0.0	0.0	0.0	-	-	0.0	-	-	0.0	-	-	0.0	0.2
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	-	-	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	11	-	-	-	-	-	10	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	-	-	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-

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Site Code: 210300
Start Date: 11/09/2021

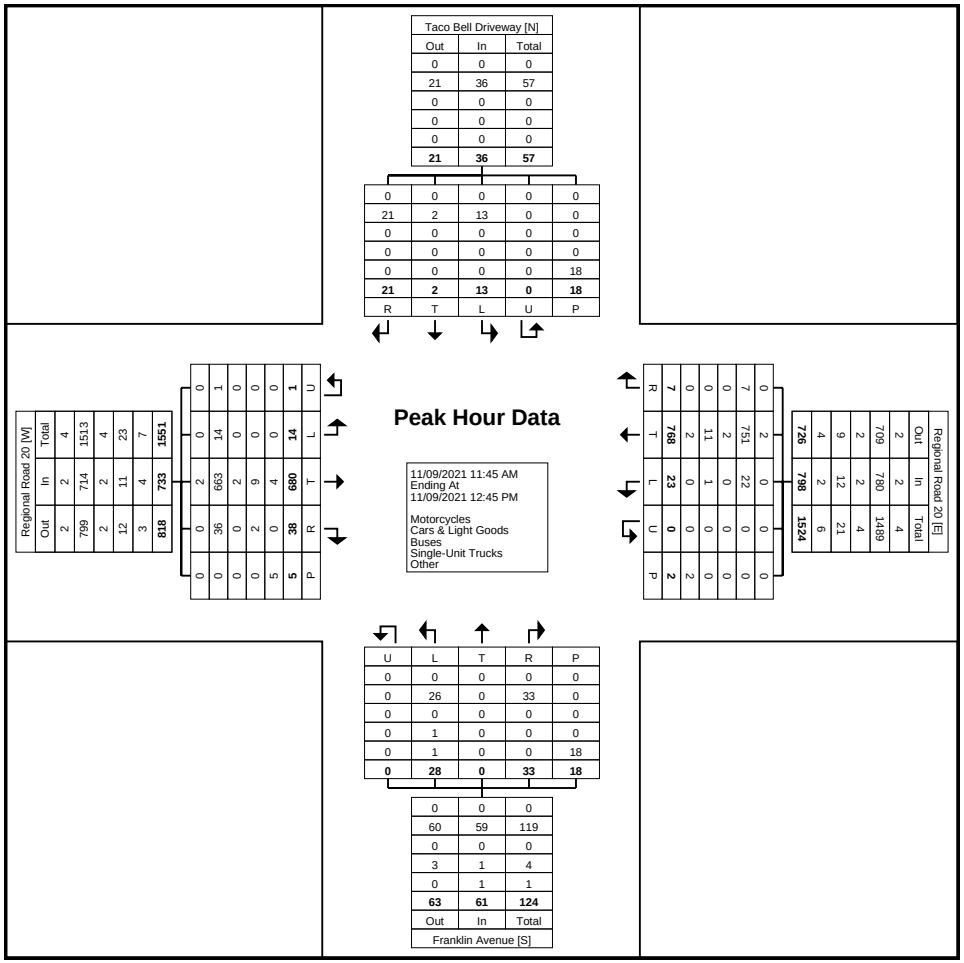
Turning Movement Peak Hour Data (11:45 AM)

Start Time	Regional Road 20 Eastbound						Regional Road 20 Westbound						Franklin Avenue Northbound						Taco Bell Driveway 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	
11:45 AM	1	186	8	0	1	195	6	189	1	0	0	196	5	0	7	0	3	12	1	1	3	0	7	5	408
12:00 PM	3	147	13	0	1	163	4	212	3	0	2	219	5	0	11	0	5	16	2	0	5	0	6	7	405
12:15 PM	7	165	8	0	1	180	6	198	3	0	0	207	12	0	7	0	6	19	7	1	5	0	1	13	419
12:30 PM	3	182	9	1	2	195	7	169	0	0	0	176	6	0	8	0	4	14	3	0	8	0	4	11	396
Total	14	680	38	1	5	733	23	768	7	0	2	798	28	0	33	0	18	61	13	2	21	0	18	36	1628
Approach %	1.9	92.8	5.2	0.1	-	-	2.9	96.2	0.9	0.0	-	-	45.9	0.0	54.1	0.0	-	-	36.1	5.6	58.3	0.0	-	-	-
Total %	0.9	41.8	2.3	0.1	-	45.0	1.4	47.2	0.4	0.0	-	49.0	1.7	0.0	2.0	0.0	-	3.7	0.8	0.1	1.3	0.0	-	2.2	-
PHF	0.500	0.914	0.731	0.250	-	0.940	0.821	0.906	0.583	0.000	-	0.911	0.583	0.000	0.750	0.000	-	0.803	0.464	0.500	0.656	0.000	-	0.692	0.971
Motorcycles	0	2	0	0	-	2	0	2	0	0	-	2	0	0	0	0	-	0	0	0	0	0	-	0	4
% Motorcycles	0.0	0.3	0.0	0.0	-	0.3	0.0	0.3	0.0	-	-	0.3	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.2
Cars & Light Goods	14	663	36	1	-	714	22	751	7	0	-	780	26	0	33	0	-	59	13	2	21	0	-	36	1589
% Cars & Light Goods	100.0	97.5	94.7	100.0	-	97.4	95.7	97.8	100.0	-	-	97.7	92.9	-	100.0	-	-	96.7	100.0	100.0	100.0	-	-	100.0	97.6
Buses	0	2	0	0	-	2	0	2	0	0	-	2	0	0	0	0	-	0	0	0	0	0	-	0	4
% Buses	0.0	0.3	0.0	0.0	-	0.3	0.0	0.3	0.0	-	-	0.3	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.2
Single-Unit Trucks	0	9	2	0	-	11	1	11	0	0	-	12	1	0	0	0	-	1	0	0	0	0	-	0	24
% Single-Unit Trucks	0.0	1.3	5.3	0.0	-	1.5	4.3	1.4	0.0	-	-	1.5	3.6	-	0.0	-	-	1.6	0.0	0.0	0.0	-	-	0.0	1.5
Articulated Trucks	0	3	0	0	-	3	0	1	0	0	-	1	1	0	0	0	-	1	0	0	0	0	-	0	5
% Articulated Trucks	0.0	0.4	0.0	0.0	-	0.4	0.0	0.1	0.0	-	-	0.1	3.6	-	0.0	-	-	1.6	0.0	0.0	0.0	-	-	0.0	0.3
Bicycles on Road	0	1	0	0	-	1	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	2
% Bicycles on Road	0.0	0.1	0.0	0.0	-	0.1	0.0	0.1	0.0	-	-	0.1	0.0	-	0.0	-	-	0.0	0.0	0.0	0.0	-	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	2	-	-	-	-	-	1	-	-
% Bicycles on Crosswalk	-	-	-	-	0.0	-	-	-	-	-	0.0	-	-	-	-	-	11.1	-	-	-	-	-	5.6	-	-
Pedestrians	-	-	-	-	5	-	-	-	-	-	2	-	-	-	-	-	16	-	-	-	-	-	17	-	-
% Pedestrians	-	-	-	-	100.0	-	-	-	-	-	100.0	-	-	-	-	-	88.9	-	-	-	-	-	94.4	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Regional Road 20 & Franklin Avenue
Site Code: 210300
Start Date: 11/09/2021



Turning Movement Peak Hour Data Plot (11:45 AM)

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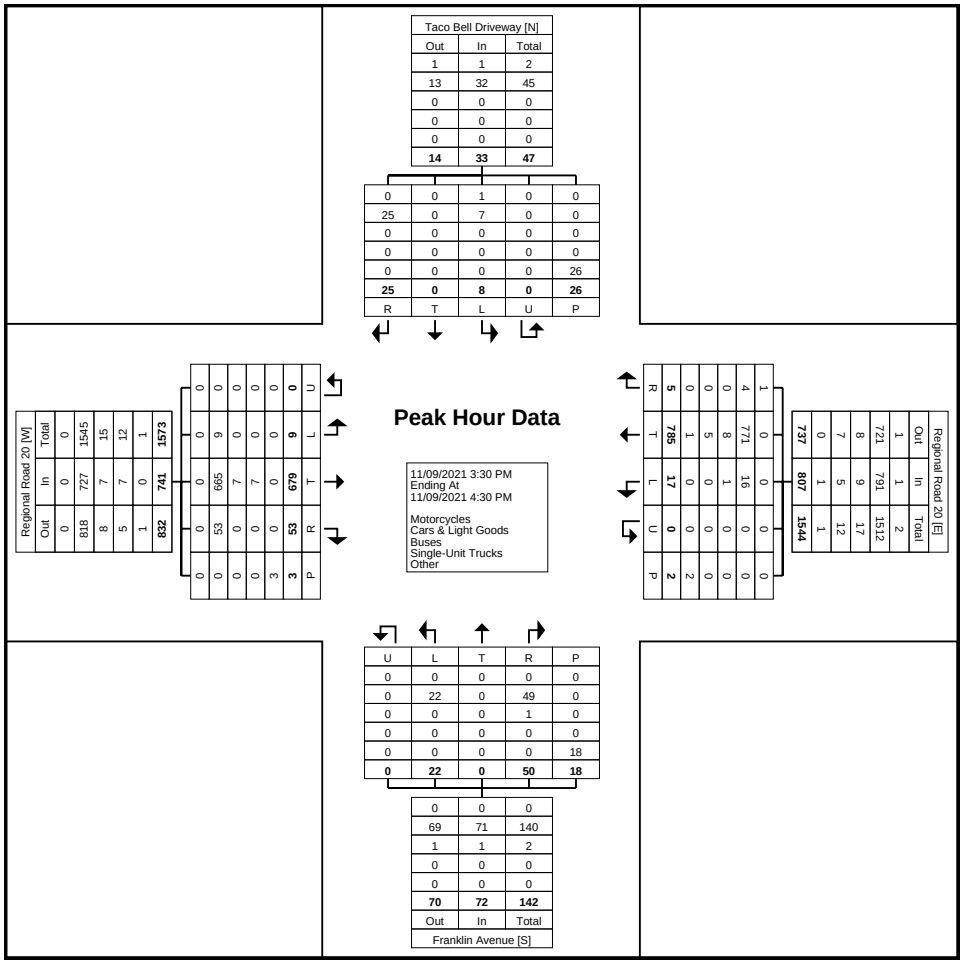
Turning Movement Peak Hour Data (3:30 PM)

Start Time	Regional Road 20 Eastbound						Regional Road 20 Westbound						Franklin Avenue Northbound						Taco Bell Driveway 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	
3:30 PM	3	170	13	0	1	186	9	196	1	0	0	206	5	0	20	0	3	25	2	0	6	0	5	8	425
3:45 PM	1	175	13	0	0	189	3	198	1	0	0	202	5	0	15	0	1	20	2	0	5	0	9	7	418
4:00 PM	2	172	11	0	2	185	2	206	0	0	2	208	3	0	9	0	7	12	1	0	8	0	6	9	414
4:15 PM	3	162	16	0	0	181	3	185	3	0	0	191	9	0	6	0	7	15	3	0	6	0	6	9	396
Total	9	679	53	0	3	741	17	785	5	0	2	807	22	0	50	0	18	72	8	0	25	0	26	33	1653
Approach %	1.2	91.6	7.2	0.0	-	-	2.1	97.3	0.6	0.0	-	-	30.6	0.0	69.4	0.0	-	-	24.2	0.0	75.8	0.0	-	-	-
Total %	0.5	41.1	3.2	0.0	-	44.8	1.0	47.5	0.3	0.0	-	48.8	1.3	0.0	3.0	0.0	-	4.4	0.5	0.0	1.5	0.0	-	2.0	-
PHF	0.750	0.970	0.828	0.000	-	0.980	0.472	0.953	0.417	0.000	-	0.970	0.611	0.000	0.625	0.000	-	0.720	0.667	0.000	0.781	0.000	-	0.917	0.972
Motorcycles	0	0	0	0	-	0	0	0	1	0	-	1	0	0	0	0	-	0	1	0	0	0	-	1	2
% Motorcycles	0.0	0.0	0.0	-	-	0.0	0.0	0.0	20.0	-	-	0.1	0.0	-	0.0	-	-	0.0	12.5	-	0.0	-	-	3.0	0.1
Cars & Light Goods	9	665	53	0	-	727	16	771	4	0	-	791	22	0	49	0	-	71	7	0	25	0	-	32	1621
% Cars & Light Goods	100.0	97.9	100.0	-	-	98.1	94.1	98.2	80.0	-	-	98.0	100.0	-	98.0	-	-	98.6	87.5	-	100.0	-	-	97.0	98.1
Buses	0	7	0	0	-	7	1	8	0	0	-	9	0	0	1	0	-	1	0	0	0	0	-	0	17
% Buses	0.0	1.0	0.0	-	-	0.9	5.9	1.0	0.0	-	-	1.1	0.0	-	2.0	-	-	1.4	0.0	-	0.0	-	-	0.0	1.0
Single-Unit Trucks	0	7	0	0	-	7	0	5	0	0	-	5	0	0	0	0	-	0	0	0	0	0	-	0	12
% Single-Unit Trucks	0.0	1.0	0.0	-	-	0.9	0.0	0.6	0.0	-	-	0.6	0.0	-	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	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
Bicycles on Road	0	0	0	0	-	0	0	1	0	0	-	1	0	0	0	0	-	0	0	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	0.0	-	-	0.0	0.0	0.1	0.0	-	-	0.1	0.0	-	0.0	-	-	0.0	0.0	-	0.0	-	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	-	1	-	-	-	-	-	0	-	-	-	-	-	5	-	-	-	-	-	4	-	-
% Bicycles on Crosswalk	-	-	-	-	33.3	-	-	-	-	-	0.0	-	-	-	-	-	27.8	-	-	-	-	-	15.4	-	-
Pedestrians	-	-	-	-	2	-	-	-	-	-	2	-	-	-	-	-	13	-	-	-	-	-	22	-	-
% Pedestrians	-	-	-	-	66.7	-	-	-	-	-	100.0	-	-	-	-	-	72.2	-	-	-	-	-	84.6	-	-

Paradigm Transportation Solutions Limited
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Start Date: 11/09/2021



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: Regional Road & Glenholme Avenue
Site Code: 210300
Start Date: 11/09/2021

Turning Movement Data

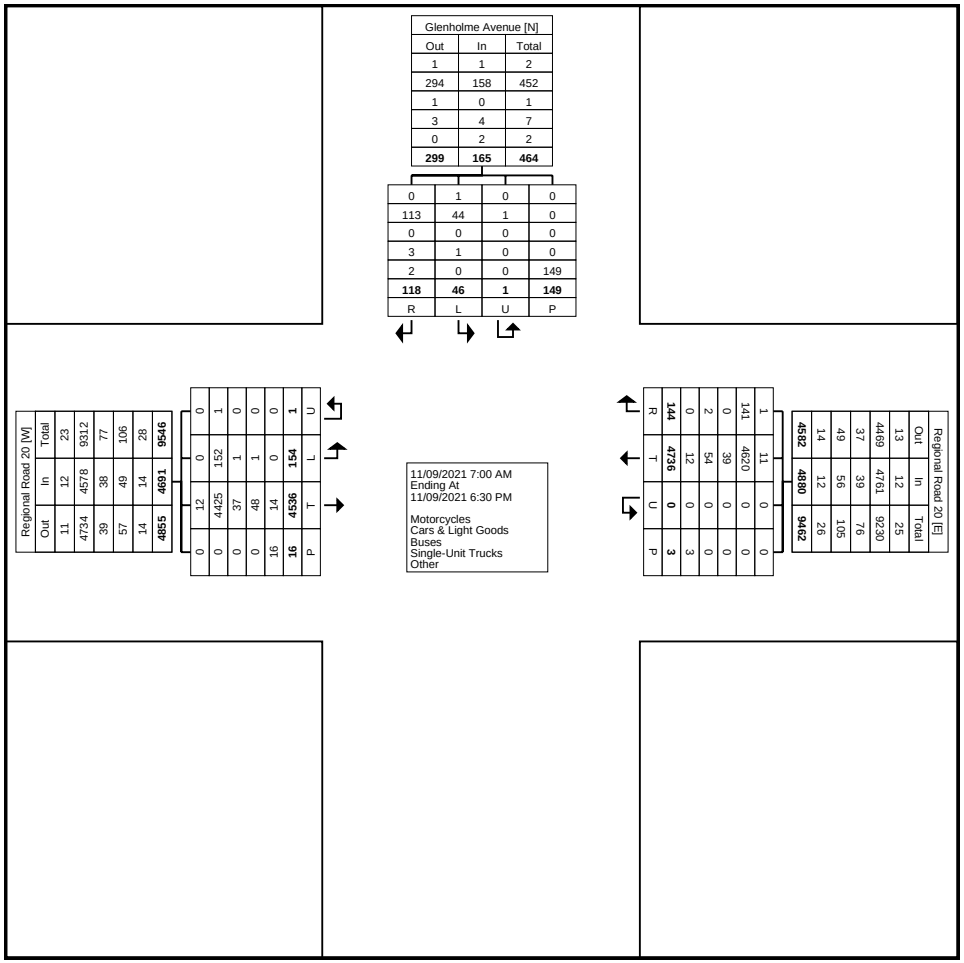
Start Time	Regional Road 20 Eastbound					Regional Road 20 Westbound					Glenholme Avenue Southbound					
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
7:00 AM	0	64	0	0	64	57	0	0	0	57	1	0	0	3	1	122
7:15 AM	1	75	0	0	76	64	0	0	0	64	1	3	0	0	4	144
7:30 AM	1	84	0	0	85	77	0	0	0	77	1	1	0	2	2	164
7:45 AM	1	122	0	0	123	71	1	0	0	72	3	2	0	4	5	200
Hourly Total	3	345	0	0	348	269	1	0	0	270	6	6	0	9	12	630
8:00 AM	1	92	0	0	93	72	1	0	0	73	2	3	0	0	5	171
8:15 AM	6	109	0	0	115	93	0	0	0	93	1	4	0	3	5	213
8:30 AM	3	129	0	0	132	83	2	0	0	85	0	1	0	5	1	218
8:45 AM	3	117	0	0	120	111	0	0	0	111	0	6	0	2	6	237
Hourly Total	13	447	0	0	460	359	3	0	0	362	3	14	0	10	17	839
9:00 AM	2	136	0	0	138	106	2	0	0	108	0	2	0	3	2	248
9:15 AM	3	124	0	0	127	101	0	0	0	101	2	3	0	0	5	233
9:30 AM	1	123	0	1	124	123	4	0	0	127	1	4	0	3	5	256
9:45 AM	0	127	0	0	127	121	0	0	0	121	1	1	0	2	2	250
Hourly Total	6	510	0	1	516	451	6	0	0	457	4	10	0	8	14	987
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11:00 AM	6	154	0	0	160	154	5	0	0	159	1	8	0	5	9	328
11:15 AM	3	146	0	0	149	192	6	0	0	198	3	2	0	11	5	352
11:30 AM	2	167	0	0	169	175	2	0	0	177	0	3	0	3	3	349
11:45 AM	6	188	0	2	194	193	5	0	1	198	1	2	0	8	3	395
Hourly Total	17	655	0	2	672	714	18	0	1	732	5	15	0	27	20	1424
12:00 PM	4	151	0	1	155	219	10	0	0	229	3	4	0	5	7	391
12:15 PM	7	165	0	0	172	202	9	0	0	211	2	2	0	1	4	387
12:30 PM	9	177	0	1	186	161	5	0	0	166	1	12	0	4	13	365
12:45 PM	1	181	0	0	182	156	3	0	0	159	2	3	0	7	5	346
Hourly Total	21	674	0	2	695	738	27	0	0	765	8	21	0	17	29	1489
*** BREAK ***	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
3:30 PM	9	189	0	0	198	211	8	0	0	219	0	2	0	5	2	419
3:45 PM	9	185	0	2	194	195	7	0	0	202	5	4	0	9	9	405
Hourly Total	18	374	0	2	392	406	15	0	0	421	5	6	0	14	11	824
4:00 PM	6	175	0	1	181	201	8	0	0	209	1	4	1	5	6	396
4:15 PM	13	159	0	2	172	183	5	0	0	188	2	8	0	6	10	370
4:30 PM	6	155	0	0	161	200	7	0	0	207	0	5	0	13	5	373
4:45 PM	8	147	0	0	155	190	6	0	0	196	3	3	0	15	6	357
Hourly Total	33	636	0	3	669	774	26	0	0	800	6	20	1	39	27	1496
5:00 PM	8	147	0	3	155	205	10	0	0	215	2	6	0	4	8	378

5:15 PM	10	164	0	1	174	194	9	0	0	203	2	3	0	7	5	382
5:30 PM	9	144	1	1	154	171	10	0	0	181	3	3	0	4	6	341
5:45 PM	8	159	0	0	167	153	9	0	2	162	0	6	0	5	6	335
Hourly Total	35	614	1	5	650	723	38	0	2	761	7	18	0	20	25	1436
6:00 PM	3	151	0	0	154	162	4	0	0	166	2	3	0	2	5	325
6:15 PM	5	130	0	1	135	140	6	0	0	146	0	5	0	3	5	286
Grand Total	154	4536	1	16	4691	4736	144	0	3	4880	46	118	1	149	165	9736
Approach %	3.3	96.7	0.0	-	-	97.0	3.0	0.0	-	-	27.9	71.5	0.6	-	-	-
Total %	1.6	46.6	0.0	-	48.2	48.6	1.5	0.0	-	50.1	0.5	1.2	0.0	-	1.7	-
Motorcycles	0	12	0	-	12	11	1	0	-	12	1	0	0	-	1	25
% Motorcycles	0.0	0.3	0.0	-	0.3	0.2	0.7	-	-	0.2	2.2	0.0	0.0	-	0.6	0.3
Cars & Light Goods	152	4425	1	-	4578	4620	141	0	-	4761	44	113	1	-	158	9497
% Cars & Light Goods	98.7	97.6	100.0	-	97.6	97.6	97.9	-	-	97.6	95.7	95.8	100.0	-	95.8	97.5
Buses	1	37	0	-	38	39	0	0	-	39	0	0	0	-	0	77
% Buses	0.6	0.8	0.0	-	0.8	0.8	0.0	-	-	0.8	0.0	0.0	0.0	-	0.0	0.8
Single-Unit Trucks	1	48	0	-	49	54	2	0	-	56	1	3	0	-	4	109
% Single-Unit Trucks	0.6	1.1	0.0	-	1.0	1.1	1.4	-	-	1.1	2.2	2.5	0.0	-	2.4	1.1
Articulated Trucks	0	11	0	-	11	7	0	0	-	7	0	1	0	-	1	19
% Articulated Trucks	0.0	0.2	0.0	-	0.2	0.1	0.0	-	-	0.1	0.0	0.8	0.0	-	0.6	0.2
Bicycles on Road	0	3	0	-	3	5	0	0	-	5	0	1	0	-	1	9
% Bicycles on Road	0.0	0.1	0.0	-	0.1	0.1	0.0	-	-	0.1	0.0	0.8	0.0	-	0.6	0.1
Bicycles on Crosswalk	-	-	-	1	-	-	-	-	0	-	-	-	-	20	-	-
% Bicycles on Crosswalk	-	-	-	6.3	-	-	-	-	0.0	-	-	-	-	13.4	-	-
Pedestrians	-	-	-	15	-	-	-	-	3	-	-	-	-	129	-	-
% Pedestrians	-	-	-	93.8	-	-	-	-	100.0	-	-	-	-	86.6	-	-

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Turning Movement Data Plot

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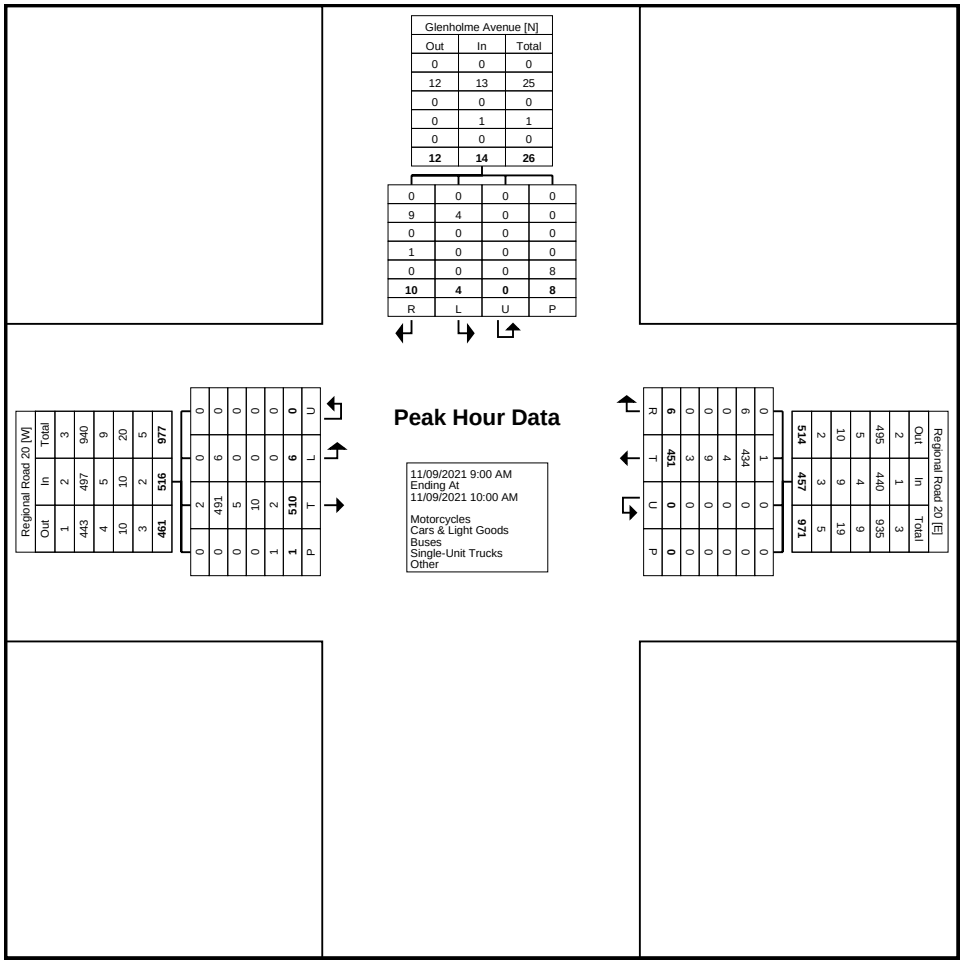
Turning Movement Peak Hour Data (9:00 AM)

Start Time	Regional Road 20 Eastbound					Regional Road 20 Westbound					Glenholme Avenue Southbound					
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
9:00 AM	2	136	0	0	138	106	2	0	0	108	0	2	0	3	2	248
9:15 AM	3	124	0	0	127	101	0	0	0	101	2	3	0	0	5	233
9:30 AM	1	123	0	1	124	123	4	0	0	127	1	4	0	3	5	256
9:45 AM	0	127	0	0	127	121	0	0	0	121	1	1	0	2	2	250
Total	6	510	0	1	516	451	6	0	0	457	4	10	0	8	14	987
Approach %	1.2	98.8	0.0	-	-	98.7	1.3	0.0	-	-	28.6	71.4	0.0	-	-	-
Total %	0.6	51.7	0.0	-	52.3	45.7	0.6	0.0	-	46.3	0.4	1.0	0.0	-	1.4	-
PHF	0.500	0.938	0.000	-	0.935	0.917	0.375	0.000	-	0.900	0.500	0.625	0.000	-	0.700	0.964
Motorcycles	0	2	0	-	2	1	0	0	-	1	0	0	0	-	0	3
% Motorcycles	0.0	0.4	-	-	0.4	0.2	0.0	-	-	0.2	0.0	0.0	-	-	0.0	0.3
Cars & Light Goods	6	491	0	-	497	434	6	0	-	440	4	9	0	-	13	950
% Cars & Light Goods	100.0	96.3	-	-	96.3	96.2	100.0	-	-	96.3	100.0	90.0	-	-	92.9	96.3
Buses	0	5	0	-	5	4	0	0	-	4	0	0	0	-	0	9
% Buses	0.0	1.0	-	-	1.0	0.9	0.0	-	-	0.9	0.0	0.0	-	-	0.0	0.9
Single-Unit Trucks	0	10	0	-	10	9	0	0	-	9	0	1	0	-	1	20
% Single-Unit Trucks	0.0	2.0	-	-	1.9	2.0	0.0	-	-	2.0	0.0	10.0	-	-	7.1	2.0
Articulated Trucks	0	1	0	-	1	2	0	0	-	2	0	0	0	-	0	3
% Articulated Trucks	0.0	0.2	-	-	0.2	0.4	0.0	-	-	0.4	0.0	0.0	-	-	0.0	0.3
Bicycles on Road	0	1	0	-	1	1	0	0	-	1	0	0	0	-	0	2
% Bicycles on Road	0.0	0.2	-	-	0.2	0.2	0.0	-	-	0.2	0.0	0.0	-	-	0.0	0.2
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	0	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	-	-	-	-	-	0.0	-	-
Pedestrians	-	-	-	1	-	-	-	-	0	-	-	-	-	8	-	-
% 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: Regional Road & Glenholme Avenue
Site Code: 210300
Start Date: 11/09/2021



Turning Movement Peak Hour Data Plot (9:00 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Regional Road & Glenholme Avenue
Site Code: 210300
Start Date: 11/09/2021

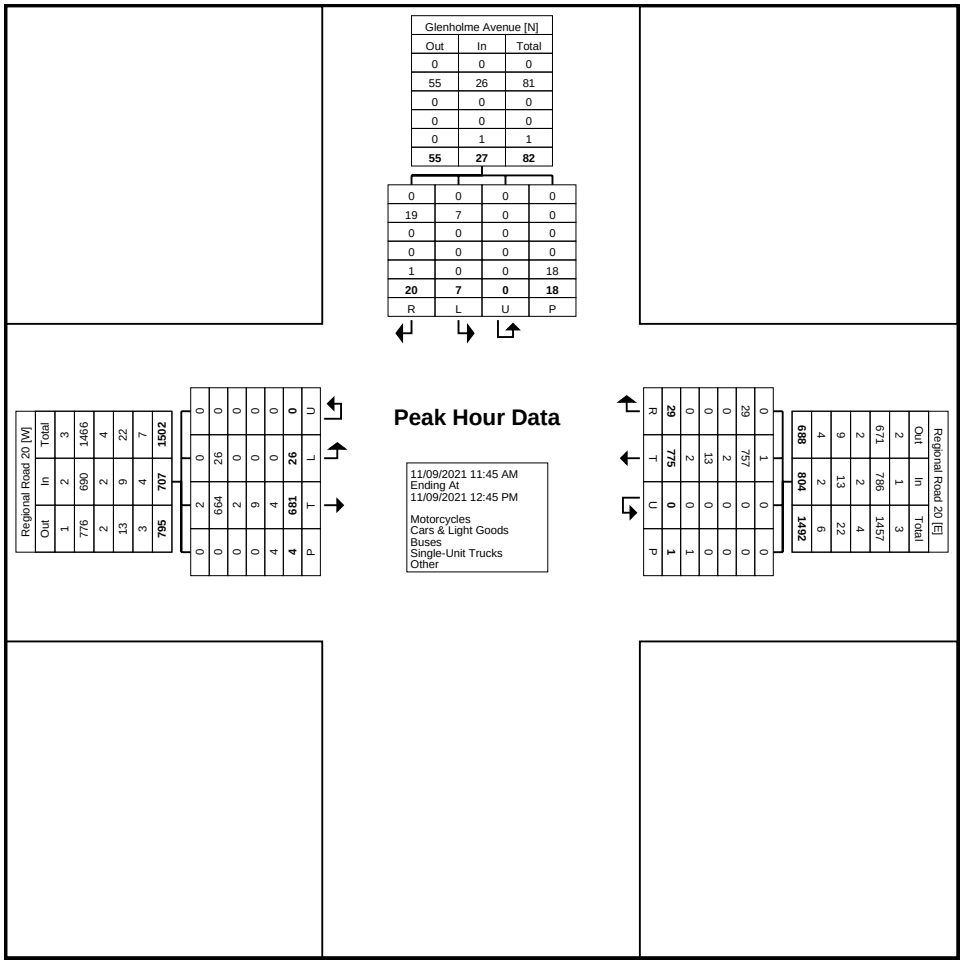
Turning Movement Peak Hour Data (11:45 AM)

Start Time	Regional Road 20 Eastbound					Regional Road 20 Westbound					Glenholme Avenue Southbound					
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
11:45 AM	6	188	0	2	194	193	5	0	1	198	1	2	0	8	3	395
12:00 PM	4	151	0	1	155	219	10	0	0	229	3	4	0	5	7	391
12:15 PM	7	165	0	0	172	202	9	0	0	211	2	2	0	1	4	387
12:30 PM	9	177	0	1	186	161	5	0	0	166	1	12	0	4	13	365
Total	26	681	0	4	707	775	29	0	1	804	7	20	0	18	27	1538
Approach %	3.7	96.3	0.0	-	-	96.4	3.6	0.0	-	-	25.9	74.1	0.0	-	-	-
Total %	1.7	44.3	0.0	-	46.0	50.4	1.9	0.0	-	52.3	0.5	1.3	0.0	-	1.8	-
PHF	0.722	0.906	0.000	-	0.911	0.885	0.725	0.000	-	0.878	0.583	0.417	0.000	-	0.519	0.973
Motorcycles	0	2	0	-	2	1	0	0	-	1	0	0	0	-	0	3
% Motorcycles	0.0	0.3	-	-	0.3	0.1	0.0	-	-	0.1	0.0	0.0	-	-	0.0	0.2
Cars & Light Goods	26	664	0	-	690	757	29	0	-	786	7	19	0	-	26	1502
% Cars & Light Goods	100.0	97.5	-	-	97.6	97.7	100.0	-	-	97.8	100.0	95.0	-	-	96.3	97.7
Buses	0	2	0	-	2	2	0	0	-	2	0	0	0	-	0	4
% Buses	0.0	0.3	-	-	0.3	0.3	0.0	-	-	0.2	0.0	0.0	-	-	0.0	0.3
Single-Unit Trucks	0	9	0	-	9	13	0	0	-	13	0	0	0	-	0	22
% Single-Unit Trucks	0.0	1.3	-	-	1.3	1.7	0.0	-	-	1.6	0.0	0.0	-	-	0.0	1.4
Articulated Trucks	0	3	0	-	3	1	0	0	-	1	0	0	0	-	0	4
% Articulated Trucks	0.0	0.4	-	-	0.4	0.1	0.0	-	-	0.1	0.0	0.0	-	-	0.0	0.3
Bicycles on Road	0	1	0	-	1	1	0	0	-	1	0	1	0	-	1	3
% Bicycles on Road	0.0	0.1	-	-	0.1	0.1	0.0	-	-	0.1	0.0	5.0	-	-	3.7	0.2
Bicycles on Crosswalk	-	-	-	0	-	-	-	-	0	-	-	-	-	2	-	-
% Bicycles on Crosswalk	-	-	-	0.0	-	-	-	-	0.0	-	-	-	-	11.1	-	-
Pedestrians	-	-	-	4	-	-	-	-	1	-	-	-	-	16	-	-
% Pedestrians	-	-	-	100.0	-	-	-	-	100.0	-	-	-	-	88.9	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Regional Road & Glenholme Avenue
Site Code: 210300
Start Date: 11/09/2021



Turning Movement Peak Hour Data Plot (11:45 AM)

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Regional Road & Glenholme Avenue
Site Code: 210300
Start Date: 11/09/2021

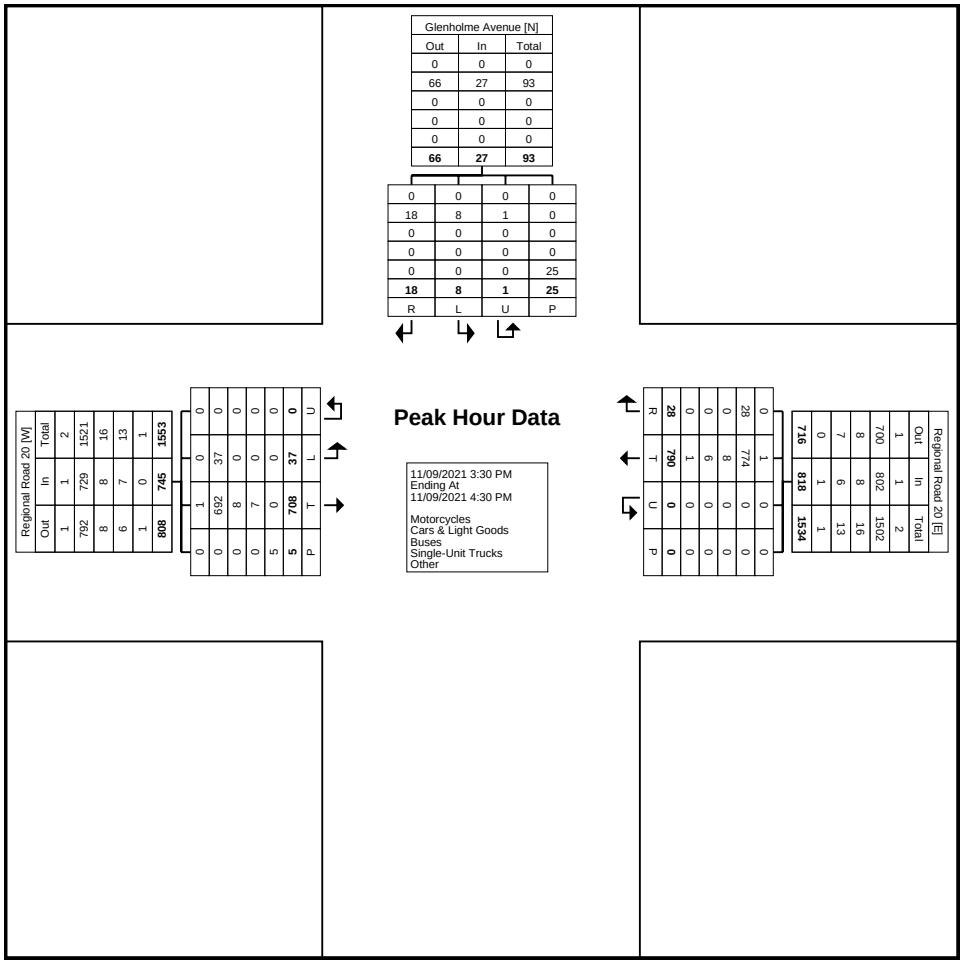
Turning Movement Peak Hour Data (3:30 PM)

Start Time	Regional Road 20 Eastbound					Regional Road 20 Westbound					Glenholme Avenue Southbound					
	Left	Thru	U-Turn	Peds	App. Total	Thru	Right	U-Turn	Peds	App. Total	Left	Right	U-Turn	Peds	App. Total	Int. Total
3:30 PM	9	189	0	0	198	211	8	0	0	219	0	2	0	5	2	419
3:45 PM	9	185	0	2	194	195	7	0	0	202	5	4	0	9	9	405
4:00 PM	6	175	0	1	181	201	8	0	0	209	1	4	1	5	6	396
4:15 PM	13	159	0	2	172	183	5	0	0	188	2	8	0	6	10	370
Total	37	708	0	5	745	790	28	0	0	818	8	18	1	25	27	1590
Approach %	5.0	95.0	0.0	-	-	96.6	3.4	0.0	-	-	29.6	66.7	3.7	-	-	-
Total %	2.3	44.5	0.0	-	46.9	49.7	1.8	0.0	-	51.4	0.5	1.1	0.1	-	1.7	-
PHF	0.712	0.937	0.000	-	0.941	0.936	0.875	0.000	-	0.934	0.400	0.563	0.250	-	0.675	0.949
Motorcycles	0	1	0	-	1	1	0	0	-	1	0	0	0	-	0	2
% Motorcycles	0.0	0.1	-	-	0.1	0.1	0.0	-	-	0.1	0.0	0.0	0.0	-	0.0	0.1
Cars & Light Goods	37	692	0	-	729	774	28	0	-	802	8	18	1	-	27	1558
% Cars & Light Goods	100.0	97.7	-	-	97.9	98.0	100.0	-	-	98.0	100.0	100.0	100.0	-	100.0	98.0
Buses	0	8	0	-	8	8	0	0	-	8	0	0	0	-	0	16
% Buses	0.0	1.1	-	-	1.1	1.0	0.0	-	-	1.0	0.0	0.0	0.0	-	0.0	1.0
Single-Unit Trucks	0	7	0	-	7	6	0	0	-	6	0	0	0	-	0	13
% Single-Unit Trucks	0.0	1.0	-	-	0.9	0.8	0.0	-	-	0.7	0.0	0.0	0.0	-	0.0	0.8
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
Bicycles on Road	0	0	0	-	0	1	0	0	-	1	0	0	0	-	0	1
% Bicycles on Road	0.0	0.0	-	-	0.0	0.1	0.0	-	-	0.1	0.0	0.0	0.0	-	0.0	0.1
Bicycles on Crosswalk	-	-	-	1	-	-	-	-	0	-	-	-	-	5	-	-
% Bicycles on Crosswalk	-	-	-	20.0	-	-	-	-	-	-	-	-	-	20.0	-	-
Pedestrians	-	-	-	4	-	-	-	-	0	-	-	-	-	20	-	-
% Pedestrians	-	-	-	80.0	-	-	-	-	-	-	-	-	-	80.0	-	-

Paradigm Transportation Solutions Limited
5A-150 Pinebush Rd

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

Count Name: Regional Road & Glenholme Avenue
Site Code: 210300
Start Date: 11/09/2021

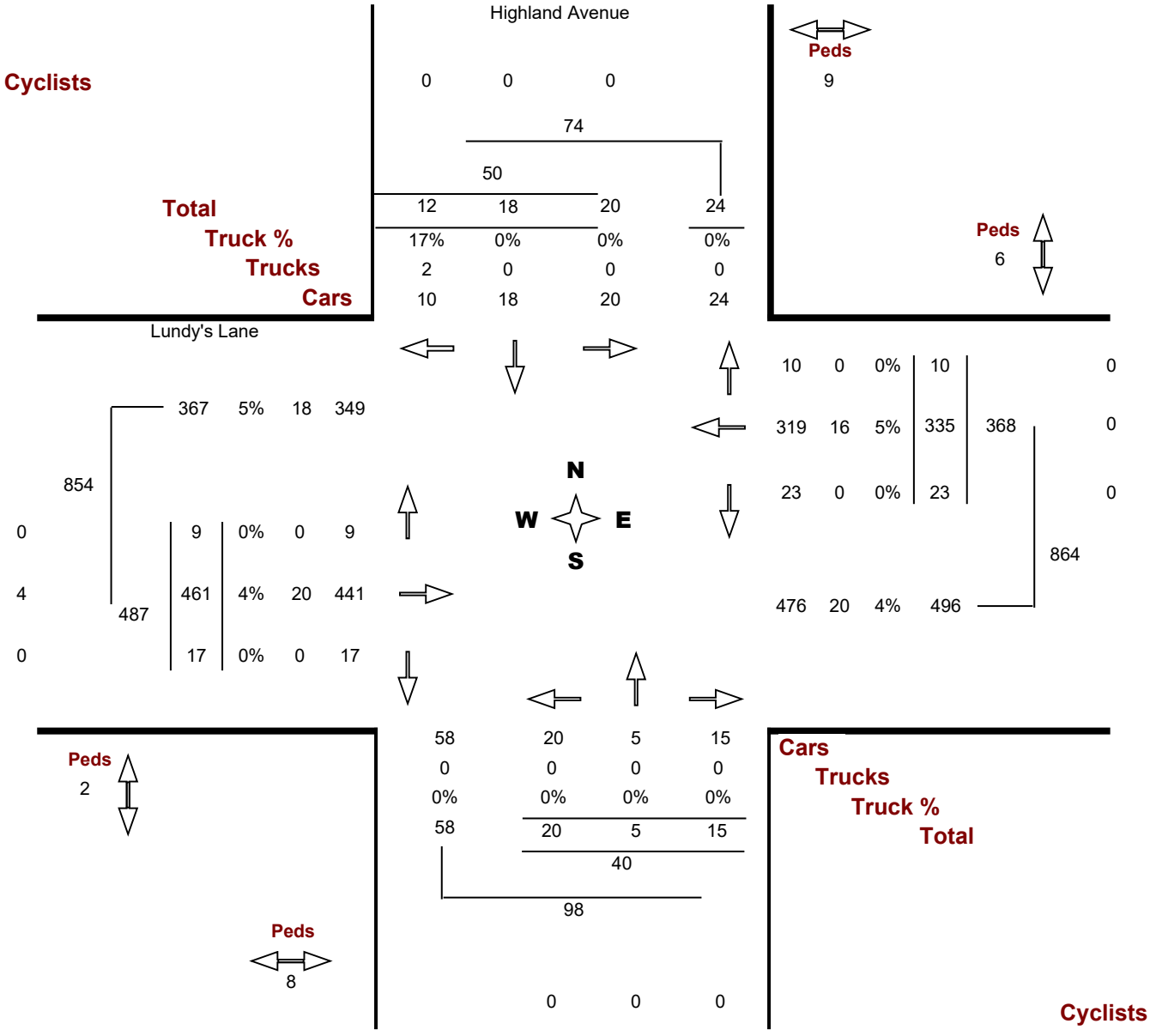


Turning Movement Peak Hour Data Plot (3:30 PM)

Turning Movements Report - AM Period

Location..... Highland Avenue @ Lundy's Lane
Municipality. NIAGARA FALLS
Traffic Cont.
Major Dir..... East west

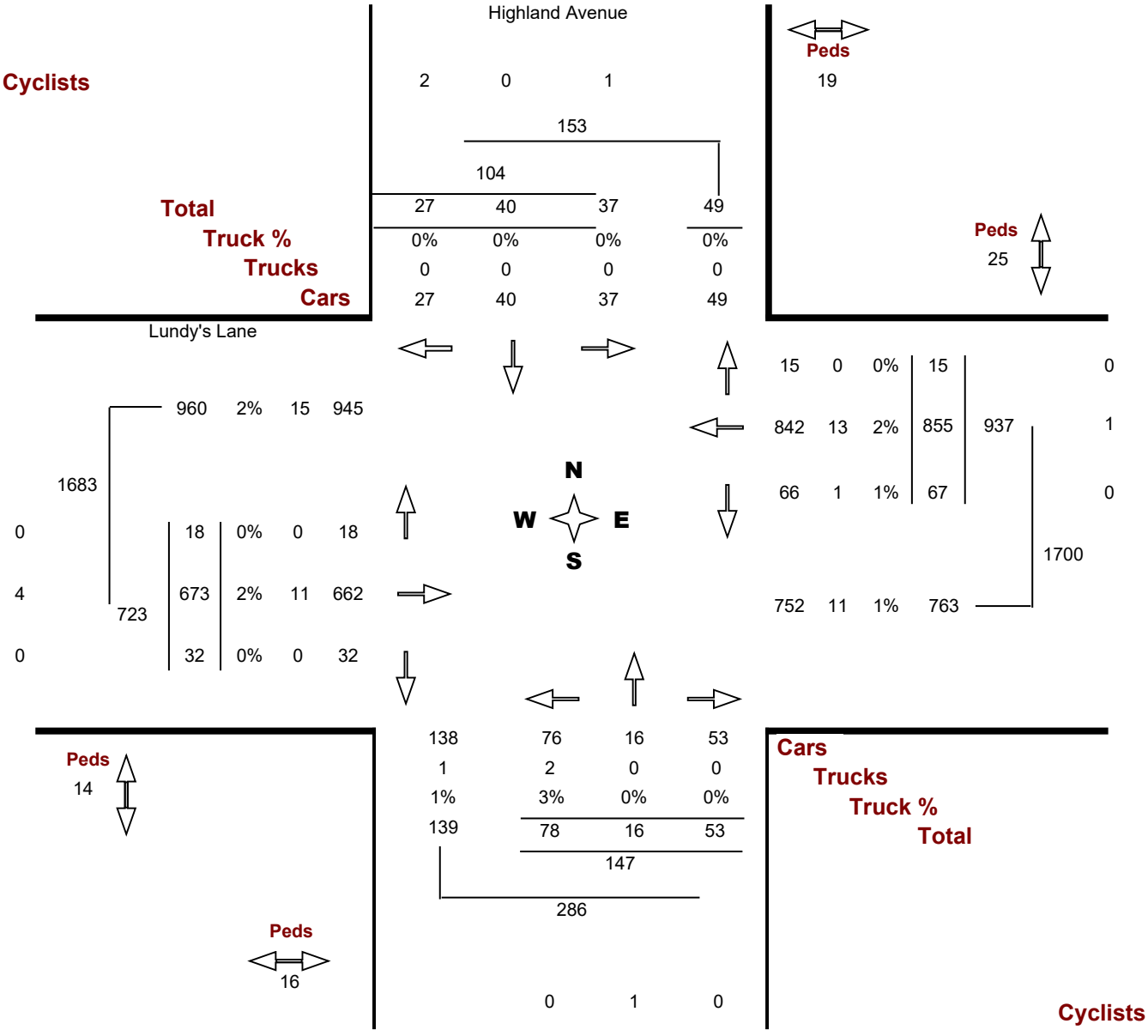
GeoID..... 01137
Count Date. Tuesday, 16 July, 2019
Count Time. 07:00 AM — 09:00 AM
Peak Hour.. 08:00 AM — 09:00 AM



Turning Movements Report - PM Period

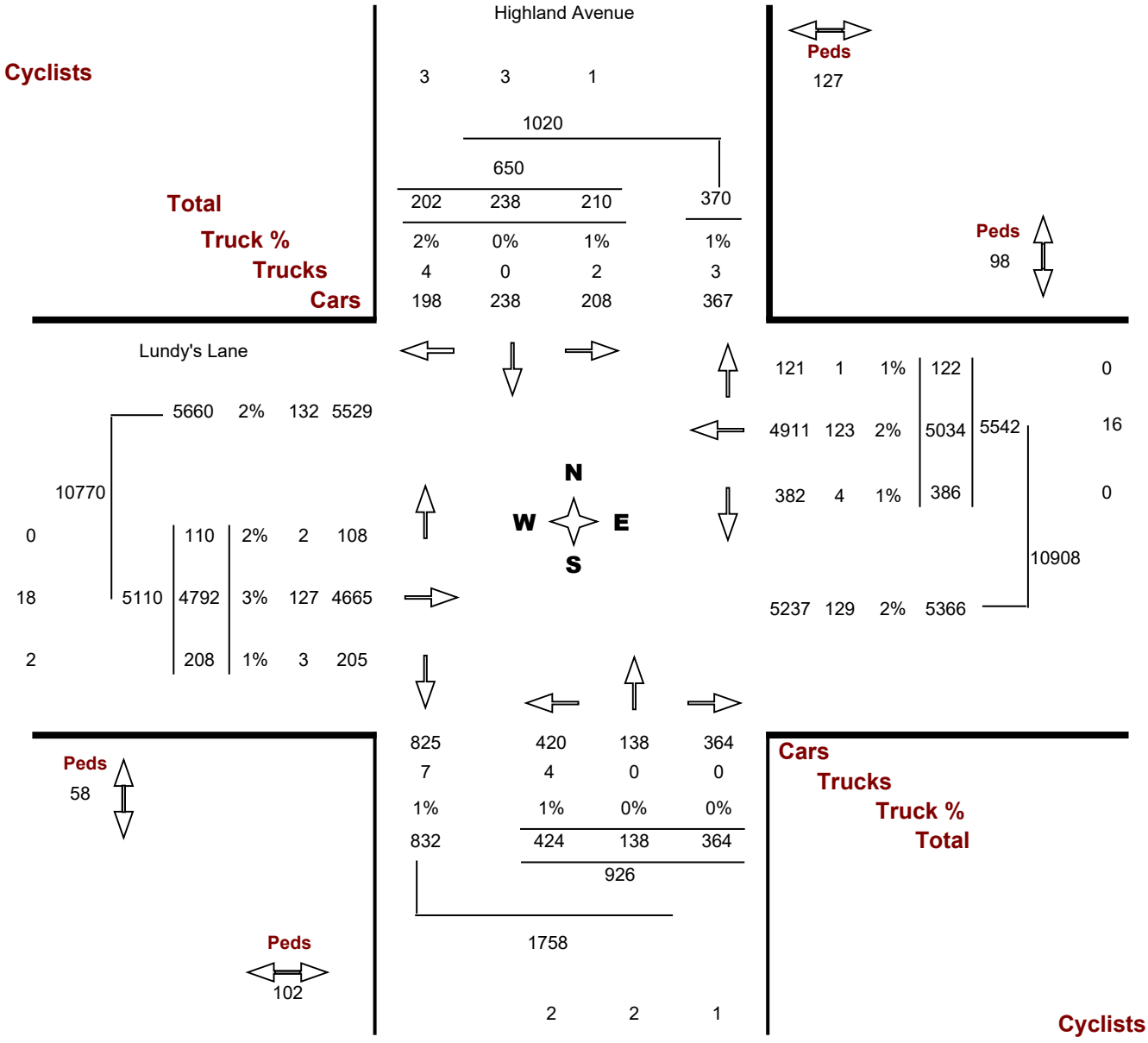
Location..... Highland Avenue @ Lundy's Lane
Municipality. NIAGARA FALLS
Traffic Cont.
Major Dir..... East west

GeoID..... 01137
Count Date. Tuesday, 16 July, 2019
Count Time. 03:00 PM — 06:00 PM
Peak Hour.. 04:30 PM — 05:30 PM



Turning Movement Count Report
Full Study

Location..... Highland Avenue @ Lundy's Lane
Municipality..... NIAGARA FALLS
GeoID..... 01137
Count Date..... Tuesday, 16 July, 2019



Turning Movement Count - Details Report (15 min)

Location..... Highland Avenue @ Lundy's Lane

Municipality..... NIAGARA FALLS

Count Date..... Tuesday, July 16, 2019

		Highland Avenue										Lundy's Lane									
		North Approach					South Approach					East Approach					West Approach				
Time Period		LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT
07:00	07:15	2	0	4	0	6	0	1	0	0	1	0	51	0	0	51	0	55	2	0	57
07:15	07:30	2	0	0	0	2	1	1	0	0	2	1	57	1	0	59	0	80	0	0	80
07:30	07:45	1	1	6	0	8	2	1	1	0	4	0	68	1	0	69	1	92	3	0	96
07:45	08:00	9	2	3	0	14	2	1	0	0	3	2	68	6	0	76	1	114	3	0	118
Hourly Total		14	3	13	0	30	5	4	1	0	10	3	244	8	0	255	2	341	8	0	351
08:00	08:15	5	1	0	0	6	1	0	3	0	4	3	72	3	0	78	3	92	3	0	98
08:15	08:30	7	5	0	0	12	2	2	4	0	8	4	75	2	0	81	2	113	7	0	122
08:30	08:45	3	6	2	0	11	6	1	6	0	13	2	99	1	0	102	3	146	3	0	152
08:45	09:00	5	6	10	0	21	11	2	2	0	15	14	89	4	0	107	1	110	4	0	115
Hourly Total		20	18	12	0	50	20	5	15	0	40	23	335	10	0	368	9	461	17	0	487
11:00	11:15	8	3	6	0	17	12	4	17	0	33	9	174	4	0	187	3	181	11	0	195
11:15	11:30	6	7	3	0	16	16	6	19	0	41	19	171	9	0	199	4	162	8	0	174
11:30	11:45	7	12	11	0	30	13	4	16	0	33	18	147	6	0	171	4	189	5	0	198
11:45	12:00	5	8	6	0	19	21	8	20	0	49	15	184	3	0	202	4	149	6	0	159
Hourly Total		26	30	26	0	82	62	22	72	0	156	61	676	22	0	759	15	681	30	0	726
12:00	12:15	5	10	7	0	22	16	3	20	0	39	17	180	2	0	199	5	159	9	0	173
12:15	12:30	6	10	7	0	23	19	2	12	0	33	9	183	5	0	197	2	206	8	0	216
12:30	12:45	11	15	9	0	35	10	8	14	0	32	17	190	1	0	208	7	186	10	0	203
12:45	13:00	8	8	9	0	25	25	6	18	0	49	12	185	3	0	200	7	169	6	0	182
Hourly Total		30	43	32	0	105	70	19	64	0	153	55	738	11	0	804	21	720	33	0	774
13:00	13:15	4	11	7	0	22	20	8	18	0	46	10	146	7	0	163	4	172	9	0	185
13:15	13:30	4	8	7	0	19	18	10	13	0	41	21	153	5	0	179	1	154	7	0	162
13:30	13:45	7	6	6	0	19	17	3	10	0	30	16	161	5	0	182	5	205	4	0	214
13:45	14:00	0	4	7	0	11	17	3	18	0	38	18	147	0	0	165	4	151	5	0	160
Hourly Total		15	29	27	0	71	72	24	59	0	155	65	607	17	0	689	14	682	25	0	721
15:00	15:15	11	11	6	0	28	15	6	16	0	37	18	184	4	0	206	1	142	10	0	153
15:15	15:30	14	12	7	0	33	19	7	14	0	40	18	205	3	0	226	3	144	6	0	153
15:30	15:45	7	6	12	0	25	22	4	8	0	34	15	203	4	0	222	3	188	2	0	193
15:45	16:00	7	15	5	0	27	14	7	16	0	37	14	186	3	0	203	6	152	8	0	166
Hourly Total		39	44	30	0	113	70	24	54	0	148	65	778	14	0	857	13	626	26	0	665
16:00	16:15	6	13	6	0	25	8	6	10	0	24	11	183	9	0	203	5	141	17	0	163

		Highland Avenue										Lundy's Lane									
		North Approach					South Approach					East Approach					West Approach				
Time Period		LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT
16:15	16:30	8	2	9	0	19	10	8	14	0	32	19	218	5	0	242	4	134	6	0	144
16:30	16:45	10	14	3	0	27	22	4	19	0	45	13	226	4	0	243	1	173	9	0	183
16:45	17:00	11	8	10	0	29	26	6	5	0	37	26	191	3	0	220	6	184	7	0	197
Hourly Total		35	37	28	0	100	66	24	48	0	138	69	818	21	0	908	16	632	39	0	687
17:00	17:15	7	7	8	0	22	15	3	16	0	34	13	206	6	0	225	5	154	4	0	163
17:15	17:30	9	11	6	0	26	15	3	13	0	31	15	232	2	0	249	6	162	12	0	180
17:30	17:45	8	9	11	0	28	12	5	9	0	26	8	194	7	0	209	4	184	7	0	195
17:45	18:00	7	7	9	0	23	17	5	13	0	35	9	206	4	0	219	5	149	7	0	161
Hourly Total		31	34	34	0	99	59	16	51	0	126	45	838	19	0	902	20	649	30	0	699
Grand Total		210	238	202	0	650	424	138	364	0	926	386	5034	122	0	5542	110	4792	208	0	5110
Truck %		1%	0%	2%	0%	1%	1%	0%	0%	0%	0%	1%	2%	1%	0%	2%	2%	3%	1%	0%	3%

Signal Code: 020098

Intersection: RR20 (LUNDY'S LANE) & RR98 (MONTROSE RD.)

Municipality: operation

Owner: operation

Last Modified: 2016-07-20 2:57:53 PM

Timing Parameters	EBD & WBD LEFTS LUNDY'S	EBD & WBD LUNDY'S	NBD & SBD LEFTS MONTROSE	NBD & SBD THRU MONTROSE	n/a	n/a
Min Green	6	10	6	8	0	0
Walk	0	10	0	11	0	0
Ped Clearance	0	18	0	18	0	0
Vehicle Ext.	0	2.3	0	2.3	0	0
Max Green	20	35	25	35	0	0
Yellow	3	4.1	3	4.1	0	0
All Red	0	2.9	0	2.9	0	0

		Offset
Minimum Cycle	27.9	0
Pedestrian Cycle	71	
Maximum Cycle	135	0
Operation	operation	

Installed On:	2009-09-29
Count Date:	2015-07-16

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

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Signal Code: 020RYL

Intersection: RR20(LUNDY'S LANE) & ROYAL MANOR

Municipality: niagarafalls

Owner: Region

Last Modified: 2021-01-13 2:21:23 PM

Timing Parameters	EBD & WBD LUNDY'S	NBD & SBD ROYAL	n/a	n/a	n/a	n/a
Min Green	10	8	0	0	0	0
Walk	7	10	0	0	0	0
Ped Clearance	10	18	0	0	0	0
Vehicle Ext.	2.5	2.5	0	0	0	0
Max Green	52	45	0	0	0	0
Yellow	4.1	4.1	0	0	0	0
All Red	2.4	2.4	0	0	0	0

		Offset
Minimum Cycle	31	0
Pedestrian Cycle	58	
Maximum Cycle	110	0
Operation	FA	

Installed On:	2001-03-22
Count Date:	--/--/----

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

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Signal Code: 020BLM

Intersection: RR20 (LUNDY'S LANE) & BELMONT AVE./PLAZA ENT.

Municipality: niagarafalls

Owner: Region

Last Modified: 2021-10-05 3:53:47 PM

Timing Parameters	EBD & WBD ADVANCE LUNDY'S	EBD & WBD LUNDY'S	NBD & SBD BELMONT	n/a	n/a	n/a
Min Green	6	8	8	0	0	0
Walk	0	12	11	0	0	0
Ped Clearance	0	21	18	0	0	0
Vehicle Ext.	2.5	2.3	2.3	0	0	0
Max Green	10	45	38	0	0	0
Yellow	3	4.1	4.1	0	0	0
All Red	0	2.8	3	0	0	0

		Offset
Minimum Cycle	30	0
Pedestrian Cycle	76	
Maximum Cycle	110	16
Operation	FA	

Installed On:	2011-04-06
Count Date:	--/--/----

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

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Signal Code: 020HGH

Intersection: RR20 (LUNDY'S LANE) & HIGHLAND

Municipality: niagarafalls

Owner: region

Last Modified: 2015-10-06 9:28:33 AM

Timing Parameters	WBD LUNDY'S LANE ADV.	EBD & WBD LUNDY'S LANE	SBD HIGHLAND/NBD PLAZA D/W	n/a	n/a	n/a
Min Green	6	8	8	0	0	0
Walk	0	11	11	0	0	0
Ped Clearance	0	18	19	0	0	0
Vehicle Ext.	2.5	3	3	0	0	0
Max Green	10	45	39	0	0	0
Yellow	3	4.1	4.1	0	0	0
All Red	0	2.4	2.4	0	0	0

		Offset
Minimum Cycle	29	0
Pedestrian Cycle	72	
Maximum Cycle	110	6
Operation	FA	

Installed On:	2002-10-29
Count Date:	2011-07-11

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

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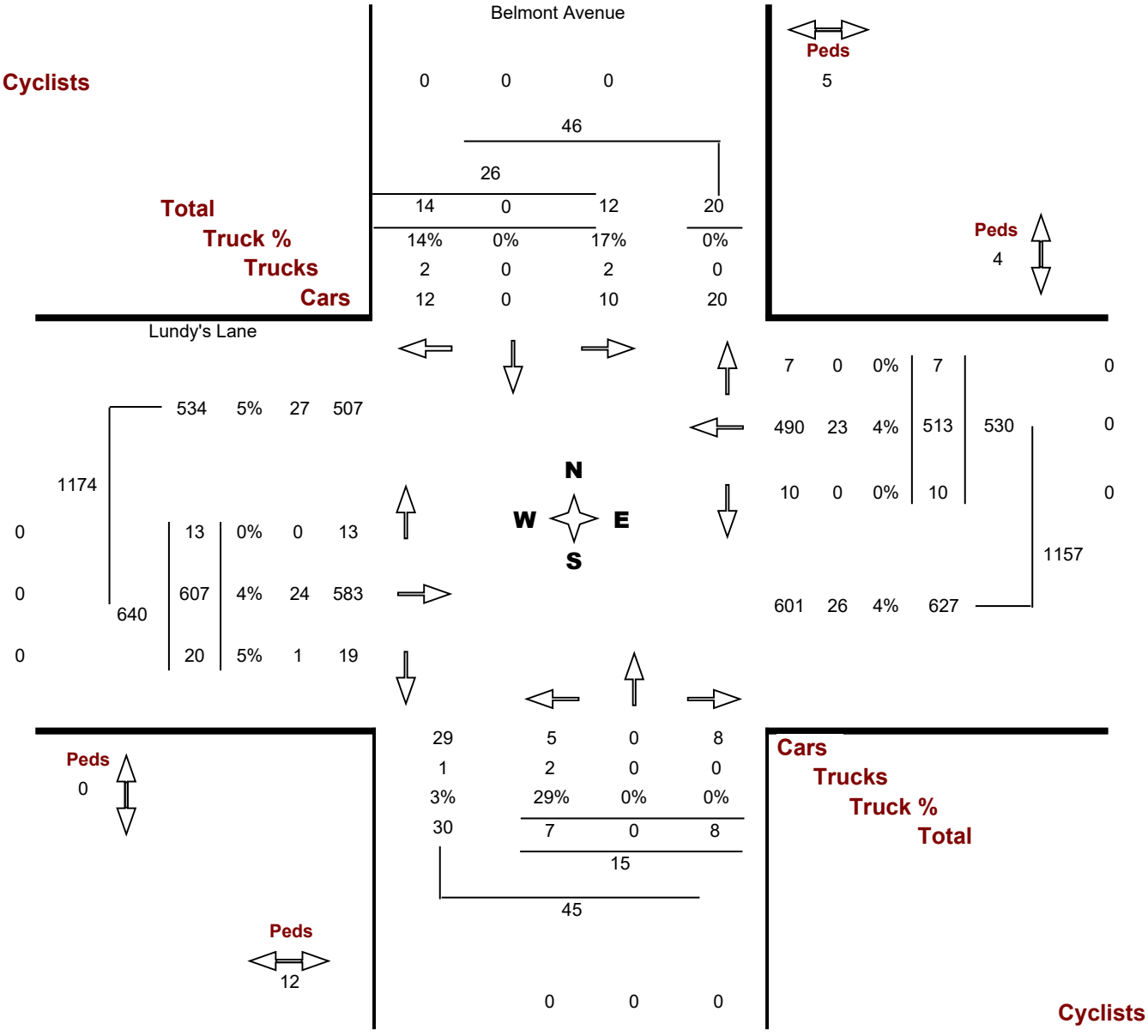
Midblock Collisions

Collision Location	Year	Month	Environment Condition	Impact Type	Collision Serverity
RR20 between Belmont Ave & Montrose Rd	2020	February	Clear	Sideswipe	P.D. only
RR20 between Belmont Ave & Montrose Rd	2018	June	Clear	Rear end	P.D. only
RR20 between Belmont Ave & Montrose Rd	2020	October	Clear	Rear end	P.D. only
RR20 between Belmont Ave & Montrose Rd	2021	June	Clear	Sideswipe	P.D. only
RR20 between Brookfield Ave & Royal Manor Dr	2018	December	Clear	SMV other	P.D. only
RR20 between Brookfield Ave & Royal Manor Dr	2018	August	Clear	Rear end	Non-fatal injury
RR20 between Brookfield Ave & Royal Manor Dr	2018	October	Clear	Rear end	Other
RR20 between Brookfield Ave & Royal Manor Dr	2020	September	Clear	Sideswipe	P.D. only
RR20 between Byng Avenue & Carlton Avenue & Prince Edward Avenue	2018	February	Clear	Rear end	Other
RR20 between Byng Avenue & Carlton Avenue & Prince Edward Avenue	2019	October	Clear	Sideswipe	P.D. only
RR20 between Byng Avenue & Carlton Avenue & Prince Edward Avenue	2019	November	Clear	Turning Movement	P.D. only
RR20 between Byng Avenue & Carlton Avenue & Prince Edward Avenue	2019	May	Clear	Sideswipe	P.D. only
RR20 between Byng Avenue & Carlton Avenue & Prince Edward Avenue	2019	June	Clear	Angle	Non-fatal injury
RR20 between Byng Avenue & Carlton Avenue & Prince Edward Avenue	2019	July	Clear	Sideswipe	P.D. only
RR20 between Byng Avenue & Carlton Avenue & Prince Edward Avenue	2020	March	Clear	Angle	P.D. only
RR20 between Highland Avenue & Glenholme Avenue	2020	October	Clear	Sideswipe	P.D. only
RR20 between Mouland Avenue & Brookfield Avenue	2018	October	Rain	Rear end	Other
RR20 between Mouland Avenue & Brookfield Avenue	2018	October	Clear	Angle	Other
RR20 between Mouland Avenue & Brookfield Avenue	2018	September	Clear	Rear end	P.D. only
RRR20 between Royal Manor Drive & Belmont Avenue	2018	May	Clear	Sideswipe	P.D. only
RRR20 between Royal Manor Drive & Belmont Avenue	2018	May	Clear	Sideswipe	P.D. only
RRR20 between Royal Manor Drive & Belmont Avenue	2018	July	Clear	Rear end	P.D. only
RRR20 between Royal Manor Drive & Belmont Avenue	2020	January	Clear	Rear end	P.D. only

Turning Movements Report - AM Period

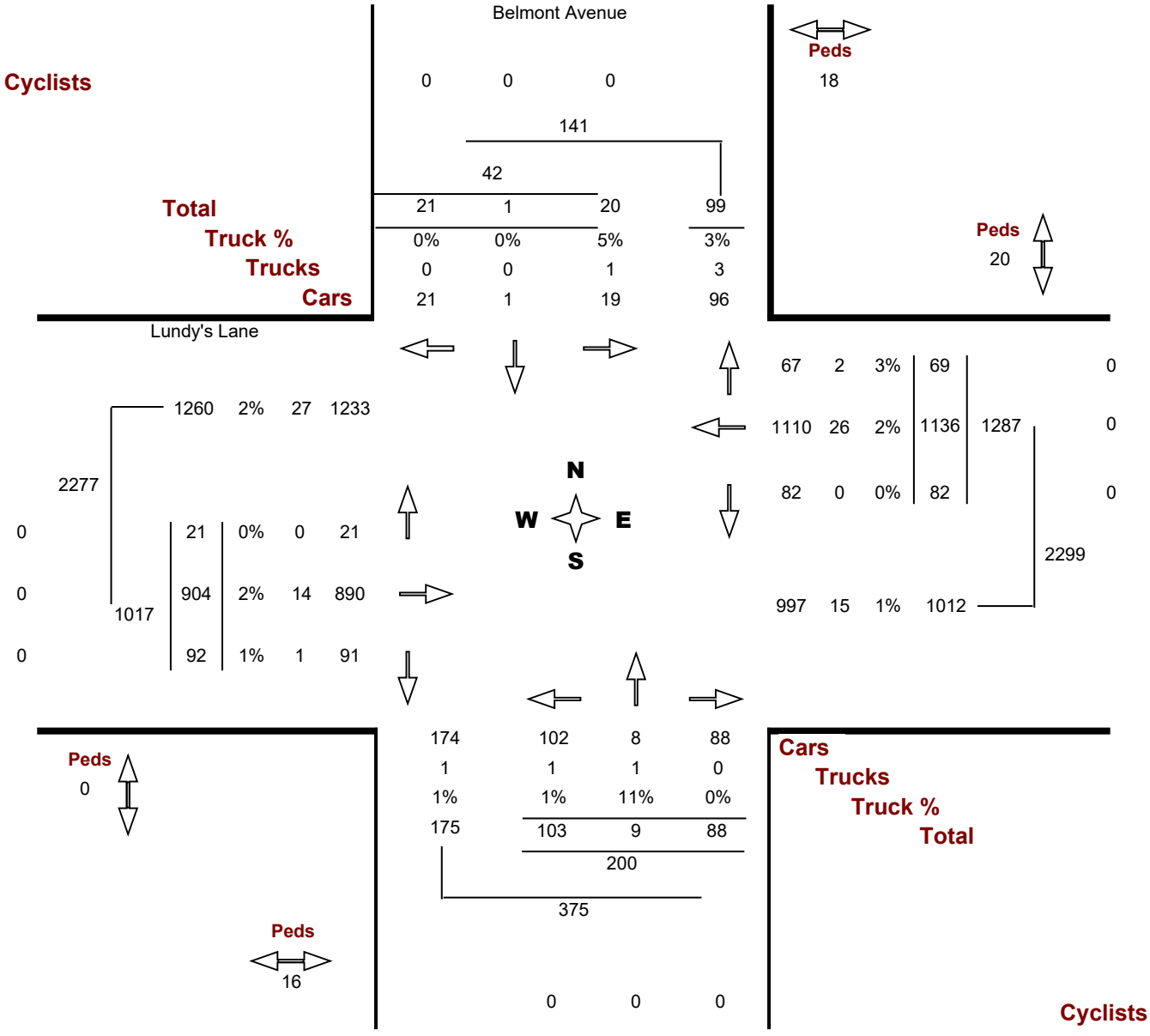
Location..... Belmont Avenue @ Lundy's Lane
Municipality. NIAGARA FALLS
Traffic Cont.
Major Dir..... East west

GeoID..... 01595
Count Date. Tuesday, 09 August, 2016
Count Time. 07:00 AM — 09:00 AM
Peak Hour.. 08:00 AM — 09:00 AM



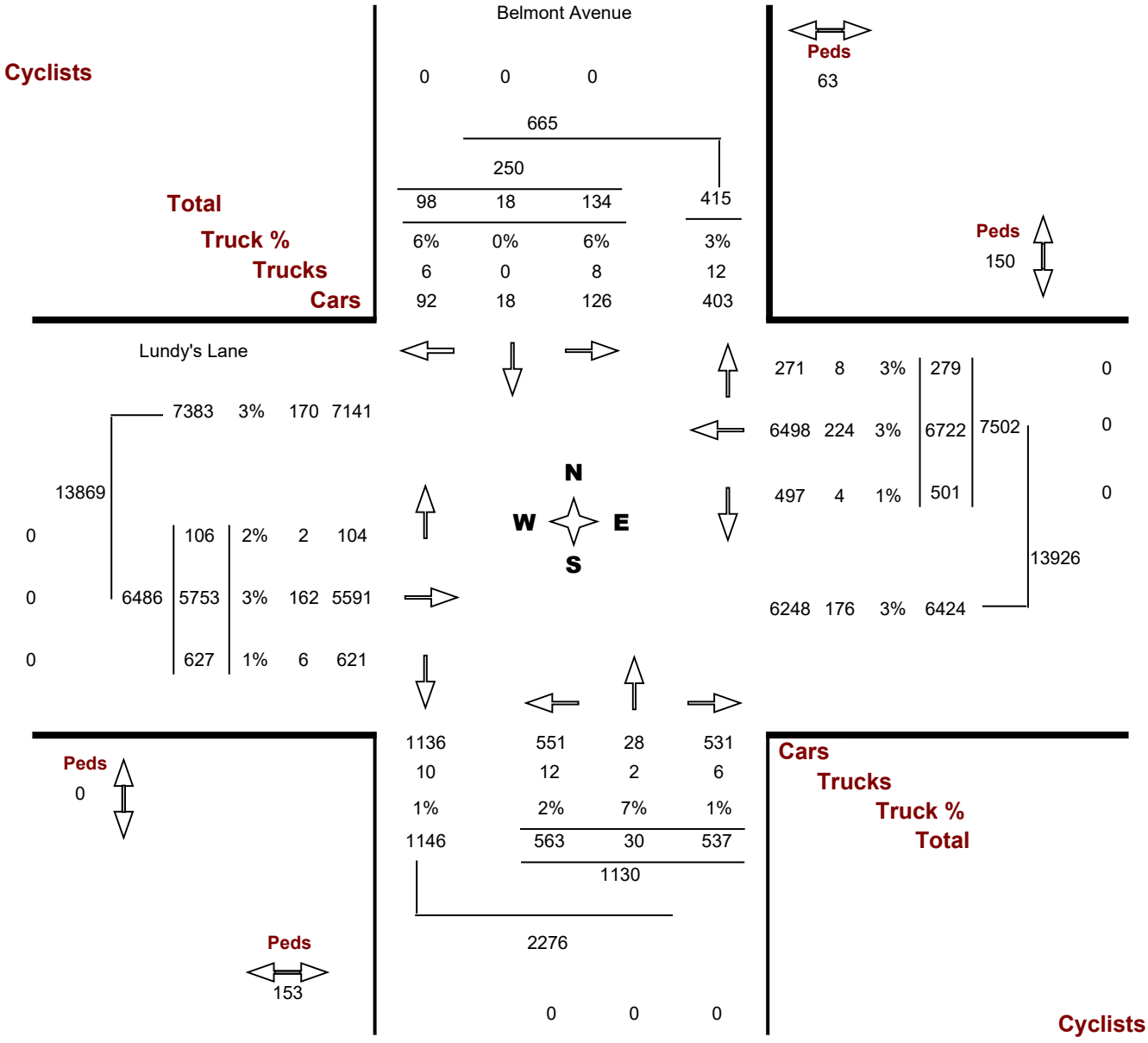
Turning Movements Report - PM Period

Location.....	Belmont Avenue @ Lundy's Lane	**GeoID.....**	01595
Municipality.	NIAGARA FALLS	**Count Date.**	Tuesday, 09 August, 2016
Traffic Cont.		**Count Time.**	03:00 PM — 06:00 PM
Major Dir.....	East west	**Peak Hour..**	04:30 PM — 05:30 PM



Turning Movement Count Report
Full Study

Location..... Belmont Avenue @ Lundy's Lane
Municipality..... NIAGARA FALLS
GeoID..... 01595
Count Date..... Tuesday, 09 August, 2016



Turning Movement Count - Details Report (15 min)

Location..... Belmont Avenue @ Lundy's Lane

Municipality..... NIAGARA FALLS

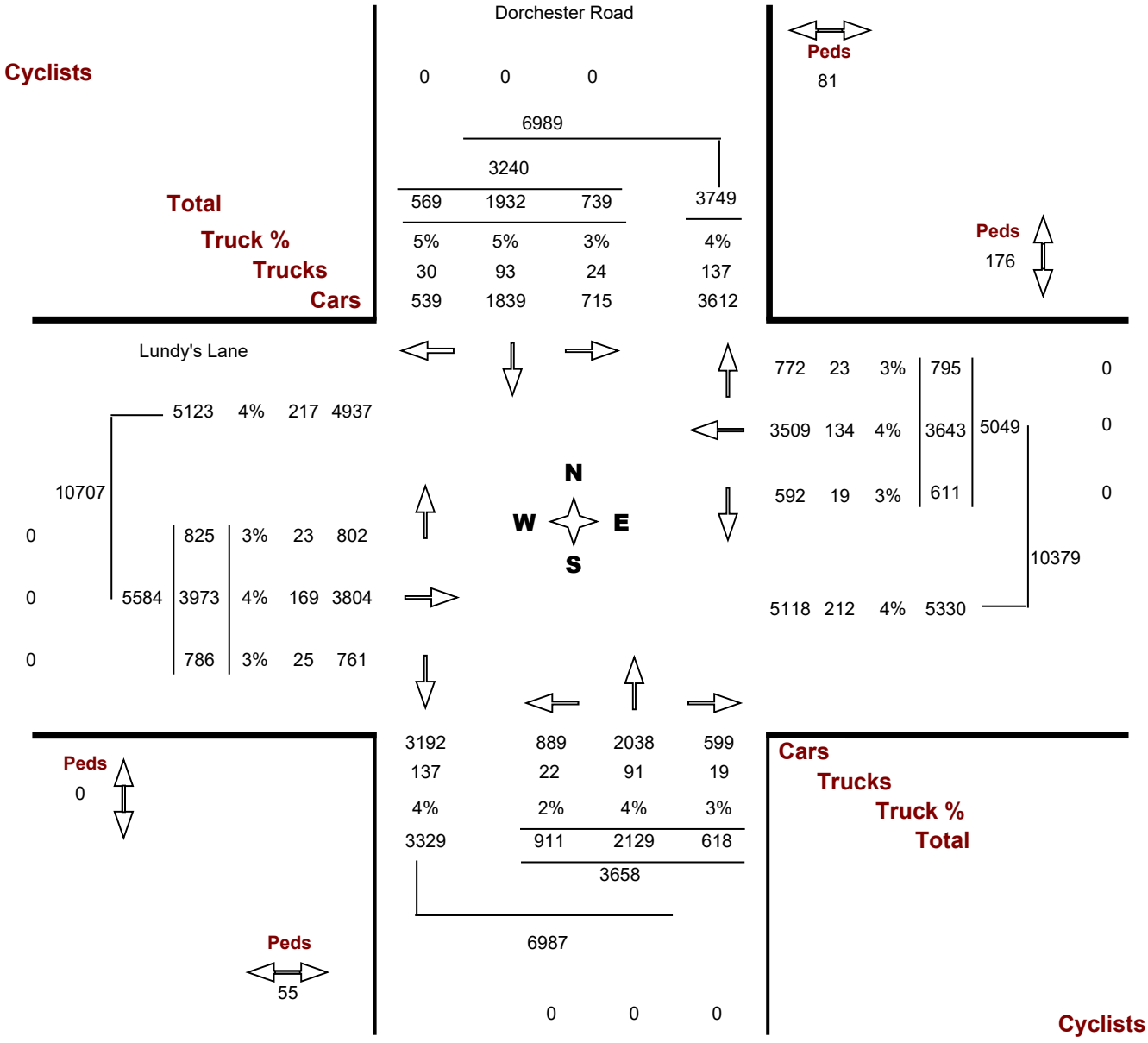
Count Date..... Tuesday, August 09, 2016

		Belmont Avenue										Lundy's Lane									
		North Approach					South Approach					East Approach					West Approach				
Time Period		LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT
07:00	07:15	2	0	1	0	3	1	0	0	0	1	2	71	1	0	74	0	81	1	0	82
07:15	07:30	1	0	2	0	3	0	0	2	0	2	0	77	3	0	80	0	72	0	0	72
07:30	07:45	0	0	0	0	0	2	0	1	0	3	3	100	2	0	105	0	121	3	0	124
07:45	08:00	2	0	3	0	5	2	1	1	0	4	0	95	0	0	95	2	124	6	0	132
Hourly Total		5	0	6	0	11	5	1	4	0	10	5	343	6	0	354	2	398	10	0	410
08:00	08:15	4	0	4	0	8	3	0	1	0	4	0	100	2	0	102	0	131	2	0	133
08:15	08:30	3	0	6	0	9	1	0	1	0	2	0	114	1	0	115	7	147	2	0	156
08:30	08:45	3	0	3	0	6	1	0	2	0	3	4	142	3	0	149	3	151	2	0	156
08:45	09:00	2	0	1	0	3	2	0	4	0	6	6	157	1	0	164	3	178	14	0	195
Hourly Total		12	0	14	0	26	7	0	8	0	15	10	513	7	0	530	13	607	20	0	640
11:00	11:15	10	0	2	0	12	12	0	19	0	31	13	203	11	0	227	6	165	31	0	202
11:15	11:30	1	0	4	0	5	16	0	16	0	32	21	194	11	0	226	3	212	31	0	246
11:30	11:45	8	4	4	0	16	19	3	31	0	53	19	222	10	0	251	4	212	23	0	239
11:45	12:00	6	1	4	0	11	17	0	22	0	39	16	211	6	0	233	1	215	35	0	251
Hourly Total		25	5	14	0	44	64	3	88	0	155	69	830	38	0	937	14	804	120	0	938
12:00	12:15	3	4	2	0	9	20	1	13	0	34	21	245	10	0	276	1	194	31	0	226
12:15	12:30	7	0	3	0	10	23	1	25	0	49	23	247	10	0	280	4	188	22	0	214
12:30	12:45	4	0	5	0	9	25	1	24	0	50	17	208	5	0	230	3	237	24	0	264
12:45	13:00	3	0	1	0	4	24	2	22	0	48	20	218	10	0	248	0	175	27	0	202
Hourly Total		17	4	11	0	32	92	5	84	0	181	81	918	35	0	1034	8	794	104	0	906
13:00	13:15	1	2	2	0	5	22	0	20	0	42	15	212	9	0	236	4	158	23	0	185
13:15	13:30	7	0	0	0	7	13	1	15	0	29	24	222	4	0	250	9	185	25	0	219
13:30	13:45	4	0	4	0	8	21	0	27	0	48	24	216	5	0	245	1	166	26	0	193
13:45	14:00	1	0	1	0	2	22	0	26	0	48	16	198	4	0	218	3	174	27	0	204
Hourly Total		13	2	7	0	22	78	1	88	0	167	79	848	22	0	949	17	683	101	0	801
15:00	15:15	6	0	6	0	12	28	4	23	0	55	18	236	6	0	260	3	183	23	0	209
15:15	15:30	4	1	2	0	7	35	1	17	0	53	20	253	20	0	293	4	183	24	0	211
15:30	15:45	1	2	3	0	6	17	0	21	0	38	27	282	14	0	323	6	198	22	0	226
15:45	16:00	6	0	1	0	7	26	2	23	0	51	25	291	22	0	338	2	192	17	0	211
Hourly Total		17	3	12	0	32	106	7	84	0	197	90	1062	62	0	1214	15	756	86	0	857
16:00	16:15	4	2	2	0	8	29	1	21	0	51	24	296	8	0	328	5	203	22	0	230

		Belmont Avenue										Lundy's Lane									
		North Approach					South Approach					East Approach					West Approach				
Time Period		LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT
16:15	16:30	10	0	5	0	15	37	1	24	0	62	26	272	9	0	307	5	178	26	0	209
16:30	16:45	6	1	7	0	14	23	0	18	0	41	22	294	7	0	323	3	232	29	0	264
16:45	17:00	6	0	3	0	9	20	1	28	0	49	22	270	17	0	309	5	250	22	0	277
Hourly Total		26	3	17	0	46	109	3	91	0	203	94	1132	41	0	1267	18	863	99	0	980
17:00	17:15	4	0	8	0	12	33	5	18	0	56	14	268	13	0	295	7	229	24	0	260
17:15	17:30	4	0	3	0	7	27	3	24	0	54	24	304	32	0	360	6	193	17	0	216
17:30	17:45	5	0	1	0	6	21	1	24	0	46	17	283	12	0	312	3	216	22	0	241
17:45	18:00	6	1	5	0	12	21	1	24	0	46	18	221	11	0	250	3	210	24	0	237
Hourly Total		19	1	17	0	37	102	10	90	0	202	73	1076	68	0	1217	19	848	87	0	954
Grand Total		134	18	98	0	250	563	30	537	0	1130	501	6722	279	0	7502	106	5753	627	0	6486
Truck %		6%	0%	6%	0%	6%	2%	7%	1%	0%	2%	1%	3%	3%	0%	3%	2%	3%	1%	0%	3%

Turning Movement Count Report
Full Study

Location..... Dorchester Road @ Lundy's Lane
Municipality..... NIAGARA FALLS
GeoID..... 01599
Count Date..... Wednesday, 08 July, 2015



Turning Movement Count - Details Report (15 min)

Location..... Dorchester Road @ Lundy's Lane

Municipality..... NIAGARA FALLS

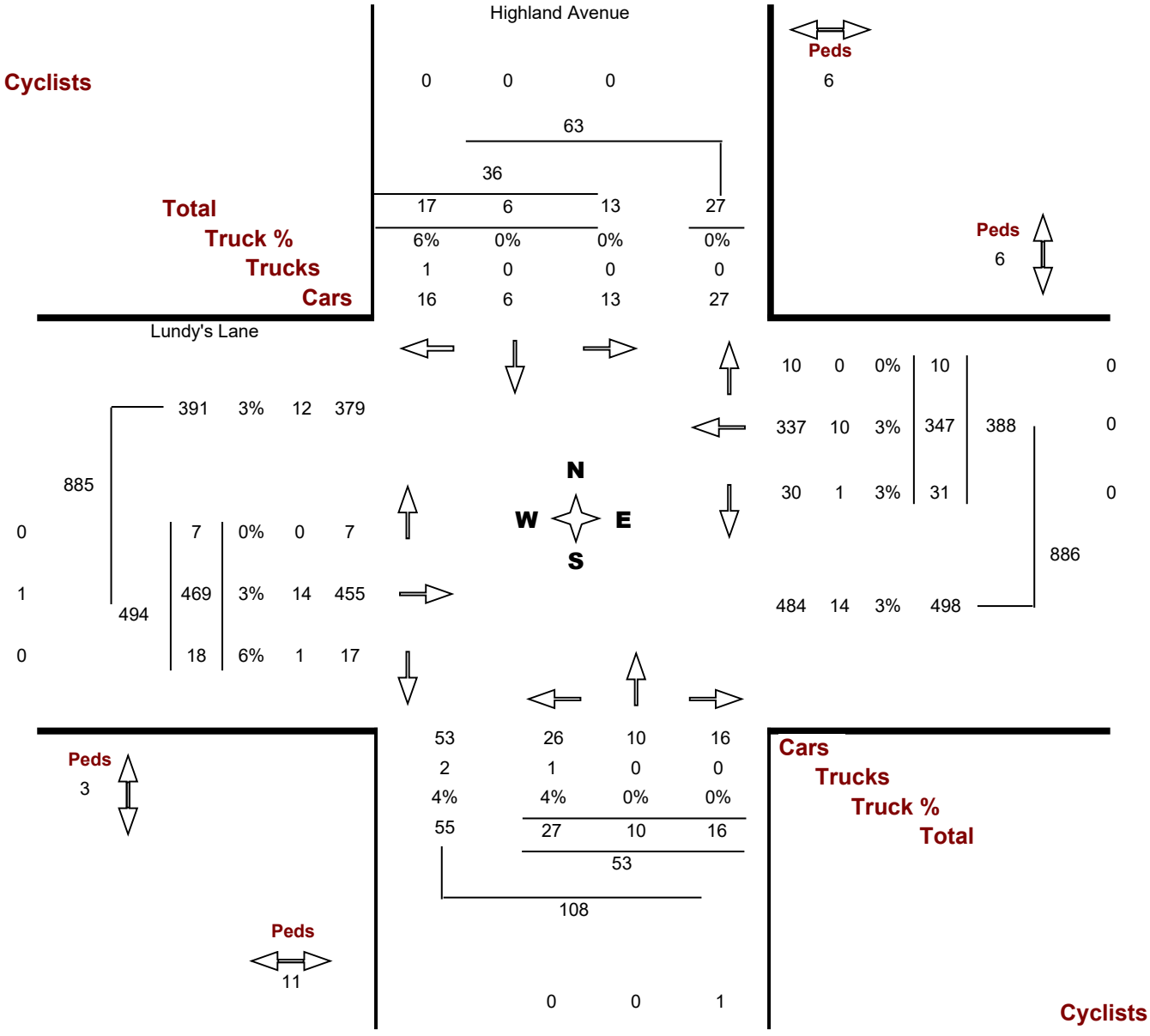
Count Date..... Wednesday, July 08, 2015

		Dorchester Road										Lundy's Lane									
		North Approach					South Approach					East Approach					West Approach				
Time Period		LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT
07:00	07:15	6	14	4	0	24	12	25	2	0	39	2	41	11	0	54	14	48	4	0	66
07:15	07:30	9	27	3	0	39	10	35	11	0	56	2	38	11	0	51	12	51	10	0	73
07:30	07:45	10	37	10	0	57	17	45	12	0	74	7	60	19	0	86	20	84	7	0	111
07:45	08:00	12	42	12	0	66	16	43	7	0	66	7	56	7	0	70	10	87	12	0	109
Hourly Total		37	120	29	0	186	55	148	32	0	235	18	195	48	0	261	56	270	33	0	359
08:00	08:15	13	36	8	0	57	24	50	11	0	85	5	44	15	0	64	24	75	9	0	108
08:15	08:30	14	43	4	0	61	15	52	7	0	74	8	83	18	0	109	25	109	18	0	152
08:30	08:45	16	36	11	0	63	24	64	10	0	98	12	67	15	0	94	26	127	19	0	172
08:45	09:00	13	50	12	0	75	19	82	13	0	114	10	69	16	0	95	24	142	21	0	187
Hourly Total		56	165	35	0	256	82	248	41	0	371	35	263	64	0	362	99	453	67	0	619
11:00	11:15	21	47	23	0	91	23	73	25	0	121	18	101	30	0	149	24	116	28	0	168
11:15	11:30	23	64	9	0	96	22	63	22	0	107	25	109	19	0	153	32	127	27	0	186
11:30	11:45	18	91	20	0	129	36	73	31	0	140	22	100	29	0	151	34	135	18	0	187
11:45	12:00	31	75	24	0	130	29	76	27	0	132	27	107	34	0	168	43	138	18	0	199
Hourly Total		93	277	76	0	446	110	285	105	0	500	92	417	112	0	621	133	516	91	0	740
12:00	12:15	38	76	18	0	132	28	97	20	0	145	32	124	38	0	194	24	124	29	0	177
12:15	12:30	19	72	24	0	115	27	70	25	0	122	32	122	30	0	184	25	142	44	0	211
12:30	12:45	35	65	15	0	115	35	65	26	0	126	23	107	20	0	150	28	119	62	0	209
12:45	13:00	25	67	17	0	109	35	70	17	0	122	31	127	32	0	190	19	134	27	0	180
Hourly Total		117	280	74	0	471	125	302	88	0	515	118	480	120	0	718	96	519	162	0	777
13:00	13:15	23	66	25	0	114	30	56	29	0	115	20	120	25	0	165	31	138	17	0	186
13:15	13:30	27	56	18	0	101	21	81	24	0	126	25	108	22	0	155	25	127	22	0	174
13:30	13:45	29	63	14	0	106	43	62	23	0	128	30	129	38	0	197	38	129	11	0	178
13:45	14:00	21	52	20	0	93	24	56	24	0	104	21	109	26	0	156	28	124	22	0	174
Hourly Total		100	237	77	0	414	118	255	100	0	473	96	466	111	0	673	122	518	72	0	712
15:00	15:15	24	67	16	0	107	32	74	31	0	137	18	127	24	0	169	32	134	23	0	189
15:15	15:30	27	76	27	0	130	34	77	11	0	122	18	147	37	0	202	17	128	29	0	174
15:30	15:45	24	81	17	0	122	30	89	17	0	136	17	138	38	0	193	29	117	29	0	175
15:45	16:00	27	66	23	0	116	36	83	14	0	133	27	147	37	0	211	18	156	30	0	204
Hourly Total		102	290	83	0	475	132	323	73	0	528	80	559	136	0	775	96	535	111	0	742
16:00	16:15	21	77	31	0	129	26	71	19	0	116	27	145	25	0	197	28	163	33	0	224

		Dorchester Road										Lundy's Lane									
		North Approach					South Approach					East Approach					West Approach				
Time Period		LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT
16:15	16:30	19	66	27	0	112	38	66	26	0	130	26	168	37	0	231	29	134	39	0	202
16:30	16:45	31	79	25	0	135	32	59	24	0	115	20	146	27	0	193	37	132	33	0	202
16:45	17:00	38	62	23	0	123	41	88	16	0	145	20	155	18	0	193	28	155	35	0	218
Hourly Total		109	284	106	0	499	137	284	85	0	506	93	614	107	0	814	122	584	140	0	846
17:00	17:15	29	64	25	0	118	50	72	21	0	143	17	142	18	0	177	23	125	32	0	180
17:15	17:30	33	70	24	0	127	40	85	17	0	142	29	184	30	0	243	15	148	25	0	188
17:30	17:45	26	68	22	0	116	36	75	31	0	142	15	171	25	0	211	35	130	20	0	185
17:45	18:00	37	77	18	0	132	26	52	25	0	103	18	152	24	0	194	28	175	33	0	236
Hourly Total		125	279	89	0	493	152	284	94	0	530	79	649	97	0	825	101	578	110	0	789
Grand Total		739	1932	569	0	3240	911	2129	618	0	3658	611	3643	795	0	5049	825	3973	786	0	5584
Truck %		3%	5%	5%	0%	5%	2%	4%	3%	0%	4%	3%	4%	3%	0%	3%	3%	4%	3%	0%	4%

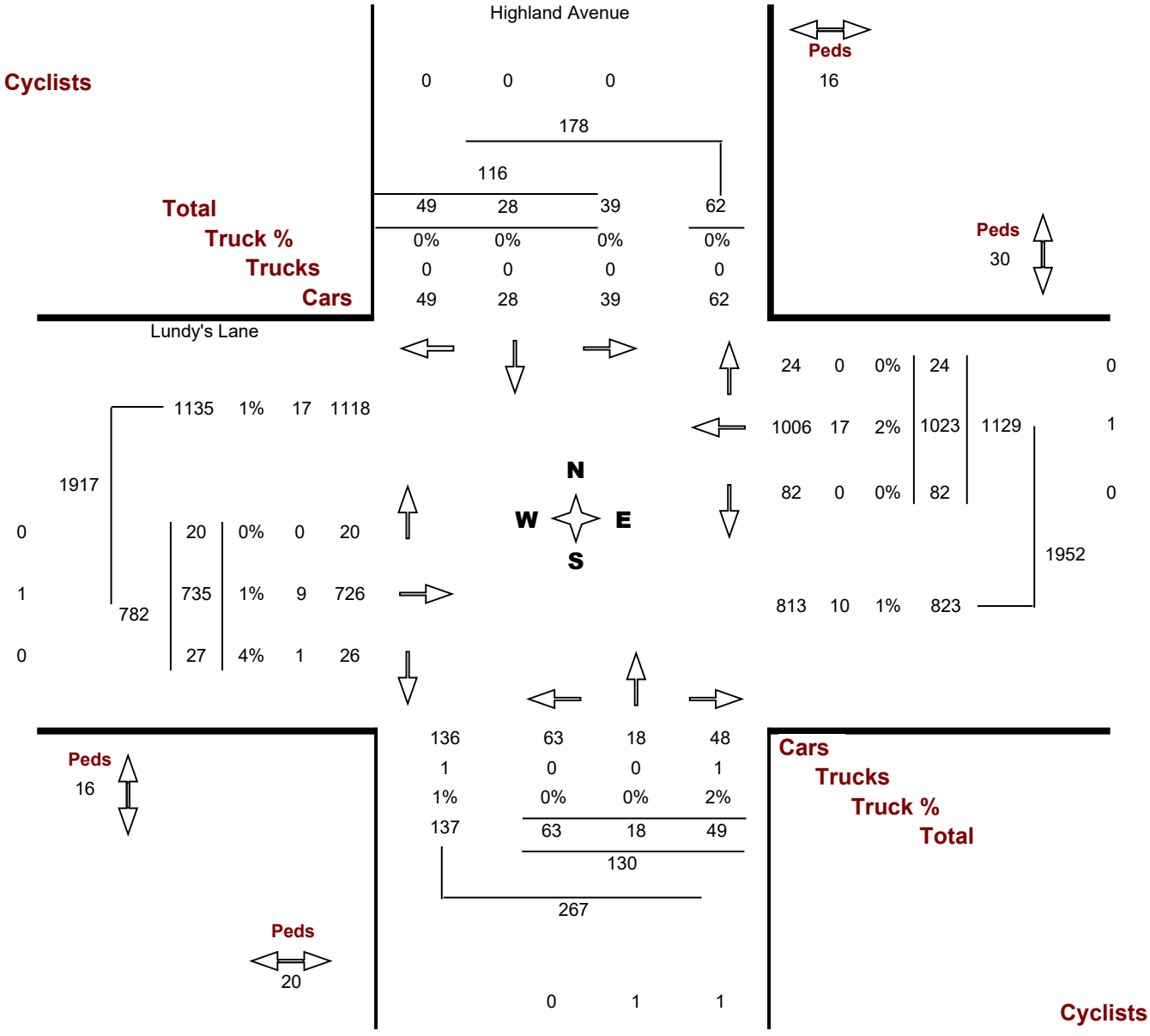
Turning Movements Report - AM Period

Location..... Highland Avenue @ Lundy's Lane
GeoID..... 01137
Municipality. NIAGARA FALLS
Count Date. Thursday, 18 August, 2016
Traffic Cont.
Count Time. 07:00 AM — 09:00 AM
Major Dir..... East west
Peak Hour.. 08:00 AM — 09:00 AM



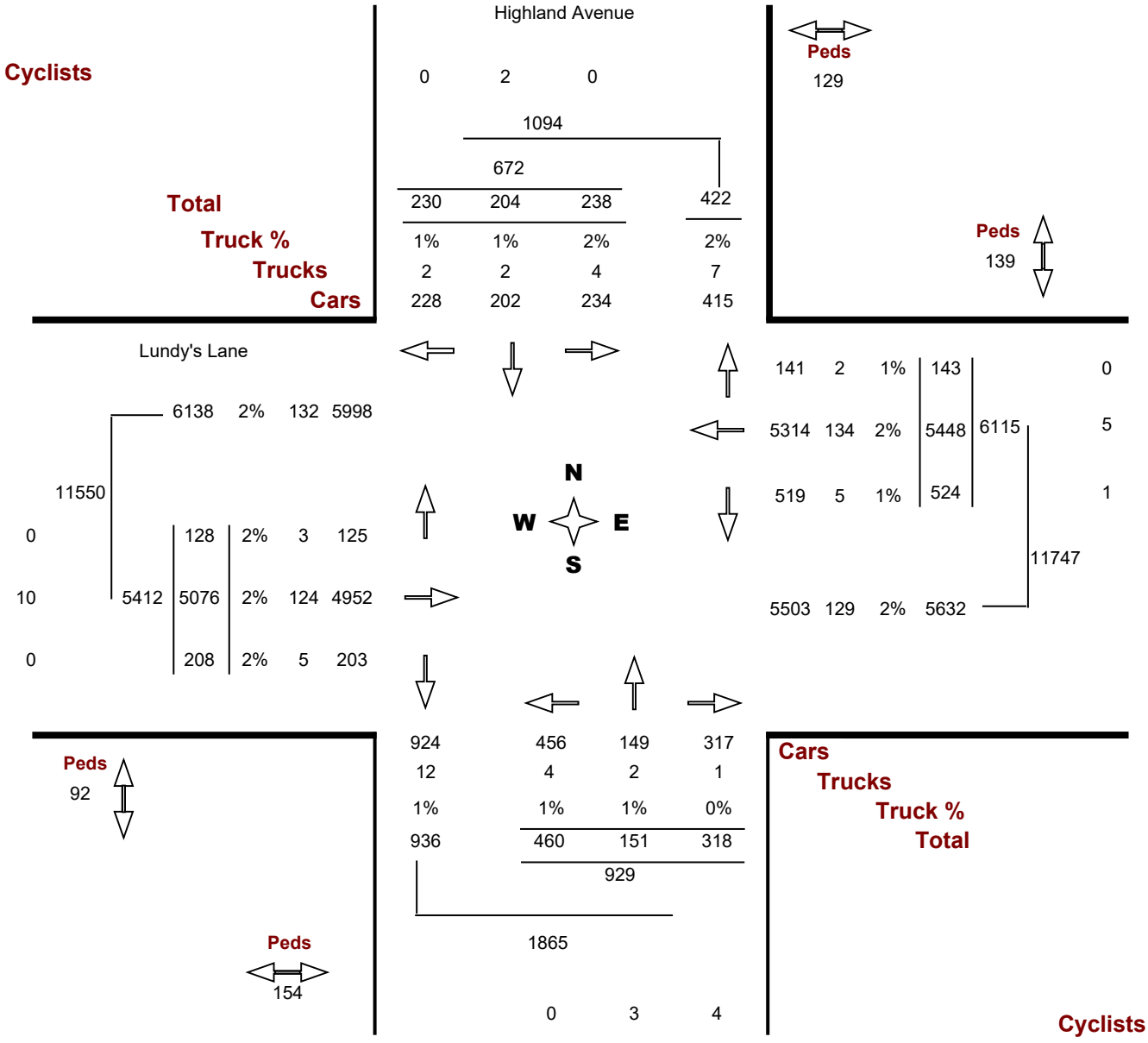
Turning Movements Report - PM Period

Location.....	Highland Avenue @ Lundy's Lane	**GeoID.....**	01137
Municipality.	NIAGARA FALLS	**Count Date.**	Thursday, 18 August, 2016
Traffic Cont.		**Count Time.**	03:00 PM — 06:00 PM
Major Dir.....	East west	**Peak Hour..**	04:15 PM — 05:15 PM



Turning Movement Count Report
Full Study

Location..... Highland Avenue @ Lundy's Lane
Municipality..... NIAGARA FALLS
GeoID..... 01137
Count Date..... Thursday, 18 August, 2016



Turning Movement Count - Details Report (15 min)

Location..... Highland Avenue @ Lundy's Lane

Municipality..... NIAGARA FALLS

Count Date..... Thursday, August 18, 2016

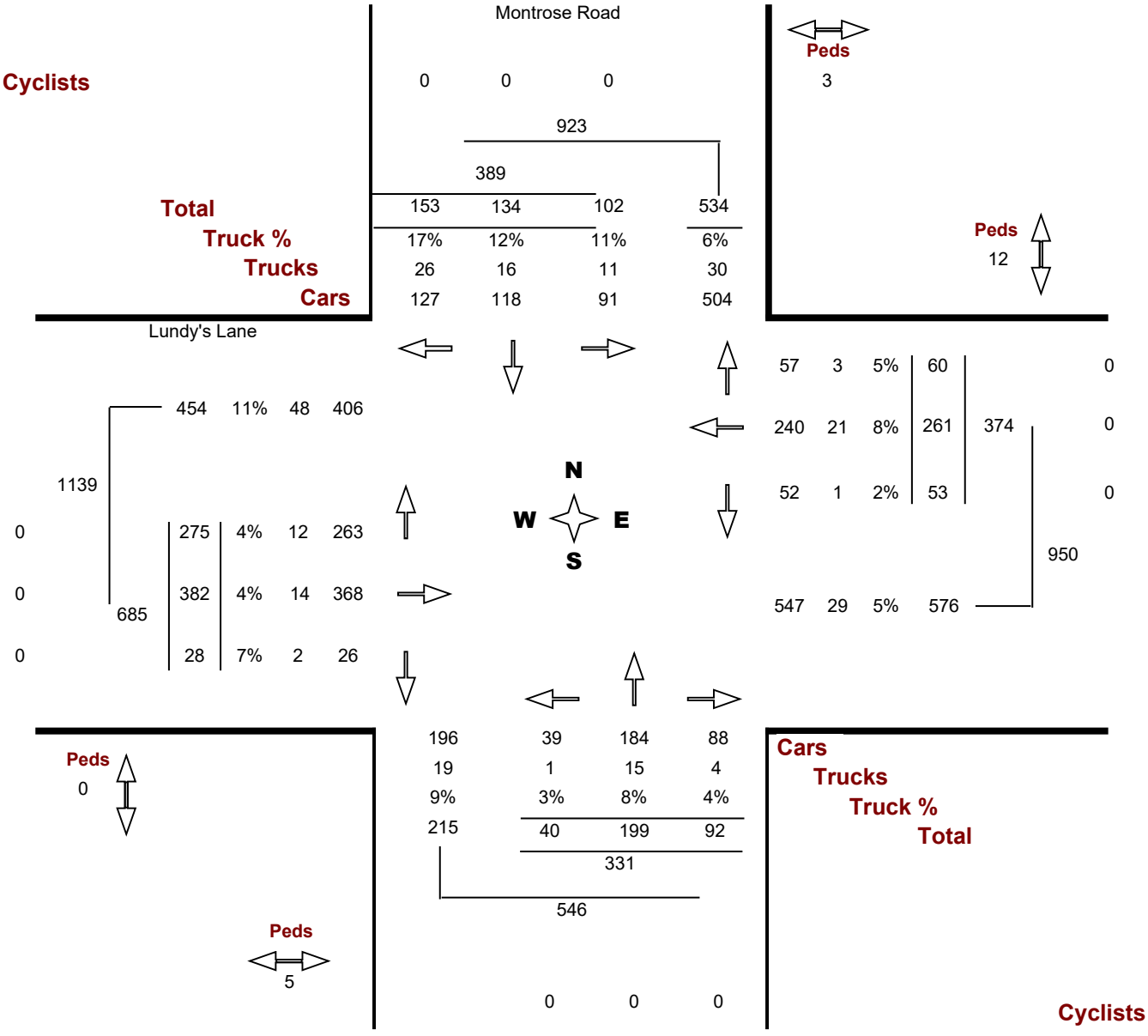
		Highland Avenue										Lundy's Lane									
		North Approach					South Approach					East Approach					West Approach				
Time Period		LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT
07:00	07:15	1	0	1	0	2	0	0	2	0	2	0	44	0	0	44	0	47	0	0	47
07:15	07:30	8	0	3	0	11	0	0	3	0	3	1	57	1	0	59	1	79	1	0	81
07:30	07:45	6	1	4	0	11	0	0	2	0	2	1	63	0	0	64	1	112	3	0	116
07:45	08:00	7	4	1	0	12	1	0	2	0	3	7	70	1	0	78	2	99	4	0	105
Hourly Total		22	5	9	0	36	1	0	9	0	10	9	234	2	0	245	4	337	8	0	349
08:00	08:15	1	1	6	0	8	4	2	1	0	7	7	72	1	0	80	0	105	3	0	108
08:15	08:30	3	2	4	0	9	10	1	4	0	15	5	76	0	0	81	2	117	5	0	124
08:30	08:45	4	2	3	0	9	6	2	4	0	12	10	85	6	0	101	2	110	5	0	117
08:45	09:00	5	1	4	0	10	7	5	7	0	19	9	114	3	0	126	3	137	5	0	145
Hourly Total		13	6	17	0	36	27	10	16	0	53	31	347	10	0	388	7	469	18	0	494
11:00	11:15	10	6	2	0	18	21	1	12	0	34	21	155	6	0	182	5	169	11	0	185
11:15	11:30	8	8	5	0	21	16	4	12	0	32	18	142	6	0	166	4	177	6	0	187
11:30	11:45	10	6	6	0	22	13	5	16	0	34	20	193	3	0	216	1	180	6	0	187
11:45	12:00	5	10	5	0	20	19	5	13	0	37	13	196	5	0	214	4	189	11	0	204
Hourly Total		33	30	18	0	81	69	15	53	0	137	72	686	20	0	778	14	715	34	0	763
12:00	12:15	8	10	8	0	26	25	9	11	0	45	32	225	7	0	264	4	185	7	0	196
12:15	12:30	8	9	5	0	22	13	9	8	0	30	19	173	4	0	196	3	157	11	0	171
12:30	12:45	5	9	8	0	22	22	6	12	0	40	24	178	9	0	211	5	205	7	0	217
12:45	13:00	3	10	6	0	19	24	5	22	0	51	25	181	3	0	209	5	191	10	0	206
Hourly Total		24	38	27	0	89	84	29	53	0	166	100	757	23	0	880	17	738	35	0	790
13:00	13:15	10	5	10	0	25	17	5	9	0	31	20	174	2	0	196	9	209	7	0	225
13:15	13:30	10	6	3	0	19	16	6	13	0	35	18	186	4	0	208	2	180	8	0	190
13:30	13:45	8	7	3	0	18	22	5	6	0	33	15	166	3	0	184	6	176	7	0	189
13:45	14:00	3	13	7	0	23	19	5	15	0	39	17	205	9	0	231	1	166	5	0	172
Hourly Total		31	31	23	0	85	74	21	43	0	138	70	731	18	0	819	18	731	27	0	776
15:00	15:15	15	10	7	0	32	16	17	10	0	43	28	190	5	0	223	5	156	7	0	168
15:15	15:30	7	4	8	0	19	24	7	8	0	39	22	183	0	0	205	7	165	9	0	181
15:30	15:45	14	7	14	0	35	19	4	11	0	34	20	212	4	0	236	8	158	8	0	174
15:45	16:00	6	13	7	0	26	20	4	12	0	36	17	228	6	0	251	3	156	10	0	169
Hourly Total		42	34	36	0	112	79	32	41	0	152	87	813	15	0	915	23	635	34	0	692
16:00	16:15	7	6	11	0	24	19	12	20	0	51	28	215	8	0	251	4	171	7	0	182

		Highland Avenue										Lundy's Lane									
		North Approach					South Approach					East Approach					West Approach				
Time Period		LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT
16:15	16:30	8	3	15	0	26	15	9	13	0	37	12	252	9	0	273	5	187	3	0	195
16:30	16:45	12	10	9	0	31	11	3	6	0	20	24	251	3	0	278	3	181	6	0	190
16:45	17:00	9	9	14	0	32	17	4	14	0	35	24	258	7	0	289	3	192	13	0	208
Hourly Total		36	28	49	0	113	62	28	53	0	143	88	976	27	0	1091	15	731	29	0	775
17:00	17:15	10	6	11	0	27	20	2	16	0	38	22	262	5	0	289	9	175	5	0	189
17:15	17:30	8	11	19	0	38	12	7	13	0	32	20	228	10	0	258	8	159	7	0	174
17:30	17:45	11	3	9	0	23	17	4	9	0	30	16	228	5	0	249	1	200	7	0	208
17:45	18:00	8	12	12	0	32	15	3	12	0	30	9	186	8	0	203	12	186	4	0	202
Hourly Total		37	32	51	0	120	64	16	50	0	130	67	904	28	0	999	30	720	23	0	773
Grand Total		238	204	230	0	672	460	151	318	0	929	524	5448	143	0	6115	128	5076	208	0	5412
Truck %		2%	1%	1%	0%	1%	1%	1%	0%	0%	1%	1%	2%	1%	0%	2%	2%	2%	2%	0%	2%

Turning Movements Report - AM Period

Location..... Lundy's Lane @ Montrose Road
Municipality. NIAGARA FALLS
Traffic Cont.
Major Dir..... East west

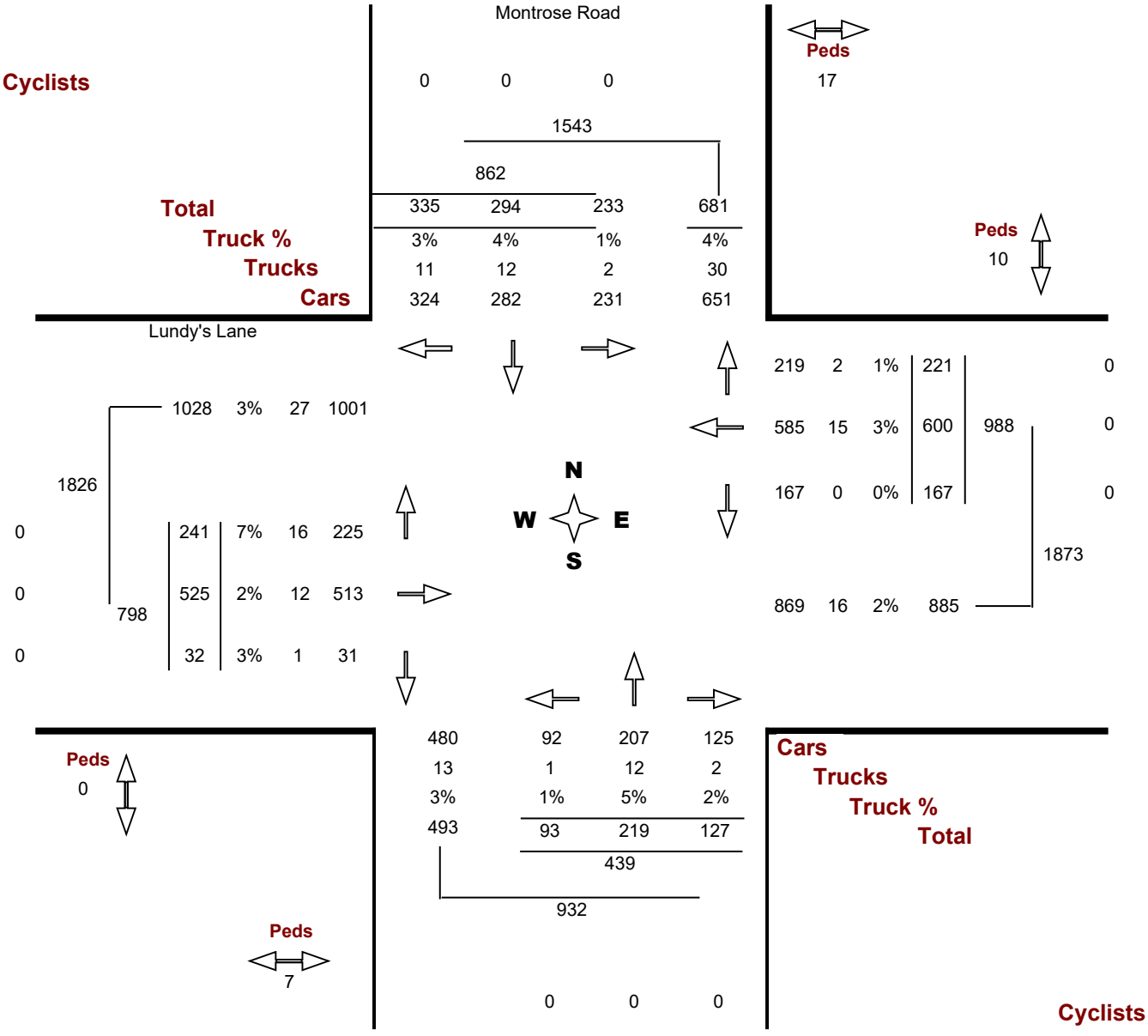
GeoID..... 01594
Count Date. Thursday, 16 July, 2015
Count Time. 07:00 AM — 09:00 AM
Peak Hour.. 08:00 AM — 09:00 AM



Turning Movements Report - PM Period

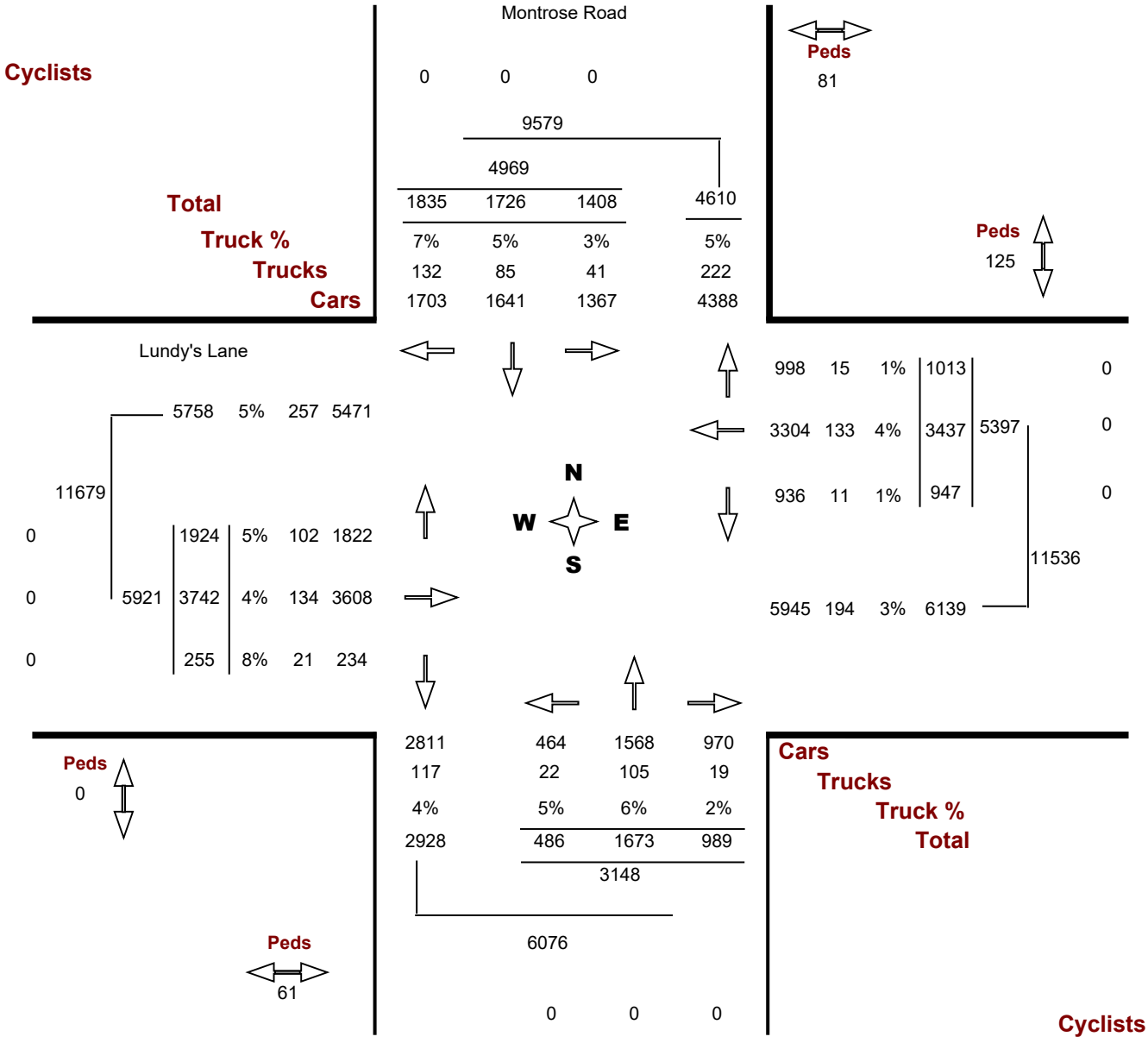
Location..... Lundy's Lane @ Montrose Road
Municipality. NIAGARA FALLS
Traffic Cont.
Major Dir..... East west

GeoID..... 01594
Count Date. Thursday, 16 July, 2015
Count Time. 03:00 PM — 06:00 PM
Peak Hour.. 04:30 PM — 05:30 PM



Turning Movement Count Report
Full Study

Location..... Lundy's Lane @ Montrose Road
Municipality..... NIAGARA FALLS
GeoID..... 01594
Count Date..... Thursday, 16 July, 2015



Turning Movement Count - Details Report (15 min)

Location..... Lundy's Lane @ Montrose Road

Municipality..... NIAGARA FALLS

Count Date..... Thursday, July 16, 2015

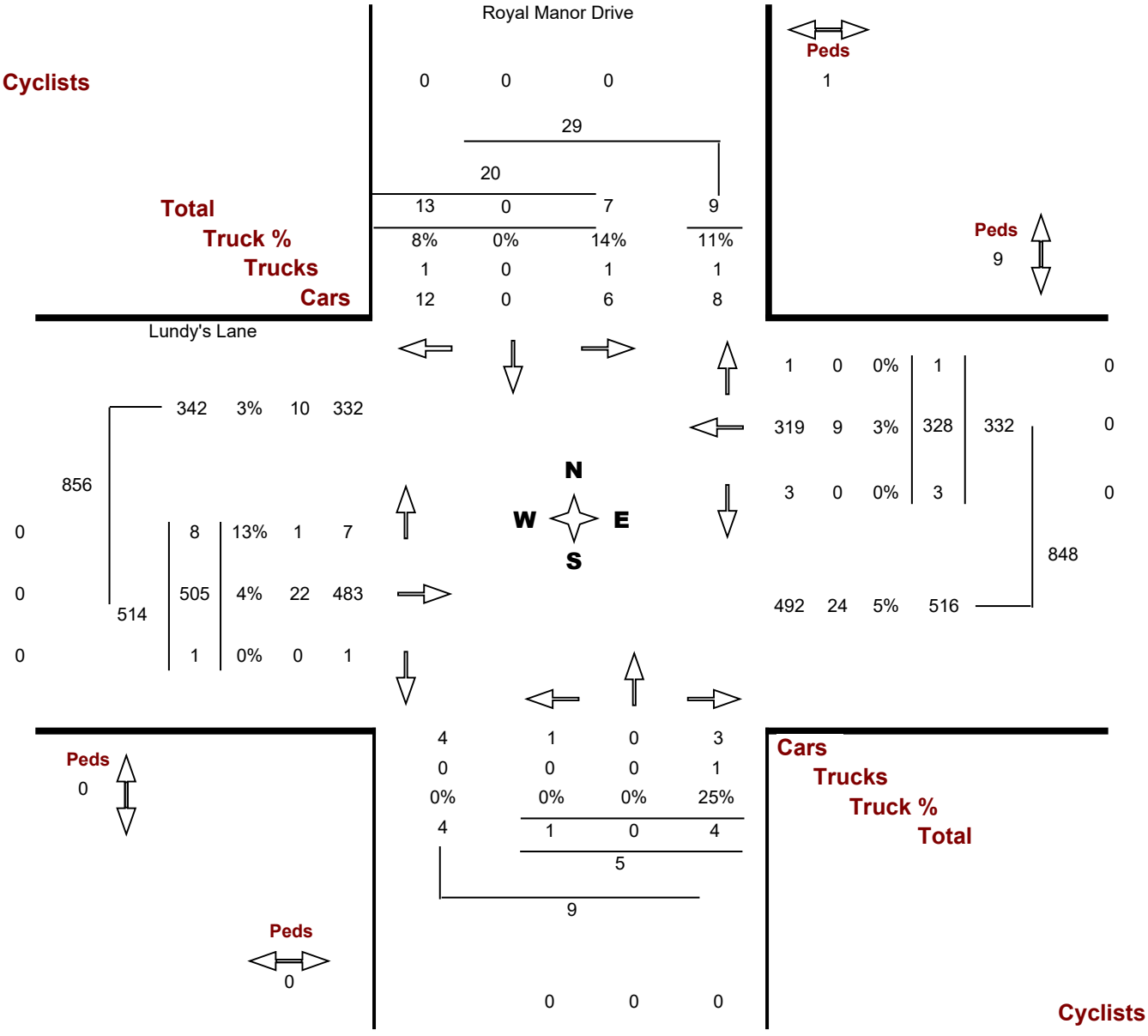
		Montrose Road										Lundy's Lane									
		North Approach					South Approach					East Approach					West Approach				
Time Period		LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT
07:00	07:15	9	13	34	0	56	6	20	12	0	38	3	43	5	0	51	40	45	4	0	89
07:15	07:30	13	22	28	0	63	6	34	9	0	49	12	43	11	0	66	36	67	6	0	109
07:30	07:45	17	25	27	0	69	7	66	31	0	104	10	54	6	0	70	54	66	11	0	131
07:45	08:00	22	25	45	0	92	10	52	18	0	80	11	50	14	0	75	67	77	11	0	155
Hourly Total		61	85	134	0	280	29	172	70	0	271	36	190	36	0	262	197	255	32	0	484
08:00	08:15	21	32	27	0	80	7	44	18	0	69	11	59	13	0	83	85	83	5	0	173
08:15	08:30	19	36	29	0	84	14	47	27	0	88	13	71	14	0	98	74	101	6	0	181
08:30	08:45	29	30	47	0	106	7	54	19	0	80	9	58	12	0	79	56	100	4	0	160
08:45	09:00	33	36	50	0	119	12	54	28	0	94	20	73	21	0	114	60	98	13	0	171
Hourly Total		102	134	153	0	389	40	199	92	0	331	53	261	60	0	374	275	382	28	0	685
11:00	11:15	49	46	52	0	147	21	43	34	0	98	25	108	22	0	155	52	143	10	0	205
11:15	11:30	46	61	59	0	166	11	49	35	0	95	31	103	34	0	168	57	119	15	0	191
11:30	11:45	54	58	63	0	175	11	49	43	0	103	38	83	26	0	147	67	127	9	0	203
11:45	12:00	55	59	55	0	169	17	54	42	0	113	42	92	25	0	159	71	124	11	0	206
Hourly Total		204	224	229	0	657	60	195	154	0	409	136	386	107	0	629	247	513	45	0	805
12:00	12:15	50	56	66	0	172	10	60	34	0	104	32	121	40	0	193	41	125	4	0	170
12:15	12:30	44	66	43	0	153	16	39	32	0	87	26	90	34	0	150	76	152	9	0	237
12:30	12:45	59	68	54	0	181	15	62	31	0	108	24	124	33	0	181	69	117	9	0	195
12:45	13:00	55	53	57	0	165	19	61	25	0	105	40	116	27	0	183	71	133	5	0	209
Hourly Total		208	243	220	0	671	60	222	122	0	404	122	451	134	0	707	257	527	27	0	811
13:00	13:15	64	61	58	0	183	9	44	42	0	95	35	115	22	0	172	50	132	8	0	190
13:15	13:30	51	71	51	0	173	13	44	33	0	90	31	102	33	0	166	48	135	8	0	191
13:30	13:45	40	51	59	0	150	18	73	28	0	119	35	147	43	0	225	51	130	13	0	194
13:45	14:00	41	51	75	0	167	18	62	39	0	119	38	140	38	0	216	57	121	7	0	185
Hourly Total		196	234	243	0	673	58	223	142	0	423	139	504	136	0	779	206	518	36	0	760
15:00	15:15	56	54	61	0	171	12	53	33	0	98	32	123	27	0	182	63	133	9	0	205
15:15	15:30	33	54	52	0	139	19	43	23	0	85	32	162	40	0	234	57	106	5	0	168
15:30	15:45	52	50	66	0	168	11	67	43	0	121	40	133	27	0	200	73	144	7	0	224
15:45	16:00	39	76	66	0	181	19	42	36	0	97	37	129	44	0	210	51	94	7	0	152
Hourly Total		180	234	245	0	659	61	205	135	0	401	141	547	138	0	826	244	477	28	0	749
16:00	16:15	56	72	69	0	197	29	64	36	0	129	47	129	27	0	203	80	129	6	0	215

		Montrose Road										Lundy's Lane									
		North Approach					South Approach					East Approach					West Approach				
Time Period		LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT
16:15	16:30	52	62	63	0	177	22	72	40	0	134	42	122	43	0	207	56	146	9	0	211
16:30	16:45	54	59	90	0	203	32	63	29	0	124	42	143	28	0	213	66	134	5	0	205
16:45	17:00	54	69	71	0	194	26	54	33	0	113	46	139	76	0	261	45	125	6	0	176
Hourly Total		216	262	293	0	771	109	253	138	0	500	177	533	174	0	884	247	534	26	0	807
17:00	17:15	71	78	94	0	243	12	50	39	0	101	36	156	63	0	255	65	137	11	0	213
17:15	17:30	54	88	80	0	222	23	52	26	0	101	43	162	54	0	259	65	129	10	0	204
17:30	17:45	57	73	68	0	198	17	50	36	0	103	32	134	54	0	220	60	119	7	0	186
17:45	18:00	59	71	76	0	206	17	52	35	0	104	32	113	57	0	202	61	151	5	0	217
Hourly Total		241	310	318	0	869	69	204	136	0	409	143	565	228	0	936	251	536	33	0	820
Grand Total		1408	1726	1835	0	4969	486	1673	989	0	3148	947	3437	1013	0	5397	1924	3742	255	0	5921
Truck %		3%	5%	7%	0%	5%	5%	6%	2%	0%	5%	1%	4%	1%	0%	3%	5%	4%	8%	0%	4%

Turning Movements Report - AM Period

Location..... Lundy's Lane @ Royal Manor Drive
Municipality. NIAGARA FALLS
Traffic Cont.
Major Dir..... East west

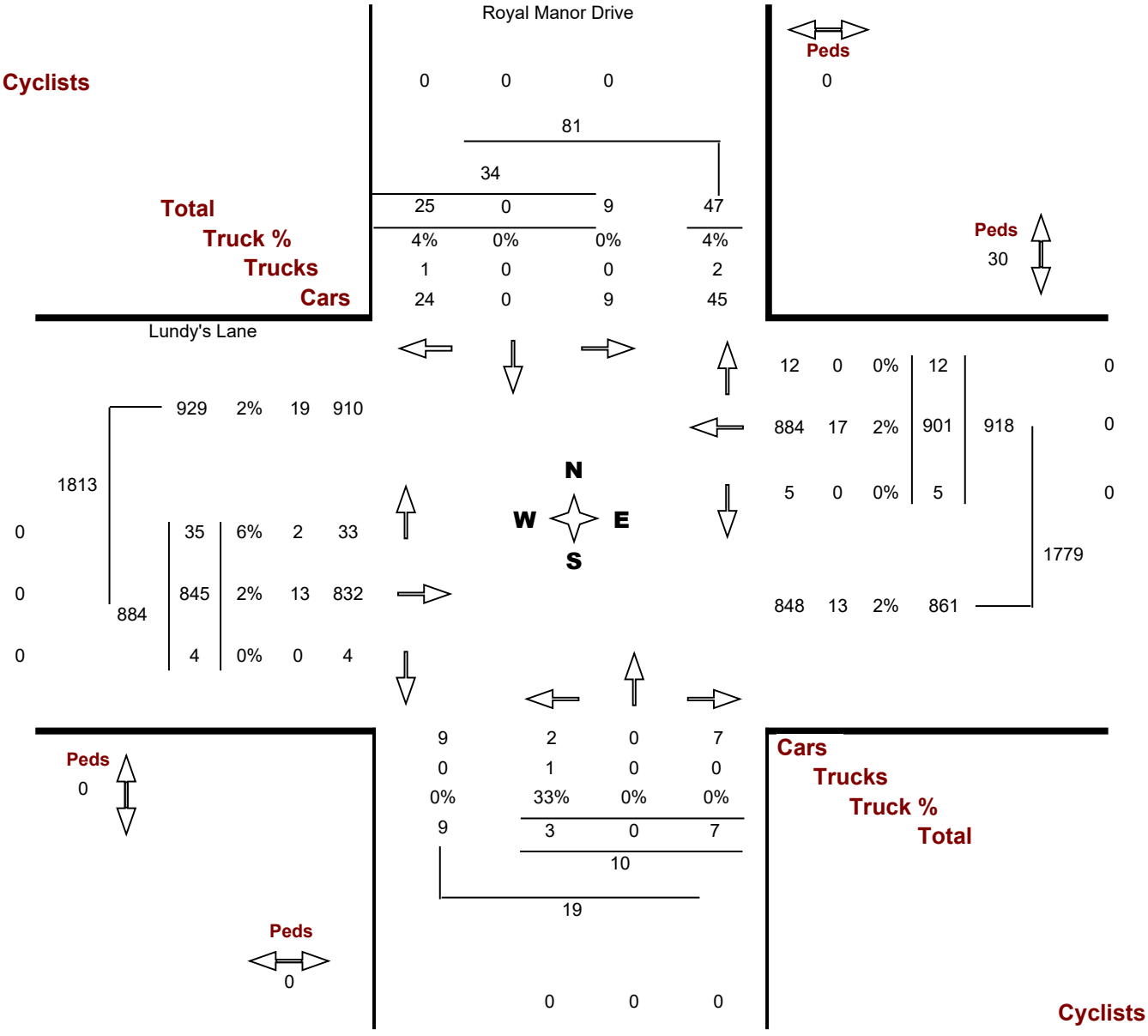
GeoID..... 01596
Count Date. Monday, 10 August, 2015
Count Time. 07:00 AM — 09:00 AM
Peak Hour.. 08:00 AM — 09:00 AM



Turning Movements Report - PM Period

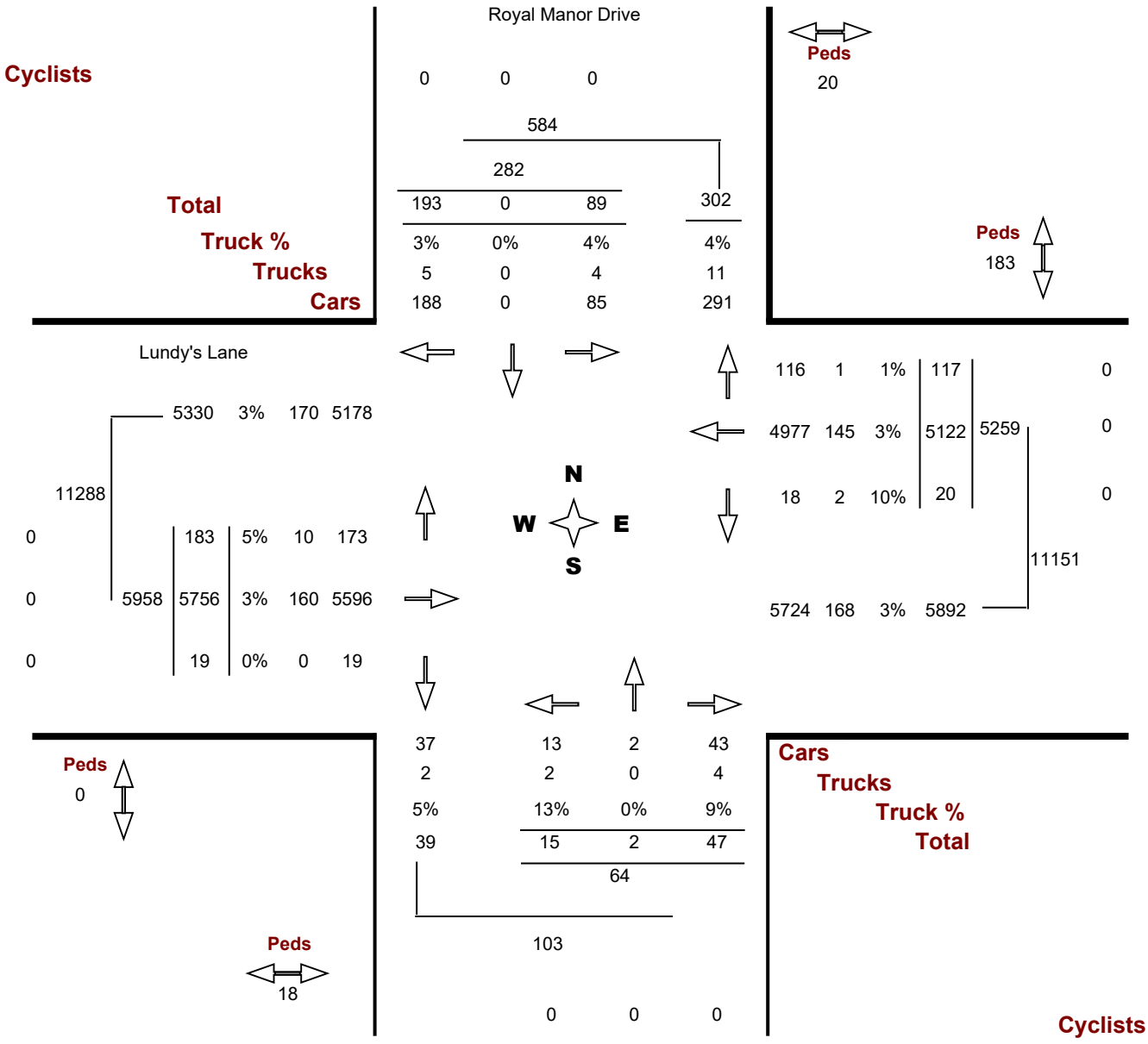
Location..... Lundy's Lane @ Royal Manor Drive
Municipality. NIAGARA FALLS
Traffic Cont.
Major Dir..... East west

GeoID..... 01596
Count Date. Monday, 10 August, 2015
Count Time. 03:00 PM — 06:00 PM
Peak Hour.. 04:30 PM — 05:30 PM



Turning Movement Count Report
Full Study

Location..... Lundy's Lane @ Royal Manor Drive
Municipality..... NIAGARA FALLS
GeoID..... 01596
Count Date..... Monday, 10 August, 2015



Turning Movement Count - Details Report (15 min)

Location..... Lundy's Lane @ Royal Manor Drive

Municipality..... NIAGARA FALLS

Count Date..... Monday, August 10, 2015

		Royal Manor Drive										Lundy's Lane									
		North Approach					South Approach					East Approach					West Approach				
Time Period		LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT
07:00	07:15	0	0	1	0	1	0	0	1	0	1	0	51	0	0	51	0	54	0	0	54
07:15	07:30	0	0	1	0	1	0	0	0	0	0	0	62	1	0	63	2	76	0	0	78
07:30	07:45	1	0	4	0	5	0	0	3	0	3	1	72	1	0	74	5	112	0	0	117
07:45	08:00	2	0	5	0	7	1	0	0	0	1	0	63	0	0	63	2	119	0	0	121
Hourly Total		3	0	11	0	14	1	0	4	0	5	1	248	2	0	251	9	361	0	0	370
08:00	08:15	1	0	4	0	5	0	0	1	0	1	1	72	0	0	73	1	91	0	0	92
08:15	08:30	2	0	5	0	7	1	0	1	0	2	2	81	1	0	84	0	132	1	0	133
08:30	08:45	3	0	3	0	6	0	0	2	0	2	0	76	0	0	76	3	139	0	0	142
08:45	09:00	1	0	1	0	2	0	0	0	0	0	0	99	0	0	99	4	143	0	0	147
Hourly Total		7	0	13	0	20	1	0	4	0	5	3	328	1	0	332	8	505	1	0	514
11:00	11:15	4	0	5	0	9	0	1	0	0	1	0	155	4	0	159	4	177	1	0	182
11:15	11:30	1	0	4	0	5	0	0	3	0	3	1	151	3	0	155	10	192	0	0	202
11:30	11:45	2	0	8	0	10	1	0	1	0	2	0	180	8	0	188	5	190	0	0	195
11:45	12:00	0	0	7	0	7	0	0	1	0	1	0	167	1	0	168	6	186	0	0	192
Hourly Total		7	0	24	0	31	1	1	5	0	7	1	653	16	0	670	25	745	1	0	771
12:00	12:15	1	0	5	0	6	1	0	3	0	4	0	157	6	0	163	12	216	2	0	230
12:15	12:30	2	0	5	0	7	0	0	3	0	3	1	178	7	0	186	3	200	2	0	205
12:30	12:45	8	0	11	0	19	0	0	2	0	2	1	162	6	0	169	11	191	1	0	203
12:45	13:00	5	0	6	0	11	1	0	2	0	3	1	168	8	0	177	3	236	0	0	239
Hourly Total		16	0	27	0	43	2	0	10	0	12	3	665	27	0	695	29	843	5	0	877
13:00	13:15	2	0	9	0	11	0	0	0	0	0	0	178	5	0	183	3	210	0	0	213
13:15	13:30	7	0	13	0	20	1	1	2	0	4	0	186	5	0	191	8	191	2	0	201
13:30	13:45	3	0	5	0	8	2	0	2	0	4	2	173	3	0	178	5	217	0	0	222
13:45	14:00	2	0	3	0	5	1	0	0	0	1	0	182	5	0	187	7	201	2	0	210
Hourly Total		14	0	30	0	44	4	1	4	0	9	2	719	18	0	739	23	819	4	0	846
15:00	15:15	5	0	11	0	16	0	0	2	0	2	1	175	5	0	181	7	240	0	0	247
15:15	15:30	7	0	11	0	18	1	0	1	0	2	0	192	2	0	194	9	209	1	0	219
15:30	15:45	0	0	7	0	7	0	0	2	0	2	0	188	6	0	194	7	191	0	0	198
15:45	16:00	5	0	9	0	14	1	0	1	0	2	1	206	5	0	212	11	206	0	0	217
Hourly Total		17	0	38	0	55	2	0	6	0	8	2	761	18	0	781	34	846	1	0	881
16:00	16:15	4	0	7	0	11	0	0	3	0	3	0	212	5	0	217	4	200	1	0	205

		Royal Manor Drive										Lundy's Lane									
		North Approach					South Approach					East Approach					West Approach				
Time Period		LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT	LT	TH	RT	U-Turn	TOT
16:15	16:30	3	0	3	0	6	0	0	3	0	3	1	221	7	0	229	4	200	0	0	204
16:30	16:45	4	0	8	0	12	0	0	3	0	3	2	248	2	0	252	10	218	0	0	228
16:45	17:00	1	0	8	0	9	1	0	0	0	1	2	223	3	0	228	9	217	1	0	227
Hourly Total		12	0	26	0	38	1	0	9	0	10	5	904	17	0	926	27	835	2	0	864
17:00	17:15	1	0	4	0	5	0	0	0	0	0	0	225	5	0	230	7	190	0	0	197
17:15	17:30	3	0	5	0	8	2	0	4	0	6	1	205	2	0	208	9	220	3	0	232
17:30	17:45	5	0	6	0	11	1	0	1	0	2	1	182	6	0	189	5	204	1	0	210
17:45	18:00	4	0	9	0	13	0	0	0	0	0	1	232	5	0	238	7	188	1	0	196
Hourly Total		13	0	24	0	37	3	0	5	0	8	3	844	18	0	865	28	802	5	0	835
Grand Total		89	0	193	0	282	15	2	47	0	64	20	5122	117	0	5259	183	5756	19	0	5958
Truck %		4%	0%	3%	0%	3%	13%	0%	9%	0%	9%	10%	3%	1%	0%	3%	5%	3%	0%	0%	3%

Appendix B

Base Year Traffic Operations

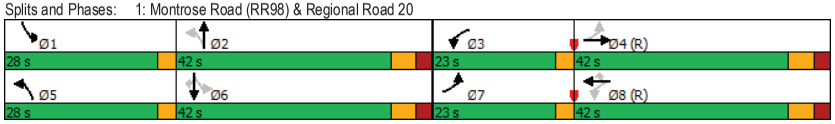


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	260	414	28	60	264	79	40	251	96	97	139	148
Future Volume (vph)	260	414	28	60	264	79	40	251	96	97	139	148
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	55.0		0.0	35.0		0.0	45.0		0.0	80.0		70.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.98	1.00		0.99		0.96	0.97	0.99		0.99		0.95
Frt		0.991				0.850		0.959				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1554	3146	0	1511	3137	1417	1583	1617	0	1599	1683	1390
Flt Permitted	0.500			0.478			0.661			0.352		
Satd. Flow (perm)	805	3146	0	753	3137	1366	1069	1617	0	588	1683	1322
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5				86		14				161
Link Speed (k/h)		60			50			50			50	
Link Distance (m)		251.8			265.0			342.9			323.7	
Travel Time (s)		15.1			19.1			24.7			23.3	
Confl. Peds. (#/hr)	17		10	10		17	27		14	14		27
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	7%	4%	11%	10%	6%	5%	5%	4%	0%	4%	4%	7%
Adj. Flow (vph)	283	450	30	65	287	86	43	273	104	105	151	161
Shared Lane Traffic (%)												
Lane Group Flow (vph)	283	480	0	65	287	86	43	377	0	105	151	161
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	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	0.0
Detector 1 Queue (s)	0.0	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	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		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		6
Detector Phase	7	4		3	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0	10.0	3.0	8.0		6.0	8.0	8.0
Minimum Split (s)	10.5	35.0		10.5	35.0	35.0	9.5	36.0		10.5	36.0	36.0
Total Split (s)	23.0	42.0		23.0	42.0	42.0	28.0	42.0		28.0	42.0	42.0
Total Split (%)	17.0%	31.1%		17.0%	31.1%	31.1%	20.7%	31.1%		20.7%	31.1%	31.1%
Maximum Green (s)	20.0	35.0		20.0	35.0	35.0	25.0	35.0		25.0	35.0	35.0
Yellow Time (s)	3.0	4.1		3.0	4.1	4.1	3.0	4.1		3.0	4.1	4.1
All-Red Time (s)	0.0	2.9		0.0	2.9	2.9	0.0	2.9		0.0	2.9	2.9
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.0	7.0		3.0	7.0	7.0	3.0	7.0		3.0	7.0	7.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	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	3.0
Recall Mode	None	C-Max		None	C-Max	C-Max	None	Max		None	Max	Max
Walk Time (s)		10.0			10.0	10.0		11.0			11.0	11.0
Flash Dont Walk (s)		18.0			18.0	18.0		18.0			18.0	18.0
Pedestrian Calls (#/hr)		0			0	0		0			0	0
Act Effct Green (s)	62.0	48.0		49.1	36.4	36.4	61.1	49.7		66.9	54.3	54.3
Actuated g/C Ratio	0.46	0.36		0.36	0.27	0.27	0.45	0.37		0.50	0.40	0.40
v/c Ratio	0.60	0.43		0.20	0.34	0.20	0.08	0.62		0.29	0.22	0.26
Control Delay	30.2	35.1		23.0	41.5	8.7	18.3	39.7		20.5	28.7	5.1
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	30.2	35.1		23.0	41.5	8.7	18.3	39.7		20.5	28.7	5.1
LOS	C	D		C	D	A	B	D		C	C	A
Approach Delay		33.3			32.3			37.5			17.5	
Approach LOS		C			C			D			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 135			
Actuated Cycle Length: 135			
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 30.7		Intersection LOS: C	
Intersection Capacity Utilization 87.3%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 1: Montrose Road (RR98) & Regional Road 20



Queues
1: Montrose Road (RR98) & Regional Road 20

Base
AM Peak Hour

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	283	480	65	287	86	43	377	105	151	161
v/c Ratio	0.60	0.43	0.20	0.34	0.20	0.08	0.62	0.29	0.22	0.26
Control Delay	30.2	35.1	23.0	41.5	8.7	18.3	39.7	20.5	28.7	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.2	35.1	23.0	41.5	8.7	18.3	39.7	20.5	28.7	5.1
Queue Length 50th (m)	51.5	54.2	10.1	34.7	0.0	6.1	83.1	15.5	28.2	0.0
Queue Length 95th (m)	75.7	73.4	19.4	48.7	13.8	13.0	124.5	26.7	46.4	15.0
Internal Link Dist (m)		227.8		241.0			318.9		299.7	
Turn Bay Length (m)	55.0		35.0			45.0		80.0		70.0
Base Capacity (vph)	480	1122	446	845	430	625	604	479	676	628
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.43	0.15	0.34	0.20	0.07	0.62	0.22	0.22	0.26

Intersection Summary

HCM Signalized Intersection Capacity Analysis
1: Montrose Road (RR98) & Regional Road 20

Base
AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	260	414	28	60	264	79	40	251	96	97	139	148
Future Volume (vph)	260	414	28	60	264	79	40	251	96	97	139	148
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	7.0		3.0	7.0	7.0	3.0	7.0		3.0	7.0	7.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.96	1.00	0.99		1.00	1.00	0.95
Flpb, ped/bikes	0.99	1.00		0.99	1.00	1.00	0.98	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1543	3145		1503	3137	1366	1552	1616		1595	1683	1322
Flt Permitted	0.50	1.00		0.48	1.00	1.00	0.66	1.00		0.35	1.00	1.00
Satd. Flow (perm)	813	3145		756	3137	1366	1080	1616		590	1683	1322
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	283	450	30	65	287	86	43	273	104	105	151	161
RTOR Reduction (vph)	0	3	0	0	0	63	0	9	0	0	0	96
Lane Group Flow (vph)	283	477	0	65	287	23	43	368	0	105	151	65
Confl. Peds. (#/hr)	17		10	10		17	27		14	14		27
Heavy Vehicles (%)	7%	4%	11%	10%	6%	5%	5%	4%	0%	4%	4%	7%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	57.4	46.8		43.4	35.8	35.8	56.6	50.3		63.6	54.3	54.3
Effective Green, g (s)	57.4	46.8		43.4	35.8	35.8	56.6	50.3		63.6	54.3	54.3
Actuated g/C Ratio	0.43	0.35		0.32	0.27	0.27	0.42	0.37		0.47	0.40	0.40
Clearance Time (s)	3.0	7.0		3.0	7.0	7.0	3.0	7.0		3.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	446	1090		285	831	362	474	602		354	676	531
v/s Ratio Prot	c0.09	0.15		0.01	0.09		0.00	c0.23		c0.02	0.09	
v/s Ratio Perm	c0.18			0.06		0.02	0.03			0.12		0.05
v/c Ratio	0.63	0.44		0.23	0.35	0.06	0.09	0.61		0.30	0.22	0.12
Uniform Delay, d1	27.5	34.0		32.5	40.1	37.1	23.4	34.4		21.6	26.5	25.4
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	2.9	1.3		0.4	1.1	0.3	0.1	4.6		0.5	0.8	0.5
Delay (s)	30.4	35.2		32.9	41.3	37.4	23.5	39.0		22.1	27.3	25.8
Level of Service	C	D		C	D	D	C	D		C	C	C
Approach Delay (s)		33.4			39.3			37.4			25.4	
Approach LOS		C			D			D			C	

Intersection Summary					
HCM 2000 Control Delay	33.9	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.61				
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	20.0		
Intersection Capacity Utilization	87.3%	ICU Level of Service	E		
Analysis Period (min)	15				

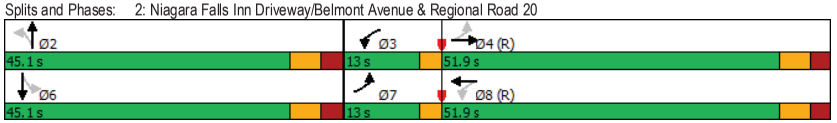
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	801	12	11	464	17	4	0	2	13	0	6
Future Volume (vph)	12	801	12	11	464	17	4	0	2	13	0	6
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		1.00				0.99			1.00	
Frt		0.998			0.995			0.850			0.955	
Flt Protected	0.950			0.950			0.950				0.968	
Satd. Flow (prot)	1662	3132	0	1662	3156	0	1330	1468	0	0	1257	0
Flt Permitted	0.418			0.251			0.744				0.883	
Satd. Flow (perm)	732	3132	0	439	3156	0	1042	1468	0	0	1146	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			4			248			68	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		265.0			231.8			75.5			218.5	
Travel Time (s)		19.1			16.7			5.4			15.7	
Confl. Peds. (#/hr)			5	5					1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	6%	0%	0%	5%	0%	25%	0%	0%	33%	0%	20%
Adj. Flow (vph)	13	871	13	12	504	18	4	0	2	14	0	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	13	884	0	12	522	0	4	2	0	0	21	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)		7.2			7.2			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	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	8.0		6.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	9.5	39.9		9.5	39.9		36.1	36.1		36.1	36.1	
Total Split (s)	13.0	51.9		13.0	51.9		45.1	45.1		45.1	45.1	
Total Split (%)	11.8%	47.2%		11.8%	47.2%		41.0%	41.0%		41.0%	41.0%	
Maximum Green (s)	10.0	45.0		10.0	45.0		38.0	38.0		38.0	38.0	
Yellow Time (s)	3.0	4.1		3.0	4.1		4.1	4.1		4.1	4.1	
All-Red Time (s)	0.0	2.8		0.0	2.8		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)	3.0	6.9		3.0	6.9		7.1	7.1			7.1	
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	
Recall Mode	None	C-Max		None	C-Max		Max	Max		Max	Max	
Walk Time (s)		12.0			12.0		11.0	11.0		11.0	11.0	
Flash Dont Walk (s)		21.0			21.0		18.0	18.0		18.0	18.0	
Pedestrian Calls (#/hr)		0			0		0	0		0	0	
Act Effct Green (s)	61.3	56.1		60.7	54.2		38.0	38.0			38.0	
Actuated g/C Ratio	0.56	0.51		0.55	0.49		0.35	0.35			0.35	
v/c Ratio	0.03	0.55		0.04	0.34		0.01	0.00			0.05	
Control Delay	10.8	20.6		5.9	13.3		24.0	0.0			0.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	10.8	20.6		5.9	13.3		24.0	0.0			0.2	
LOS	B	C		A	B		C	A			A	
Approach Delay		20.5			13.1			16.0			0.2	
Approach LOS		C			B			B			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 16 (15%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay: 17.5		Intersection LOS: B	
Intersection Capacity Utilization 63.3%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 2: Niagara Falls Inn Driveway/Belmont Avenue & Regional Road 20



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	13	884	12	522	4	2	21
v/c Ratio	0.03	0.55	0.04	0.34	0.01	0.00	0.05
Control Delay	10.8	20.6	5.9	13.3	24.0	0.0	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.8	20.6	5.9	13.3	24.0	0.0	0.2
Queue Length 50th (m)	1.2	66.2	0.4	15.6	0.6	0.0	0.0
Queue Length 95th (m)	4.0	102.0	m0.9	16.1	3.2	0.0	0.0
Internal Link Dist (m)		241.0		207.8		51.5	194.5
Turn Bay Length (m)							
Base Capacity (vph)	496	1598	358	1557	359	669	440
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.55	0.03	0.34	0.01	0.00	0.05

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	801	12	11	464	17	4	0	2	13	0	6
Future Volume (vph)	12	801	12	11	464	17	4	0	2	13	0	6
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	6.9		3.0	6.9		7.1	7.1			7.1	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.85			0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.97	
Satd. Flow (prot)	1662	3132		1662	3155		1330	1468			1256	
Flt Permitted	0.42	1.00		0.25	1.00		0.74	1.00			0.88	
Satd. Flow (perm)	731	3132		440	3155		1041	1468			1146	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	13	871	13	12	504	18	4	0	2	14	0	7
RTOR Reduction (vph)	0	1	0	0	2	0	0	1	0	0	14	0
Lane Group Flow (vph)	13	883	0	12	520	0	4	1	0	0	7	0
Confl. Peds. (#/hr)			5	5					1	1		
Heavy Vehicles (%)	0%	6%	0%	0%	5%	0%	25%	0%	0%	33%	0%	20%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	56.3	53.7		53.7	52.4		38.0	38.0			38.0	
Effective Green, g (s)	56.3	53.7		53.7	52.4		38.0	38.0			38.0	
Actuated g/C Ratio	0.51	0.49		0.49	0.48		0.35	0.35			0.35	
Clearance Time (s)	3.0	6.9		3.0	6.9		7.1	7.1			7.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	396	1528		229	1502		359	507			395	
v/s Ratio Prot	c0.00	c0.28		c0.00	0.16			0.00				
v/s Ratio Perm	0.02			0.02			0.00				c0.01	
v/c Ratio	0.03	0.58		0.05	0.35		0.01	0.00			0.02	
Uniform Delay, d1	13.3	20.1		15.1	18.1		23.7	23.6			23.7	
Progression Factor	1.00	1.00		0.53	0.72		1.00	1.00			1.00	
Incremental Delay, d2	0.0	1.6		0.1	0.6		0.1	0.0			0.1	
Delay (s)	13.4	21.7		8.1	13.6		23.7	23.6			23.8	
Level of Service	B	C		A	B		C	C			C	
Approach Delay (s)		21.5			13.4			23.7			23.8	
Approach LOS		C			B			C			C	

Intersection Summary					
HCM 2000 Control Delay	18.6	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.34				
Actuated Cycle Length (s)	110.0	Sum of lost time (s)		17.0	
Intersection Capacity Utilization	63.3%	ICU Level of Service		B	
Analysis Period (min)	15				

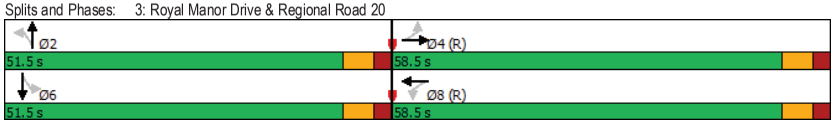
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	771	0	1	476	4	1	0	3	2	0	20
Future Volume (vph)	8	771	0	1	476	4	1	0	3	2	0	20
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00							
Frt					0.999			0.899			0.876	
Flt Protected		0.999						0.988			0.996	
Satd. Flow (prot)	0	3131	0	0	3164	0	0	1554	0	0	1387	0
Flt Permitted		0.948			0.954			0.978			0.991	
Satd. Flow (perm)	0	2971	0	0	3019	0	0	1539	0	0	1380	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					1			35			35	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		231.8			321.7			58.1			98.8	
Travel Time (s)		16.7			23.2			4.2			7.1	
Confl. Peds. (#/hr)	2		11	11		2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	14%	6%	0%	0%	5%	0%	0%	0%	0%	0%	0%	11%
Adj. Flow (vph)	9	838	0	1	517	4	1	0	3	2	0	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	847	0	0	522	0	0	4	0	0	24	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	24.5	24.5		24.5	24.5		34.5	34.5		34.5	34.5	
Total Split (s)	58.5	58.5		58.5	58.5		51.5	51.5		51.5	51.5	
Total Split (%)	53.2%	53.2%		53.2%	53.2%		46.8%	46.8%		46.8%	46.8%	
Maximum Green (s)	52.0	52.0		52.0	52.0		45.0	45.0		45.0	45.0	
Yellow Time (s)	4.1	4.1		4.1	4.1		4.1	4.1		4.1	4.1	
All-Red Time (s)	2.4	2.4		2.4	2.4		2.4	2.4		2.4	2.4	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.5			6.5			6.5			6.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		Max	Max		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		18.0	18.0		18.0	18.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		52.0			52.0			45.0			45.0	
Actuated g/C Ratio		0.47			0.47			0.41			0.41	
v/c Ratio		0.60			0.37			0.01			0.04	
Control Delay		16.1			24.0			0.0			4.4	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		16.1			24.0			0.0			4.4	
LOS		B			C			A			A	
Approach Delay		16.1			24.0						4.4	
Approach LOS		B			C						A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay: 18.8		Intersection LOS: B	
Intersection Capacity Utilization 46.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Royal Manor Drive & Regional Road 20



Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	847	522	4	24
v/c Ratio	0.60	0.37	0.01	0.04
Control Delay	16.1	24.0	0.0	4.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	16.1	24.0	0.0	4.4
Queue Length 50th (m)	26.1	41.7	0.0	0.0
Queue Length 95th (m)	53.7	60.3	0.0	3.8
Internal Link Dist (m)	207.8	297.7	34.1	74.8
Turn Bay Length (m)				
Base Capacity (vph)	1404	1427	650	585
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.60	0.37	0.01	0.04

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	8	771	0	1	476	4	1	0	3	2	0	20
Future Volume (vph)	8	771	0	1	476	4	1	0	3	2	0	20
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		6.5			6.5			6.5			6.5	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frpb, ped/bikes		1.00			1.00			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		1.00			1.00			0.90			0.88	
Flt Protected		1.00			1.00			0.99			1.00	
Satd. Flow (prot)		3133			3163			1553			1387	
Flt Permitted		0.95			0.95			0.98			0.99	
Satd. Flow (perm)		2972			3019			1538			1381	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	9	838	0	1	517	4	1	0	3	2	0	22
RTOR Reduction (vph)	0	0	0	0	1	0	0	2	0	0	14	0
Lane Group Flow (vph)	0	847	0	0	521	0	0	2	0	0	10	0
Confl. Peds. (#/hr)	2		11	11		2						
Heavy Vehicles (%)	14%	6%	0%	0%	5%	0%	0%	0%	0%	0%	0%	11%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		52.0			52.0			45.0			45.0	
Effective Green, g (s)		52.0			52.0			45.0			45.0	
Actuated g/C Ratio		0.47			0.47			0.41			0.41	
Clearance Time (s)		6.5			6.5			6.5			6.5	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1404			1427			629			564	
v/s Ratio Prot												
v/s Ratio Perm		c0.28			0.17			0.00			c0.01	
v/c Ratio		0.60			0.37			0.00			0.02	
Uniform Delay, d1		21.4			18.5			19.2			19.3	
Progression Factor		0.67			1.25			1.00			1.00	
Incremental Delay, d2		1.6			0.7			0.0			0.1	
Delay (s)		15.9			23.8			19.2			19.4	
Level of Service		B			C			B			B	
Approach Delay (s)		15.9			23.8			19.2			19.4	
Approach LOS		B			C			B			B	

Intersection Summary					
HCM 2000 Control Delay	18.9	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.33				
Actuated Cycle Length (s)	110.0	Sum of lost time (s)		13.0	
Intersection Capacity Utilization	46.7%	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)	4	598	19	6	520	3	14	2	21	0	1	12
Future Volume (vph)	4	598	19	6	520	3	14	2	21	0	1	12
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.995			0.999			0.922			0.875	
Flt Protected					0.999			0.982				
Satd. Flow (prot)	0	3246	0	0	3223	0	0	1584	0	0	1531	0
Flt Permitted					0.999			0.982				
Satd. Flow (perm)	0	3246	0	0	3223	0	0	1584	0	0	1531	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		321.7			111.0			229.0			196.7	
Travel Time (s)		23.2			8.0			16.5			14.2	
Confl. Peds. (#/hr)	5		12	12		5	2		2	2		2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	4	650	21	7	565	3	15	2	23	0	1	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	675	0	0	575	0	0	40	0	0	14	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			15.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	37.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	4	598	19	6	520	3	14	2	21	0	1	12
Future Volume (Veh/h)	4	598	19	6	520	3	14	2	21	0	1	12
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	650	21	7	565	3	15	2	23	0	1	13
Pedestrians		2			2			12			5	
Lane Width (m)		3.6			3.6			3.6			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			1			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		322			221							
pX, platoon unblocked	0.98			0.89			0.89	0.89	0.89	0.89	0.89	0.98
vC, conflicting volume	573			683			992	1268	350	944	1276	291
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	535			386			676	984	9	623	994	248
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			95	99	98	100	100	98
cM capacity (veh/h)	1023			1039			291	218	943	317	215	742

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	329	346	290	286	40	14
Volume Left	4	0	7	0	15	0
Volume Right	0	21	0	3	23	13
cSH	1023	1700	1039	1700	470	632
Volume to Capacity	0.00	0.20	0.01	0.17	0.09	0.02
Queue Length 95th (m)	0.1	0.0	0.2	0.0	2.2	0.5
Control Delay (s)	0.1	0.0	0.3	0.0	13.4	10.8
Lane LOS	A		A		B	B
Approach Delay (s)	0.1		0.1		13.4	10.8
Approach LOS					B	B

Intersection Summary					
Average Delay	0.6				
Intersection Capacity Utilization	37.8%	ICU Level of Service		A	
Analysis Period (min)	15				



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	1	631	527	3	3	6
Future Volume (vph)	1	631	527	3	3	6
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999		0.905	
Flt Protected					0.985	
Satd. Flow (prot)	0	3292	3225	0	1560	0
Flt Permitted					0.985	
Satd. Flow (perm)	0	3292	3225	0	1560	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		111.0	109.8		191.2	
Travel Time (s)		8.0	7.9		13.8	
Confl. Peds. (#/hr)	5			5		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	3%	0%	0%	0%
Adj. Flow (vph)	1	686	573	3	3	7
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	687	576	0	10	0
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	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	29.7%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	631	527	3	3	6
Future Volume (Veh/h)	1	631	527	3	3	6
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)	1	686	573	3	3	7
Pedestrians					5	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			110			
pX, platoon unblocked	0.93				0.93	0.93
vC, conflicting volume	581				924	293
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	408				776	100
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	99
cM capacity (veh/h)	1079				314	876

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	230	457	382	194	10
Volume Left	1	0	0	0	3
Volume Right	0	0	0	3	7
cSH	1079	1700	1700	1700	570
Volume to Capacity	0.00	0.27	0.22	0.11	0.02
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.4
Control Delay (s)	0.0	0.0	0.0	0.0	11.4
Lane LOS	A				B
Approach Delay (s)	0.0		0.0		11.4
Approach LOS					B

Intersection Summary				
Average Delay		0.1		
Intersection Capacity Utilization		29.7%	ICU Level of Service	A
Analysis Period (min)		15		

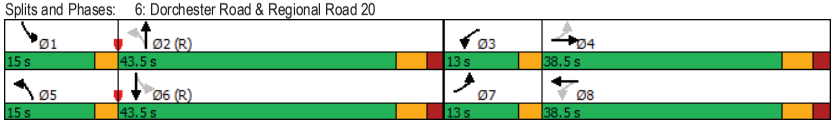
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	136	483	172	51	273	94	145	268	63	69	227	44
Future Volume (vph)	136	483	172	51	273	94	145	268	63	69	227	44
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	40.0		0.0	45.0		0.0	50.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	0.99		0.99	0.99		1.00	1.00		1.00	1.00	
Frt		0.961			0.962			0.972			0.976	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1568	2967	0	1630	2980	0	1630	1642	0	1539	1654	0
Flt Permitted	0.386			0.217			0.465			0.473		
Satd. Flow (perm)	633	2967	0	369	2980	0	795	1642	0	763	1654	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		46			44			12			10	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		109.8			114.2			162.1			187.2	
Travel Time (s)		7.9			8.2			11.7			13.5	
Confl. Peds. (#/hr)	5		15	15		5	5		8	8		5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	7%	4%	2%	7%	5%	2%	3%	4%	8%	3%	3%
Adj. Flow (vph)	148	525	187	55	297	102	158	291	68	75	247	48
Shared Lane Traffic (%)												
Lane Group Flow (vph)	148	712	0	55	399	0	158	359	0	75	295	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	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0		3.0	8.0		6.0	8.0	
Minimum Split (s)	10.5	36.5		10.5	36.5		9.5	40.5		10.5	40.5	
Total Split (s)	13.0	38.5		13.0	38.5		15.0	43.5		15.0	43.5	
Total Split (%)	11.8%	35.0%		11.8%	35.0%		13.6%	39.5%		13.6%	39.5%	
Maximum Green (s)	10.0	32.0		10.0	32.0		12.0	37.0		12.0	37.0	
Yellow Time (s)	3.0	4.1		3.0	4.1		3.0	4.1		3.0	4.1	
All-Red Time (s)	0.0	2.4		0.0	2.4		0.0	2.4		0.0	2.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	6.5		3.0	6.5		3.0	6.5		3.0	6.5	
Lead/Lag	Lead	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	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Walk Time (s)		12.0			12.0			15.0			15.0	
Flash Dont Walk (s)		13.0			13.0			19.0			19.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	41.2	29.8		37.3	26.0		61.1	48.8		56.8	45.0	
Actuated g/C Ratio	0.37	0.27		0.34	0.24		0.56	0.44		0.52	0.41	
v/c Ratio	0.46	0.85		0.26	0.54		0.31	0.49		0.17	0.43	
Control Delay	41.3	63.0		22.1	34.3		15.1	27.0		14.3	27.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	41.3	63.0		22.1	34.3		15.1	27.0		14.3	27.4	
LOS	D	E		C	C		B	C		B	C	
Approach Delay		59.2			32.8			23.4			24.8	
Approach LOS		E			C			C			C	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 60 (55%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.85
Intersection Signal Delay: 39.6 — Intersection LOS: D
Intersection Capacity Utilization 80.4% — ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 6: Dorchester Road & Regional Road 20





Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	148	712	55	399	158	359	75	295
v/c Ratio	0.46	0.85	0.26	0.54	0.31	0.49	0.17	0.43
Control Delay	41.3	63.0	22.1	34.3	15.1	27.0	14.3	27.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.3	63.0	22.1	34.3	15.1	27.0	14.3	27.4
Queue Length 50th (m)	32.7	84.7	7.5	35.7	17.5	58.7	7.9	48.0
Queue Length 95th (m)	49.2	105.4	15.0	49.1	31.5	97.5	16.6	79.3
Internal Link Dist (m)		85.8		90.2		138.1		163.2
Turn Bay Length (m)	40.0		45.0		50.0		30.0	
Base Capacity (vph)	322	904	247	898	534	734	501	682
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	0.46	0.79	0.22	0.44	0.30	0.49	0.15	0.43

Intersection Summary



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	136	483	172	51	273	94	145	268	63	69	227	44
Future Volume (vph)	136	483	172	51	273	94	145	268	63	69	227	44
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	6.5		3.0	6.5		3.0	6.5		3.0	6.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		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	0.96		1.00	0.96		1.00	0.97		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)	1565	2966		1627	2979		1628	1642		1536	1653	
Flt Permitted	0.39	1.00		0.22	1.00		0.47	1.00		0.47	1.00	
Satd. Flow (perm)	637	2966		372	2979		797	1642		765	1653	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	148	525	187	55	297	102	158	291	68	75	247	48
RTOR Reduction (vph)	0	34	0	0	33	0	0	7	0	0	6	0
Lane Group Flow (vph)	148	678	0	55	366	0	158	352	0	75	289	0
Confl. Peds. (#/hr)	5		15	15		5	5		8	8		5
Heavy Vehicles (%)	6%	7%	4%	2%	7%	5%	2%	3%	4%	8%	3%	3%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	39.4	29.8		33.3	26.7		57.6	47.5		51.5	44.4	
Effective Green, g (s)	39.4	29.8		33.3	26.7		57.6	47.5		51.5	44.4	
Actuated g/C Ratio	0.36	0.27		0.30	0.24		0.52	0.43		0.47	0.40	
Clearance Time (s)	3.0	6.5		3.0	6.5		3.0	6.5		3.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	309	803		187	723		494	709		407	667	
v/s Ratio Prot	c0.04	c0.23		0.02	0.12		c0.03	c0.21		0.01	0.17	
v/s Ratio Perm	0.13			0.07			0.14			0.07		
v/c Ratio	0.48	0.84		0.29	0.51		0.32	0.50		0.18	0.43	
Uniform Delay, d1	25.3	37.9		28.3	36.0		14.3	22.6		16.5	23.7	
Progression Factor	1.70	1.50		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.1	7.4		0.9	0.6		0.4	2.5		0.2	2.0	
Delay (s)	44.2	64.5		29.2	36.5		14.7	25.1		16.8	25.8	
Level of Service	D	E		C	D		B	C		B	C	
Approach Delay (s)		61.0			35.6			21.9			23.9	
Approach LOS		E			D			C			C	

Intersection Summary					
HCM 2000 Control Delay	40.3	HCM 2000 Level of Service	D		
HCM 2000 Volume to Capacity ratio	0.62				
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	19.0		
Intersection Capacity Utilization	80.4%	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)	0	553	458	3	0	2
Future Volume (vph)	0	553	458	3	0	2
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999		0.865	
Flt Protected						
Satd. Flow (prot)	0	3260	3251	0	1514	0
Flt Permitted						
Satd. Flow (perm)	0	3260	3251	0	1514	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		114.2	50.1		180.5	
Travel Time (s)		8.2	3.6		13.0	
Confl. Peds. (#/hr)	7			7		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	33%	0%	0%
Adj. Flow (vph)	0	601	498	3	0	2
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	601	501	0	2	0
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	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	26.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	553	458	3	0	2
Future Volume (Veh/h)	0	553	458	3	0	2
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	601	498	3	0	2
Pedestrians					7	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		114				
pX, platoon unblocked						
vC, conflicting volume	508				807	258
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	508				807	258
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	1061				321	743

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	200	401	332	169	2
Volume Left	0	0	0	0	0
Volume Right	0	0	0	3	2
cSH	1061	1700	1700	1700	743
Volume to Capacity	0.00	0.24	0.20	0.10	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.1
Control Delay (s)	0.0	0.0	0.0	0.0	9.9
Lane LOS					A
Approach Delay (s)	0.0		0.0		9.9
Approach LOS					A

Intersection Summary				
Average Delay		0.0		
Intersection Capacity Utilization		26.6%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	538	9	7	442	6	12
Future Volume (vph)	538	9	7	442	6	12
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt	0.997				0.912	
Flt Protected				0.999	0.983	
Satd. Flow (prot)	3251	0	0	3226	1569	0
Flt Permitted				0.999	0.983	
Satd. Flow (perm)	3251	0	0	3226	1569	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	50.1			206.3	147.1	
Travel Time (s)	3.6			14.9	10.6	
Confl. Peds. (#/hr)		12	12			1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	0%	3%	0%	0%
Adj. Flow (vph)	585	10	8	480	7	13
Shared Lane Traffic (%)						
Lane Group Flow (vph)	595	0	0	488	20	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	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	29.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	538	9	7	442	6	12
Future Volume (Veh/h)	538	9	7	442	6	12
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)	585	10	8	480	7	13
Pedestrians				1	12	
Lane Width (m)				3.6	3.6	
Walking Speed (m/s)				1.2	1.2	
Percent Blockage				0	1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	164					
pX, platoon unblocked						
vC, conflicting volume			607		858	310
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			607		858	310
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		98	98
cM capacity (veh/h)			971		294	684

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	390	205	168	320	20
Volume Left	0	0	8	0	7
Volume Right	0	10	0	0	13
cSH	1700	1700	971	1700	467
Volume to Capacity	0.23	0.12	0.01	0.19	0.04
Queue Length 95th (m)	0.0	0.0	0.2	0.0	1.1
Control Delay (s)	0.0	0.0	0.5	0.0	13.0
Lane LOS			A		B
Approach Delay (s)	0.0		0.2		13.0
Approach LOS					B

Intersection Summary				
Average Delay	0.3			
Intersection Capacity Utilization	29.0%	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)	6	523	13	25	439	9	17	7	40	6	6	18
Future Volume (vph)	6	523	13	25	439	9	17	7	40	6	6	18
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.996			0.997			0.916			0.921	
Flt Protected		0.999			0.997			0.987			0.990	
Satd. Flow (prot)	0	3240	0	0	3223	0	0	1526	0	0	1490	0
Flt Permitted		0.999			0.997			0.987			0.990	
Satd. Flow (perm)	0	3240	0	0	3223	0	0	1526	0	0	1490	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		206.3			78.8			169.0			191.8	
Travel Time (s)		14.9			5.7			12.2			13.8	
Confl. Peds. (#/hr)	3		12	12		3						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	8%	4%	2%	25%	7%	0%	3%	0%	0%	12%
Adj. Flow (vph)	7	568	14	27	477	10	18	8	43	7	7	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	589	0	0	514	0	0	69	0	0	34	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
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	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	46.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	523	13	25	439	9	17	7	40	6	6	18
Future Volume (Veh/h)	6	523	13	25	439	9	17	7	40	6	6	18
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	568	14	27	477	10	18	8	43	7	7	20
Pedestrians								12			3	
Lane Width (m)								3.6			3.6	
Walking Speed (m/s)								1.2			1.2	
Percent Blockage								1			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		371			302							
pX, platoon unblocked												
vC, conflicting volume	490			594			917	1145	303	884	1147	246
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	490			594			917	1145	303	884	1147	246
tC, single (s)	4.1			4.2			7.6	6.5	7.0	7.5	6.5	7.1
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	3.4
p0 queue free %	99			97			91	96	94	97	96	97
cM capacity (veh/h)	1081			955			198	192	683	212	191	722

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	291	298	266	248	69	34
Volume Left	7	0	27	0	18	7
Volume Right	0	14	0	10	43	20
cSH	1081	1700	955	1700	353	350
Volume to Capacity	0.01	0.18	0.03	0.15	0.20	0.10
Queue Length 95th (m)	0.2	0.0	0.7	0.0	5.7	2.6
Control Delay (s)	0.3	0.0	1.2	0.0	17.7	16.4
Lane LOS	A		A		C	C
Approach Delay (s)	0.1		0.6		17.7	16.4
Approach LOS					C	C

Intersection Summary				
Average Delay	1.8			
Intersection Capacity Utilization	46.5%	ICU Level of Service		A
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	18	545	455	9	10	20
Future Volume (vph)	18	545	455	9	10	20
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.997		0.910	
Flt Protected		0.998			0.984	
Satd. Flow (prot)	0	3249	3236	0	1367	0
Flt Permitted		0.998			0.984	
Satd. Flow (perm)	0	3249	3236	0	1367	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		78.8	68.0		182.2	
Travel Time (s)		5.7	4.9		13.1	
Confl. Peds. (#/hr)	3			3		2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	2%	2%	25%	22%	11%
Adj. Flow (vph)	20	592	495	10	11	22
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	612	505	0	33	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		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	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	41.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	18	545	455	9	10	20
Future Volume (Veh/h)	18	545	455	9	10	20
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)	20	592	495	10	11	22
Pedestrians		2			3	
Lane Width (m)		3.6			3.6	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			223			
pX, platoon unblocked	0.99				0.99	0.99
vC, conflicting volume	508				839	258
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	476				811	222
tC, single (s)	4.2				7.2	7.1
tC, 2 stage (s)						
tF (s)	2.3				3.7	3.4
p0 queue free %	98				96	97
cM capacity (veh/h)	1039				270	742

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	217	395	330	175	33
Volume Left	20	0	0	0	11
Volume Right	0	0	0	10	22
cSH	1039	1700	1700	1700	469
Volume to Capacity	0.02	0.23	0.19	0.10	0.07
Queue Length 95th (m)	0.5	0.0	0.0	0.0	1.8
Control Delay (s)	1.0	0.0	0.0	0.0	13.3
Lane LOS	A				B
Approach Delay (s)	0.3		0.0		13.3
Approach LOS					B

Intersection Summary				
Average Delay		0.6		
Intersection Capacity Utilization		41.2%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	527	31	26	481	21	31
Future Volume (vph)	527	31	26	481	21	31
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt	0.992				0.919	
Flt Protected				0.997	0.980	
Satd. Flow (prot)	3225	0	0	3217	1510	0
Flt Permitted				0.997	0.980	
Satd. Flow (perm)	3225	0	0	3217	1510	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	68.0			55.0	165.0	
Travel Time (s)	4.9			4.0	11.9	
Confl. Peds. (#/hr)		11	11		1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	7%	4%	3%	5%	4%
Adj. Flow (vph)	573	34	28	523	23	34
Shared Lane Traffic (%)						
Lane Group Flow (vph)	607	0	0	551	57	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	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	45.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	527	31	26	481	21	31
Future Volume (Veh/h)	527	31	26	481	21	31
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)	573	34	28	523	23	34
Pedestrians	1				11	
Lane Width (m)	3.6				3.6	
Walking Speed (m/s)	1.2				1.2	
Percent Blockage	0				1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				155		
pX, platoon unblocked					0.95	
vC, conflicting volume			618		920	314
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			618		818	314
tC, single (s)			4.2		6.9	7.0
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		92	95
cM capacity (veh/h)			936		282	669

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	382	225	202	349	57
Volume Left	0	0	28	0	23
Volume Right	0	34	0	0	34
cSH	1700	1700	936	1700	431
Volume to Capacity	0.22	0.13	0.03	0.21	0.13
Queue Length 95th (m)	0.0	0.0	0.7	0.0	3.6
Control Delay (s)	0.0	0.0	1.5	0.0	14.6
Lane LOS			A		B
Approach Delay (s)	0.0		0.6		14.6
Approach LOS					B

Intersection Summary				
Average Delay	0.9			
Intersection Capacity Utilization	45.4%	ICU Level of Service		A
Analysis Period (min)	15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	7	561	496	7	4	11
Future Volume (vph)	7	561	496	7	4	11
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.998		0.899	
Flt Protected		0.999			0.988	
Satd. Flow (prot)	0	3257	3254	0	1446	0
Flt Permitted		0.999			0.988	
Satd. Flow (perm)	0	3257	3254	0	1446	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		55.0	100.4		189.4	
Travel Time (s)		4.0	7.2		13.6	
Confl. Peds. (#/hr)	8			8		1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	0%	0%	10%
Adj. Flow (vph)	8	610	539	8	4	12
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	618	547	0	16	0
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	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	32.5%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	7	561	496	7	4	11
Future Volume (Veh/h)	7	561	496	7	4	11
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)	8	610	539	8	4	12
Pedestrians		1			8	
Lane Width (m)		3.6			3.6	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			100			
pX, platoon unblocked	0.94				0.94	0.94
vC, conflicting volume	555				872	282
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	409				745	120
tC, single (s)	4.1				6.8	7.1
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.4
p0 queue free %	99				99	99
cM capacity (veh/h)	1088				329	827

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	211	407	359	188	16
Volume Left	8	0	0	0	4
Volume Right	0	0	0	8	12
cSH	1088	1700	1700	1700	600
Volume to Capacity	0.01	0.24	0.21	0.11	0.03
Queue Length 95th (m)	0.2	0.0	0.0	0.0	0.7
Control Delay (s)	0.4	0.0	0.0	0.0	11.2
Lane LOS	A				B
Approach Delay (s)	0.1		0.0		11.2
Approach LOS					B

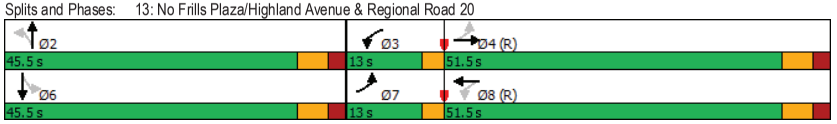
Intersection Summary				
Average Delay		0.2		
Intersection Capacity Utilization		32.5%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	461	17	23	335	10	20	5	15	20	18	12
Future Volume (vph)	9	461	17	23	335	10	20	5	15	20	18	12
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	35.0		0.0	35.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		0.99	1.00		1.00	0.99			0.99	
Frt		0.995			0.996			0.886			0.968	
Flt Protected	0.950			0.950			0.950				0.980	
Satd. Flow (prot)	1662	3182	0	1662	3155	0	1662	1529	0	0	1591	0
Flt Permitted	0.529			0.402			0.721				0.908	
Satd. Flow (perm)	917	3182	0	699	3155	0	1259	1529	0	0	1470	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			3			16			13	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		100.4			342.8			50.5			193.9	
Travel Time (s)		7.2			24.7			3.6			14.0	
Confl. Peds. (#/hr)	9		8	8		9	2		6	6		2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	4%	0%	0%	5%	0%	0%	0%	0%	0%	0%	17%
Adj. Flow (vph)	10	501	18	25	364	11	22	5	16	22	20	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	10	519	0	25	375	0	22	21	0	0	55	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	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	8.0		6.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.5	35.5		10.5	35.5		36.5	36.5		36.5	36.5	
Total Split (s)	13.0	51.5		13.0	51.5		45.5	45.5		45.5	45.5	
Total Split (%)	11.8%	46.8%		11.8%	46.8%		41.4%	41.4%		41.4%	41.4%	
Maximum Green (s)	10.0	45.0		10.0	45.0		39.0	39.0		39.0	39.0	
Yellow Time (s)	3.0	4.1		3.0	4.1		4.1	4.1		4.1	4.1	
All-Red Time (s)	0.0	2.4		0.0	2.4		2.4	2.4		2.4	2.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)	3.0	6.5		3.0	6.5		6.5	6.5			6.5	
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	
Recall Mode	None	C-Max		None	C-Max		Max	Max		Max	Max	
Walk Time (s)		11.0			11.0		11.0	11.0		11.0	11.0	
Flash Dont Walk (s)		18.0			18.0		19.0	19.0		19.0	19.0	
Pedestrian Calls (#/hr)		0			0		0	0		0	0	
Act Effct Green (s)	59.4	52.2		61.1	56.1		39.0	39.0			39.0	
Actuated g/C Ratio	0.54	0.47		0.56	0.51		0.35	0.35			0.35	
v/c Ratio	0.02	0.34		0.06	0.23		0.05	0.04			0.10	
Control Delay	11.0	19.6		11.2	15.9		23.9	12.6			19.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	11.0	19.6		11.2	15.9		23.9	12.6			19.8	
LOS	B	B		B	B		C	B			B	
Approach Delay		19.4			15.6			18.4			19.8	
Approach LOS		B			B			B			B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 6 (5%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.34			
Intersection Signal Delay: 17.9		Intersection LOS: B	
Intersection Capacity Utilization 60.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 13: No Frills Plaza/Highland Avenue & Regional Road 20



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	10	519	25	375	22	21	55
v/c Ratio	0.02	0.34	0.06	0.23	0.05	0.04	0.10
Control Delay	11.0	19.6	11.2	15.9	23.9	12.6	19.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.0	19.6	11.2	15.9	23.9	12.6	19.8
Queue Length 50th (m)	1.0	39.6	2.4	22.6	3.2	0.7	6.3
Queue Length 95th (m)	3.5	54.4	6.4	38.3	9.0	6.2	15.5
Internal Link Dist (m)		76.4		318.8		26.5	169.9
Turn Bay Length (m)	35.0		35.0				
Base Capacity (vph)	579	1511	478	1610	446	552	529
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.34	0.05	0.23	0.05	0.04	0.10

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	461	17	23	335	10	20	5	15	20	18	12
Future Volume (vph)	9	461	17	23	335	10	20	5	15	20	18	12
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	6.5		3.0	6.5		6.5	6.5			6.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99			1.00	
Flpb, ped/bikes	0.99	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.89			0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.98	
Satd. Flow (prot)	1654	3181		1658	3154		1659	1528			1587	
Flt Permitted	0.53	1.00		0.40	1.00		0.72	1.00			0.91	
Satd. Flow (perm)	921	3181		702	3154		1259	1528			1471	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	10	501	18	25	364	11	22	5	16	22	20	13
RTOR Reduction (vph)	0	2	0	0	2	0	0	10	0	0	8	0
Lane Group Flow (vph)	10	517	0	25	373	0	22	11	0	0	47	0
Confl. Peds. (#/hr)	9		8	8		9	2		6	6		2
Heavy Vehicles (%)	0%	4%	0%	0%	5%	0%	0%	0%	0%	0%	0%	17%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	52.3	51.0		57.7	53.7		39.0	39.0			39.0	
Effective Green, g (s)	52.3	51.0		57.7	53.7		39.0	39.0			39.0	
Actuated g/C Ratio	0.48	0.46		0.52	0.49		0.35	0.35			0.35	
Clearance Time (s)	3.0	6.5		3.0	6.5		6.5	6.5			6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	446	1474		402	1539		446	541			521	
v/s Ratio Prot	0.00	c0.16		c0.00	0.12			0.01				
v/s Ratio Perm	0.01			0.03			0.02				c0.03	
v/c Ratio	0.02	0.35		0.06	0.24		0.05	0.02			0.09	
Uniform Delay, d1	15.2	18.9		12.8	16.3		23.3	23.1			23.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.0	0.7		0.1	0.4		0.2	0.1			0.3	
Delay (s)	15.2	19.6		12.9	16.7		23.5	23.1			24.0	
Level of Service	B	B		B	B		C	C			C	
Approach Delay (s)		19.5			16.5			23.3			24.0	
Approach LOS		B			B			C			C	

Intersection Summary						
HCM 2000 Control Delay	18.7	HCM 2000 Level of Service		B		
HCM 2000 Volume to Capacity ratio	0.23					
Actuated Cycle Length (s)	110.0	Sum of lost time (s)		16.0		
Intersection Capacity Utilization	60.0%	ICU Level of Service		B		
Analysis Period (min)	15					

c Critical Lane Group

Intersection: 1: Montrose Road (RR98) & Regional Road 20

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	TR	L	T	R
Maximum Queue (m)	62.1	91.2	99.6	36.1	49.6	52.1	22.5	52.3	114.8	38.2	47.0	31.0
Average Queue (m)	39.8	37.9	54.0	13.7	25.1	27.5	1.9	11.2	59.4	16.7	21.7	12.7
95th Queue (m)	63.1	78.5	84.4	30.0	45.1	47.8	11.4	38.2	99.3	31.0	42.7	24.3
Link Distance (m)		237.7	237.7		237.4	237.4	237.4		325.2		309.7	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	55.0			35.0				45.0		80.0		70.0
Storage Blk Time (%)	4	0		0	6			0	20			
Queuing Penalty (veh)	8	1		0	3			0	8			

Intersection: 2: Niagara Falls Inn Driveway/Belmont Avenue & Regional Road 20

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	LTR
Maximum Queue (m)	11.7	83.3	81.4	11.5	23.8	28.4	12.0	5.4	17.9
Average Queue (m)	2.4	43.4	42.2	2.6	9.4	11.7	0.8	0.3	3.7
95th Queue (m)	8.9	72.9	72.8	9.4	20.0	23.1	5.9	2.9	13.2
Link Distance (m)	237.4	237.4	237.4	212.9	212.9	212.9	59.8	59.8	199.2
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (m)									
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 3: Royal Manor Drive & Regional Road 20

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	TR	LT	TR	LTR	LTR
Maximum Queue (m)	53.6	54.3	66.4	91.4	7.1	12.8
Average Queue (m)	28.5	30.0	25.9	50.8	0.4	2.7
95th Queue (m)	48.4	50.8	58.1	83.3	3.6	9.5
Link Distance (m)	212.9	212.9	287.9	287.9	46.0	82.4
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 4: Brookfield Avenue & Regional Road 20

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	TR	LT	TR	LTR	LTR
Maximum Queue (m)	5.6	5.4	10.6	5.7	18.5	9.1
Average Queue (m)	0.2	0.3	0.9	0.2	7.1	2.7
95th Queue (m)	3.3	3.4	5.3	3.0	14.9	9.3
Link Distance (m)	287.9	287.9	96.2	96.2	217.0	184.0
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 5: Regional Road 20 & Mouland Avenue

Movement	EB	EB	SB
Directions Served	LT	T	LR
Maximum Queue (m)	5.1	6.2	9.2
Average Queue (m)	0.2	0.3	2.3
95th Queue (m)	2.7	3.7	8.7
Link Distance (m)	96.2	96.2	177.3
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 6: Dorchester Road & Regional Road 20

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (m)	47.4	89.9	91.9	30.4	59.8	68.0	49.6	78.8	37.4	78.1
Average Queue (m)	36.3	62.8	68.0	11.6	32.0	42.1	21.2	38.0	15.0	37.7
95th Queue (m)	59.1	86.4	90.4	24.4	53.0	63.7	42.5	67.0	35.6	67.4
Link Distance (m)		89.1	89.1		97.0	97.0		148.1		173.2
Upstream Blk Time (%)		1	1							
Queuing Penalty (veh)		2	4							
Storage Bay Dist (m)	40.0			45.0			50.0		30.0	
Storage Blk Time (%)	3	30			2		0	4	1	15
Queuing Penalty (veh)	7	40			1		0	6	2	10

Intersection: 7: Regional Road 20 & Depew Avenue

Movement	WB	SB
Directions Served	T	LR
Maximum Queue (m)	1.3	8.6
Average Queue (m)	0.0	0.6
95th Queue (m)	0.9	4.3
Link Distance (m)	31.3	166.6
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 8: Corwin Avenue & Regional Road 20

Movement	WB	WB	NB
Directions Served	LT	T	LR
Maximum Queue (m)	10.7	1.8	13.2
Average Queue (m)	0.7	0.1	4.5
95th Queue (m)	4.9	1.3	12.1
Link Distance (m)	191.0	191.0	135.0
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 9: Calton Avenue/Prince Edward Avenue & Regional Road 20

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	TR	LT	TR	LTR	LTR
Maximum Queue (m)	10.5	3.6	23.9	8.9	23.6	20.2
Average Queue (m)	0.9	0.2	3.9	0.3	9.6	6.2
95th Queue (m)	5.5	2.7	14.5	5.4	17.6	15.5
Link Distance (m)	191.0	191.0	63.3	63.3	156.9	179.7
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 10: Regional Road 20 & Byng Avenue

Movement	EB	EB	WB	SB
Directions Served	LT	T	T	LR
Maximum Queue (m)	14.9	5.0	1.8	19.3
Average Queue (m)	2.1	0.2	0.1	7.0
95th Queue (m)	9.6	2.6	1.3	17.1
Link Distance (m)	63.3	63.3	48.2	170.0
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 11: Franklin Avenue & Regional Road 20

Movement	EB	EB	WB	NB
Directions Served	T	TR	LT	LR
Maximum Queue (m)	1.8	5.2	13.1	21.8
Average Queue (m)	0.1	0.2	2.6	9.1
95th Queue (m)	1.3	2.4	10.0	17.1
Link Distance (m)	48.2	48.2	41.1	152.5
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 12: Regional Road 20 & Glenholme Avenue

Movement	EB	WB	WB	SB
Directions Served	LT	T	TR	LR
Maximum Queue (m)	11.7	4.9	3.1	15.3
Average Queue (m)	1.2	0.2	0.1	3.5
95th Queue (m)	6.6	2.6	2.2	11.4
Link Distance (m)	41.1	80.2	80.2	175.6
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 13: No Frills Plaza/Highland Avenue & Regional Road 20

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	LTR
Maximum Queue (m)	18.0	60.7	68.7	25.0	49.3	44.6	15.5	15.4	23.0
Average Queue (m)	2.2	37.5	41.8	3.7	24.4	14.9	4.3	3.9	7.8
95th Queue (m)	10.6	57.6	61.2	14.7	41.7	31.9	12.8	11.9	19.4
Link Distance (m)		80.2	80.2		332.3	332.3	36.4	36.4	180.0
Upstream Blk Time (%)			0						
Queuing Penalty (veh)			0						
Storage Bay Dist (m)	35.0			35.0					
Storage Blk Time (%)		12			3				
Queuing Penalty (veh)		1			1				

Network Summary

Network wide Queuing Penalty: 95

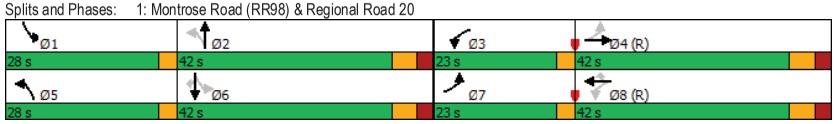
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	206	566	58	147	615	132	81	242	132	203	307	351
Future Volume (vph)	206	566	58	147	615	132	81	242	132	203	307	351
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	55.0		0.0	35.0		0.0	45.0		0.0	80.0		70.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		0.99		0.96	0.98	0.99		0.99		0.95
Frt		0.986				0.850		0.947				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1554	3120	0	1511	3137	1417	1583	1598	0	1599	1683	1390
Flt Permitted	0.210			0.253			0.492			0.269		
Satd. Flow (perm)	341	3120	0	400	3137	1366	806	1598	0	450	1683	1322
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8				143		20				382
Link Speed (k/h)		60			50			50			50	
Link Distance (m)		251.8			265.0			342.9			323.7	
Travel Time (s)		15.1			19.1			24.7			23.3	
Confl. Peds. (#/hr)	17		10	10		17	27		14	14		27
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	7%	4%	11%	10%	6%	5%	5%	4%	0%	4%	4%	7%
Adj. Flow (vph)	224	615	63	160	668	143	88	263	143	221	334	382
Shared Lane Traffic (%)												
Lane Group Flow (vph)	224	678	0	160	668	143	88	406	0	221	334	382
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	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	0.0
Detector 1 Queue (s)	0.0	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	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		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		6
Detector Phase	7	4		3	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0	10.0	3.0	8.0		6.0	8.0	8.0
Minimum Split (s)	10.5	35.0		10.5	35.0	35.0	9.5	36.0		10.5	36.0	36.0
Total Split (s)	23.0	42.0		23.0	42.0	42.0	28.0	42.0		28.0	42.0	42.0
Total Split (%)	17.0%	31.1%		17.0%	31.1%	31.1%	20.7%	31.1%		20.7%	31.1%	31.1%
Maximum Green (s)	20.0	35.0		20.0	35.0	35.0	25.0	35.0		25.0	35.0	35.0
Yellow Time (s)	3.0	4.1		3.0	4.1	4.1	3.0	4.1		3.0	4.1	4.1
All-Red Time (s)	0.0	2.9		0.0	2.9	2.9	0.0	2.9		0.0	2.9	2.9
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.0	7.0		3.0	7.0	7.0	3.0	7.0		3.0	7.0	7.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	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	3.0
Recall Mode	None	C-Max		None	C-Max	C-Max	None	Max		None	Max	Max
Walk Time (s)		10.0			10.0	10.0		11.0			11.0	11.0
Flash Dont Walk (s)		18.0			18.0	18.0		18.0			18.0	18.0
Pedestrian Calls (#/hr)		0			0	0		0			0	0
Act Effct Green (s)	61.4	40.8		56.3	38.1	38.1	57.0	43.5		67.0	50.5	50.5
Actuated g/C Ratio	0.45	0.30		0.42	0.28	0.28	0.42	0.32		0.50	0.37	0.37
v/c Ratio	0.73	0.72		0.57	0.76	0.29	0.22	0.77		0.61	0.53	0.52
Control Delay	37.9	47.2		30.6	51.2	7.6	20.2	51.0		27.6	37.4	5.7
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	37.9	47.2		30.6	51.2	7.6	20.2	51.0		27.6	37.4	5.7
LOS	D	D		C	D	A	C	D		C	D	A
Approach Delay		44.9			41.4			45.5			22.1	
Approach LOS		D			D			D			C	

Intersection Summary

Area Type: Other
Cycle Length: 135
Actuated Cycle Length: 135
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.77
Intersection Signal Delay: 37.5 Intersection LOS: D
Intersection Capacity Utilization 90.4% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 1: Montrose Road (RR98) & Regional Road 20



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	224	678	160	668	143	88	406	221	334	382
v/c Ratio	0.73	0.72	0.57	0.76	0.29	0.22	0.77	0.61	0.53	0.52
Control Delay	37.9	47.2	30.6	51.2	7.6	20.2	51.0	27.6	37.4	5.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.9	47.2	30.6	51.2	7.6	20.2	51.0	27.6	37.4	5.7
Queue Length 50th (m)	39.0	88.2	26.7	91.0	0.0	12.9	97.9	35.3	72.7	0.0
Queue Length 95th (m)	59.1	118.1	42.5	117.8	17.3	23.0	#164.7	53.4	108.1	24.1
Internal Link Dist (m)		227.8		241.0			318.9		299.7	
Turn Bay Length (m)	55.0		35.0			45.0		80.0		70.0
Base Capacity (vph)	335	947	344	884	487	543	527	436	628	733
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.72	0.47	0.76	0.29	0.16	0.77	0.51	0.53	0.52

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)	206	566	58	147	615	132	81	242	132	203	307	351
Future Volume (vph)	206	566	58	147	615	132	81	242	132	203	307	351
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	7.0		3.0	7.0	7.0	3.0	7.0		3.0	7.0	7.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.96	1.00	0.99		1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.99	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1552	3120		1509	3137	1366	1567	1598		1596	1683	1322
Flt Permitted	0.21	1.00		0.25	1.00	1.00	0.49	1.00		0.27	1.00	1.00
Satd. Flow (perm)	344	3120		402	3137	1366	811	1598		451	1683	1322
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	224	615	63	160	668	143	88	263	143	221	334	382
RTOR Reduction (vph)	0	6	0	0	0	103	0	14	0	0	0	239
Lane Group Flow (vph)	224	672	0	160	668	40	88	392	0	221	334	143
Confl. Peds. (#/hr)	17		10	10		17	27		14	14		27
Heavy Vehicles (%)	7%	4%	11%	10%	6%	5%	5%	4%	0%	4%	4%	7%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	57.7	40.8		52.3	38.1	38.1	53.0	43.5		63.0	50.5	50.5
Effective Green, g (s)	57.7	40.8		52.3	38.1	38.1	53.0	43.5		63.0	50.5	50.5
Actuated g/C Ratio	0.43	0.30		0.39	0.28	0.28	0.39	0.32		0.47	0.37	0.37
Clearance Time (s)	3.0	7.0		3.0	7.0	7.0	3.0	7.0		3.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	298	942		272	885	385	371	514		350	629	494
v/s Ratio Prot	c0.09	0.22		0.06	0.21		0.02	c0.25		c0.08	0.20	
v/s Ratio Perm	c0.23			0.17		0.03	0.08			0.22		0.11
v/c Ratio	0.75	0.71		0.59	0.75	0.10	0.24	0.76		0.63	0.53	0.29
Uniform Delay, d1	28.0	41.9		29.3	44.2	35.8	26.5	41.1		24.8	33.0	29.7
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	10.2	4.6		3.2	5.9	0.5	0.3	10.3		3.7	3.2	1.5
Delay (s)	38.2	46.5		32.5	50.1	36.4	26.8	51.4		28.5	36.2	31.1
Level of Service	D	D		C	D	D	C	D		C	D	C
Approach Delay (s)		44.4			45.2			47.1			32.3	
Approach LOS		D			D			D			C	

Intersection Summary				
HCM 2000 Control Delay	41.6	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.76			
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	90.4%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

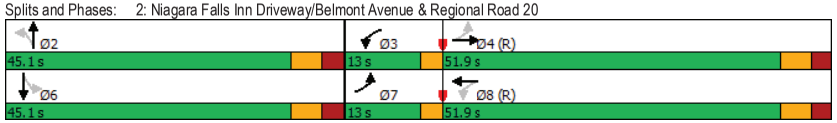
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	952	30	62	983	22	48	1	63	21	3	12
Future Volume (vph)	13	952	30	62	983	22	48	1	63	21	3	12
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		1.00				0.99			1.00	
Frt		0.995			0.997			0.852			0.955	
Flt Protected	0.950			0.950			0.950				0.971	
Satd. Flow (prot)	1662	3125	0	1662	3160	0	1330	1472	0	0	1287	0
Flt Permitted	0.174			0.143			0.732				0.849	
Satd. Flow (perm)	304	3125	0	250	3160	0	1025	1472	0	0	1124	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			2			68			13	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		265.0			231.8			75.5			218.5	
Travel Time (s)		19.1			16.7			5.4			15.7	
Confl. Peds. (#/hr)			5	5					1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	6%	0%	0%	5%	0%	25%	0%	0%	33%	0%	20%
Adj. Flow (vph)	14	1035	33	67	1068	24	52	1	68	23	3	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	14	1068	0	67	1092	0	52	69	0	0	39	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)		7.2			7.2			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	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	8.0		6.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	9.5	39.9		9.5	39.9		36.1	36.1		36.1	36.1	
Total Split (s)	13.0	51.9		13.0	51.9		45.1	45.1		45.1	45.1	
Total Split (%)	11.8%	47.2%		11.8%	47.2%		41.0%	41.0%		41.0%	41.0%	
Maximum Green (s)	10.0	45.0		10.0	45.0		38.0	38.0		38.0	38.0	
Yellow Time (s)	3.0	4.1		3.0	4.1		4.1	4.1		4.1	4.1	
All-Red Time (s)	0.0	2.8		0.0	2.8		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)	3.0	6.9		3.0	6.9		7.1	7.1			7.1	
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	
Recall Mode	None	C-Max		None	C-Max		Max	Max		Max	Max	
Walk Time (s)		12.0			12.0		11.0	11.0		11.0	11.0	
Flash Dont Walk (s)		21.0			21.0		18.0	18.0		18.0	18.0	
Pedestrian Calls (#/hr)		0			0		0	0		0	0	
Act Effct Green (s)	58.1	49.2		61.7	54.2		38.0	38.0			38.0	
Actuated g/C Ratio	0.53	0.45		0.56	0.49		0.35	0.35			0.35	
v/c Ratio	0.06	0.76		0.28	0.70		0.15	0.12			0.10	
Control Delay	11.3	30.7		7.2	10.3		26.4	6.8			18.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	11.3	30.7		7.2	10.3		26.4	6.8			18.9	
LOS	B	C		A	B		C	A			B	
Approach Delay		30.5			10.1			15.2			18.9	
Approach LOS		C			B			B			B	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 16 (15%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.76
Intersection Signal Delay: 19.7 Intersection LOS: B
Intersection Capacity Utilization 74.4% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 2: Niagara Falls Inn Driveway/Belmont Avenue & Regional Road 20



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	14	1068	67	1092	52	69	39
v/c Ratio	0.06	0.76	0.28	0.70	0.15	0.12	0.10
Control Delay	11.3	30.7	7.2	10.3	26.4	6.8	18.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.3	30.7	7.2	10.3	26.4	6.8	18.9
Queue Length 50th (m)	1.3	106.8	1.6	21.0	8.0	0.2	3.9
Queue Length 95th (m)	4.2	139.7	m2.2	26.0	17.7	9.8	11.8
Internal Link Dist (m)		241.0		207.8		51.5	194.5
Turn Bay Length (m)							
Base Capacity (vph)	292	1400	269	1558	354	553	396
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.76	0.25	0.70	0.15	0.12	0.10

Intersection Summary

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	952	30	62	983	22	48	1	63	21	3	12
Future Volume (vph)	13	952	30	62	983	22	48	1	63	21	3	12
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	6.9		3.0	6.9		7.1	7.1			7.1	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.85			0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.97	
Satd. Flow (prot)	1662	3126		1662	3160		1330	1472			1286	
Flt Permitted	0.17	1.00		0.14	1.00		0.73	1.00			0.85	
Satd. Flow (perm)	304	3126		251	3160		1024	1472			1124	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	14	1035	33	67	1068	24	52	1	68	23	3	13
RTOR Reduction (vph)	0	2	0	0	1	0	0	45	0	0	9	0
Lane Group Flow (vph)	14	1066	0	67	1091	0	52	24	0	0	30	0
Confl. Peds. (#/hr)			5	5					1	1		
Heavy Vehicles (%)	0%	6%	0%	0%	5%	0%	25%	0%	0%	33%	0%	20%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	51.2	48.6		58.0	52.4		38.0	38.0			38.0	
Effective Green, g (s)	51.2	48.6		58.0	52.4		38.0	38.0			38.0	
Actuated g/C Ratio	0.47	0.44		0.53	0.48		0.35	0.35			0.35	
Clearance Time (s)	3.0	6.9		3.0	6.9		7.1	7.1			7.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	173	1381		214	1505		353	508			388	
v/s Ratio Prot	0.00	c0.34		c0.02	0.35			0.02				
v/s Ratio Perm	0.04			0.15			c0.05				0.03	
v/c Ratio	0.08	0.77		0.31	0.72		0.15	0.05			0.08	
Uniform Delay, d1	17.1	26.0		15.9	23.0		24.8	24.0			24.2	
Progression Factor	1.00	1.00		0.47	0.37		1.00	1.00			1.00	
Incremental Delay, d2	0.2	4.2		0.6	2.1		0.9	0.2			0.4	
Delay (s)	17.3	30.3		8.0	10.7		25.7	24.1			24.6	
Level of Service	B	C		A	B		C	C			C	
Approach Delay (s)		30.1			10.5			24.8			24.6	
Approach LOS		C			B			C			C	

Intersection Summary				
HCM 2000 Control Delay	20.3	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.49			
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	17.0	
Intersection Capacity Utilization	74.4%	ICU Level of Service	D	
Analysis Period (min)	15			

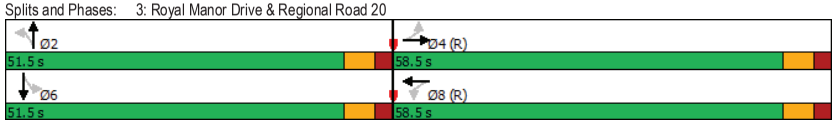
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	1042	0	1	994	14	1	0	4	12	0	28
Future Volume (vph)	33	1042	0	1	994	14	1	0	4	12	0	28
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					1.00							
Frt					0.998			0.892			0.906	
Flt Protected		0.998						0.990			0.985	
Satd. Flow (prot)	0	3123	0	0	3161	0	0	1545	0	0	1450	0
Flt Permitted		0.815			0.954			0.981			0.945	
Satd. Flow (perm)	0	2551	0	0	3016	0	0	1531	0	0	1392	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					2			35			35	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		231.8			321.7			58.1			98.8	
Travel Time (s)		16.7			23.2			4.2			7.1	
Confl. Peds. (#/hr)	2		11	11		2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	14%	6%	0%	0%	5%	0%	0%	0%	0%	0%	0%	11%
Adj. Flow (vph)	36	1133	0	1	1080	15	1	0	4	13	0	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1169	0	0	1096	0	0	5	0	0	43	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	24.5	24.5		24.5	24.5		34.5	34.5		34.5	34.5	
Total Split (s)	58.5	58.5		58.5	58.5		51.5	51.5		51.5	51.5	
Total Split (%)	53.2%	53.2%		53.2%	53.2%		46.8%	46.8%		46.8%	46.8%	
Maximum Green (s)	52.0	52.0		52.0	52.0		45.0	45.0		45.0	45.0	
Yellow Time (s)	4.1	4.1		4.1	4.1		4.1	4.1		4.1	4.1	
All-Red Time (s)	2.4	2.4		2.4	2.4		2.4	2.4		2.4	2.4	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.5			6.5			6.5			6.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		Max	Max		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		18.0	18.0		18.0	18.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		52.0			52.0			45.0			45.0	
Actuated g/C Ratio		0.47			0.47			0.41			0.41	
v/c Ratio		0.97			0.77			0.01			0.07	
Control Delay		48.0			40.3			0.0			8.5	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		48.0			40.3			0.0			8.5	
LOS		D			D			A			A	
Approach Delay		48.0			40.3						8.5	
Approach LOS		D			D						A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.97			
Intersection Signal Delay: 43.5		Intersection LOS: D	
Intersection Capacity Utilization 74.7%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Royal Manor Drive & Regional Road 20



Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	1169	1096	5	43
v/c Ratio	0.97	0.77	0.01	0.07
Control Delay	48.0	40.3	0.0	8.5
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	48.0	40.3	0.0	8.5
Queue Length 50th (m)	84.4	119.7	0.0	1.1
Queue Length 95th (m)	#176.4	m129.4	0.0	8.2
Internal Link Dist (m)	207.8	297.7	34.1	74.8
Turn Bay Length (m)				
Base Capacity (vph)	1205	1426	647	590
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.97	0.77	0.01	0.07

Intersection Summary
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	33	1042	0	1	994	14	1	0	4	12	0	28
Future Volume (vph)	33	1042	0	1	994	14	1	0	4	12	0	28
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		6.5			6.5			6.5			6.5	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frpb, ped/bikes		1.00			1.00			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		1.00			1.00			0.89			0.91	
Flt Protected		1.00			1.00			0.99			0.99	
Satd. Flow (prot)		3125			3161			1546			1450	
Flt Permitted		0.82			0.95			0.98			0.95	
Satd. Flow (perm)		2551			3017			1531			1392	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	36	1133	0	1	1080	15	1	0	4	13	0	30
RTOR Reduction (vph)	0	0	0	0	1	0	0	3	0	0	21	0
Lane Group Flow (vph)	0	1169	0	0	1095	0	0	2	0	0	22	0
Confl. Peds. (#/hr)	2		11	11		2						
Heavy Vehicles (%)	14%	6%	0%	0%	5%	0%	0%	0%	0%	0%	0%	11%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		52.0			52.0			45.0			45.0	
Effective Green, g (s)		52.0			52.0			45.0			45.0	
Actuated g/C Ratio		0.47			0.47			0.41			0.41	
Clearance Time (s)		6.5			6.5			6.5			6.5	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1205			1426			626			569	
v/s Ratio Prot												
v/s Ratio Perm		c0.46			0.36			0.00			c0.02	
v/c Ratio		0.97			0.77			0.00			0.04	
Uniform Delay, d1		28.2			24.0			19.2			19.5	
Progression Factor		1.11			1.55			1.00			1.00	
Incremental Delay, d2		15.9			2.4			0.0			0.1	
Delay (s)		47.4			39.6			19.2			19.6	
Level of Service		D			D			B			B	
Approach Delay (s)		47.4			39.6			19.2			19.6	
Approach LOS		D			D			B			B	

Intersection Summary			
HCM 2000 Control Delay	43.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	74.7%	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)	8	888	40	10	922	6	10	1	20	1	2	18
Future Volume (vph)	8	888	40	10	922	6	10	1	20	1	2	18
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.994			0.999			0.913			0.883	
Flt Protected					0.999			0.984			0.998	
Satd. Flow (prot)	0	3243	0	0	3223	0	0	1572	0	0	1542	0
Flt Permitted					0.999			0.984			0.998	
Satd. Flow (perm)	0	3243	0	0	3223	0	0	1572	0	0	1542	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		321.7			111.0			229.0			196.7	
Travel Time (s)		23.2			8.0			16.5			14.2	
Confl. Peds. (#/hr)	5		12	12		5	2		2	2		2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	9	965	43	11	1002	7	11	1	22	1	2	20
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1017	0	0	1020	0	0	34	0	0	23	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			15.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	49.2%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	888	40	10	922	6	10	1	20	1	2	18
Future Volume (Veh/h)	8	888	40	10	922	6	10	1	20	1	2	18
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	965	43	11	1002	7	11	1	22	1	2	20
Pedestrians		2			2			12			5	
Lane Width (m)		3.6			3.6			3.6			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			1			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		322			221							
pX, platoon unblocked	0.81			0.74			0.83	0.83	0.74	0.83	0.83	0.81
vC, conflicting volume	1014			1020			1562	2052	518	1558	2070	512
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	544			309			235	825	0	229	846	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			98	100	97	100	99	98
cM capacity (veh/h)	834			920			547	248	793	554	241	877

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	492	526	512	508	34	23
Volume Left	9	0	11	0	11	1
Volume Right	0	43	0	7	22	20
cSH	834	1700	920	1700	655	699
Volume to Capacity	0.01	0.31	0.01	0.30	0.05	0.03
Queue Length 95th (m)	0.3	0.0	0.3	0.0	1.3	0.8
Control Delay (s)	0.3	0.0	0.3	0.0	10.8	10.3
Lane LOS	A		A		B	B
Approach Delay (s)	0.1		0.2		10.8	10.3
Approach LOS					B	B

Intersection Summary						
Average Delay			0.4			
Intersection Capacity Utilization			49.2%	ICU Level of Service		A
Analysis Period (min)			15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	12	888	875	3	2	4
Future Volume (vph)	12	888	875	3	2	4
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt					0.910	
Flt Protected		0.999			0.984	
Satd. Flow (prot)	0	3289	3228	0	1567	0
Flt Permitted		0.999			0.984	
Satd. Flow (perm)	0	3289	3228	0	1567	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		111.0	109.8		191.2	
Travel Time (s)		8.0	7.9		13.8	
Confl. Peds. (#/hr)	5			5		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	3%	0%	0%	0%
Adj. Flow (vph)	13	965	951	3	2	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	978	954	0	6	0
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	1.11	1.11	1.11	1.11	1.11	1.11
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)	12	888	875	3	2	4
Future Volume (Veh/h)	12	888	875	3	2	4
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)	13	965	951	3	2	4
Pedestrians					5	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			110			
pX, platoon unblocked	0.76				0.76	0.76
vC, conflicting volume	959				1466	482
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	322				988	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				99	100
cM capacity (veh/h)	948				186	828

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	335	643	634	320	6
Volume Left	13	0	0	0	2
Volume Right	0	0	0	3	4
cSH	948	1700	1700	1700	384
Volume to Capacity	0.01	0.38	0.37	0.19	0.02
Queue Length 95th (m)	0.3	0.0	0.0	0.0	0.4
Control Delay (s)	0.5	0.0	0.0	0.0	14.5
Lane LOS	A				B
Approach Delay (s)	0.2		0.0		14.5
Approach LOS					B

Intersection Summary				
Average Delay		0.1		
Intersection Capacity Utilization	45.9%	ICU Level of Service		A
Analysis Period (min)		15		



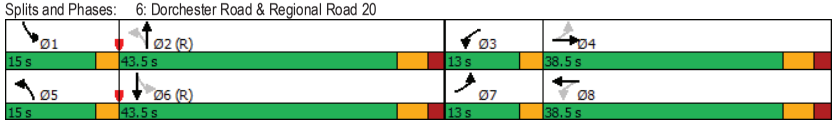
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	161	598	208	127	689	130	235	407	101	119	330	106
Future Volume (vph)	161	598	208	127	689	130	235	407	101	119	330	106
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	40.0		0.0	45.0		0.0	50.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.99		0.99	1.00		1.00	1.00		1.00	1.00	
Frt		0.961			0.976			0.970			0.964	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1568	2967	0	1630	3027	0	1630	1638	0	1539	1631	0
Flt Permitted	0.123			0.125			0.223			0.172		
Satd. Flow (perm)	203	2967	0	213	3027	0	382	1638	0	278	1631	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		44			20			12			16	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		109.8			114.2			162.1			187.2	
Travel Time (s)		7.9			8.2			11.7			13.5	
Confl. Peds. (#/hr)	5		15	15		5	5		8	8		5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	7%	4%	2%	7%	5%	2%	3%	4%	8%	3%	3%
Adj. Flow (vph)	175	650	226	138	749	141	255	442	110	129	359	115
Shared Lane Traffic (%)												
Lane Group Flow (vph)	175	876	0	138	890	0	255	552	0	129	474	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	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0		3.0	8.0		6.0	8.0	
Minimum Split (s)	10.5	36.5		10.5	36.5		9.5	40.5		10.5	40.5	
Total Split (s)	13.0	38.5		13.0	38.5		15.0	43.5		15.0	43.5	
Total Split (%)	11.8%	35.0%		11.8%	35.0%		13.6%	39.5%		13.6%	39.5%	
Maximum Green (s)	10.0	32.0		10.0	32.0		12.0	37.0		12.0	37.0	
Yellow Time (s)	3.0	4.1		3.0	4.1		3.0	4.1		3.0	4.1	
All-Red Time (s)	0.0	2.4		0.0	2.4		0.0	2.4		0.0	2.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	6.5		3.0	6.5		3.0	6.5		3.0	6.5	
Lead/Lag	Lead	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	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Walk Time (s)		12.0			12.0			15.0			15.0	
Flash Dont Walk (s)		13.0			13.0			19.0			19.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	46.0	32.5		45.0	32.1		54.0	38.9		50.8	37.2	
Actuated g/C Ratio	0.42	0.30		0.41	0.29		0.49	0.35		0.46	0.34	
v/c Ratio	0.84	0.96		0.66	0.99		0.79	0.94		0.53	0.84	
Control Delay	61.5	74.4		36.1	67.1		36.7	60.2		23.2	47.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	61.5	74.4		36.1	67.1		36.7	60.2		23.2	47.9	
LOS	E	E		D	E		D	E		C	D	
Approach Delay		72.3			62.9			52.8			42.6	
Approach LOS		E			E			D			D	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 60 (55%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.99
Intersection Signal Delay: 59.9 Intersection LOS: E
Intersection Capacity Utilization 94.9% ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 6: Dorchester Road & Regional Road 20



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	175	876	138	890	255	552	129	474
v/c Ratio	0.84	0.96	0.66	0.99	0.79	0.94	0.53	0.84
Control Delay	61.5	74.4	36.1	67.1	36.7	60.2	23.2	47.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.5	74.4	36.1	67.1	36.7	60.2	23.2	47.9
Queue Length 50th (m)	39.8	107.8	18.6	103.5	32.6	118.2	15.2	95.9
Queue Length 95th (m)	m43.5	m#117.1	#37.7	#149.4	#62.3	#195.6	26.6	#154.1
Internal Link Dist (m)		85.8		90.2		138.1		163.2
Turn Bay Length (m)	40.0		45.0		50.0		30.0	
Base Capacity (vph)	209	908	216	896	323	587	271	562
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	0.84	0.96	0.64	0.99	0.79	0.94	0.48	0.84

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	161	598	208	127	689	130	235	407	101	119	330	106
Future Volume (vph)	161	598	208	127	689	130	235	407	101	119	330	106
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	6.5		3.0	6.5		3.0	6.5		3.0	6.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
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	0.96		1.00	0.98		1.00	0.97		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1568	2968		1629	3028		1629	1639		1539	1631	
Flt Permitted	0.12	1.00		0.12	1.00		0.22	1.00		0.17	1.00	
Satd. Flow (perm)	203	2968		214	3028		383	1639		278	1631	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	175	650	226	138	749	141	255	442	110	129	359	115
RTOR Reduction (vph)	0	31	0	0	14	0	0	8	0	0	11	0
Lane Group Flow (vph)	175	845	0	138	876	0	255	544	0	129	463	0
Confl. Peds. (#/hr)	5		15	15		5	5		8	8		5
Heavy Vehicles (%)	6%	7%	4%	2%	7%	5%	2%	3%	4%	8%	3%	3%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	42.4	32.5		41.6	32.1		50.7	38.9		47.3	37.2	
Effective Green, g (s)	42.4	32.5		41.6	32.1		50.7	38.9		47.3	37.2	
Actuated g/C Ratio	0.39	0.30		0.38	0.29		0.46	0.35		0.43	0.34	
Clearance Time (s)	3.0	6.5		3.0	6.5		3.0	6.5		3.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	201	876		203	883		310	579		235	551	
v/s Ratio Prot	c0.08	0.28		0.06	c0.29		c0.09	c0.33		0.05	0.28	
v/s Ratio Perm	0.26			0.20			0.29			0.19		
v/c Ratio	0.87	0.96		0.68	0.99		0.82	0.94		0.55	0.84	
Uniform Delay, d1	26.3	38.2		25.6	38.8		21.9	34.4		22.5	33.7	
Progression Factor	1.97	1.71		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	17.8	13.7		8.7	28.2		16.0	25.2		2.6	14.4	
Delay (s)	69.6	78.8		34.3	67.0		37.9	59.6		25.1	48.1	
Level of Service	E	E		C	E		D	E		C	D	
Approach Delay (s)		77.3			62.6			52.7			43.1	
Approach LOS		E			E			D			D	

Intersection Summary				
HCM 2000 Control Delay	61.4	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	0.95			
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	19.0	
Intersection Capacity Utilization	94.9%	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)	10	779	916	11	1	3
Future Volume (vph)	10	779	916	11	1	3
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.998		0.899	
Flt Protected		0.999			0.988	
Satd. Flow (prot)	0	3257	3242	0	1554	0
Flt Permitted		0.999			0.988	
Satd. Flow (perm)	0	3257	3242	0	1554	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		114.2	50.1		180.5	
Travel Time (s)		8.2	3.6		13.0	
Confl. Peds. (#/hr)	7			7		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	33%	0%	0%
Adj. Flow (vph)	11	847	996	12	1	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	858	1008	0	4	0
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	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

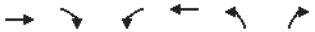
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	41.0%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	10	779	916	11	1	3
Future Volume (Veh/h)	10	779	916	11	1	3
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)	11	847	996	12	1	3
Pedestrians					7	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		114				
pX, platoon unblocked					0.77	
vC, conflicting volume	1015				1454	511
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1015				993	511
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				99	99
cM capacity (veh/h)	687				185	510

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	293	565	664	344	4
Volume Left	11	0	0	0	1
Volume Right	0	0	0	12	3
cSH	687	1700	1700	1700	354
Volume to Capacity	0.02	0.33	0.39	0.20	0.01
Queue Length 95th (m)	0.4	0.0	0.0	0.0	0.3
Control Delay (s)	0.6	0.0	0.0	0.0	15.3
Lane LOS	A				C
Approach Delay (s)	0.2		0.0		15.3
Approach LOS					C

Intersection Summary				
Average Delay		0.1		
Intersection Capacity Utilization		41.0%	ICU Level of Service	A
Analysis Period (min)		15		



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	809	13	18	925	4	18
Future Volume (vph)	809	13	18	925	4	18
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt	0.998				0.887	
Flt Protected				0.999	0.992	
Satd. Flow (prot)	3254	0	0	3227	1540	0
Flt Permitted				0.999	0.992	
Satd. Flow (perm)	3254	0	0	3227	1540	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	50.1			206.3	147.1	
Travel Time (s)	3.6			14.9	10.6	
Confl. Peds. (#/hr)		12	12			1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	0%	3%	0%	0%
Adj. Flow (vph)	879	14	20	1005	4	20
Shared Lane Traffic (%)						
Lane Group Flow (vph)	893	0	0	1025	24	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	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	809	13	18	925	4	18
Future Volume (Veh/h)	809	13	18	925	4	18
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)	879	14	20	1005	4	20
Pedestrians				1	12	
Lane Width (m)				3.6	3.6	
Walking Speed (m/s)				1.2	1.2	
Percent Blockage				0	1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	164					
pX, platoon unblocked			0.80		0.80	0.80
vC, conflicting volume			905		1440	460
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			387		1055	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		98	98
cM capacity (veh/h)			938		174	865

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	586	307	355	670	24
Volume Left	0	0	20	0	4
Volume Right	0	14	0	0	20
cSH	1700	1700	938	1700	521
Volume to Capacity	0.34	0.18	0.02	0.39	0.05
Queue Length 95th (m)	0.0	0.0	0.5	0.0	1.2
Control Delay (s)	0.0	0.0	0.7	0.0	12.2
Lane LOS			A		B
Approach Delay (s)	0.0		0.3		12.2
Approach LOS					B

Intersection Summary				
Average Delay			0.3	
Intersection Capacity Utilization			52.0%	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)	17	790	12	15	910	9	11	0	36	10	4	26
Future Volume (vph)	17	790	12	15	910	9	11	0	36	10	4	26
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.998			0.999			0.897			0.912	
Flt Protected		0.999			0.999			0.988			0.987	
Satd. Flow (prot)	0	3249	0	0	3245	0	0	1492	0	0	1461	0
Flt Permitted		0.999			0.999			0.988			0.987	
Satd. Flow (perm)	0	3249	0	0	3245	0	0	1492	0	0	1461	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		206.3			78.8			169.0			191.8	
Travel Time (s)		14.9			5.7			12.2			13.8	
Confl. Peds. (#/hr)	3		12	12		3						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	8%	4%	2%	25%	7%	0%	3%	0%	0%	12%
Adj. Flow (vph)	18	859	13	16	989	10	12	0	39	11	4	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	890	0	0	1015	0	0	51	0	0	43	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary				
Area Type:	Other			
Control Type: Unsignalized				
Intersection Capacity Utilization 49.9%			ICU Level of Service A	
Analysis Period (min) 15				



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	17	790	12	15	910	9	11	0	36	10	4	26
Future Volume (Veh/h)	17	790	12	15	910	9	11	0	36	10	4	26
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	18	859	13	16	989	10	12	0	39	11	4	28
Pedestrians								12			3	
Lane Width (m)								3.6			3.6	
Walking Speed (m/s)								1.2			1.2	
Percent Blockage								1			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		371			302							
pX, platoon unblocked	0.83			0.96			0.84	0.84	0.96	0.84	0.84	0.83
vC, conflicting volume	1002			884			1470	1948	448	1534	1949	502
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	581			802			989	1555	349	1065	1556	0
tC, single (s)	4.1			4.2			7.6	6.5	7.0	7.5	6.5	7.1
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	3.4
p0 queue free %	98			98			92	100	94	92	96	97
cM capacity (veh/h)	826			767			145	91	614	136	91	867

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	448	442	510	504	51	43
Volume Left	18	0	16	0	12	11
Volume Right	0	13	0	10	39	28
cSH	826	1700	767	1700	349	274
Volume to Capacity	0.02	0.26	0.02	0.30	0.15	0.16
Queue Length 95th (m)	0.5	0.0	0.5	0.0	4.0	4.4
Control Delay (s)	0.6	0.0	0.6	0.0	17.1	20.6
Lane LOS	A		A		C	C
Approach Delay (s)	0.3		0.3		17.1	20.6
Approach LOS					C	C

Intersection Summary						
Average Delay	1.2					
Intersection Capacity Utilization	49.9%	ICU Level of Service	A			
Analysis Period (min)	15					



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	39	780	890	6	4	42
Future Volume (vph)	39	780	890	6	4	42
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999		0.876	
Flt Protected		0.998			0.996	
Satd. Flow (prot)	0	3247	3251	0	1365	0
Flt Permitted		0.998			0.996	
Satd. Flow (perm)	0	3247	3251	0	1365	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		78.8	68.0		182.2	
Travel Time (s)		5.7	4.9		13.1	
Confl. Peds. (#/hr)	3			3		2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	2%	2%	25%	22%	11%
Adj. Flow (vph)	42	848	967	7	4	46
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	890	974	0	50	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		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	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 65.4%		ICU Level of Service C	
Analysis Period (min) 15			

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	39	780	890	6	4	42
Future Volume (Veh/h)	39	780	890	6	4	42
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)	42	848	967	7	4	46
Pedestrians		2			3	
Lane Width (m)		3.6			3.6	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			223			
pX, platoon unblocked	0.81				0.81	0.81
vC, conflicting volume	977				1482	492
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	508				1129	0
tC, single (s)	4.2				7.2	7.1
tC, 2 stage (s)						
tF (s)	2.3				3.7	3.4
p0 queue free %	95				97	95
cM capacity (veh/h)	831				130	853

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	325	565	645	329	50
Volume Left	42	0	0	0	4
Volume Right	0	0	0	7	46
cSH	831	1700	1700	1700	591
Volume to Capacity	0.05	0.33	0.38	0.19	0.08
Queue Length 95th (m)	1.3	0.0	0.0	0.0	2.2
Control Delay (s)	1.7	0.0	0.0	0.0	11.7
Lane LOS	A				B
Approach Delay (s)	0.6		0.0		11.7
Approach LOS					B

Intersection Summary				
Average Delay		0.6		
Intersection Capacity Utilization		65.4%	ICU Level of Service	C
Analysis Period (min)		15		

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	747	58	19	864	24	55
Future Volume (vph)	747	58	19	864	24	55
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt	0.989				0.906	
Flt Protected				0.999	0.985	
Satd. Flow (prot)	3213	0	0	3224	1497	0
Flt Permitted				0.999	0.985	
Satd. Flow (perm)	3213	0	0	3224	1497	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	68.0			55.0	165.0	
Travel Time (s)	4.9			4.0	11.9	
Confl. Peds. (#/hr)		11	11		1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	7%	4%	3%	5%	4%
Adj. Flow (vph)	812	63	21	939	26	60
Shared Lane Traffic (%)						
Lane Group Flow (vph)	875	0	0	960	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	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	52.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	747	58	19	864	24	55
Future Volume (Veh/h)	747	58	19	864	24	55
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	63	21	939	26	60
Pedestrians	1				11	
Lane Width (m)	3.6				3.6	
Walking Speed (m/s)	1.2				1.2	
Percent Blockage	0				1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				155		
pX, platoon unblocked					0.80	
vC, conflicting volume			886		1367	448
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			886		956	448
tC, single (s)			4.2		6.9	7.0
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		87	89
cM capacity (veh/h)			740		193	547

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	541	334	334	626	86
Volume Left	0	0	21	0	26
Volume Right	0	63	0	0	60
cSH	1700	1700	740	1700	352
Volume to Capacity	0.32	0.20	0.03	0.37	0.24
Queue Length 95th (m)	0.0	0.0	0.7	0.0	7.6
Control Delay (s)	0.0	0.0	1.0	0.0	18.5
Lane LOS			A		C
Approach Delay (s)	0.0		0.3		18.5
Approach LOS					C

Intersection Summary				
Average Delay	1.0			
Intersection Capacity Utilization	52.5%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	41	779	869	31	10	20
Future Volume (vph)	41	779	869	31	10	20
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.995		0.910	
Flt Protected		0.997			0.984	
Satd. Flow (prot)	0	3253	3246	0	1469	0
Flt Permitted		0.997			0.984	
Satd. Flow (perm)	0	3253	3246	0	1469	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		55.0	100.4		189.4	
Travel Time (s)		4.0	7.2		13.6	
Confl. Peds. (#/hr)	8			8		1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	0%	0%	10%
Adj. Flow (vph)	45	847	945	34	11	22
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	892	979	0	33	0
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	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	65.5%	ICU Level of Service	C
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	41	779	869	31	10	20
Future Volume (Veh/h)	41	779	869	31	10	20
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)	45	847	945	34	11	22
Pedestrians		1			8	
Lane Width (m)		3.6			3.6	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			100			
pX, platoon unblocked	0.79				0.79	0.79
vC, conflicting volume	987				1484	498
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	445				1076	0
tC, single (s)	4.1				6.8	7.1
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.4
p0 queue free %	95				93	97
cM capacity (veh/h)	881				162	828

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	327	565	630	349	33
Volume Left	45	0	0	0	11
Volume Right	0	0	0	34	22
cSH	881	1700	1700	1700	349
Volume to Capacity	0.05	0.33	0.37	0.21	0.09
Queue Length 95th (m)	1.3	0.0	0.0	0.0	2.5
Control Delay (s)	1.8	0.0	0.0	0.0	16.4
Lane LOS	A				C
Approach Delay (s)	0.6		0.0		16.4
Approach LOS					C

Intersection Summary					
Average Delay			0.6		
Intersection Capacity Utilization			65.5%	ICU Level of Service	C
Analysis Period (min)			15		

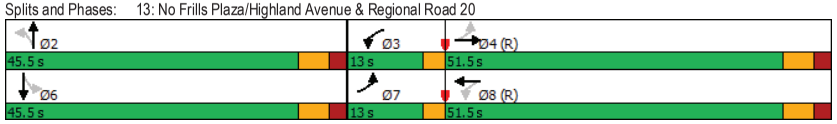


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	673	32	67	855	15	78	16	53	37	40	27
Future Volume (vph)	18	673	32	67	855	15	78	16	53	37	40	27
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	35.0		0.0	35.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	1.00		1.00	0.99			0.99	
Frt		0.993			0.997			0.884			0.965	
Flt Protected	0.950			0.950			0.950				0.982	
Satd. Flow (prot)	1662	3175	0	1662	3158	0	1662	1525	0	0	1583	0
Flt Permitted	0.230			0.260			0.708				0.882	
Satd. Flow (perm)	401	3175	0	453	3158	0	1237	1525	0	0	1418	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			2			58			18	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		100.4			342.8			50.5			193.9	
Travel Time (s)		7.2			24.7			3.6			14.0	
Confl. Peds. (#/hr)	9		8	8		9	2		6	6		2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	4%	0%	0%	5%	0%	0%	0%	0%	0%	0%	17%
Adj. Flow (vph)	20	732	35	73	929	16	85	17	58	40	43	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	20	767	0	73	945	0	85	75	0	0	112	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	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	8.0		6.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.5	35.5		10.5	35.5		36.5	36.5		36.5	36.5	
Total Split (s)	13.0	51.5		13.0	51.5		45.5	45.5		45.5	45.5	
Total Split (%)	11.8%	46.8%		11.8%	46.8%		41.4%	41.4%		41.4%	41.4%	
Maximum Green (s)	10.0	45.0		10.0	45.0		39.0	39.0		39.0	39.0	
Yellow Time (s)	3.0	4.1		3.0	4.1		4.1	4.1		4.1	4.1	
All-Red Time (s)	0.0	2.4		0.0	2.4		2.4	2.4		2.4	2.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)	3.0	6.5		3.0	6.5		6.5	6.5			6.5	
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	
Recall Mode	None	C-Max		None	C-Max		Max	Max		Max	Max	
Walk Time (s)		11.0			11.0		11.0	11.0		11.0	11.0	
Flash Dont Walk (s)		18.0			18.0		19.0	19.0		19.0	19.0	
Pedestrian Calls (#/hr)		0			0		0	0		0	0	
Act Effct Green (s)	57.6	49.0		61.3	54.1		39.0	39.0			39.0	
Actuated g/C Ratio	0.52	0.45		0.56	0.49		0.35	0.35			0.35	
v/c Ratio	0.07	0.54		0.22	0.61		0.19	0.13			0.22	
Control Delay	11.6	24.7		12.8	23.2		26.2	9.4			22.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	11.6	24.7		12.8	23.2		26.2	9.4			22.1	
LOS	B	C		B	C		C	A			C	
Approach Delay		24.3			22.4			18.3			22.1	
Approach LOS		C			C			B			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 6 (5%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.61			
Intersection Signal Delay: 22.8		Intersection LOS: C	
Intersection Capacity Utilization 70.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 13: No Frills Plaza/Highland Avenue & Regional Road 20



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	20	767	73	945	85	75	112
v/c Ratio	0.07	0.54	0.22	0.61	0.19	0.13	0.22
Control Delay	11.6	24.7	12.8	23.2	26.2	9.4	22.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.6	24.7	12.8	23.2	26.2	9.4	22.1
Queue Length 50th (m)	1.9	66.5	7.2	72.4	13.2	2.5	14.6
Queue Length 95th (m)	5.5	89.1	14.2	112.0	25.6	12.5	28.7
Internal Link Dist (m)		76.4		318.8		26.5	169.9
Turn Bay Length (m)	35.0		35.0				
Base Capacity (vph)	335	1417	363	1555	438	578	514
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.54	0.20	0.61	0.19	0.13	0.22

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	673	32	67	855	15	78	16	53	37	40	27
Future Volume (vph)	18	673	32	67	855	15	78	16	53	37	40	27
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	6.5		3.0	6.5		6.5	6.5			6.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.88			0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.98	
Satd. Flow (prot)	1661	3176		1661	3159		1659	1525			1580	
Flt Permitted	0.23	1.00		0.26	1.00		0.71	1.00			0.88	
Satd. Flow (perm)	402	3176		455	3159		1237	1525			1419	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	732	35	73	929	16	85	17	58	40	43	29
RTOR Reduction (vph)	0	3	0	0	1	0	0	37	0	0	12	0
Lane Group Flow (vph)	20	764	0	73	944	0	85	38	0	0	100	0
Confl. Peds. (#/hr)	9		8	8		9	2		6	6		2
Heavy Vehicles (%)	0%	4%	0%	0%	5%	0%	0%	0%	0%	0%	0%	17%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	51.1	48.4		58.0	52.3		39.0	39.0			39.0	
Effective Green, g (s)	51.1	48.4		58.0	52.3		39.0	39.0			39.0	
Actuated g/C Ratio	0.46	0.44		0.53	0.48		0.35	0.35			0.35	
Clearance Time (s)	3.0	6.5		3.0	6.5		6.5	6.5			6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	217	1397		312	1501		438	540			503	
v/s Ratio Prot	0.00	0.24		c0.01	c0.30			0.02				
v/s Ratio Perm	0.04			0.11			0.07				c0.07	
v/c Ratio	0.09	0.55		0.23	0.63		0.19	0.07			0.20	
Uniform Delay, d1	16.6	22.7		13.9	21.6		24.6	23.5			24.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.2	1.5		0.4	2.0		1.0	0.2			0.9	
Delay (s)	16.8	24.3		14.3	23.6		25.6	23.7			25.5	
Level of Service	B	C		B	C		C	C			C	
Approach Delay (s)		24.1			22.9			24.7			25.5	
Approach LOS		C			C			C			C	

Intersection Summary				
HCM 2000 Control Delay	23.6	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.44			
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	70.4%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Intersection: 1: Montrose Road (RR98) & Regional Road 20

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	TR	L	T	R
Maximum Queue (m)	62.4	171.2	189.4	42.4	107.8	111.4	26.3	52.3	261.1	80.7	175.1	77.5
Average Queue (m)	40.6	104.0	119.1	33.1	65.5	66.9	2.8	23.4	120.1	39.9	62.6	43.3
95th Queue (m)	67.0	205.6	216.5	50.9	101.1	100.6	14.3	57.0	252.2	74.2	131.5	76.8
Link Distance (m)		237.7	237.7		237.4	237.4	237.4		325.2		309.7	
Upstream Blk Time (%)		7	9						4			
Queuing Penalty (veh)		0	0						0			
Storage Bay Dist (m)	55.0			35.0				45.0		80.0		70.0
Storage Blk Time (%)	3	12		9	32			0	44	3	3	1
Queuing Penalty (veh)	7	24		26	46			0	35	21	15	5

Intersection: 2: Niagara Falls Inn Driveway/Belmont Avenue & Regional Road 20

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	LTR
Maximum Queue (m)	218.2	248.6	246.0	24.3	39.6	46.6	37.1	27.4	25.9
Average Queue (m)	45.2	150.1	152.1	11.0	20.8	25.5	10.4	9.5	6.3
95th Queue (m)	182.4	275.0	275.1	21.6	35.5	41.3	26.7	22.0	18.7
Link Distance (m)	237.4	237.4	237.4	212.9	212.9	212.9	59.8	59.8	199.2
Upstream Blk Time (%)	1	7	6						
Queuing Penalty (veh)	2	21	18						
Storage Bay Dist (m)									
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 3: Royal Manor Drive & Regional Road 20

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	TR	LT	TR	LTR	LTR
Maximum Queue (m)	219.0	227.6	181.3	199.8	10.0	19.9
Average Queue (m)	193.7	195.9	112.6	137.0	0.8	5.8
95th Queue (m)	248.6	251.1	182.8	200.3	5.0	15.4
Link Distance (m)	212.9	212.9	287.9	287.9	46.0	82.4
Upstream Blk Time (%)	6	8				
Queuing Penalty (veh)	33	39				
Storage Bay Dist (m)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 4: Brookfield Avenue & Regional Road 20

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	TR	LT	TR	LTR	LTR
Maximum Queue (m)	30.4	15.3	23.6	22.2	16.6	13.0
Average Queue (m)	2.0	1.0	2.5	1.2	6.2	4.5
95th Queue (m)	13.5	8.5	13.0	10.1	14.6	12.3
Link Distance (m)	287.9	287.9	96.2	96.2	217.0	184.0
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 5: Regional Road 20 & Mouland Avenue

Movement	EB	EB	SB
Directions Served	LT	T	LR
Maximum Queue (m)	76.1	74.8	9.1
Average Queue (m)	12.7	13.4	1.6
95th Queue (m)	47.4	49.8	7.0
Link Distance (m)	96.2	96.2	177.3
Upstream Blk Time (%)	0	0	
Queuing Penalty (veh)	1	2	
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 6: Dorchester Road & Regional Road 20

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (m)	47.4	99.8	99.8	52.4	102.1	104.6	57.3	156.1	37.4	168.4
Average Queue (m)	37.6	76.6	79.6	42.7	85.5	90.0	47.7	97.0	26.5	95.3
95th Queue (m)	59.5	105.1	104.5	67.1	108.2	109.9	70.0	161.0	44.8	161.6
Link Distance (m)		89.1	89.1		97.0	97.0		148.1		173.2
Upstream Blk Time (%)		13	14		9	13		5		2
Queuing Penalty (veh)		56	63		40	61		0		0
Storage Bay Dist (m)	40.0			45.0			50.0		30.0	
Storage Blk Time (%)	24	35		3	41		7	27	5	46
Queuing Penalty (veh)	72	57		10	53		33	63	22	54

Intersection: 7: Regional Road 20 & Depew Avenue

Movement	EB	EB	WB	WB	SB
Directions Served	LT	T	T	TR	LR
Maximum Queue (m)	24.1	16.8	38.7	34.6	8.6
Average Queue (m)	2.5	0.6	7.8	11.5	1.1
95th Queue (m)	12.7	7.0	29.0	34.5	5.6
Link Distance (m)	97.0	97.0	31.3	31.3	166.6
Upstream Blk Time (%)			2	5	
Queuing Penalty (veh)			11	21	
Storage Bay Dist (m)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 8: Corwin Avenue & Regional Road 20

Movement	EB	EB	WB	WB	NB
Directions Served	T	TR	LT	T	LR
Maximum Queue (m)	9.3	3.1	27.4	26.3	10.4
Average Queue (m)	0.5	0.2	4.7	3.1	4.7
95th Queue (m)	4.4	2.9	18.8	17.5	11.9
Link Distance (m)	31.3	31.3	191.0	191.0	135.0
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 9: Calton Avenue/Prince Edward Avenue & Regional Road 20

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	TR	LT	TR	LTR	LTR
Maximum Queue (m)	41.5	25.8	26.1	18.2	19.8	20.7
Average Queue (m)	5.8	1.3	3.2	0.9	7.8	8.3
95th Queue (m)	22.9	12.8	15.5	9.5	17.0	18.1
Link Distance (m)	191.0	191.0	63.3	63.3	156.9	179.7
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 10: Regional Road 20 & Byng Avenue

Movement	EB	EB	WB	WB	SB
Directions Served	LT	T	T	TR	LR
Maximum Queue (m)	23.6	23.9	5.0	10.7	21.1
Average Queue (m)	7.0	1.1	0.2	0.4	8.9
95th Queue (m)	19.2	10.0	2.9	4.8	18.6
Link Distance (m)	63.3	63.3	48.2	48.2	170.0
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 11: Franklin Avenue & Regional Road 20

Movement	EB	EB	WB	WB	NB
Directions Served	T	TR	LT	T	LR
Maximum Queue (m)	8.6	12.1	22.9	4.8	28.6
Average Queue (m)	0.6	0.6	4.2	0.4	11.3
95th Queue (m)	7.1	4.9	15.6	4.9	20.4
Link Distance (m)	48.2	48.2	41.1	41.1	152.5
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 12: Regional Road 20 & Glenholme Avenue

Movement	EB	EB	WB	WB	SB
Directions Served	LT	T	T	TR	LR
Maximum Queue (m)	23.2	12.7	8.2	3.0	18.3
Average Queue (m)	5.5	0.7	0.3	0.1	6.6
95th Queue (m)	17.5	5.5	3.5	2.1	15.6
Link Distance (m)	41.1	41.1	80.2	80.2	175.6
Upstream Blk Time (%)	0				
Queuing Penalty (veh)	0				
Storage Bay Dist (m)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 13: No Frills Plaza/Highland Avenue & Regional Road 20

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	LTR
Maximum Queue (m)	42.4	79.2	83.3	42.4	100.6	94.4	36.8	28.7	34.7
Average Queue (m)	5.3	50.8	54.8	16.6	54.1	48.6	13.9	10.3	16.8
95th Queue (m)	21.8	77.7	80.7	39.8	82.1	77.8	30.4	21.7	31.4
Link Distance (m)		80.2	80.2		332.3	332.3	36.4	36.4	180.0
Upstream Blk Time (%)		0	1				1	0	
Queuing Penalty (veh)		1	2				0	0	
Storage Bay Dist (m)	35.0			35.0					
Storage Blk Time (%)		19		0	21				
Queuing Penalty (veh)		3		0	14				

Network Summary

Network wide Queuing Penalty: 933

Appendix C

Collision Diagram/Safety Performance Functions

Accident No.	Accident Date	Accident Year	Accident Time	Geo ID	Location	Latitude	Longitude	Impact Location	Initial Impact Type	Traffic Control	Classification Of Accident	Collision Type	Cyclist Involved	Road Jurisdiction	Municipality	Environment Condition 1	Light	Pedestrian 1 Action	Apparent Driver 1 Action	Apparent Driver 2 Action
1848367	2018-05-29	2018	16:09	900820	Lundy's Lane btwn Royal Manor Drive & Belmont Avenue (900820)	43.089080	-79.119976	02 - Thru lane	04 - Sideswipe	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		99 - Other	01 - Driving properly
1783416	2017-09-01	2017	16:28	900820	Lundy's Lane btwn Royal Manor Drive & Belmont Avenue (900820)	43.089081	-79.119945	02 - Thru lane	03 - Rear end	10 - No control	02 - Non-fatal injury	Injury	FALSE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	01 - Clear	01 - Daylight		02 - Following too close	01 - Driving properly
1848402	2018-05-29	2018	16:15	900820	Lundy's Lane btwn Royal Manor Drive & Belmont Avenue (900820)	43.089086	-79.119923	02 - Thru lane	04 - Sideswipe	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		99 - Other	01 - Driving properly
1691406	2016-10-12	2016	20:00	900820	Lundy's Lane btwn Royal Manor Drive & Belmont Avenue (900820)	43.089091	-79.119667	02 - Thru lane	04 - Sideswipe	10 - No control	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	08 - Dark, artificial			
2333425	2023-04-02	2023	21:15	900820	Lundy's Lane btwn Royal Manor Drive & Belmont Avenue (900820)	43.089082	-79.119865	02 - Thru lane	04 - Sideswipe	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	08 - Dark, artificial		01 - Driving properly	01 - Driving properly
205443	2020-01-17	2020	23:50	900820	Lundy's Lane btwn Royal Manor Drive & Belmont Avenue (900820)	43.089155	-79.117460	02 - Thru lane	03 - Rear end	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark			01 - Driving properly
1751102	2017-06-10	2017	19:47	900820	Lundy's Lane btwn Royal Manor Drive & Belmont Avenue (900820)	43.089084	-79.119872	02 - Thru lane	03 - Rear end	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	02 - Following too close
1863793	2018-07-05	2018	19:00	900820	Lundy's Lane btwn Royal Manor Drive & Belmont Avenue (900820)	43.089083	-79.119924	02 - Thru lane	03 - Rear end	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
18106570	2018-10-27	2018	22:30	11040	Lundy's Lane btwn Mouland Avenue & Brookfield Avenue (11040)	43.089235	-79.112808	02 - Thru lane	03 - Rear end	10 - No control		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	02 - Rain	08 - Dark, artificial			
1722136	2017-03-16	2017	22:34	11040	Lundy's Lane btwn Mouland Avenue & Brookfield Avenue (11040)	43.089247	-79.112064	02 - Thru lane	04 - Sideswipe	10 - No control	03 - P.D. only	PDO	FALSE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	01 - Clear	08 - Dark, artificial		12 - Improper lane change	01 - Driving properly
2299707	2022-09-01	2022	09:45	11040	Lundy's Lane btwn Mouland Avenue & Brookfield Avenue (11040)	43.089243	-79.112010	02 - Thru lane	04 - Sideswipe	10 - No control	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	
1897119	2018-09-29	2018	19:45	11040	Lundy's Lane btwn Mouland Avenue & Brookfield Avenue (11040)	43.089230	-79.112986	03 - Left turn lane	03 - Rear end	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		02 - Following too close	01 - Driving properly
1685705	2016-09-25	2016	14:09	11040	Lundy's Lane btwn Mouland Avenue & Brookfield Avenue (11040)	43.089225	-79.113263	07 - Passing lane	03 - Rear end	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	02 - Following too close
18107063	2018-10-29	2018	13:50	11040	Lundy's Lane btwn Mouland Avenue & Brookfield Avenue (11040)	43.089226	-79.112989	02 - Thru lane	02 - Angle	10 - No control		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
1754291	2017-06-19	2017	12:45	11040	Lundy's Lane btwn Mouland Avenue & Brookfield Avenue (11040)	43.089248	-79.111878	02 - Thru lane	04 - Sideswipe	10 - No control		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
21143574	2021-12-17	2021	15:36	11040	Lundy's Lane btwn Mouland Avenue & Brookfield Avenue (11040)	43.089227	-79.113138	02 - Thru lane	03 - Rear end	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
2185282	2021-08-04	2021	11:50	901252	Lundy's Lane btwn Lundy's Lane & Mouland Avenue (901252)	43.089257	-79.110769	02 - Thru lane	04 - Sideswipe	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
1711797	2017-02-10	2017	15:43	901252	Lundy's Lane btwn Lundy's Lane & Mouland Avenue (901252)	43.089253	-79.110908	02 - Thru lane	05 - Turning movement	10 - No control	03 - P.D. only	PDO	FALSE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	03 - Snow	01 - Daylight		01 - Driving properly	06 - Improper turn
2084272	2020-09-02	2020	11:34	901252	Lundy's Lane btwn Lundy's Lane & Mouland Avenue (901252)	43.089249	-79.111052	02 - Thru lane	04 - Sideswipe	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	
2232247	2022-03-27	2022	19:24	901252	Lundy's Lane btwn Lundy's Lane & Mouland Avenue (901252)	43.089249	-79.111449	02 - Thru lane	01 - Approaching	10 - No control	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		01 - Driving properly	
183531	2018-01-09	2018	20:30	901252	Lundy's Lane btwn Lundy's Lane & Mouland Avenue (901252)	43.089254	-79.110668	02 - Thru lane	03 - Rear end	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark			
2114932	2021-02-19	2021	18:30	901252	Lundy's Lane btwn Lundy's Lane & Mouland Avenue (901252)	43.089245	-79.110836	02 - Thru lane	04 - Sideswipe	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark			01 - Driving properly
22129443	2022-11-11	2022	22:03	901252	Lundy's Lane btwn Lundy's Lane & Mouland Avenue (901252)	43.089249	-79.111198	02 - Thru lane	04 - Sideswipe	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	02 - Rain	07 - Dark		12 - Improper lane change	01 - Driving properly
1772031	2017-08-03	2017	09:00	901252	Lundy's Lane btwn Lundy's Lane & Mouland Avenue (901252)	43.089252	-79.110806	02 - Thru lane	02 - Angle	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
2199102	2021-09-03	2021	17:12	901252	Lundy's Lane btwn Lundy's Lane & Mouland Avenue (901252)	43.089246	-79.111815	02 - Thru lane	03 - Rear end	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		02 - Following too close	01 - Driving properly
225958	2022-01-19	2022	09:45	901250	Lundys Lane btwn Highland Avenue & Glenholme Avenue (901250)	43.089363	-79.102560	02 - Thru lane	04 - Sideswipe	10 - No control	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	
2237879	2022-04-13	2022	13:59	901250	Lundys Lane btwn Highland Avenue & Glenholme Avenue (901250)	43.089369	-79.103355	02 - Thru lane	04 - Sideswipe	10 - No control	02 - Non-fatal injury	Injury	TRUE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	09 - Improper passing
2266625	2022-06-18	2022	17:45	901250	Lundys Lane btwn Highland Avenue & Glenholme Avenue (901250)	43.089361	-79.102532	02 - Thru lane	04 - Sideswipe	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	
21105252	2021-09-17	2021	07:56	901250	Lundys Lane btwn Highland Avenue & Glenholme Avenue (901250)	43.089360	-79.102407	09 - Right shoulder	01 - Approaching	04 - Ped. crossover	02 - Non-fatal injury	Injury	TRUE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		08 - Failed to yield right-of-way	01 - Driving properly
20101031	2020-10-16	2020	13:34	901250	Lundys Lane btwn Highland Avenue & Glenholme Avenue (901250)	43.089364	-79.102462	02 - Thru lane	04 - Sideswipe	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		12 - Improper lane change	01 - Driving properly
2125282	2021-03-21	2021	15:15	11034	Lundy's Lane btwn Glenholme Avenue & Franklin Avenue (11034)	43.089359	-79.104051	02 - Thru lane	05 - Turning movement	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	
225988	2022-01-18	2022	18:15	11034	Lundy's Lane btwn Glenholme Avenue & Franklin Avenue (11034)	43.089360	-79.104045	02 - Thru lane	02 - Angle	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		08 - Failed to yield right-of-way	
2242732	2022-04-25	2022	12:45	11034	Lundy's Lane btwn Glenholme Avenue & Franklin Avenue (11034)	43.089362	-79.104002	02 - Thru lane	02 - Angle	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
2181318	2021-07-23	2021	23:50	11034	Lundy's Lane btwn Glenholme Avenue & Franklin Avenue (11034)	43.089358	-79.103792	02 - Thru lane	03 - Rear end	10 - No control	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	08 - Dark, artificial		99 - Other	
2373918	2023-07-07	2023	15:03	11034	Lundy's Lane btwn Glenholme Avenue & Franklin Avenue (11034)	43.089358	-79.104064	07 - Passing lane	02 - Angle	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		06 - Improper turn	01 - Driving properly
2219104	2022-02-18	2022	16:55	11034	Lundy's Lane btwn Glenholme Avenue & Franklin Avenue (11034)	43.089364	-79.103675	02 - Thru lane	03 - Rear end	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	
19115490	2019-11-12	2019	20:15	11034	Lundy's Lane btwn Glenholme Avenue & Franklin Avenue (11034)	43.089365	-79.104047	02 - Thru lane	03 - Rear end	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		06 - Improper turn	01 - Driving properly
2212315	2022-02-05	2022	18:00	11035	Lundy's Lane btwn Franklin Avenue & Byng Avenue (11035)	43.089351	-79.104417	02 - Thru lane	05 - Turning movement	10 - No control	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark			06 - Improper turn
2165923	2021-06-26	2021	16:15	11035	Lundy's Lane btwn Franklin Avenue & Byng Avenue (11035)	43.089350	-79.104884	02 - Thru lane	03 - Rear end	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
2065568	2020-07-15	2020	13:30	11035	Lundy's Lane btwn Franklin Avenue & Byng Avenue (11035)	43.089356	-79.104307	02 - Thru lane	04 - Sideswipe	10 - No control	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	
2239965	2022-04-18	2022	16:53	11035	Lundy's Lane btwn Franklin Avenue & Byng Avenue (11035)	43.089347	-79.104922	02 - Thru lane	04 - Sideswipe	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		09 - Improper passing	01 - Driving properly
20117487	2020-12-03	2020	14:20	11035	Lundy's Lane btwn Franklin Avenue & Byng Avenue (11035)	43.089349	-79.104739	02 - Thru lane	04 - Sideswipe	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		12 - Improper lane change	01 - Driving properly
19124356	2019-12-08	2019	21:34	11035	Lundy's Lane btwn Franklin Avenue & Byng Avenue (11035)	43.089356	-79.104441	02 - Thru lane	03 - Rear end	10 - No control	03 - P.D. only	PDO	FALSE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	01 - Clear	07 - Dark		02 - Following too close	01 - Driving properly
1875156	2018-08-03	2018	16:15	11035	Lundy's Lane btwn Franklin Avenue & Byng Avenue (11035)	43.089353	-79.104561	02 - Thru lane	03 - Rear end	10 - No control	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	02 - Following too close
2081313	2020-08-25	2020	21:26	11035	Lundy's Lane btwn Franklin Avenue & Byng Avenue (11035)	43.089347	-79.104540	03 - Left turn lane	05 - Turning movement	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		06 - Improper turn	01 - Driving properly
2235444	2022-04-06	2022	22:30	11035	Lundy's Lane btwn Franklin Avenue & Byng Avenue (11035)	43.089346	-79.104560	02 - Thru lane	05 - Turning movement	10 - No control	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		01 - Driving properly	
22139660	2022-12-08	2022	20:00	11035	Lundy's Lane btwn Franklin Avenue & Byng Avenue (11035)	43.089342	-79.104759	02 - Thru lane	04 - Sideswipe	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	08 - Dark, artificial		01 - Driving properly	01 - Driving properly
2254743	2022-05-23	2022	15:00	11035	Lundy's Lane btwn Franklin Avenue & Byng Avenue (11035)	43.089342	-79.104905	02 - Thru lane	04 - Sideswipe	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	
2215713	2022-02-14	2022	16:45	901251	Lundy's Lane btwn Depew Avenue & Lundys Lane (901251)	43.089258	-79.110160	02 - Thru lane	02 - Angle	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	
21108670	2021-09-24	2021	13:19	901251	Lundy's Lane btwn Depew Avenue & Lundys Lane (901251)	43.089266	-79.109948	03 - Left turn lane	04 - Sideswipe	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		12 - Improper lane change	01 - Driving properly
2279733	2022-07-18	2022	13:15	901251	Lundy's Lane btwn Depew Avenue & Lundys Lane (901251)	43.089255	-79.110445	02 - Thru lane	03 - Rear end	10 - No control	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	
1645411	2016-06-04	2016	16:55	901251	Lundy's Lane btwn Depew Avenue & Lundys Lane (901251)	43.089255	-79.110371	02 - Thru lane	03 - Rear end	10 - No control	03 - P.D. only	PDO	FALSE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	02 - Following too close
2079564	2020-08-21	2020	12:45	901251	Lundy's Lane btwn Depew Avenue & Lundys Lane (901251)	43.089259	-79.110262	02 - Thru lane	04 - Sideswipe	10 - No control	03 - P.D. only	PDO	TRUE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			01 - Driving properly
2342480	2023-04-27	2023	12:30	901251	Lundy's Lane btwn Depew Avenue & Lundys Lane (901251)	43.089262	-79.110207	02 - Thru lane	02 - Angle	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	99 - Other
2149015	2021-05-22	2021	11:30	901251	Lundy's Lane btwn Depew Avenue & Lundys Lane (901251)	43.089274	-79.109570	02 - Thru lane	02 - Angle	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
2130853	2021-04-07	2021	15:10	901251	Lundy's Lane btwn Depew Avenue & Lundys Lane (901251)	43.089256	-79.110420	07 - Passing lane	04 - Sideswipe	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
185717	2018-01-19	2018	18:31	11033	Lundy's Lane btwn Corwin Avenue & Depew Avenue (11033)	43.089286	-79.108564	02 - Thru lane	03 - Rear end	10 - No control	03 - P.D. only	PDO	FALSE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	01 - Clear	07 - Dark		02 - Following too close	01 - Driving properly
2282303	2022-07-24	2022	19:14	11033	Lundy's Lane btwn Corwin Avenue & Depew Avenue (11033)	43.089282	-79.109030	07 - Passing lane	03 - Rear end	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
1814134	2018-02-16	2018	14:45	11033	Lundy's Lane btwn Corwin Avenue & Depew Avenue (11033)	43.089287	-79.108581	02 - Thru lane	04 - Sideswipe	10 - No control		PDO	FALSE	04 - County or district	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
1692452	2016-10-15	2016	23:36	11033	Lundy's Lane btwn Corwin Avenue & Depew Avenue (11033)	43.089287	-79.108561	11 - Not on roadway - right side	07 - SMV other	10 - No control	03 - P.D. only	PDO	FALSE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	01 - Clear	07 - Dark		10 - Lost control	
2047905	2020-05-30	2020	18:25	11033	Lundy's Lane btwn Corwin Avenue & Depew Avenue (11033)	43.089284	-79.108659	04 - Right turn lane	02 - Angle	10 - No control	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		08 - Failed to yield right-of-way	01 - Driving properly
21101432	2021-09-08	2021	17:29	11033	Lundy's Lane btwn Corwin Avenue & Depew Avenue (11033)	43.089285	-79.108654	07 - Passing lane	04 - Sideswipe	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		09 - Improper passing	01 - Driving properly
1811518	2018-02-07	2018	16:13	11033	Lundy's Lane btwn Corwin Avenue & Depew Avenue (11033)	43.089286	-79.108563	02 - Thru lane	05 - Turning movement	10 - No control		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	
1858068	2018-06-21	2018	20:30	11033	Lundy's Lane btwn Corwin Avenue & Depew Avenue (11033)	43.089282	-79.109048	02 - Thru lane	04 - Sideswipe	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	05 - Dusk			
172381	2017-01-09	2017	12:40	11033	Lundy's Lane btwn Corwin Avenue & Depew Avenue (11033)	43.089287	-79.108559	02 - Thru lane	02 - Angle	10 - No control	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
1832396	2018-04-17	2018	10:35	11033	Lundy's Lane btwn Corwin Avenue & Depew Avenue (11033)	43.089282	-79.108925	03 - Left turn lane	03 - Rear end	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	06 - Improper turn
1819225	2018-03-03	2018	17:00	11037	Lundy's Lane btwn Carlton Avenue & Prince Edward Avenue & Corwin Avenue (11037)	43.089307	-79.107521	02 - Thru lane	04 - Sideswipe	10 - No control		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	
1859312	2018-06-25	2018	16:54	11037	Lundy's Lane btwn Carlton Avenue & Prince Edward Avenue & Corwin Avenue (11037)	43.089326	-79.106089	02 - Thru lane	03 - Rear end	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
1997431	2019-09-25	2019	17:50	11037	Lundy's Lane btwn Carlton Avenue & Prince Edward Avenue & Corwin Avenue (11037)	43.089294	-79.108013	02 - Thru lane	03 - Rear end	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
1812885	2018-02-12	2018	16:53	11037	Lundy's Lane btwn Carlton Avenue & Prince Edward Avenue & Corwin Avenue (11037)	43.089298	-79.107872	02 - Thru lane	07 - SMV other	10 - No control	02 - Non-fatal injury	Injury	FALSE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	01 - Clear	01 - Daylight	03 - Crossing - no traffic control	01 - Driving properly	
1666614	2016-08-02	2016	14:44	11037	Lundy's Lane btwn Carlton Avenue & Prince Edward Avenue & Corwin Avenue (11037)	43.089302	-79.107730	02 - Thru lane	04 - Sideswipe	10 - No control	03 - P.D. only	PDO	FALSE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	12 - Improper lane change
22383041	2022-04-14	2022	11:00	11037	Lundy's Lane btwn Carlton Avenue & Prince Edward Avenue & Corwin Avenue (11037)	43.089310	-79.107299	02 - Thru lane	04 - Sideswipe	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
2197640	2021-08-31	2021	17:20	11037	Lundy's Lane btwn Carlton Avenue & Prince Edward Avenue & Corwin Avenue (11037)	43.089296	-79.108255	02 - Thru lane	05 - Turning movement	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
1932787	2019-04-14	2019	15:30	11037	Lundy's Lane btwn Carlton Avenue & Prince Edward Avenue & Corwin Avenue (11037)	43.089315	-79.106585	12 - Off highway	06 - SMV unattended vehicle	10 - No control		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	02 - Rain	01 - Daylight			
1766282	2017-07-19	2017	15:20	11037	Lundy's Lane btwn Carlton Avenue & Prince Edward Avenue & Corwin Avenue (11037)	43.089328	-79.106027	02 - Thru lane	02 - Angle	10 - No control		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
1621680	2016-03-19	2016	15:15	11037	Lundy's Lane btwn Carlton Avenue & Prince Edward Avenue & Corwin Avenue (11037)	43.089328	-79.106027	02 - Thru lane	04 - Sideswipe	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		12 - Improper lane change	12 - Improper lane change
21125663	2021-11-02	2021	22:30	11037	Lundy's Lane btwn Carlton Avenue & Prince Edward Avenue & Corwin Avenue (11037)	43.089309	-79.107205	02 - Thru lane	04 - Sideswipe	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	08 - Dark, artificial		01 - Driving properly	06 - Improper turn
2328371	2023-03-21	2023	14:30	11037	Lundy's Lane btwn Carlton Avenue & Prince Edward Avenue & Corwin Avenue (11037)	43.089315	-79.106676	02 - Thru lane	05 - Turning movement	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	06 - Improper turn
2250948	2022-05-15	2022	16:07	11037	Lundy's Lane btwn Carlton Avenue & Prince Edward Avenue & Corwin Avenue (11037)	43.089290	-79.108299	02 - Thru lane	05 - Turning movement	10 - No control	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		08 - Failed to yield right-of-way	01 - Driving properly
1667857	2016-08-05	2016	21:30	11037	Lundy's Lane btwn Carlton Avenue & Prince Edward Avenue & Corwin Avenue (11037)	43.089297	-79.107743	02 - Thru lane	03 - Rear end	10 - No control	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	08 - Dark, artificial			
1713353	2017-02-15	2017	23:20	11037	Lundy's Lane btwn Carlton Avenue & Prince Edward Avenue & Corwin Avenue (11037)	43.089293	-79.108131	02 - Thru lane	07 - SMV other	10 - No control	02 - Non-fatal injury	Injury	FALSE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	03 - Snow	07 - Dark	99 - Other	99 - Other	
1613131	2016-02-18	2016	16:00	11037	Lundy's Lane btwn Carlton Avenue & Prince Edward Avenue & Corwin Avenue (11037)	43.089300	-79.107731	02 - Thru lane	03 - Rear end	10 - No control		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
171691	2017-01-06	2017	18:02	11037	Lundy's Lane btwn Carlton Avenue & Prince Edward Avenue & Corwin Avenue (11037)	43.089295	-79.108211	02 - Thru lane	03 - Rear end	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		02 - Following too close	01 - Driving properly
2062776	2020-07-07	2020	19:00	11037	Lundy's Lane btwn Carlton Avenue & Prince Edward Avenue & Corwin Avenue (11037)	43.089296	-79.107909	02 - Thru lane	99 - Other	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	99 - Other
2332167	2023-03-31	2023	13:30	11037	Lundy's Lane btwn Carlton Avenue & Prince Edward Avenue & Corwin Avenue (11037)	43.089289	-79.108335	02 - Thru lane	05 - Turning movement	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	02 - Rain	01 - Daylight		01 - Driving properly	01 - Driving properly
2290418	2022-08-12	2022	12:45	11037	Lundy's Lane btwn Carlton Avenue & Prince Edward Avenue & Corwin Avenue (11037)	43.089298	-79.107796	02 - Thru lane	02 - Angle	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
1640015	2016-05-20	2016	14:52	11037	Lundy's Lane btwn Carlton Avenue & Prince Edward Avenue & Corwin Avenue (11037)	43.089290	-79.108189	10 - Not on roadway - left side	04 - Sideswipe	10 - No control	02 - Non-fatal injury	Injury	TRUE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
1725420	2017-03-27	2017	21:48	11037	Lundy's Lane btwn Carlton Avenue & Prince Edward Avenue & Corwin Avenue (11037)	43.089319	-79.106759	02 - Thru lane	04 - Sideswipe	10 - No control	03 - P.D. only	PDO	FALSE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	01 - Clear	07 - Dark		99 - Other	01 - Driving properly
2227579	2022-03-18	2022	14:52	11037	Lundy's Lane btwn Carlton Avenue & Prince Edward Avenue & Corwin Avenue (11037)	43.089313	-79.107010	02 - Thru lane	05 - Turning movement	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	
2357	2020-01-08	2020	16:07	11037	Lundy's Lane btwn Carlton Avenue & Prince Edward Avenue & Corwin Avenue (11037)	43.089306	-79.107239	02 - Thru lane	05 - Turning movement	10 - No control	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		08 - Failed to yield right-of-way	01 - Driving properly
2153334	2021-05-31	2021	18:20	11037	Lundy's Lane btwn Carlton Avenue & Prince Edward Avenue & Corwin Avenue (11037)	43.089298	-79.107913	02 - Thru lane	02 - Angle	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		08 - Failed to yield right-of-way	01 - Driving properly
20103362	2020-10-23	2020	09:00	11037	Lundy's Lane btwn Carlton Avenue & Prince Edward Avenue & Corwin Avenue (11037)	43.089293	-79.108139	02 - Thru lane	04 - Sideswipe	10 - No control	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			01 - Driving properly
2292566	2022-08-17	2022	12:30	11037	Lundy's Lane btwn Carlton Avenue & Prince Edward Avenue & Corwin Avenue (11037)	43.089323	-79.106131	02 - Thru lane	04 - Sideswipe	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		12 - Improper lane change	01 - Driving properly
2285510	2022-08-01	2022	12:37	11037	Lundy's Lane btwn Carlton Avenue & Prince Edward Avenue & Corwin Avenue (11037)	43.089287	-79.108400	02 - Thru lane	05 - Turning movement	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		06 - Improper turn	01 - Driving properly
2182719	2021-07-30	2021	21:40	11037	Lundy's Lane btwn Carlton Avenue & Prince Edward Avenue & Corwin Avenue (11037)	43.089302	-79.107784	02 - Thru lane	04 - Sideswipe	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		01 - Driving properly	
2067858	2020-07-21	2020	17:37	11037	Lundy's Lane btwn Carlton Avenue & Prince Edward Avenue & Corwin Avenue (11037)	43.089326	-79.106099	02 - Thru lane	03 - Rear end	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
1874746	2018-08-02	2018	17:15	11037	Lundy's Lane btwn Carlton Avenue & Prince Edward Avenue & Corwin Avenue (11037)	43.089326	-79.106113	02 - Thru lane	03 - Rear end	10 - No control		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
2177199	2021-07-19	2021	21:27	11037	Lundy's Lane btwn Carlton Avenue & Prince Edward Avenue & Corwin Avenue (11037)	43.089285	-79.108269	02 - Thru lane	03 - Rear end	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		01 - Driving properly	01 - Driving properly
2178912	2021-07-22	2021	18:18	11037	Lundy's Lane btwn Carlton Avenue & Prince Edward Avenue & Corwin Avenue (11037)	43.089296	-79.108146	02 - Thru lane	05 - Turning movement	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		10 - Lost control	01 - Driving properly
16109345	2016-12-08	2016	11:25	11037	Lundy's Lane btwn Carlton Avenue & Prince Edward Avenue & Corwin Avenue (11037)	43.089319	-79.106741	09 - Right shoulder	02 - Angle	10 - No control	03 - P.D. only	PDO	FALSE	06 - Private property	NIAGARA FALLS	01 - Clear	01 - Daylight		08 - Failed to yield right-of-way	01 - Driving properly
21436	2020-03-08	2020	12:00	11037	Lundy's Lane btwn Carlton Avenue & Prince Edward Avenue & Corwin Avenue (11037)	43.089309	-79.106897	02 - Thru lane	04 - Sideswipe	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
1630936	2016-04-20	2016	22:18	11037	Lundy's Lane btwn Carlton Avenue & Prince Edward Avenue & Corwin Avenue (11037)	43.089327	-79.106140	02 - Thru lane	07 - SMV other	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		10 - Lost control	
1927165	2019-03-28	2019	19:00	11037	Lundy's Lane btwn Carlton Avenue & Prince Edward Avenue & Corwin Avenue (11037)	43.089323	-79.106249	02 - Thru lane	04 - Sideswipe	10 - No control		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	06 - Dusk, artificial			
1956351	2019-06-19	2019	11:00	11037	Lundy's Lane btwn Carlton Avenue & Prince Edward Avenue & Corwin Avenue (11037)	43.089320	-79.106316	02 - Thru lane	05 - Turning movement	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
1943865	2019-05-17	2019	14:25	11037	Lundy's Lane btwn Carlton Avenue & Prince Edward Avenue & Corwin Avenue (11037)	43.089291	-79.108234	02 - Thru lane	02 - Angle	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
21820	2020-03-04	2020	17:40	11037	Lundy's Lane btwn Carlton Avenue & Prince Edward Avenue & Corwin Avenue (11037)	43.089292	-79.108024	02 - Thru lane	04 - Sideswipe	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			01 - Driving properly
1660037	2016-07-15	2016	17:56	11037	Lundy's Lane btwn Carlton Avenue & Prince Edward Avenue & Corwin Avenue (11037)	43.089289	-79.108186	02 - Thru lane	05 - Turning movement	10 - No control	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	06 - Improper turn
2324766	2023-03-11	2023	19:01	11037	Lundy's Lane btwn Carlton Avenue & Prince Edward Avenue & Corwin Avenue (11037)	43.089288	-79.108221	02 - Thru lane	05 - Turning movement	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	08 - Dark, artificial		06 - Improper turn	01 - Driving properly
1970309	2019-07-20	2019	16:50	11036	Lundy's Lane btwn Byng Avenue & Carlton Avenue & Prince Edward Avenue (11036)	43.089333	-79.105737	02 - Thru lane	04 - Sideswipe	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
21100916	2021-09-07	2021	14:26	11036	Lundy's Lane btwn Byng Avenue & Carlton Avenue & Prince Edward Avenue (11036)	43.089328	-79.105862	02 - Thru lane	03 - Rear end	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		10 - Lost control	01 - Driving properly
1954596	2019-06-14	2019	20:18	11036	Lundy's Lane btwn Byng Avenue & Carlton Avenue & Prince Edward Avenue (11036)	43.089336	-79.105654	02 - Thru lane	02 - Angle	10 - No control	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		08 - Failed to yield right-of-way	01 - Driving properly
1660467	2016-07-16	2016	19:20	11036	Lundy's Lane btwn Byng Avenue & Carlton Avenue & Prince Edward Avenue (11036)	43.089333	-79.105658	02 - Thru lane	03 - Rear end	10 - No control	03 - P.D. only	PDO	FALSE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	01 - Clear	02 - Daylight, artificial		01 - Driving properly	02 - Following too close
1943896	2019-05-17	2019	16:23	11036	Lundy's Lane btwn Byng Avenue & Carlton Avenue & Prince Edward Avenue (11036)	43.089334	-79.105755	02 - Thru lane	04 - Sideswipe	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	12 - Improper lane change
2343475	2023-04-29	2023	21:58	11036	Lundy's Lane btwn Byng Avenue & Carlton Avenue & Prince Edward Avenue (11036)	43.089334	-79.105648	02 - Thru lane	03 - Rear end	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	08 - Dark, artificial		99 - Other	01 - Driving properly
22111802	2022-09-29	2022	20:30	11036	Lundy's Lane btwn Byng Avenue & Carlton Avenue & Prince Edward Avenue (11036)	43.089325	-79.105852	02 - Thru lane	03 - Rear end	10 - No control	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		01 - Driving properly	
1811940	2018-02-08	2018	18:45	11036	Lundy's Lane btwn Byng Avenue & Carlton Avenue & Prince Edward Avenue (11036)	43.089341	-79.105301	02 - Thru lane	03 - Rear end	10 - No control		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	08 - Dark, artificial		01 - Driving properly	01 - Driving properly
19115833	2019-11-12	2019	22:00	11036	Lundy's Lane btwn Byng Avenue & Carlton Avenue & Prince Edward Avenue (11036)	43.089333	-79.105732	02 - Thru lane	05 - Turning movement	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		01 - Driving properly	01 - Driving properly
2284793	2022-07-30	2022	16:45	11036	Lundy's Lane btwn Byng Avenue & Carlton Avenue & Prince Edward Avenue (11036)	43.089334	-79.105736	02 - Thru lane	03 - Rear end	10 - No control	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
2374299	2023-07-07	2023	16:20	11036	Lundy's Lane btwn Byng Avenue & Carlton Avenue & Prince Edward Avenue (11036)	43.089338	-79.105371	02 - Thru lane	04 - Sideswipe	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
1661929	2016-07-20	2016	19:36	11036	Lundy's Lane btwn Byng Avenue & Carlton Avenue & Prince Edward Avenue (11036)	43.089328	-79.105928	02 - Thru lane	03 - Rear end	10 - No control	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		12 - Improper lane change	01 - Driving properly
1768595	2017-07-25	2017	16:59	11036	Lundy's Lane btwn Byng Avenue & Carlton Avenue & Prince Edward Avenue (11036)	43.089337	-79.105522	02 - Thru lane	02 - Angle	10 - No control	02 - Non-fatal injury	Injury	TRUE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		08 - Failed to yield right-of-way	01 - Driving properly
23260	2020-03-13	2020	15:30	11036	Lundy's Lane btwn Byng Avenue & Carlton Avenue & Prince Edward Avenue (11036)	43.089337	-79.105366	02 - Thru lane	02 - Angle	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
1625990	2016-04-03	2016	21:30	11036	Lundy's Lane btwn Byng Avenue & Carlton Avenue & Prince Edward Avenue (11036)	43.089342	-79.105097	02 - Thru lane	03 - Rear end	10 - No control		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	03 - Snow	08 - Dark, artificial			
19104645	2019-10-14	2019	00:29	11036	Lundy's Lane btwn Byng Avenue & Carlton Avenue & Prince Edward Avenue (11036)	43.089334	-79.105606	02 - Thru lane	04 - Sideswipe	10 - No control	03 - P.D. only	PDO	FALSE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	01 - Clear	07 - Dark		01 - Driving properly	01 - Driving properly
1677065	2016-08-31	2016	16:15	901019	Lundy's Lane btwn Brookfield Avenue & Royal Manor Drive (901019)	43.089174	-79.116898	02 - Thru lane	03 - Rear end	10 - No control	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	02 - Rain	01 - Daylight			
22107548	2022-09-18	2022	18:35	901019	Lundy's Lane btwn Brookfield Avenue & Royal Manor Drive (901019)	43.089216	-79.113617	02 - Thru lane	04 - Sideswipe	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
17100908	2017-10-18	2017	15:35	901019	Lundy's Lane btwn Brookfield Avenue & Royal Manor Drive (901019)	43.089205	-79.115354	02 - Thru lane	03 - Rear end	10 - No control	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	
18120023	2018-12-07	2018	08:00	901019	Lundy's Lane btwn Brookfield Avenue & Royal Manor Drive (901019)	43.089174	-79.116887	02 - Thru lane	07 - SMV other	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
22123496	2022-10-28	2022	17:00	901019	Lundy's Lane btwn Brookfield Avenue & Royal Manor Drive (901019)	43.089176	-79.116599	02 - Thru lane	04 - Sideswipe	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
1899568	2018-10-06	2018	17:30	901019	Lundy's Lane btwn Brookfield Avenue & Royal Manor Drive (901019)	43.089222	-79.113506	02 - Thru lane	03 - Rear end	10 - No control		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
1741368	2017-05-15	2017	23:54	901019	Lundy's Lane btwn Brookfield Avenue & Royal Manor Drive (901019)	43.089224	-79.114588	02 - Thru lane	07 - SMV other	10 - No control	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		10 - Lost control	
22107456	2022-09-19	2022	12:20	901019	Lundy's Lane btwn Brookfield Avenue & Royal Manor Drive (901019)	43.089218	-79.113605	02 - Thru lane	04 - Sideswipe	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
1626185	2016-04-04	2016	16:48	901019	Lundy's Lane btwn Brookfield Avenue & Royal Manor Drive (901019)	43.089222	-79.114015	02 - Thru lane	03 - Rear end	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
1877678	2018-08-09	2018	21:18	901019	Lundy's Lane btwn Brookfield Avenue & Royal Manor Drive (901019)	43.089220	-79.113543	02 - Thru lane	03 - Rear end	10 - No control	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	08 - Dark, artificial		01 - Driving properly	99 - Other
2271356	2022-06-30	2022	15:20	901019	Lundy's Lane btwn Brookfield Avenue & Royal Manor Drive (901019)	43.089168	-79.117079	03 - Left turn lane	04 - Sideswipe	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		12 - Improper lane change	
17117123	2017-12-05	2017	12:30	901019	Lundy's Lane btwn Brookfield Avenue & Royal Manor Drive (901019)	43.089223	-79.113479	02 - Thru lane	05 - Turning movement	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	06 - Improper turn
2085605	2020-09-05	2020	20:15	901019	Lundy's Lane btwn Brookfield Avenue & Royal Manor Drive (901019)	43.089192	-79.115956	02 - Thru lane	04 - Sideswipe	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		12 - Improper lane change	01 - Driving properly
21143592	2021-12-17	2021	17:25	901019	Lundy's Lane btwn Brookfield Avenue & Royal Manor Drive (901019)	43.089220	-79.114646	02 - Thru lane	03 - Rear end	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	03 - Snow	07 - Dark		02 - Following too close	01 - Driving properly
2353488	2023-05-19	2023	12:20	900108	Lundy's Lane btwn Belmont Avenue & Montrose Road (900108)	43.089075	-79.120245	02 - Thru lane	03 - Rear end	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
1857680	2018-06-21	2018	14:56	900108	Lundy's Lane btwn Belmont Avenue & Montrose Road (900108)	43.089051	-79.121948	02 - Thru lane	03 - Rear end	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	02 - Following too close
1783978	2017-09-03	2017	02:02	900108	Lundy's Lane btwn Belmont Avenue & Montrose Road (900108)	43.089063	-79.121611	02 - Thru lane	03 - Rear end	10 - No control	03 - P.D. only	PDO	FALSE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	02 - Rain	07 - Dark		01 - Driving properly	02 - Following too close
22114629	2022-10-06	2022	16:50	900108	Lundy's Lane btwn Belmont Avenue & Montrose Road (900108)	43.089045	-79.122048	02 - Thru lane	03 - Rear end	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
14364	2020-02-15	2020	14:12	900108	Lundy's Lane btwn Belmont Avenue & Montrose Road (900108)	43.089038	-79.122659	02 - Thru lane	04 - Sideswipe	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			01 - Driving properly
17101856	2017-10-21	2017	02:19	900108	Lundy's Lane btwn Belmont Avenue & Montrose Road (900108)	43.089062	-79.121213	02 - Thru lane	05 - Turning movement	10 - No control	02 - Non-fatal injury	Injury	FALSE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	01 - Clear	07 - Dark		01 - Driving properly	03 - Exceeding speed limit

2294021	2022-08-20	2022	18:45	900108	Lundy's Lane btwn Belmont Avenue & Montrose Road (900108)	43.089050	-79.121924	02 - Thru lane	04 - Sideswipe	10 - No control	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		06 - Improper turn	01 - Driving properly
20105329	2020-10-28	2020	22:42	900108	Lundy's Lane btwn Belmont Avenue & Montrose Road (900108)	43.089063	-79.121433	02 - Thru lane	03 - Rear end	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	08 - Dark, artificial		03 - Exceeding speed limit	01 - Driving properly
1729078	2017-04-08	2017	10:16	900108	Lundy's Lane btwn Belmont Avenue & Montrose Road (900108)	43.089070	-79.120613	02 - Thru lane	06 - SMV unattended vehicle	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		10 - Lost control	
1699076	2016-11-05	2016	15:00	900108	Lundy's Lane btwn Belmont Avenue & Montrose Road (900108)	43.089043	-79.122333	02 - Thru lane	03 - Rear end	10 - No control	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
2153627	2021-06-01	2021	08:45	900108	Lundy's Lane btwn Belmont Avenue & Montrose Road (900108)	43.089040	-79.122557	02 - Thru lane	04 - Sideswipe	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
1678644	2016-09-05	2016	00:30	900108	Lundy's Lane btwn Belmont Avenue & Montrose Road (900108)	43.089035	-79.123046	02 - Thru lane	04 - Sideswipe	10 - No control	03 - P.D. only	PDO	FALSE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	01 - Clear	07 - Dark		12 - Improper lane change	01 - Driving properly
1631179	2016-04-21	2016	17:10	900108	Lundy's Lane btwn Belmont Avenue & Montrose Road (900108)	43.089059	-79.122083	02 - Thru lane	03 - Rear end	10 - No control		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
21100950	2021-09-07	2021	15:33	900108	Lundy's Lane btwn Belmont Avenue & Montrose Road (900108)	43.089038	-79.122664	11 - Not on roadway - right side	07 - SMV other	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		10 - Lost control	
21112212	2021-10-02	2021	14:17	900108	Lundy's Lane btwn Belmont Avenue & Montrose Road (900108)	43.089072	-79.120390	02 - Thru lane	03 - Rear end	10 - No control	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		02 - Following too close	01 - Driving properly
22134778	2022-11-26	2022	15:00	900108	Lundy's Lane btwn Belmont Avenue & Montrose Road (900108)	43.089049	-79.122093	02 - Thru lane	04 - Sideswipe	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
1647801	2016-06-10	2016	15:00	900108	Lundy's Lane btwn Belmont Avenue & Montrose Road (900108)	43.089077	-79.120322	12 - Off highway	99 - Other	10 - No control	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
1713602	2017-02-16	2017	21:20	900108	Lundy's Lane btwn Belmont Avenue & Montrose Road (900108)	43.089052	-79.121725	02 - Thru lane	06 - SMV unattended vehicle	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	08 - Dark, artificial			
2363409	2023-06-13	2023	18:10	01596	Lundy's Lane @ Royal Manor Drive (01596)	43.089164	-79.117201	01 - Within intersection	05 - Turning movement	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	02 - Rain	01 - Daylight		08 - Failed to yield right-of-way	01 - Driving properly
2055810	2020-06-19	2020	15:00	01596	Lundy's Lane @ Royal Manor Drive (01596)	43.089169	-79.117202	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	02 - Following too close
1721991	2017-03-16	2017	13:14	01596	Lundy's Lane @ Royal Manor Drive (01596)	43.089164	-79.117208	01 - Within intersection	05 - Turning movement	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		06 - Improper turn	01 - Driving properly
1999060	2019-09-29	2019	17:00	01596	Lundy's Lane @ Royal Manor Drive (01596)	43.089157	-79.117189	02 - Thru lane	03 - Rear end	01 - Traffic signal	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		02 - Following too close	01 - Driving properly
1975598	2019-08-03	2019	21:45	01596	Lundy's Lane @ Royal Manor Drive (01596)	43.089159	-79.117206	02 - Thru lane	04 - Sideswipe	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		01 - Driving properly	05 - Speed too slow
2381586	2023-07-24	2023	20:10	01596	Lundy's Lane @ Royal Manor Drive (01596)	43.089168	-79.117210	02 - Thru lane	04 - Sideswipe	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
1764952	2017-07-16	2017	00:05	01596	Lundy's Lane @ Royal Manor Drive (01596)	43.089156	-79.117209	02 - Thru lane	04 - Sideswipe	01 - Traffic signal	03 - P.D. only	PDO	FALSE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	01 - Clear	07 - Dark		01 - Driving properly	10 - Lost control
19126296	2019-12-14	2019	15:30	01596	Lundy's Lane @ Royal Manor Drive (01596)	43.089175	-79.117213	02 - Thru lane	03 - Rear end	01 - Traffic signal	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	02 - Rain	01 - Daylight			01 - Driving properly
1775642	2017-08-12	2017	13:15	01596	Lundy's Lane @ Royal Manor Drive (01596)	43.089164	-79.117213	02 - Thru lane	03 - Rear end	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
2258304	2022-06-01	2022	14:30	01596	Lundy's Lane @ Royal Manor Drive (01596)	43.089171	-79.117213	01 - Within intersection	02 - Angle	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	02 - Rain	01 - Daylight		07 - Disobeyed traffic control	01 - Driving properly
2081747	2020-08-26	2020	22:10	01596	Lundy's Lane @ Royal Manor Drive (01596)	43.089157	-79.117213	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		02 - Following too close	01 - Driving properly
1983780	2019-08-23	2019	01:00	01596	Lundy's Lane @ Royal Manor Drive (01596)	43.089154	-79.117208	02 - Thru lane	04 - Sideswipe	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		01 - Driving properly	
175186	2017-01-18	2017	19:25	01596	Lundy's Lane @ Royal Manor Drive (01596)	43.089164	-79.117208	03 - Left turn lane	04 - Sideswipe	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	08 - Dark, artificial		01 - Driving properly	06 - Improper turn
1670696	2016-08-13	2016	17:20	01596	Lundy's Lane @ Royal Manor Drive (01596)	43.089164	-79.117208	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		02 - Following too close	01 - Driving properly
2011663	2020-02-06	2020	13:00	01596	Lundy's Lane @ Royal Manor Drive (01596)	43.089168	-79.117194	02 - Thru lane	07 - SMV other	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	04 - Freezing Rain	01 - Daylight		01 - Driving properly	
1670292	2016-08-12	2016	15:10	01596	Lundy's Lane @ Royal Manor Drive (01596)	43.089157	-79.117197	02 - Thru lane	03 - Rear end	01 - Traffic signal	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	02 - Rain	01 - Daylight			
2232636	2022-03-31	2022	15:45	01596	Lundy's Lane @ Royal Manor Drive (01596)	43.089164	-79.117203	01 - Within intersection	05 - Turning movement	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
1982990	2019-08-20	2019	23:00	01596	Lundy's Lane @ Royal Manor Drive (01596)	43.089164	-79.117208	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		02 - Following too close	01 - Driving properly
2268564	2022-06-24	2022	16:25	01596	Lundy's Lane @ Royal Manor Drive (01596)	43.089157	-79.117208	02 - Thru lane	03 - Rear end	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
1769764	2017-07-28	2017	16:30	01596	Lundy's Lane @ Royal Manor Drive (01596)	43.089168	-79.117214	01 - Within intersection	03 - Rear end	10 - No control		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
17104477	2017-10-28	2017	15:47	01596	Lundy's Lane @ Royal Manor Drive (01596)	43.089157	-79.117208	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	02 - Rain	01 - Daylight		02 - Following too close	01 - Driving properly
1925062	2019-03-22	2019	12:00	01596	Lundy's Lane @ Royal Manor Drive (01596)	43.089154	-79.117203	02 - Thru lane	03 - Rear end	01 - Traffic signal		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
1755857	2017-06-23	2017	16:04	01596	Lundy's Lane @ Royal Manor Drive (01596)	43.089155	-79.117214	02 - Thru lane	03 - Rear end	10 - No control	03 - P.D. only	PDO	FALSE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	02 - Rain	01 - Daylight		01 - Driving properly	02 - Following too close
183784	2018-01-12	2018	20:15	01596	Lundy's Lane @ Royal Manor Drive (01596)	43.089162	-79.117208	02 - Thru lane	04 - Sideswipe	10 - No control		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	03 - Snow	07 - Dark		01 - Driving properly	01 - Driving properly
206055	2020-01-20	2020	14:38	01596	Lundy's Lane @ Royal Manor Drive (01596)	43.089157	-79.117194	01 - Within intersection	05 - Turning movement	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		06 - Improper turn	01 - Driving properly
1659285	2016-07-13	2016	17:25	01596	Lundy's Lane @ Royal Manor Drive (01596)	43.089154	-79.117208	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
20116489	2020-11-30	2020	14:30	01596	Lundy's Lane @ Royal Manor Drive (01596)	43.089164	-79.117217	01 - Within intersection	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	02 - Rain	01 - Daylight		01 - Driving properly	01 - Driving properly
17102658	2017-10-11	2017	12:15	01596	Lundy's Lane @ Royal Manor Drive (01596)	43.089168	-79.117214	02 - Thru lane	03 - Rear end	10 - No control	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	02 - Rain	01 - Daylight		01 - Driving properly	
1788156	2017-09-14	2017	19:00	01596	Lundy's Lane @ Royal Manor Drive (01596)	43.089162	-79.117207	02 - Thru lane	03 - Rear end	01 - Traffic signal	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
1785568	2017-09-07	2017	13:50	01596	Lundy's Lane @ Royal Manor Drive (01596)	43.089164	-79.117208	02 - Thru lane	03 - Rear end	01 - Traffic signal	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		99 - Other	
1980962	2019-08-16	2019	19:30	01596	Lundy's Lane @ Royal Manor Drive (01596)	43.089157	-79.117213	02 - Thru lane	03 - Rear end	01 - Traffic signal	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	99 - Other
1686093	2016-09-26	2016	14:50	01598	Lundy's Lane @ Mouland Avenue (01598)	43.089247	-79.111866	01 - Within intersection	05 - Turning movement	02 - Stop sign	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	02 - Rain	01 - Daylight			
2061861	2020-07-05	2020	19:30	01598	Lundy's Lane @ Mouland Avenue (01598)	43.089246	-79.111864	02 - Thru lane	04 - Sideswipe	10 - No control	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		12 - Improper lane change	06 - Improper turn
17101711	2017-10-20	2017	18:44	01598	Lundy's Lane @ Mouland Avenue (01598)	43.089245	-79.111862	02 - Thru lane	01 - Approaching	10 - No control	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	05 - Dusk		01 - Driving properly	10 - Lost control
2193749	2021-08-23	2021	13:05	01598	Lundy's Lane @ Mouland Avenue (01598)	43.089245	-79.111866	01 - Within intersection	01 - Approaching	02 - Stop sign	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		99 - Other	01 - Driving properly
1639901	2016-05-20	2016	06:00	01594	Lundy's Lane @ Montrose Road (01594)	43.089017	-79.123287	03 - Left turn lane	07 - SMV other	01 - Traffic signal	03 - P.D. only	PDO	FALSE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	01 - Clear	01 - Daylight		10 - Lost control	
22135198	2022-11-27	2022	20:30	01594	Lundy's Lane @ Montrose Road (01594)	43.089023	-79.123270	01 - Within intersection	04 - Sideswipe	01 - Traffic signal	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	02 - Rain	07 - Dark		01 - Driving properly	
16192	2020-02-21	2020	17:50	01594	Lundy's Lane @ Montrose Road (01594)	43.089038	-79.123277	01 - Within intersection	03 - Rear end	01 - Traffic signal	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	05 - Dusk		01 - Driving properly	
1944755	2019-05-19	2019	22:15	01594	Lundy's Lane @ Montrose Road (01594)	43.089031	-79.123301	02 - Thru lane	05 - Turning movement	01 - Traffic signal	03 - P.D. only	PDO	FALSE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	02 - Rain	07 - Dark		01 - Driving properly	06 - Improper turn
16109047	2016-12-07	2016	12:00	01594	Lundy's Lane @ Montrose Road (01594)	43.089033	-79.123284	03 - Left turn lane	03 - Rear end	01 - Traffic signal	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
2124146	2021-03-19	2021	16:15	01594	Lundy's Lane @ Montrose Road (01594)	43.089038	-79.123291	03 - Left turn lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	
1955951	2019-06-18	2019	10:30	01594	Lundy's Lane @ Montrose Road (01594)	43.089031	-79.123286	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
2085056	2020-09-04	2020	14:04	01594	Lundy's Lane @ Montrose Road (01594)	43.089021	-79.123296	01 - Within intersection	05 - Turning movement	01 - Traffic signal	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		07 - Disobeyed traffic control	01 - Driving properly
2199277	2021-09-03	2021	23:02	01594	Lundy's Lane @ Montrose Road (01594)	43.089038	-79.123293	01 - Within intersection	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	08 - Dark, artificial		02 - Following too close	01 - Driving properly
1795920	2017-10-04	2017	16:35	01594	Lundy's Lane @ Montrose Road (01594)	43.089028	-79.123295	02 - Thru lane	03 - Rear end	01 - Traffic signal	04 - Non-reportable	PDO	FALSE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	01 - Clear	01 - Daylight		02 - Following too close	01 - Driving properly
18124091	2018-12-19	2018	21:00	01594	Lundy's Lane @ Montrose Road (01594)	43.089045	-79.123298	01 - Within intersection	05 - Turning movement	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		06 - Improper turn	01 - Driving properly
1976037	2019-08-04	2019	21:26	01594	Lundy's Lane @ Montrose Road (01594)	43.089035	-79.123272	01 - Within intersection	05 - Turning movement	01 - Traffic signal	03 - P.D. only	PDO	FALSE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	01 - Clear	07 - Dark		06 - Improper turn	01 - Driving properly
1777196	2017-08-15	2017	17:15	01594	Lundy's Lane @ Montrose Road (01594)	43.089036	-79.123283	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
1718455	2017-03-04	2017	19:41	01594	Lundy's Lane @ Montrose Road (01594)	43.089037	-79.123295	01 - Within intersection	05 - Turning movement	01 - Traffic signal	03 - P.D. only	PDO	FALSE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	01 - Clear	07 - Dark		08 - Failed to yield right-of-way	01 - Driving properly
17101308	2017-10-19	2017	18:07	01594	Lundy's Lane @ Montrose Road (01594)	43.089024	-79.123284	09 - Right shoulder	05 - Turning movement	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		06 - Improper turn	01 - Driving properly
16111685	2016-12-16	2016	14:10	01594	Lundy's Lane @ Montrose Road (01594)	43.089033	-79.123284	04 - Right turn lane	03 - Rear end	03 - Yield sign	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
22124180	2022-10-30	2022	11:30	01594	Lundy's Lane @ Montrose Road (01594)	43.089026	-79.123284	04 - Right turn lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
1799094	2017-10-13	2017	14:54	01594	Lundy's Lane @ Montrose Road (01594)	43.089033	-79.123290	02 - Thru lane	03 - Rear end	01 - Traffic signal	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		02 - Following too close	01 - Driving properly
2296113	2022-08-20	2022	23:00	01594	Lundy's Lane @ Montrose Road (01594)	43.089019	-79.123280	04 - Right turn lane	04 - Sideswipe		03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	08 - Dark, artificial		01 - Driving properly	
22103481	2022-09-08	2022	13:30	01594	Lundy's Lane @ Montrose Road (01594)	43.089031	-79.123298	02 - Thru lane	04 - Sideswipe	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	
171572	2017-01-06	2017	10:41	01594	Lundy's Lane @ Montrose Road (01594)	43.089033	-79.123290	01 - Within intersection	02 - Angle	01 - Traffic signal	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		07 - Disobeyed traffic control	01 - Driving properly
1834942	2018-04-24	2018	09:15	01594	Lundy's Lane @ Montrose Road (01594)	43.089034	-79.123274	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		99 - Other	01 - Driving properly
20119628	2020-12-10	2020	09:40	01594	Lundy's Lane @ Montrose Road (01594)	43.089038	-79.123291	01 - Within intersection	07 - SMV other	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		06 - Improper turn	
18106483	2018-10-27	2018	14:45	01594	Lundy's Lane @ Montrose Road (01594)	43.089030	-79.123290	02 - Thru lane	03 - Rear end	01 - Traffic signal		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	07 - Fog, mist, smoke, dust	01 - Daylight			
1871629	2018-07-26	2018	10:15	01594	Lundy's Lane @ Montrose Road (01594)	43.089039	-79.123292	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
203152	2020-01-11	2020	03:46	01594	Lundy's Lane @ Montrose Road (01594)	43.089030	-79.123280	01 - Within intersection	07 - SMV other	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		10 - Lost control	
1914473	2019-02-16	2019	14:30	01594	Lundy's Lane @ Montrose Road (01594)	43.089032	-79.123279	02 - Thru lane	03 - Rear end	01 - Traffic signal		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
19102426	2019-10-08	2019	00:21	01594	Lundy's Lane @ Montrose Road (01594)	43.089068	-79.123234	01 - Within intersection	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		10 - Lost control	01 - Driving properly
1859079	2018-06-25	2018	08:38	01594	Lundy's Lane @ Montrose Road (01594)	43.089034	-79.123293	07 - Passing lane	05 - Turning movement	01 - Traffic signal	02 - Non-fatal injury	Injury	TRUE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		06 - Improper turn	01 - Driving properly
1763949	2017-07-11	2017	08:20	01594	Lundy's Lane @ Montrose Road (01594)	43.089033	-79.123284	01 - Within intersection	02 - Angle	01 - Traffic signal	02 - Non-fatal injury	Injury	TRUE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	01 - Clear	01 - Daylight		06 - Improper turn	01 - Driving properly
228547	2022-01-26	2022	12:50	01594	Lundy's Lane @ Montrose Road (01594)	43.089026	-79.123289	01 - Within intersection	04 - Sideswipe	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
2198008	2021-08-31	2021	15:30	01594	Lundy's Lane @ Montrose Road (01594)	43.089018	-79.123301	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
2279994	2022-07-19	2022	10:30	01594	Lundy's Lane @ Montrose Road (01594)	43.089025	-79.123286	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
1951001	2019-06-05	2019	19:04	01594	Lundy's Lane @ Montrose Road (01594)	43.089032	-79.123298	04 - Right turn lane	03 - Rear end	01 - Traffic signal	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		02 - Following too close	01 - Driving properly
1832612	2018-04-17	2018	22:49	01594	Lundy's Lane @ Montrose Road (01594)	43.089024	-79.123274	01 - Within intersection	05 - Turning movement	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	03 - Snow	07 - Dark		01 - Driving properly	06 - Improper turn
1951722	2019-06-06	2019	20:20	01594	Lundy's Lane @ Montrose Road (01594)	43.089018	-79.123296	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
2316329	2023-02-16	2023	13:18	01594	Lundy's Lane @ Montrose Road (01594)	43.089031	-79.123291	01 - Within intersection	01 - Approaching	01 - Traffic signal	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		07 - Disobeyed traffic control	01 - Driving properly
1924488	2019-03-20	2019	16:50	01594	Lundy's Lane @ Montrose Road (01594)	43.089031	-79.123284	02 - Thru lane	03 - Rear end	01 - Traffic signal		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
2194216	2021-08-24	2021	12:20	01594	Lundy's Lane @ Montrose Road (01594)	43.089016	-79.123284	01 - Within intersection	05 - Turning movement	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
1769098	2017-07-26	2017	21:23	01594	Lundy's Lane @ Montrose Road (01594)	43.089037	-79.123288	02 - Thru lane	04 - Sideswipe	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		12 - Improper lane change	01 - Driving properly
16275	2020-02-21	2020	23:13	01594	Lundy's Lane @ Montrose Road (01594)	43.089021	-79.123291	01 - Within intersection	05 - Turning movement	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		06 - Improper turn	01 - Driving properly
2215198	2022-02-13	2022	15:57	01594	Lundy's Lane @ Montrose Road (01594)	43.089033	-79.123300	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		99 - Other	01 - Driving properly
2223947	2022-03-08	2022	17:20	01594	Lundy's Lane @ Montrose Road (01594)	43.089021	-79.123277	02 - Thru lane	03 - Rear end	01 - Traffic signal	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
1881843	2018-08-20	2018	13:50	01594	Lundy's Lane @ Montrose Road (01594)	43.089029	-79.123288	02 - Thru lane	03 - Rear end	01 - Traffic signal		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
1928247	2019-03-07	2019	13:00	01594	Lundy's Lane @ Montrose Road (01594)	43.089031	-79.123293	05 - Right turn channel	03 - Rear end	03 - Yield sign		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
1792384	2017-09-25	2017	08:00	01594	Lundy's Lane @ Montrose Road (01594)	43.089023	-79.123284	09 - Right shoulder	03 - Rear end	01 - Traffic signal	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	02 - Following too close
2187834	2021-08-10	2021	13:25	01594	Lundy's Lane @ Montrose Road (01594)	43.089023	-79.123298	02 - Thru lane	03 - Rear end	01 - Traffic signal	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
2281459	2022-07-22	2022	16:26	01594	Lundy's Lane @ Montrose Road (01594)	43.089028	-79.123291	01 - Within intersection	02 - Angle	01 - Traffic signal	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		07 - Disobeyed traffic control	01 - Driving properly
1776517	2017-08-14	2017	15:40	01594	Lundy's Lane @ Montrose Road (01594)	43.089024	-79.123288	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
198997	2019-01-29	2019	17:00	01594	Lundy's Lane @ Montrose Road (01594)	43.089025	-79.123274	01 - Within intersection	03 - Rear end	01 - Traffic signal		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	03 - Snow	05 - Dusk			
2292207	2022-08-15	2022	18:00	01594	Lundy's Lane @ Montrose Road (01594)	43.089031	-79.123272	01 - Within intersection	02 - Angle	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	
1726239	2017-03-30	2017	16:13	01594	Lundy's Lane @ Montrose Road (01594)	43.089037	-79.123295	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	02 - Rain	01 - Daylight		01 - Driving properly	10 - Lost control
1996659	2019-09-23	2019	18:35	01594	Lundy's Lane @ Montrose Road (01594)	43.089028	-79.123271	03 - Left turn lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	01 - Clear	01 - Daylight		02 - Following too close	01 - Driving properly
199305	2019-01-30	2019	17:05	01594	Lundy's Lane @ Montrose Road (01594)	43.089032	-79.123279	01 - Within intersection	03 - Rear end	01 - Traffic signal		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	05 - Dusk			
1987012	2019-08-31	2019	03:00	01594	Lundy's Lane @ Montrose Road (01594)	43.089031	-79.123306	01 - Within intersection	03 - Rear end	01 - Traffic signal	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		01 - Driving properly	01 - Driving properly
1857526	2018-06-21	2018	08:10	01594	Lundy's Lane @ Montrose Road (01594)	43.089028	-79.123284	01 - Within intersection	05 - Turning movement	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
16115451	2016-12-29	2016	11:02	01594	Lundy's Lane @ Montrose Road (01594)	43.089028	-79.123295	01 - Within intersection	05 - Turning movement	01 - Traffic signal	02 - Non-fatal injury	Injury	FALSE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	03 - Snow	01 - Daylight		01 - Driving properly	06 - Improper turn
2317024	2023-02-17	2023	18:25	01594	Lundy's Lane @ Montrose Road (01594)	43.089030	-79.123279	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		01 - Driving properly	02 - Following too close
16173	2020-02-21	2020	17:30	01594	Lundy's Lane @ Montrose Road (01594)	43.089028	-79.123295	02 - Thru lane	03 - Rear end	01 - Traffic signal	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	05 - Dusk		02 - Following too close	01 - Driving properly
1850778	2018-06-04	2018	13:11	01594	Lundy's Lane @ Montrose Road (01594)	43.089028	-79.123287	02 - Thru lane	02 - Angle	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		10 - Lost control	01 - Driving properly
1622188	2016-03-15	2016	21:30	01594	Lundy's Lane @ Montrose Road (01594)	43.089041	-79.123278	02 - Thru lane	03 - Rear end			PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	08 - Dark, artificial			
2096273	2020-10-03	2020	09:00	01594	Lundy's Lane @ Montrose Road (01594)	43.089031	-79.123286	01 - Within intersection	05 - Turning movement	09 - Traffic controller	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		08 - Failed to yield right-of-way	01 - Driving properly
199752	2019-02-01	2019	04:13	01594	Lundy's Lane @ Montrose Road (01594)	43.089024	-79.123279	01 - Within intersection	07 - SMV other	01 - Traffic signal	01 - Fatal injury	Fatal	FALSE	05 - Regional municipality	NIAGARA FALLS	03 - Snow	07 - Dark		10 - Lost control	
1895755	2018-09-26	2018	09:50	01594	Lundy's Lane @ Montrose Road (01594)	43.089030	-79.123287	04 - Right turn lane	07 - SMV other	01 - Traffic signal	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	
2157219	2021-06-08	2021	11:25	01594	Lundy's Lane @ Montrose Road (01594)	43.089036	-79.123289	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		02 - Following too close	01 - Driving properly
17110074	2017-11-14	2017	12:15	01594	Lundy's Lane @ Montrose Road (01594)	43.089020	-79.123284	04 - Right turn lane	03 - Rear end	03 - Yield sign		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	
1922734	2019-03-14	2019	14:20	01594	Lundy's Lane @ Montrose Road (01594)	43.089027	-79.123269	02 - Thru lane	03 - Rear end	01 - Traffic signal		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	02 - Rain	01 - Daylight			
1924694	2019-03-21	2019	10:31	01594	Lundy's Lane @ Montrose Road (01594)	43.089034	-79.123269	01 - Within intersection	02 - Angle	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		07 - Disobeyed traffic control	01 - Driving properly
1827307	2018-03-31	2018	20:00	01594	Lundy's Lane @ Montrose Road (01594)	43.089031	-79.123293	01 - Within intersection	05 - Turning movement	01 - Traffic signal	04 - Non-reportable	PDO	TRUE	05 - Regional municipality	NIAGARA FALLS	02 - Rain	07 - Dark		01 - Driving properly	08 - Failed to yield right-of-way
22130632	2022-11-15	2022	13:10	01594	Lundy's Lane @ Montrose Road (01594)	43.089037	-79.123284	01 - Within intersection	05 - Turning movement	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
1798477	2017-10-11	2017	19:15	01594	Lundy's Lane @ Montrose Road (01594)	43.089033	-79.123284	01 - Within intersection	02 - Angle	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	02 - Rain	07 - Dark		06 - Improper turn	01 - Driving properly
1635066	2016-05-04	2016	15:00	01594	Lundy's Lane @ Montrose Road (01594)	43.089017	-79.123274	02 - Thru lane	03 - Rear end	01 - Traffic signal	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		10 - Lost control	01 - Driving properly
1769361	2017-07-27	2017	11:45	01594	Lundy's Lane @ Montrose Road (01594)	43.089028	-79.123284	02 - Thru lane	03 - Rear end	01 - Traffic signal		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
16100826	2016-11-10	2016	20:06	01594	Lundy's Lane @ Montrose Road (01594)	43.089028	-79.123290	09 - Right shoulder	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		01 - Driving properly	02 - Following too close
2336598	2023-04-12	2023	09:50	01594	Lundy's Lane @ Montrose Road (01594)	43.089021	-79.123294	02 - Thru lane	03 - Rear end	01 - Traffic signal	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
2321047	2023-02-28	2023	20:45	01594	Lundy's Lane @ Montrose Road (01594)	43.089030	-79.123294	02 - Thru lane	99 - Other	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	08 - Dark, artificial		01 - Driving properly	
2321372	2023-03-02	2023	14:55	01594	Lundy's Lane @ Montrose Road (01594)	43.089023	-79.123284	02 - Thru lane	03 - Rear end	01 - Traffic signal	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		02 - Following too close	01 - Driving properly
22100874	2022-09-04	2022	20:24	01594	Lundy's Lane @ Montrose Road (01594)	43.089028	-79.123286	01 - Within intersection	05 - Turning movement	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	02 - Rain	08 - Dark, artificial		07 - Disobeyed traffic control	01 - Driving properly
1796276	2017-10-05	2017	16:15	01594	Lundy's Lane @ Montrose Road (01594)	43.089033	-79.123290	04 - Right turn lane	03 - Rear end	03 - Yield sign	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	
1887624	2018-09-04	2018	13:15	01594	Lundy's Lane @ Montrose Road (01594)	43.089025	-79.123290	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
194925	2019-01-15	2019	20:30	01594	Lundy's Lane @ Montrose Road (01594)	43.089029	-79.123298	01 - Within intersection	05 - Turning movement	01 - Traffic signal		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	08 - Dark, artificial			
19103712	2019-10-11	2019	00:59	01594	Lundy's Lane @ Montrose Road (01594)	43.089014	-79.123282	01 - Within intersection	05 - Turning movement	01 - Traffic signal	03 - P.D. only	PDO	FALSE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	01 - Clear	07 - Dark		01 - Driving properly	01 - Driving properly
2036284	2020-04-25	2020	13:53	01594	Lundy's Lane @ Montrose Road (01594)	43.089035	-79.123272	01 - Within intersection	02 - Angle	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		99 - Other	99 - Other
1828015	2018-04-02	2018	19:30	01594	Lundy's Lane @ Montrose Road (01594)	43.089031	-79.123274	02 - Thru lane	02 - Angle	01 - Traffic signal		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	06 - Dusk, artificial		01 - Driving properly	
2295162	2022-08-22	2022	17:00	01594	Lundy's Lane @ Montrose Road (01594)	43.089018	-79.123282	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
2338260	2023-04-15	2023	14:12	01594	Lundy's Lane @ Montrose Road (01594)	43.089023	-79.123275	02 - Thru lane	04 - Sideswipe	01 - Traffic signal	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			01 - Driving properly
193230	2019-01-10	2019	21:21	01594	Lundy's Lane @ Montrose Road (01594)	43.089039	-79.123279	02 - Thru lane	07 - SMV other	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		10 - Lost control	
2092516	2020-09-23	2020	14:15	01594	Lundy's Lane @ Montrose Road (01594)	43.089031	-79.123272	04 - Right turn lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		02 - Following too close	01 - Driving properly
189435	2018-02-01	2018	12:54	01594	Lundy's Lane @ Montrose Road (01594)	43.089015	-79.123284	01 - Within intersection	05 - Turning movement	01 - Traffic signal		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
17122341	2017-12-21	2017	11:40	01594	Lundy's Lane @ Montrose Road (01594)	43.089028	-79.123290	03 - Left turn lane	04 - Sideswipe	01 - Traffic signal		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	
1653154	2016-06-26	2016	18:41	01594	Lundy's Lane @ Montrose Road (01594)	43.089024	-79.123274	01 - Within intersection	05 - Turning movement	01 - Traffic signal	03 - P.D. only	PDO	FALSE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	01 - Clear	01 - Daylight		08 - Failed to yield right-of-way	01 - Driving properly
1948933	2019-05-30	2019	17:15	01594	Lundy's Lane @ Montrose Road (01594)	43.089024	-79.123288	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
1939064	2019-05-03	2019	15:30	01594	Lundy's Lane @ Montrose Road (01594)	43.089024	-79.123293	05 - Right turn channel	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
2086693	2020-09-07	2020	11:30	01594	Lundy's Lane @ Montrose Road (01594)	43.089028	-79.123282	01 - Within intersection	02 - Angle	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
22106120	2022-09-05	2022	15:30	01594	Lundy's Lane @ Montrose Road (01594)	43.089031	-79.123284	02 - Thru lane	04 - Sideswipe	01 - Traffic signal	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	
2071979	2020-07-30	2020	16:00	01594	Lundy's Lane @ Montrose Road (01594)	43.089024	-79.123268	02 - Thru lane	03 - Rear end	10 - No control	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
1726950	2017-04-01	2017	19:02	01594	Lundy's Lane @ Montrose Road (01594)	43.089033	-79.123290	01 - Within intersection	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		10 - Lost control	01 - Driving properly
2078681	2020-08-18	2020	19:40	01594	Lundy's Lane @ Montrose Road (01594)	43.089031	-79.123286	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		99 - Other	01 - Driving properly

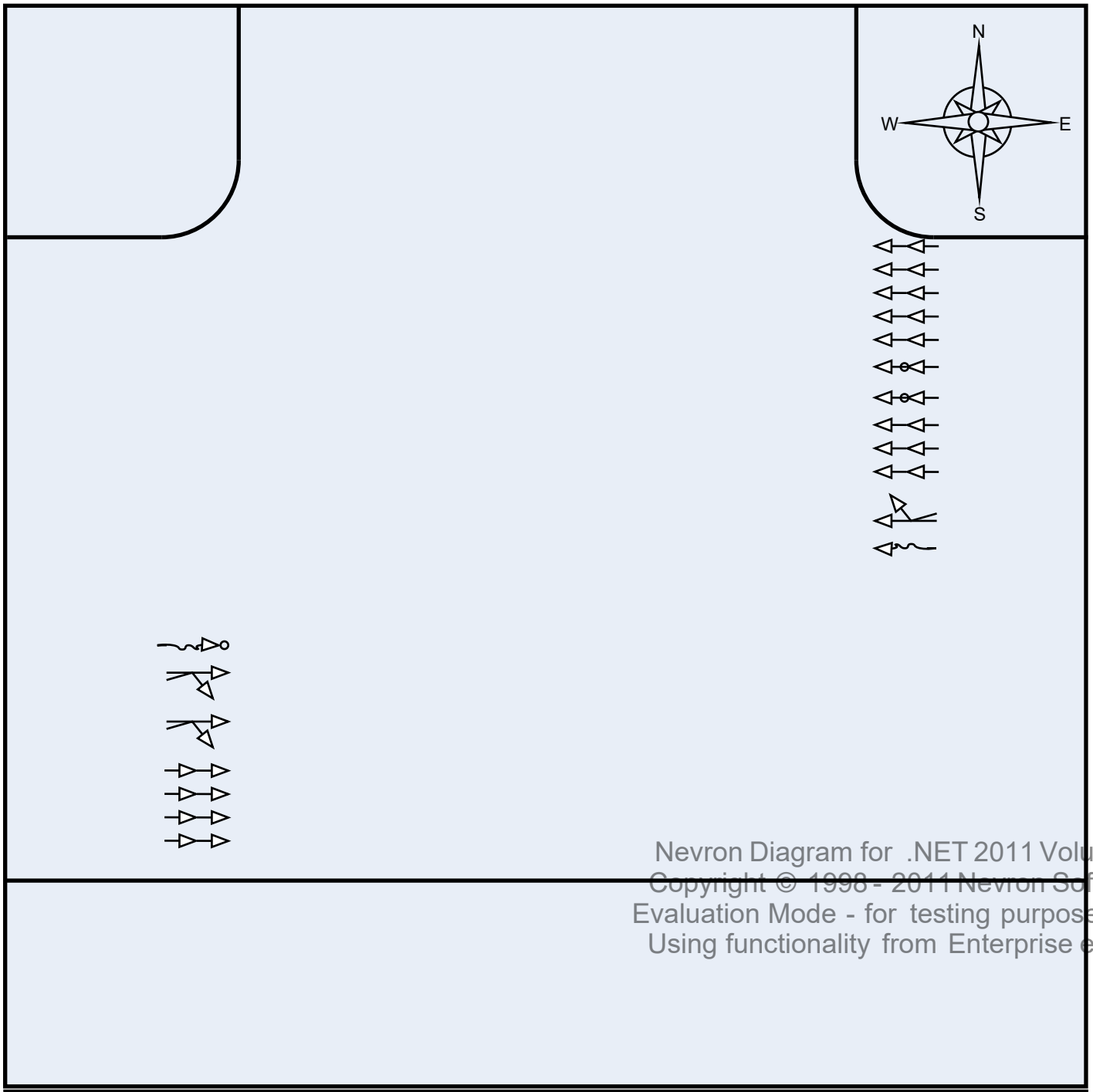
2320280	2023-02-27	2023	17:30	01594	Lundy's Lane @ Montrose Road (01594)	43.089030	-79.123294	02 - Thru lane	04 - Sideswipe	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	03 - Snow	05 - Dusk		01 - Driving properly	
16114230	2016-12-24	2016	20:46	01594	Lundy's Lane @ Montrose Road (01594)	43.089033	-79.123295	04 - Right turn lane	03 - Rear end	03 - Yield sign	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	05 - Drifting Snow	07 - Dark		01 - Driving properly	02 - Following too close
2331818	2023-03-30	2023	14:50	01594	Lundy's Lane @ Montrose Road (01594)	43.089019	-79.123277	02 - Thru lane	04 - Sideswipe	01 - Traffic signal	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
1676707	2016-08-30	2016	17:09	01594	Lundy's Lane @ Montrose Road (01594)	43.089031	-79.123284	01 - Within intersection	05 - Turning movement	01 - Traffic signal	03 - P.D. only	PDO	FALSE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	01 - Clear	01 - Daylight		07 - Disobeyed traffic control	01 - Driving properly
20121825	2020-12-16	2020	21:50	01594	Lundy's Lane @ Montrose Road (01594)	43.089035	-79.123277	01 - Within intersection	03 - Rear end	01 - Traffic signal	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	03 - Snow	08 - Dark, artificial			01 - Driving properly
2339526	2023-04-19	2023	15:25	01594	Lundy's Lane @ Montrose Road (01594)	43.089031	-79.123294	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		02 - Following too close	01 - Driving properly
1842861	2018-05-15	2018	19:43	01594	Lundy's Lane @ Montrose Road (01594)	43.089019	-79.123284	01 - Within intersection	07 - SMV other	01 - Traffic signal	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight	02 - Crossing without right-of-way	01 - Driving properly	
1882883	2018-08-21	2018	15:15	01594	Lundy's Lane @ Montrose Road (01594)	43.089028	-79.123294	02 - Thru lane	04 - Sideswipe	01 - Traffic signal		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
2040142	2020-05-07	2020	10:42	01594	Lundy's Lane @ Montrose Road (01594)	43.089035	-79.123277	04 - Right turn lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		02 - Following too close	01 - Driving properly
2196959	2021-08-29	2021	14:30	01594	Lundy's Lane @ Montrose Road (01594)	43.089025	-79.123291	02 - Thru lane	03 - Rear end	01 - Traffic signal	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	02 - Rain	01 - Daylight		01 - Driving properly	01 - Driving properly
18113217	2018-11-15	2018	17:15	01594	Lundy's Lane @ Montrose Road (01594)	43.089025	-79.123277	02 - Thru lane	03 - Rear end	01 - Traffic signal		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	03 - Snow	07 - Dark			
16109112	2016-12-07	2016	15:00	01594	Lundy's Lane @ Montrose Road (01594)	43.089028	-79.123290	03 - Left turn lane	04 - Sideswipe	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		12 - Improper lane change	01 - Driving properly
1891422	2018-09-14	2018	18:15	01594	Lundy's Lane @ Montrose Road (01594)	43.089033	-79.123287	01 - Within intersection	02 - Angle	01 - Traffic signal		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
2062046	2020-07-06	2020	11:07	01594	Lundy's Lane @ Montrose Road (01594)	43.089028	-79.123296	03 - Left turn lane	04 - Sideswipe	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
1922233	2019-03-13	2019	16:00	01594	Lundy's Lane @ Montrose Road (01594)	43.089034	-79.123279	01 - Within intersection	02 - Angle	01 - Traffic signal		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
2266666	2022-06-20	2022	16:31	01594	Lundy's Lane @ Montrose Road (01594)	43.089028	-79.123296	04 - Right turn lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	TRUE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	99 - Other
17107643	2017-11-07	2017	00:25	01594	Lundy's Lane @ Montrose Road (01594)	43.089037	-79.123284	02 - Thru lane	07 - SMV other	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		10 - Lost control	
20119368	2020-12-08	2020	18:30	01594	Lundy's Lane @ Montrose Road (01594)	43.089035	-79.123296	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark			01 - Driving properly
2348772	2023-05-12	2023	14:35	01594	Lundy's Lane @ Montrose Road (01594)	43.089020	-79.123282	06 - Two-way left turn lane	05 - Turning movement	01 - Traffic signal	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		06 - Improper turn	01 - Driving properly
19126004	2019-12-12	2019	21:30	01594	Lundy's Lane @ Montrose Road (01594)	43.089068	-79.123234	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark			01 - Driving properly
21106447	2021-09-19	2021	16:00	01594	Lundy's Lane @ Montrose Road (01594)	43.089028	-79.123282	03 - Left turn lane	04 - Sideswipe	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
1776916	2017-06-09	2017	16:20	01594	Lundy's Lane @ Montrose Road (01594)	43.089024	-79.123288	02 - Thru lane	04 - Sideswipe	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
1995170	2019-09-20	2019	11:45	01594	Lundy's Lane @ Montrose Road (01594)	43.089021	-79.123282	03 - Left turn lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			01 - Driving properly
21125050	2021-11-01	2021	15:20	01594	Lundy's Lane @ Montrose Road (01594)	43.089045	-79.123291	07 - Passing lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		02 - Following too close	01 - Driving properly
2250064	2022-05-13	2022	08:10	01594	Lundy's Lane @ Montrose Road (01594)	43.089028	-79.123296	02 - Thru lane	03 - Rear end	01 - Traffic signal	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	
1787584	2017-09-13	2017	09:17	01594	Lundy's Lane @ Montrose Road (01594)	43.089024	-79.123284	02 - Thru lane	04 - Sideswipe	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	04 - Speed too fast for condition
1960003	2019-06-28	2019	15:44	01594	Lundy's Lane @ Montrose Road (01594)	43.089068	-79.123234	01 - Within intersection	05 - Turning movement	01 - Traffic signal	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		06 - Improper turn	01 - Driving properly
2328966	2023-03-23	2023	06:25	01594	Lundy's Lane @ Montrose Road (01594)	43.089030	-79.123286	01 - Within intersection	05 - Turning movement	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	02 - Rain	03 - Dawn		01 - Driving properly	01 - Driving properly
1764249	2017-07-14	2017	13:16	01594	Lundy's Lane @ Montrose Road (01594)	43.089032	-79.123299	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		02 - Following too close	01 - Driving properly
2120344	2021-03-08	2021	13:45	01594	Lundy's Lane @ Montrose Road (01594)	43.089028	-79.123286	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	99 - Other
16132	2016-01-01	2016	04:10	01594	Lundy's Lane @ Montrose Road (01594)	43.089033	-79.123284	02 - Thru lane	05 - Turning movement	01 - Traffic signal	03 - P.D. only	PDO	FALSE		NIAGARA FALLS	01 - Clear	07 - Dark		01 - Driving properly	06 - Improper turn
1712032	2017-02-11	2017	11:00	01594	Lundy's Lane @ Montrose Road (01594)	43.089027	-79.123279	04 - Right turn lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
2089004	2020-09-14	2020	13:40	01594	Lundy's Lane @ Montrose Road (01594)	43.089031	-79.123296	01 - Within intersection	04 - Sideswipe	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		99 - Other	01 - Driving properly
18106993	2018-10-29	2018	09:30	01137	Highland Avenue @ Lundy's Lane (01137)	43.089359	-79.102282	02 - Thru lane	03 - Rear end	01 - Traffic signal		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	02 - Rain	01 - Daylight			
2185495	2021-08-05	2021	20:30	01137	Highland Avenue @ Lundy's Lane (01137)	43.089358	-79.102274	01 - Within intersection	03 - Rear end	01 - Traffic signal	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	05 - Dusk		02 - Following too close	01 - Driving properly
1932386	2019-04-14	2019	01:35	01137	Highland Avenue @ Lundy's Lane (01137)	43.089361	-79.102293	01 - Within intersection	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		01 - Driving properly	01 - Driving properly
16107716	2016-12-03	2016	03:53	01137	Highland Avenue @ Lundy's Lane (01137)	43.089360	-79.102282	01 - Within intersection	07 - SMV other		03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		10 - Lost control	
1824618	2018-03-23	2018	07:36	01137	Highland Avenue @ Lundy's Lane (01137)	43.089358	-79.102284	01 - Within intersection	07 - SMV other	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	
1970747	2019-07-23	2019	15:30	01137	Highland Avenue @ Lundy's Lane (01137)	43.089358	-79.102284	01 - Within intersection	02 - Angle	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
171862	2017-01-07	2017	12:04	01137	Highland Avenue @ Lundy's Lane (01137)	43.089355	-79.102282	01 - Within intersection	05 - Turning movement	01 - Traffic signal	02 - Non-fatal injury	Injury	FALSE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	06 - Improper turn
165392	2016-01-17	2016	12:00	01137	Highland Avenue @ Lundy's Lane (01137)	43.089368	-79.102303	02 - Thru lane	03 - Rear end		04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	03 - Snow	01 - Daylight			
18124602	2018-12-21	2018	10:30	01137	Highland Avenue @ Lundy's Lane (01137)	43.089359	-79.102284	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	02 - Rain	01 - Daylight			
1811119	2018-02-06	2018	20:57	01137	Highland Avenue @ Lundy's Lane (01137)	43.089358	-79.102281	01 - Within intersection	07 - SMV other	01 - Traffic signal	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	04 - Freezing Rain	07 - Dark		01 - Driving properly	
1768711	2017-07-25	2017	22:05	01137	Highland Avenue @ Lundy's Lane (01137)	43.089360	-79.102288	01 - Within intersection	02 - Angle	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		07 - Disobeyed traffic control	01 - Driving properly
1844727	2018-05-20	2018	18:05	01137	Highland Avenue @ Lundy's Lane (01137)	43.089363	-79.102287	01 - Within intersection	07 - SMV other	01 - Traffic signal	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight	01 - Crossing with right-of-way	01 - Driving properly	
2082781	2020-08-23	2020	13:15	01137	Highland Avenue @ Lundy's Lane (01137)	43.089360	-79.102286	01 - Within intersection	01 - Approaching	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	
20108251	2020-11-06	2020	14:22	01137	Highland Avenue @ Lundy's Lane (01137)	43.089351	-79.102277	01 - Within intersection	02 - Angle	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		07 - Disobeyed traffic control	01 - Driving properly
2265081	2022-06-16	2022	21:04	01137	Highland Avenue @ Lundy's Lane (01137)	43.089361	-79.102289	01 - Within intersection	07 - SMV other	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	05 - Dusk		07 - Disobeyed traffic control	
1636219	2016-05-08	2016	10:26	01137	Highland Avenue @ Lundy's Lane (01137)	43.089363	-79.102290	01 - Within intersection	05 - Turning movement	01 - Traffic signal	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	06 - Improper turn
18117146	2018-11-27	2018	13:30	01137	Highland Avenue @ Lundy's Lane (01137)	43.089361	-79.102283	02 - Thru lane	03 - Rear end	01 - Traffic signal		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
1820498	2018-03-09	2018	14:00	01137	Highland Avenue @ Lundy's Lane (01137)	43.089356	-79.102284	02 - Thru lane	04 - Sideswipe	01 - Traffic signal		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	03 - Snow	01 - Daylight		01 - Driving properly	01 - Driving properly
1936680	2019-04-26	2019	22:14	01137	Highland Avenue @ Lundy's Lane (01137)	43.089358	-79.102284	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		01 - Driving properly	01 - Driving properly
2380755	2023-07-22	2023	23:30	01137	Highland Avenue @ Lundy's Lane (01137)	43.089361	-79.102287	01 - Within intersection	03 - Rear end	01 - Traffic signal	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		99 - Other	
1981233	2019-08-17	2019	09:00	01137	Highland Avenue @ Lundy's Lane (01137)	43.089363	-79.102285	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
22144543	2022-12-22	2022	09:00	01137	Highland Avenue @ Lundy's Lane (01137)	43.089349	-79.102293	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		02 - Following too close	01 - Driving properly
2349313	2023-05-13	2023	18:59	01137	Highland Avenue @ Lundy's Lane (01137)	43.089355	-79.102280	02 - Thru lane	99 - Other	01 - Traffic signal	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		06 - Improper turn	01 - Driving properly
1610004	2016-02-06	2016	14:00	01137	Highland Avenue @ Lundy's Lane (01137)	43.089359	-79.102300	03 - Left turn lane	03 - Rear end	01 - Traffic signal	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	02 - Following too close
17141	2017-01-01	2017	09:05	01137	Highland Avenue @ Lundy's Lane (01137)	43.089364	-79.102282	01 - Within intersection	07 - SMV other	01 - Traffic signal	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight	01 - Crossing with right-of-way	01 - Driving properly	
2363765	2023-06-14	2023	21:49	01137	Highland Avenue @ Lundy's Lane (01137)	43.089360	-79.102284	01 - Within intersection	02 - Angle	01 - Traffic signal	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	08 - Dark, artificial		03 - Exceeding speed limit	01 - Driving properly
1813062	2018-02-12	2018	21:30	01137	Highland Avenue @ Lundy's Lane (01137)	43.089360	-79.102284	02 - Thru lane	02 - Angle	03 - Yield sign		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	08 - Dark, artificial		01 - Driving properly	01 - Driving properly
22112486	2022-09-30	2022	18:45	01137	Highland Avenue @ Lundy's Lane (01137)	43.089356	-79.102282	01 - Within intersection	05 - Turning movement	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	06 - Improper turn
18117519	2018-11-29	2018	07:55	01137	Highland Avenue @ Lundy's Lane (01137)	43.089360	-79.102287	02 - Thru lane	03 - Rear end	01 - Traffic signal		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
178763	2017-01-31	2017	09:00	01137	Highland Avenue @ Lundy's Lane (01137)	43.089356	-79.102280	01 - Within intersection	02 - Angle	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	03 - Snow	01 - Daylight			
1772586	2017-08-04	2017	16:00	01137	Highland Avenue @ Lundy's Lane (01137)	43.089363	-79.102285	02 - Thru lane	02 - Angle	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
1734078	2017-04-22	2017	13:00	01137	Highland Avenue @ Lundy's Lane (01137)	43.089362	-79.102285	02 - Thru lane	03 - Rear end	01 - Traffic signal		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	
181407	2018-01-04	2018	21:30	01137	Highland Avenue @ Lundy's Lane (01137)	43.089359	-79.102284	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	03 - Snow	07 - Dark			
21123223	2021-10-28	2021	13:40	01137	Highland Avenue @ Lundy's Lane (01137)	43.089345	-79.102293	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
1898085	2018-10-01	2018	21:00	01137	Highland Avenue @ Lundy's Lane (01137)	43.089356	-79.102282	02 - Thru lane	03 - Rear end	10 - No control		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	02 - Rain	07 - Dark			
1997483	2019-09-25	2019	20:04	01136	Glenholme Avenue @ Lundy's Lane (01136)	43.089364	-79.103540	02 - Thru lane	02 - Angle	02 - Stop sign	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	02 - Rain	07 - Dark		06 - Improper turn	01 - Driving properly
2089394	2020-09-15	2020	13:48	01136	Glenholme Avenue @ Lundy's Lane (01136)	43.089360	-79.103539	07 - Passing lane	03 - Rear end	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		02 - Following too close	01 - Driving properly
1860044	2018-06-27	2018	14:15	01136	Glenholme Avenue @ Lundy's Lane (01136)	43.089364	-79.103542	01 - Within intersection	05 - Turning movement	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
2269271	2022-06-26	2022	06:34	01136	Glenholme Avenue @ Lundy's Lane (01136)	43.089360	-79.103543	02 - Thru lane	03 - Rear end	10 - No control	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		03 - Exceeding speed limit	01 - Driving properly
1996614	2019-09-23	2019	21:47	01135	Franklin Avenue @ Lundy's Lane (01135)	43.089359	-79.104185	01 - Within intersection	02 - Angle	10 - No control	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	02 - Rain	07 - Dark		06 - Improper turn	06 - Improper turn
22104299	2022-09-12	2022	14:00	01135	Franklin Avenue @ Lundy's Lane (01135)	43.089359	-79.104184	01 - Within intersection	02 - Angle	02 - Stop sign	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
1868076	2018-07-17	2018	15:04	01135	Franklin Avenue @ Lundy's Lane (01135)	43.089355	-79.104184	01 - Within intersection	05 - Turning movement	02 - Stop sign	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		06 - Improper turn	01 - Driving properly
2121100	2021-03-10	2021	16:00	01135	Franklin Avenue @ Lundy's Lane (01135)	43.089352	-79.104180	01 - Within intersection	03 - Rear end	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		99 - Other	01 - Driving properly
1944784	2019-05-19	2019	23:52	01135	Franklin Avenue @ Lundy's Lane (01135)	43.089359	-79.104185	01 - Within intersection	02 - Angle	02 - Stop sign	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		01 - Driving properly	06 - Improper turn
1927193	2019-03-29	2019	12:15	01135	Franklin Avenue @ Lundy's Lane (01135)	43.089359	-79.104186	01 - Within intersection	07 - SMV other	02 - Stop sign	04 - Non-reportable	PDO	FALSE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	01 - Clear	01 - Daylight	01 - Crossing with right-of-way	08 - Failed to yield right-of-way	
2128533	2021-03-31	2021	15:30	01135	Franklin Avenue @ Lundy's Lane (01135)	43.089356	-79.104185	02 - Thru lane	03 - Rear end	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		02 - Following too close	01 - Driving properly
22127293	2022-11-05	2022	17:30	01135	Franklin Avenue @ Lundy's Lane (01135)	43.089357	-79.104187	02 - Thru lane	03 - Rear end	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		01 - Driving properly	
22122899	2022-10-26	2022	20:25	01135	Franklin Avenue @ Lundy's Lane (01135)	43.089358	-79.104190	01 - Within intersection	05 - Turning movement	10 - No control	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	08 - Dark, artificial		01 - Driving properly	
1693222	2016-10-18	2016	11:35	01135	Franklin Avenue @ Lundy's Lane (01135)	43.089360	-79.104186	01 - Within intersection	02 - Angle	02 - Stop sign	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
1710898	2017-02-02	2017	13:30	01135	Franklin Avenue @ Lundy's Lane (01135)	43.089352	-79.104187	02 - Thru lane	99 - Other	02 - Stop sign	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
2230206	2022-03-24	2022	22:15	01135	Franklin Avenue @ Lundy's Lane (01135)	43.089357	-79.104186	01 - Within intersection	05 - Turning movement	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	08 - Dark, artificial		01 - Driving properly	01 - Driving properly
2343387	2023-04-29	2023	16:57	01135	Franklin Avenue @ Lundy's Lane (01135)	43.089352	-79.104190	03 - Left turn lane	03 - Rear end	10 - No control	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	02 - Rain	01 - Daylight		02 - Following too close	01 - Driving properly
2142504	2021-05-08	2021	15:59	01135	Franklin Avenue @ Lundy's Lane (01135)	43.089362	-79.104188	01 - Within intersection	02 - Angle	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	06 - Improper turn
1758236	2017-06-29	2017	18:07	01135	Franklin Avenue @ Lundy's Lane (01135)	43.089355	-79.104189	02 - Thru lane	04 - Sideswipe	10 - No control	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
1726579	2017-03-31	2017	14:15	01135	Franklin Avenue @ Lundy's Lane (01135)	43.089359	-79.104186	02 - Thru lane	04 - Sideswipe	10 - No control		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	02 - Rain	01 - Daylight		01 - Driving properly	
1878334	2018-08-11	2018	14:30	01135	Franklin Avenue @ Lundy's Lane (01135)	43.089355	-79.104184	02 - Thru lane	03 - Rear end	10 - No control		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
1763435	2017-07-11	2017	17:20	01135	Franklin Avenue @ Lundy's Lane (01135)	43.089361	-79.104186	02 - Thru lane	03 - Rear end	10 - No control		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
19121636	2019-11-30	2019	18:17	01135	Franklin Avenue @ Lundy's Lane (01135)	43.089370	-79.104180	02 - Thru lane	05 - Turning movement	10 - No control	03 - P.D. only	PDO	FALSE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	01 - Clear	07 - Dark		06 - Improper turn	01 - Driving properly
2293634	2022-08-19	2022	21:00	01135	Franklin Avenue @ Lundy's Lane (01135)	43.089375	-79.104190	01 - Within intersection	03 - Rear end	02 - Stop sign	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		99 - Other	01 - Driving properly
2313646	2023-02-09	2023	13:29	01135	Franklin Avenue @ Lundy's Lane (01135)	43.089358	-79.104187	02 - Thru lane	04 - Sideswipe	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	02 - Rain	01 - Daylight		99 - Other	01 - Driving properly
204290	2020-01-14	2020	23:15	01135	Franklin Avenue @ Lundy's Lane (01135)	43.089357	-79.104186	01 - Within intersection	02 - Angle	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		08 - Failed to yield right-of-way	01 - Driving properly
2112590	2021-02-12	2021	12:18	01135	Franklin Avenue @ Lundy's Lane (01135)	43.089356	-79.104187	02 - Thru lane	03 - Rear end	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		02 - Following too close	01 - Driving properly
2321499	2023-03-02	2023	20:28	01135	Franklin Avenue @ Lundy's Lane (01135)	43.089352	-79.104182	02 - Thru lane	02 - Angle	03 - Yield sign	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		99 - Other	01 - Driving properly
18108948	2018-11-03	2018	17:18	01135	Franklin Avenue @ Lundy's Lane (01135)	43.089360	-79.104185	01 - Within intersection	02 - Angle	02 - Stop sign	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	05 - Dusk		01 - Driving properly	10 - Lost control
2051264	2020-06-06	2020	13:00	01135	Franklin Avenue @ Lundy's Lane (01135)	43.089354	-79.104182	02 - Thru lane	02 - Angle	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
209750	2020-02-01	2020	11:15	01135	Franklin Avenue @ Lundy's Lane (01135)	43.089358	-79.104187	02 - Thru lane	02 - Angle	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			01 - Driving properly
1647407	2016-06-10	2016	11:15	01135	Franklin Avenue @ Lundy's Lane (01135)	43.089360	-79.104186	02 - Thru lane	99 - Other		04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
1635339	2016-05-05	2016	17:14	01135	Franklin Avenue @ Lundy's Lane (01135)	43.089359	-79.104187	02 - Thru lane	03 - Rear end	10 - No control	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
1787706	2017-09-13	2017	13:25	01599	Dorchester Road @ Lundy's Lane (01599)	43.089255	-79.110563	03 - Left turn lane	02 - Angle	01 - Traffic signal	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
1688096	2016-10-02	2016	19:28	01599	Dorchester Road @ Lundy's Lane (01599)	43.089251	-79.110563	01 - Within intersection	03 - Rear end	01 - Traffic signal	02 - Non-fatal injury	Injury	FALSE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	01 - Clear	07 - Dark		02 - Following too close	01 - Driving properly
2265975	2022-06-18	2022	23:08	01599	Dorchester Road @ Lundy's Lane (01599)	43.089238	-79.110566	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	08 - Dark, artificial		99 - Other	01 - Driving properly
1822857	2018-03-17	2018	17:26	01599	Dorchester Road @ Lundy's Lane (01599)	43.089252	-79.110561	01 - Within intersection	05 - Turning movement	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
1810593	2018-02-05	2018	09:00	01599	Dorchester Road @ Lundy's Lane (01599)	43.089253	-79.110574	02 - Thru lane	03 - Rear end	01 - Traffic signal		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
21115798	2021-10-10	2021	12:28	01599	Dorchester Road @ Lundy's Lane (01599)	43.089255	-79.110574	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	
2345379	2023-05-04	2023	17:01	01599	Dorchester Road @ Lundy's Lane (01599)	43.089250	-79.110549	02 - Thru lane	03 - Rear end	01 - Traffic signal	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		02 - Following too close	01 - Driving properly
1958166	2019-06-23	2019	16:34	01599	Dorchester Road @ Lundy's Lane (01599)	43.089242	-79.110566	01 - Within intersection	05 - Turning movement	01 - Traffic signal	02 - Non-fatal injury	Injury	TRUE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	01 - Clear	01 - Daylight		08 - Failed to yield right-of-way	07 - Disobeyed traffic control
20100752	2020-10-15	2020	16:12	01599	Dorchester Road @ Lundy's Lane (01599)	43.089252	-79.110569	01 - Within intersection	05 - Turning movement	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	02 - Rain	01 - Daylight		06 - Improper turn	01 - Driving properly
1976099	2019-08-05	2019	01:15	01599	Dorchester Road @ Lundy's Lane (01599)	43.089245	-79.110557	02 - Thru lane	03 - Rear end	10 - No control	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		02 - Following too close	01 - Driving properly
1766610	2017-07-20	2017	12:10	01599	Dorchester Road @ Lundy's Lane (01599)	43.089255	-79.110569	02 - Thru lane	03 - Rear end	01 - Traffic signal		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	02 - Rain	01 - Daylight		99 - Other	01 - Driving properly
2012571	2020-02-10	2020	11:40	01599	Dorchester Road @ Lundy's Lane (01599)	43.089245	-79.110575	02 - Thru lane	03 - Rear end	01 - Traffic signal	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
2320179	2023-02-27	2023	14:48	01599	Dorchester Road @ Lundy's Lane (01599)	43.089251	-79.110582	01 - Within intersection	05 - Turning movement	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	03 - Snow	01 - Daylight		06 - Improper turn	01 - Driving properly
2367286	2023-06-22	2023	21:53	01599	Dorchester Road @ Lundy's Lane (01599)	43.089253	-79.110563	01 - Within intersection	03 - Rear end	01 - Traffic signal	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	08 - Dark, artificial		07 - Disobeyed traffic control	01 - Driving properly
21109991	2021-09-27	2021	13:20	01599	Dorchester Road @ Lundy's Lane (01599)	43.089235	-79.110542	02 - Thru lane	03 - Rear end	01 - Traffic signal	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		99 - Other	01 - Driving properly
18107764	2018-10-31	2018	14:30	01599	Dorchester Road @ Lundy's Lane (01599)	43.089254	-79.110557	01 - Within intersection	05 - Turning movement	01 - Traffic signal		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	02 - Rain	01 - Daylight			
1924013	2019-03-19	2019	11:20	01599	Dorchester Road @ Lundy's Lane (01599)	43.089255	-79.110561	03 - Left turn lane	04 - Sideswipe	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
1749641	2017-06-06	2017	20:55	01599	Dorchester Road @ Lundy's Lane (01599)	43.089251	-79.110569	01 - Within intersection	05 - Turning movement	01 - Traffic signal	03 - P.D. only	PDO	FALSE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	02 - Rain	05 - Dusk		01 - Driving properly	08 - Failed to yield right-of-way
1921475	2019-03-11	2019	08:16	01599	Dorchester Road @ Lundy's Lane (01599)	43.089252	-79.110571	01 - Within intersection	02 - Angle	01 - Traffic signal	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	07 - Disobeyed traffic control
1917935	2019-02-27	2019	15:30	01599	Dorchester Road @ Lundy's Lane (01599)	43.089248	-79.110553	02 - Thru lane	04 - Sideswipe	01 - Traffic signal		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	03 - Snow	01 - Daylight			
22133152	2022-11-22	2022	08:50	01599	Dorchester Road @ Lundy's Lane (01599)	43.089250	-79.110573	02 - Thru lane	03 - Rear end	01 - Traffic signal	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
18112417	2018-11-13	2018	17:15	01599	Dorchester Road @ Lundy's Lane (01599)	43.089248	-79.110562	02 - Thru lane	05 - Turning movement	10 - No control		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	03 - Snow	05 - Dusk			
2299439	2022-09-01	2022	16:30	01599	Dorchester Road @ Lundy's Lane (01599)	43.089242	-79.110564	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			01 - Driving properly
2230566	2022-03-26	2022	09:24	01599	Dorchester Road @ Lundy's Lane (01599)	43.089253	-79.110569	01 - Within intersection	03 - Rear end	01 - Traffic signal	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		02 - Following too close	01 - Driving properly
1896526	2018-09-28	2018	09:00	01599	Dorchester Road @ Lundy's Lane (01599)	43.089253	-79.110571	03 - Left turn lane	02 - Angle	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
21143951	2021-12-18	2021	20:49	01599	Dorchester Road @ Lundy's Lane (01599)	43.089255	-79.110569	01 - Within intersection	07 - SMV other	01 - Traffic signal	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	02 - Rain	08 - Dark, artificial	01 - Crossing with right-of-way	07 - Disobeyed traffic control	
2241892	2022-04-23	2022	12:30	01599	Dorchester Road @ Lundy's Lane (01599)	43.089259	-79.110566	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
1694812	2016-10-23	2016	00:59	01599	Dorchester Road @ Lundy's Lane (01599)	43.089253	-79.110574	01 - Within intersection	05 - Turning movement	01 - Traffic signal	03 - P.D. only	PDO	FALSE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	01 - Clear	08 - Dark, artificial		06 - Improper turn	01 - Driving properly
1776839	2017-08-15	2017	12:15	01599	Dorchester Road @ Lundy's Lane (01599)	43.089248	-79.110552	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
2047215	2020-05-28	2020	21:14	01599	Dorchester Road @ Lundy's Lane (01599)	43.089253	-79.110573	01 - Within intersection	04 - Sideswipe	01 - Traffic signal	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		03 - Exceeding speed limit	01 - Driving properly
1624163	2016-03-28	2016	21:00	01599	Dorchester Road @ Lundy's Lane (01599)	43.089249	-79.110574	04 - Right turn lane	03 - Rear end		99 - Other	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		01 - Driving properly	01 - Driving properly
2194172	2021-08-22	2021	11:50	01599	Dorchester Road @ Lundy's Lane (01599)	43.089255	-79.110564	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
1837219	2018-05-01	2018	15:30	01599	Dorchester Road @ Lundy's Lane (01599)	43.089248	-79.110561	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
229645	2022-01-29	2022	11:30	01599	Dorchester Road @ Lundy's Lane (01599)	43.089248	-79.110557	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
21143189	2021-12-16	2021	15:30	01599	Dorchester Road @ Lundy's Lane (01599)	43.089252	-79.110564	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
1831583	2018-04-14	2018	12:15	01599	Dorchester Road @ Lundy's Lane (01599)	43.089248	-79.110571	02 - Thru lane	04 - Sideswipe	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
2284387	2022-07-29	2022	14:35	01599	Dorchester Road @ Lundy's Lane (01599)	43.089238	-79.110552	02 - Thru lane	04 - Sideswipe	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		06 - Improper turn	
18101474	2018-10-12	2018	10:05	01599	Dorchester Road @ Lundy's Lane (01599)	43.089256	-79.110567	03 - Left turn lane	02 - Angle	10 - No control		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
1652124	2016-06-23	2016	20:13	01599	Dorchester Road @ Lundy's Lane (01599)	43.089250	-79.110571	01 - Within intersection	04 - Sideswipe	01 - Traffic signal	03 - P.D. only	PDO	FALSE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	01 - Clear	01 - Daylight		12 - Improper lane change	01 - Driving properly
1921805	2019-03-12	2019	11:15	01599	Dorchester Road @ Lundy's Lane (01599)	43.089248	-79.110557	03 - Left turn lane	04 - Sideswipe	01 - Traffic signal		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
17121653	2017-12-16	2017	13:00	01599	Dorchester Road @ Lundy's Lane (01599)	43.089259	-79.110557	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	
2293962	2022-08-20	2022	14:10	01599	Dorchester Road @ Lundy's Lane (01599)	43.089235	-79.110547	01 - Within intersection	05 - Turning movement	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
18106533	2018-10-27	2018	19:25	01599	Dorchester Road @ Lundy's Lane (01599)	43.089255	-79.110565	01 - Within intersection	05 - Turning movement	01 - Traffic signal	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	02 - Rain	08 - Dark, artificial		06 - Improper turn	01 - Driving properly
1768637	2017-07-25	2017	18:47	01599	Dorchester Road @ Lundy's Lane (01599)	43.089253	-79.110569	01 - Within intersection	02 - Angle	02 - Stop sign	02 - Non-fatal injury	Injury	FALSE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	01 - Clear	01 - Daylight		07 - Disobeyed traffic control	01 - Driving properly

1972199	2019-07-27	2019	05:41	01599	Dorchester Road @ Lundy's Lane (01599)	43.089252	-79.110576	04 - Right turn lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	01 - Clear	03 - Dawn		99 - Other	01 - Driving properly
1793321	2017-09-27	2017	15:40	01599	Dorchester Road @ Lundy's Lane (01599)	43.089253	-79.110569	03 - Left turn lane	02 - Angle	01 - Traffic signal	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
2320248	2023-02-27	2023	17:00	01599	Dorchester Road @ Lundy's Lane (01599)	43.089240	-79.110559	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	03 - Snow	01 - Daylight		01 - Driving properly	04 - Speed too fast for condition
2340598	2023-04-21	2023	22:30	01599	Dorchester Road @ Lundy's Lane (01599)	43.089245	-79.110564	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	08 - Dark, artificial		01 - Driving properly	01 - Driving properly
1942150	2019-05-12	2019	20:45	01599	Dorchester Road @ Lundy's Lane (01599)	43.089252	-79.110571	01 - Within intersection	05 - Turning movement	01 - Traffic signal	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	02 - Rain	07 - Dark		06 - Improper turn	01 - Driving properly
2173899	2021-07-12	2021	18:31	01599	Dorchester Road @ Lundy's Lane (01599)	43.089248	-79.110564	01 - Within intersection	07 - SMV other	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight	05 - Crossing marked crosswalk without right-of-way	01 - Driving properly	
2013275	2020-02-12	2020	13:30	01599	Dorchester Road @ Lundy's Lane (01599)	43.089252	-79.110561	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			01 - Driving properly
20105445	2020-10-28	2020	19:30	01599	Dorchester Road @ Lundy's Lane (01599)	43.089254	-79.110571	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	08 - Dark, artificial		01 - Driving properly	01 - Driving properly
2295332	2022-08-23	2022	16:35	01599	Dorchester Road @ Lundy's Lane (01599)	43.089255	-79.110569	01 - Within intersection	02 - Angle	01 - Traffic signal	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		07 - Disobeyed traffic control	01 - Driving properly
1685657	2016-09-25	2016	11:23	01599	Dorchester Road @ Lundy's Lane (01599)	43.089253	-79.110572	01 - Within intersection	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	02 - Following too close
1827052	2018-03-10	2018	12:26	01599	Dorchester Road @ Lundy's Lane (01599)	43.089250	-79.110569	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
1842229	2018-05-11	2018	15:15	01599	Dorchester Road @ Lundy's Lane (01599)	43.089254	-79.110573	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	
2344744	2023-05-02	2023	16:15	01599	Dorchester Road @ Lundy's Lane (01599)	43.089257	-79.110571	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		02 - Following too close	01 - Driving properly
2219198	2022-02-24	2022	14:40	01599	Dorchester Road @ Lundy's Lane (01599)	43.089245	-79.110557	02 - Thru lane	03 - Rear end	01 - Traffic signal	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		02 - Following too close	01 - Driving properly
21108727	2021-09-24	2021	15:30	01599	Dorchester Road @ Lundy's Lane (01599)	43.089259	-79.110561	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	02 - Following too close
1670337	2016-08-12	2016	18:26	01599	Dorchester Road @ Lundy's Lane (01599)	43.089253	-79.110563	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		10 - Lost control	01 - Driving properly
2259799	2022-06-04	2022	19:39	01599	Dorchester Road @ Lundy's Lane (01599)	43.089248	-79.110552	01 - Within intersection	07 - SMV other	01 - Traffic signal	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight	01 - Crossing with right-of-way	06 - Improper turn	
1716106	2017-02-25	2017	03:10	01599	Dorchester Road @ Lundy's Lane (01599)	43.089253	-79.110569	01 - Within intersection	02 - Angle	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	02 - Rain	07 - Dark		07 - Disobeyed traffic control	01 - Driving properly
22111295	2022-09-28	2022	17:00	01599	Dorchester Road @ Lundy's Lane (01599)	43.089242	-79.110569	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
18112353	2018-11-13	2018	11:35	01599	Dorchester Road @ Lundy's Lane (01599)	43.089256	-79.110569	02 - Thru lane	03 - Rear end	01 - Traffic signal		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
2099938	2020-10-10	2020	17:45	01599	Dorchester Road @ Lundy's Lane (01599)	43.089245	-79.110566	02 - Thru lane	04 - Sideswipe	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		99 - Other	01 - Driving properly
20102396	2020-10-20	2020	14:30	01599	Dorchester Road @ Lundy's Lane (01599)	43.089238	-79.110566	03 - Left turn lane	02 - Angle	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			01 - Driving properly
14884	2020-02-17	2020	10:05	01599	Dorchester Road @ Lundy's Lane (01599)	43.089259	-79.110571	02 - Thru lane	02 - Angle	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
18112239	2018-11-13	2018	08:40	01599	Dorchester Road @ Lundy's Lane (01599)	43.089255	-79.110555	02 - Thru lane	03 - Rear end	01 - Traffic signal		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
1972401	2019-07-27	2019	14:30	01599	Dorchester Road @ Lundy's Lane (01599)	43.089252	-79.110564	01 - Within intersection	05 - Turning movement	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
2358737	2023-06-03	2023	10:42	01599	Dorchester Road @ Lundy's Lane (01599)	43.089253	-79.110573	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		02 - Following too close	01 - Driving properly
1985936	2019-08-28	2019	22:21	01599	Dorchester Road @ Lundy's Lane (01599)	43.089255	-79.110561	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		01 - Driving properly	01 - Driving properly
2278849	2022-07-16	2022	16:55	01599	Dorchester Road @ Lundy's Lane (01599)	43.089248	-79.110566	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	02 - Following too close
1943869	2019-05-16	2019	16:35	01599	Dorchester Road @ Lundy's Lane (01599)	43.089245	-79.110561	02 - Thru lane	04 - Sideswipe	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
2083139	2020-08-30	2020	16:25	01599	Dorchester Road @ Lundy's Lane (01599)	43.089245	-79.110557	02 - Thru lane	04 - Sideswipe	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		12 - Improper lane change	01 - Driving properly
1855577	2018-06-16	2018	12:10	01599	Dorchester Road @ Lundy's Lane (01599)	43.089254	-79.110569	03 - Left turn lane	01 - Approaching	01 - Traffic signal		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
16114967	2016-12-27	2016	15:00	01599	Dorchester Road @ Lundy's Lane (01599)	43.089253	-79.110572	11 - Not on roadway - right side	07 - SMV other	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		10 - Lost control	
22100775	2022-09-04	2022	15:30	01599	Dorchester Road @ Lundy's Lane (01599)	43.089250	-79.110569	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	
2122018	2021-03-11	2021	11:11	01599	Dorchester Road @ Lundy's Lane (01599)	43.089248	-79.110561	01 - Within intersection	05 - Turning movement	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	
17101546	2017-10-19	2017	20:30	01599	Dorchester Road @ Lundy's Lane (01599)	43.089251	-79.110551	01 - Within intersection	02 - Angle	01 - Traffic signal	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	08 - Dark, artificial		01 - Driving properly	
1752849	2017-06-15	2017	15:47	01599	Dorchester Road @ Lundy's Lane (01599)	43.089253	-79.110569	01 - Within intersection	02 - Angle		02 - Non-fatal injury	Injury	TRUE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	06 - Improper turn
21141001	2021-12-11	2021	00:05	01599	Dorchester Road @ Lundy's Lane (01599)	43.089255	-79.110569	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	02 - Rain	07 - Dark		01 - Driving properly	
2358603	2023-06-03	2023	10:42	01599	Dorchester Road @ Lundy's Lane (01599)	43.089253	-79.110554	02 - Thru lane	01 - Approaching head-on	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		99 - Other	01 - Driving properly
18120032	2018-12-07	2018	10:32	01599	Dorchester Road @ Lundy's Lane (01599)	43.089259	-79.110571	02 - Thru lane	01 - Approaching	02 - Stop sign	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	08 - Failed to yield right-of-way
2259309	2022-06-03	2022	14:45	01599	Dorchester Road @ Lundy's Lane (01599)	43.089250	-79.110564	02 - Thru lane	03 - Rear end	01 - Traffic signal	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	
1774078	2017-08-08	2017	12:26	01599	Dorchester Road @ Lundy's Lane (01599)	43.089254	-79.110573	02 - Thru lane	02 - Angle	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
17101573	2017-10-19	2017	15:30	01599	Dorchester Road @ Lundy's Lane (01599)	43.089254	-79.110571	02 - Thru lane	03 - Rear end	10 - No control	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		99 - Other	
1672148	2016-08-16	2016	17:30	01599	Dorchester Road @ Lundy's Lane (01599)	43.089248	-79.110581	02 - Thru lane	03 - Rear end	01 - Traffic signal	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
1947464	2019-05-27	2019	11:00	01599	Dorchester Road @ Lundy's Lane (01599)	43.089248	-79.110576	01 - Within intersection	05 - Turning movement	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
1994423	2019-09-18	2019	15:55	01599	Dorchester Road @ Lundy's Lane (01599)	43.089247	-79.110573	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		99 - Other	99 - Other
2038021	2020-05-01	2020	02:26	01599	Dorchester Road @ Lundy's Lane (01599)	43.089255	-79.110584	01 - Within intersection	07 - SMV other	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		06 - Improper turn	
21129690	2021-11-12	2021	11:30	01599	Dorchester Road @ Lundy's Lane (01599)	43.089248	-79.110547	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	
1624244	2016-03-29	2016	08:10	01599	Dorchester Road @ Lundy's Lane (01599)	43.089253	-79.110570	01 - Within intersection	07 - SMV other		02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight	01 - Crossing with right-of-way	06 - Improper turn	
1931952	2019-04-12	2019	19:45	01599	Dorchester Road @ Lundy's Lane (01599)	43.089252	-79.110566	02 - Thru lane	03 - Rear end	01 - Traffic signal	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	02 - Rain	05 - Dusk		02 - Following too close	01 - Driving properly
1863450	2018-07-05	2018	16:53	01599	Dorchester Road @ Lundy's Lane (01599)	43.089254	-79.110588	03 - Left turn lane	02 - Angle	01 - Traffic signal	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		06 - Improper turn	01 - Driving properly
2356257	2023-05-26	2023	16:45	01599	Dorchester Road @ Lundy's Lane (01599)	43.089250	-79.110567	02 - Thru lane	04 - Sideswipe	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	12 - Improper lane change
1899492	2018-10-06	2018	13:00	01599	Dorchester Road @ Lundy's Lane (01599)	43.089248	-79.110569	01 - Within intersection	05 - Turning movement	01 - Traffic signal		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	07 - Fog, mist, smoke, dust	01 - Daylight			
2213301	2022-02-05	2022	08:55	01599	Dorchester Road @ Lundy's Lane (01599)	43.089243	-79.110550	02 - Thru lane	03 - Rear end	01 - Traffic signal	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	
18103694	2018-10-19	2018	10:00	01599	Dorchester Road @ Lundy's Lane (01599)	43.089252	-79.110548	02 - Thru lane	02 - Angle	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		06 - Improper turn	01 - Driving properly
20122258	2020-12-18	2020	16:45	01599	Dorchester Road @ Lundy's Lane (01599)	43.089248	-79.110566	02 - Thru lane	03 - Rear end	01 - Traffic signal	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	06 - Dusk, artificial			01 - Driving properly
2336764	2023-04-12	2023	13:45	01599	Dorchester Road @ Lundy's Lane (01599)	43.089254	-79.110571	02 - Thru lane	04 - Sideswipe	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	
1845466	2018-05-22	2018	14:45	01599	Dorchester Road @ Lundy's Lane (01599)	43.089252	-79.110571	02 - Thru lane	02 - Angle	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
1914543	2019-02-16	2019	21:55	01599	Dorchester Road @ Lundy's Lane (01599)	43.089248	-79.110571	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	08 - Dark, artificial		01 - Driving properly	02 - Following too close
2320092	2023-02-26	2023	14:00	01599	Dorchester Road @ Lundy's Lane (01599)	43.089254	-79.110559	02 - Thru lane	03 - Rear end	01 - Traffic signal	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	
2065893	2020-07-16	2020	12:00	01599	Dorchester Road @ Lundy's Lane (01599)	43.089252	-79.110570	03 - Left turn lane	99 - Other	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	02 - Rain	01 - Daylight		01 - Driving properly	01 - Driving properly
17108856	2017-11-10	2017	13:05	01599	Dorchester Road @ Lundy's Lane (01599)	43.089259	-79.110569	03 - Left turn lane	04 - Sideswipe	01 - Traffic signal		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		08 - Failed to yield right-of-way	
1932164	2019-04-09	2019	19:00	01599	Dorchester Road @ Lundy's Lane (01599)	43.089245	-79.110552	02 - Thru lane	01 - Approaching	01 - Traffic signal		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
17115352	2017-11-30	2017	12:30	01599	Dorchester Road @ Lundy's Lane (01599)	43.089255	-79.110563	02 - Thru lane	03 - Rear end	01 - Traffic signal		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		02 - Following too close	01 - Driving properly
2333380	2023-04-03	2023	14:45	01599	Dorchester Road @ Lundy's Lane (01599)	43.089235	-79.110550	01 - Within intersection	03 - Rear end	01 - Traffic signal	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			01 - Driving properly
16935	2016-01-02	2016	15:30	01599	Dorchester Road @ Lundy's Lane (01599)	43.089265	-79.110575	03 - Left turn lane	04 - Sideswipe		04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
18103229	2018-10-17	2018	19:06	01599	Dorchester Road @ Lundy's Lane (01599)	43.089246	-79.110573	01 - Within intersection	07 - SMV other	01 - Traffic signal	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	02 - Rain	07 - Dark	01 - Crossing with right-of-way	06 - Improper turn	
1730680	2017-04-13	2017	10:40	01599	Dorchester Road @ Lundy's Lane (01599)	43.089253	-79.110572	03 - Left turn lane	02 - Angle	01 - Traffic signal		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	
2064933	2020-07-13	2020	23:35	01599	Dorchester Road @ Lundy's Lane (01599)	43.089255	-79.110552	01 - Within intersection	99 - Other	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		01 - Driving properly	01 - Driving properly
2212003	2022-02-04	2022	08:15	01599	Dorchester Road @ Lundy's Lane (01599)	43.089250	-79.110550	02 - Thru lane	99 - Other	01 - Traffic signal	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		99 - Other	01 - Driving properly
1834999	2018-04-25	2018	11:52	01599	Dorchester Road @ Lundy's Lane (01599)	43.089251	-79.110569	03 - Left turn lane	05 - Turning movement	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	02 - Rain	01 - Daylight		01 - Driving properly	01 - Driving properly
174908	2017-01-17	2017	19:30	01599	Dorchester Road @ Lundy's Lane (01599)	43.089255	-79.110569	02 - Thru lane	03 - Rear end	01 - Traffic signal	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	08 - Dark, artificial			
20523	2020-03-05	2020	17:20	01600	Depew Avenue @ Lundy's Lane (01600)	43.089277	-79.109131	02 - Thru lane	04 - Sideswipe	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		99 - Other	01 - Driving properly
18118196	2018-12-01	2018	17:22	01600	Depew Avenue @ Lundy's Lane (01600)	43.089278	-79.109131	02 - Thru lane	03 - Rear end	10 - No control	03 - P.D. only	PDO	FALSE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	02 - Rain	08 - Dark, artificial		01 - Driving properly	01 - Driving properly
183552	2018-01-12	2018	14:00	01600	Depew Avenue @ Lundy's Lane (01600)	43.089279	-79.109132	01 - Within intersection	05 - Turning movement	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	02 - Rain	01 - Daylight			
20101327	2020-10-16	2020	17:45	01601	Corwin Avenue @ Lundy's Lane (01601)	43.089273	-79.108509	01 - Within intersection	05 - Turning movement	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
16114110	2016-12-23	2016	14:30	01601	Corwin Avenue @ Lundy's Lane (01601)	43.089285	-79.108517	02 - Thru lane	04 - Sideswipe	01 - Traffic signal	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
18084	2020-02-27	2020	15:18	01601	Corwin Avenue @ Lundy's Lane (01601)	43.089285	-79.108525	01 - Within intersection	02 - Angle	02 - Stop sign	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		08 - Failed to yield right-of-way	01 - Driving properly
1852932	2018-06-09	2018	22:39	01601	Corwin Avenue @ Lundy's Lane (01601)	43.089286	-79.108525	02 - Thru lane	02 - Angle	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		08 - Failed to yield right-of-way	01 - Driving properly
2251720	2022-05-15	2022	11:05	01601	Corwin Avenue @ Lundy's Lane (01601)	43.089289	-79.108527	02 - Thru lane	03 - Rear end	10 - No control	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
2126474	2021-03-25	2021	16:30	01601	Corwin Avenue @ Lundy's Lane (01601)	43.089280	-79.108509	01 - Within intersection	02 - Angle	10 - No control	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			01 - Driving properly
20102418	2020-10-20	2020	15:56	01133	Carlton Avenue & Prince Edward Avenue @ Lundy's Lane (01133)	43.089330	-79.105964	11 - Not on roadway - right side	07 - SMV other	02 - Stop sign	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		99 - Other	
1930013	2019-04-06	2019	21:13	01133	Carlton Avenue & Prince Edward Avenue @ Lundy's Lane (01133)	43.089327	-79.105969	02 - Thru lane	04 - Sideswipe	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	08 - Dark, artificial		01 - Driving properly	12 - Improper lane change
1986270	2019-08-29	2019	20:50	01133	Carlton Avenue & Prince Edward Avenue @ Lundy's Lane (01133)	43.089327	-79.105983	02 - Thru lane	04 - Sideswipe	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		01 - Driving properly	01 - Driving properly
1748428	2017-06-03	2017	17:45	01133	Carlton Avenue & Prince Edward Avenue @ Lundy's Lane (01133)	43.089334	-79.105978	02 - Thru lane	03 - Rear end	10 - No control	02 - Non-fatal injury	Injury	FALSE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	02 - Following too close
2375915	2023-07-12	2023	08:17	01133	Carlton Avenue & Prince Edward Avenue @ Lundy's Lane (01133)	43.089327	-79.105971	01 - Within intersection	02 - Angle	02 - Stop sign	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		08 - Failed to yield right-of-way	01 - Driving properly
2160651	2021-06-14	2021	15:30	01133	Carlton Avenue & Prince Edward Avenue @ Lundy's Lane (01133)	43.089325	-79.105976	01 - Within intersection	02 - Angle	02 - Stop sign	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
18126838	2018-12-28	2018	22:35	01134	Byng Avenue @ Lundy's Lane (01134)	43.089344	-79.105037	01 - Within intersection	05 - Turning movement	02 - Stop sign	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	02 - Rain	07 - Dark		06 - Improper turn	01 - Driving properly
1763833	2017-07-12	2017	21:00	01134	Byng Avenue @ Lundy's Lane (01134)	43.089345	-79.105041	02 - Thru lane	03 - Rear end	10 - No control		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	05 - Dusk		01 - Driving properly	02 - Following too close
21144572	2021-12-19	2021	17:00	01134	Byng Avenue @ Lundy's Lane (01134)	43.089343	-79.105041	02 - Thru lane	05 - Turning movement	10 - No control	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	08 - Dark, artificial		01 - Driving properly	
197423	2019-01-24	2019	14:00	01134	Byng Avenue @ Lundy's Lane (01134)	43.089342	-79.105034	02 - Thru lane	05 - Turning movement	10 - No control		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
2365722	2023-06-19	2023	13:23	01134	Byng Avenue @ Lundy's Lane (01134)	43.089342	-79.105040	01 - Within intersection	02 - Angle	02 - Stop sign	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		09 - Improper passing	01 - Driving properly
21134555	2021-11-24	2021	20:51	01134	Byng Avenue @ Lundy's Lane (01134)	43.089343	-79.105036	07 - Passing lane	02 - Angle	02 - Stop sign	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		06 - Improper turn	01 - Driving properly
17109313	2017-11-11	2017	22:05	01134	Byng Avenue @ Lundy's Lane (01134)	43.089346	-79.105048	09 - Right shoulder	04 - Sideswipe	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		12 - Improper lane change	01 - Driving properly
1610540	2016-02-08	2016	14:40	01134	Byng Avenue @ Lundy's Lane (01134)	43.089340	-79.105041	01 - Within intersection	05 - Turning movement	02 - Stop sign	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
21141959	2021-12-13	2021	13:52	01134	Byng Avenue @ Lundy's Lane (01134)	43.089345	-79.105043	02 - Thru lane	02 - Angle	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	
1895956	2018-09-26	2018	18:19	01134	Byng Avenue @ Lundy's Lane (01134)	43.089331	-79.105036	02 - Thru lane	03 - Rear end	02 - Stop sign	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		12 - Improper lane change	01 - Driving properly
17104509	2017-10-28	2017	18:12	01134	Byng Avenue @ Lundy's Lane (01134)	43.089343	-79.105045	02 - Thru lane	02 - Angle	10 - No control	03 - P.D. only	PDO	FALSE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	02 - Rain	07 - Dark		08 - Failed to yield right-of-way	01 - Driving properly
1731693	2017-04-16	2017	12:40	12193	Brookfield Avenue @ Lundy's Lane (12193)	43.089226	-79.113367	07 - Passing lane	07 - SMV other	01 - Traffic signal	03 - P.D. only	PDO	FALSE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	
1638493	2016-05-15	2016	16:15	12193	Brookfield Avenue @ Lundy's Lane (12193)	43.089225	-79.113363	02 - Thru lane	03 - Rear end	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
1849125	2018-05-31	2018	13:18	12193	Brookfield Avenue @ Lundy's Lane (12193)	43.089218	-79.113361	01 - Within intersection	05 - Turning movement	02 - Stop sign	03 - P.D. only	PDO	TRUE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		99 - Other	01 - Driving properly
206103	2020-01-20	2020	16:10	12193	Brookfield Avenue @ Lundy's Lane (12193)	43.089218	-79.113363	01 - Within intersection	05 - Turning movement	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		08 - Failed to yield right-of-way	01 - Driving properly
2337679	2023-04-14	2023	20:51	12193	Brookfield Avenue @ Lundy's Lane (12193)	43.089216	-79.113357	02 - Thru lane	04 - Sideswipe	02 - Stop sign	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	08 - Dark, artificial		12 - Improper lane change	01 - Driving properly
1766248	2017-07-19	2017	14:40	01595	Belmont Avenue @ Lundy's Lane (01595)	43.089070	-79.120102	02 - Thru lane	03 - Rear end	01 - Traffic signal		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			01 - Driving properly
1763870	2017-07-13	2017	12:22	01595	Belmont Avenue @ Lundy's Lane (01595)	43.089070	-79.120091	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	01 - Clear	01 - Daylight		02 - Following too close	01 - Driving properly
2190817	2021-08-17	2021	04:25	01595	Belmont Avenue @ Lundy's Lane (01595)	43.089074	-79.120098	11 - Not on roadway - right side	07 - SMV other	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	02 - Rain	08 - Dark, artificial		10 - Lost control	
17104396	2017-10-28	2017	11:20	01595	Belmont Avenue @ Lundy's Lane (01595)	43.089084	-79.120108	01 - Within intersection	03 - Rear end	01 - Traffic signal	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	02 - Rain	01 - Daylight		01 - Driving properly	02 - Following too close
1852460	2018-06-08	2018	18:00	01595	Belmont Avenue @ Lundy's Lane (01595)	43.089071	-79.120106	01 - Within intersection	02 - Angle	01 - Traffic signal		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
22104838	2022-09-13	2022	14:46	01595	Belmont Avenue @ Lundy's Lane (01595)	43.089077	-79.120106	01 - Within intersection	04 - Sideswipe	01 - Traffic signal	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
1755808	2017-06-23	2017	14:20	01595	Belmont Avenue @ Lundy's Lane (01595)	43.089079	-79.120120	01 - Within intersection	05 - Turning movement	01 - Traffic signal	02 - Non-fatal injury	Injury	TRUE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		04 - Speed too fast for condition	01 - Driving properly
163145	2016-01-12	2016	12:45	01595	Belmont Avenue @ Lundy's Lane (01595)	43.089087	-79.120095	02 - Thru lane	04 - Sideswipe		04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
1941153	2019-05-09	2019	15:05	01595	Belmont Avenue @ Lundy's Lane (01595)	43.089059	-79.120094	02 - Thru lane	03 - Rear end	01 - Traffic signal	02 - Non-fatal injury	Injury	FALSE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	01 - Driving properly
2124013	2021-03-18	2021	16:40	01595	Belmont Avenue @ Lundy's Lane (01595)	43.089082	-79.120110	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		99 - Other	01 - Driving properly
1961358	2019-07-01	2019	09:42	01595	Belmont Avenue @ Lundy's Lane (01595)	43.089061	-79.120110	01 - Within intersection	02 - Angle	01 - Traffic signal	02 - Non-fatal injury	Injury	TRUE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight		01 - Driving properly	99 - Other
19128031	2019-12-19	2019	19:30	01595	Belmont Avenue @ Lundy's Lane (01595)	43.089025	-79.120091	02 - Thru lane	03 - Rear end	01 - Traffic signal	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		01 - Driving properly	
198317	2019-01-25	2019	18:25	01595	Belmont Avenue @ Lundy's Lane (01595)	43.089078	-79.120099	01 - Within intersection	03 - Rear end	01 - Traffic signal		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark			
19128011	2019-12-19	2019	20:30	01595	Belmont Avenue @ Lundy's Lane (01595)	43.089025	-79.120091	02 - Thru lane	03 - Rear end	01 - Traffic signal	04 - Non-reportable	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	07 - Dark		02 - Following too close	
17121147	2017-12-15	2017	17:00	01595	Belmont Avenue @ Lundy's Lane (01595)	43.089082	-79.120111	02 - Thru lane	03 - Rear end	01 - Traffic signal		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	03 - Snow	07 - Dark		01 - Driving properly	01 - Driving properly
1672789	2016-08-19	2016	16:39	01595	Belmont Avenue @ Lundy's Lane (01595)	43.089079	-79.120114	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	01 - Clear	01 - Daylight		02 - Following too close	01 - Driving properly
1965236	2019-07-10	2019	11:15	01595	Belmont Avenue @ Lundy's Lane (01595)	43.089064	-79.120106	02 - Thru lane	04 - Sideswipe	10 - No control	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
1755894	2017-06-23	2017	17:30	01595	Belmont Avenue @ Lundy's Lane (01595)	43.089070	-79.120111	02 - Thru lane	03 - Rear end	01 - Traffic signal		PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	02 - Rain	01 - Daylight		01 - Driving properly	01 - Driving properly
1895627	2018-09-25	2018	21:28	01595	Belmont Avenue @ Lundy's Lane (01595)	43.089083	-79.120110	09 - Right shoulder	03 - Rear end	10 - No control	02 - Non-fatal injury	Injury	TRUE	05 - Regional municipality	NIAGARA FALLS	02 - Rain	08 - Dark, artificial		01 - Driving properly	01 - Driving properly
1951967	2019-06-07	2019	22:20	01595	Belmont Avenue @ Lundy's Lane (01595)	43.089079	-79.120110	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	01 - Municipal (excl. Twp. Rd.)	NIAGARA FALLS	01 - Clear	07 - Dark		02 - Following too close	01 - Driving properly
1971470	2019-07-25	2019	11:45	01595	Belmont Avenue @ Lundy's Lane (01595)	43.089065	-79.120110	02 - Thru lane	03 - Rear end	01 - Traffic signal	03 - P.D. only	PDO	FALSE	05 - Regional municipality	NIAGARA FALLS	01 - Clear	01 - Daylight			
1889732	2018-09-10	2018	01:30	01595	Belmont Avenue @ Lundy's Lane (01595)	43.089075	-79.120104	01 - Within intersection	07 - SMV other	01 - Traffic signal	02 - Non-fatal injury	Injury	FALSE	05 - Regional municipality	NIAGARA FALLS	02 - Rain	07 - Dark		10 - Lost control	
558																				

Collision Diagram

Belmont Avenue @ Lundy's Lane (01595)

From: Jan 01, 2016 To: Sep 30, 2022



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Using functionality from Enterprise edition

LEGEND

Turning Movement	0	Unknown	0	Angle	2	Angle Turning Left	0	Angle Turning Right	0
Approaching	0	Rear End	14	Sideswipe	3	SMV Other	2	SMV Unattended	0
Turning Movement	1	Fatal Collisions	0	Injury Collision	0				

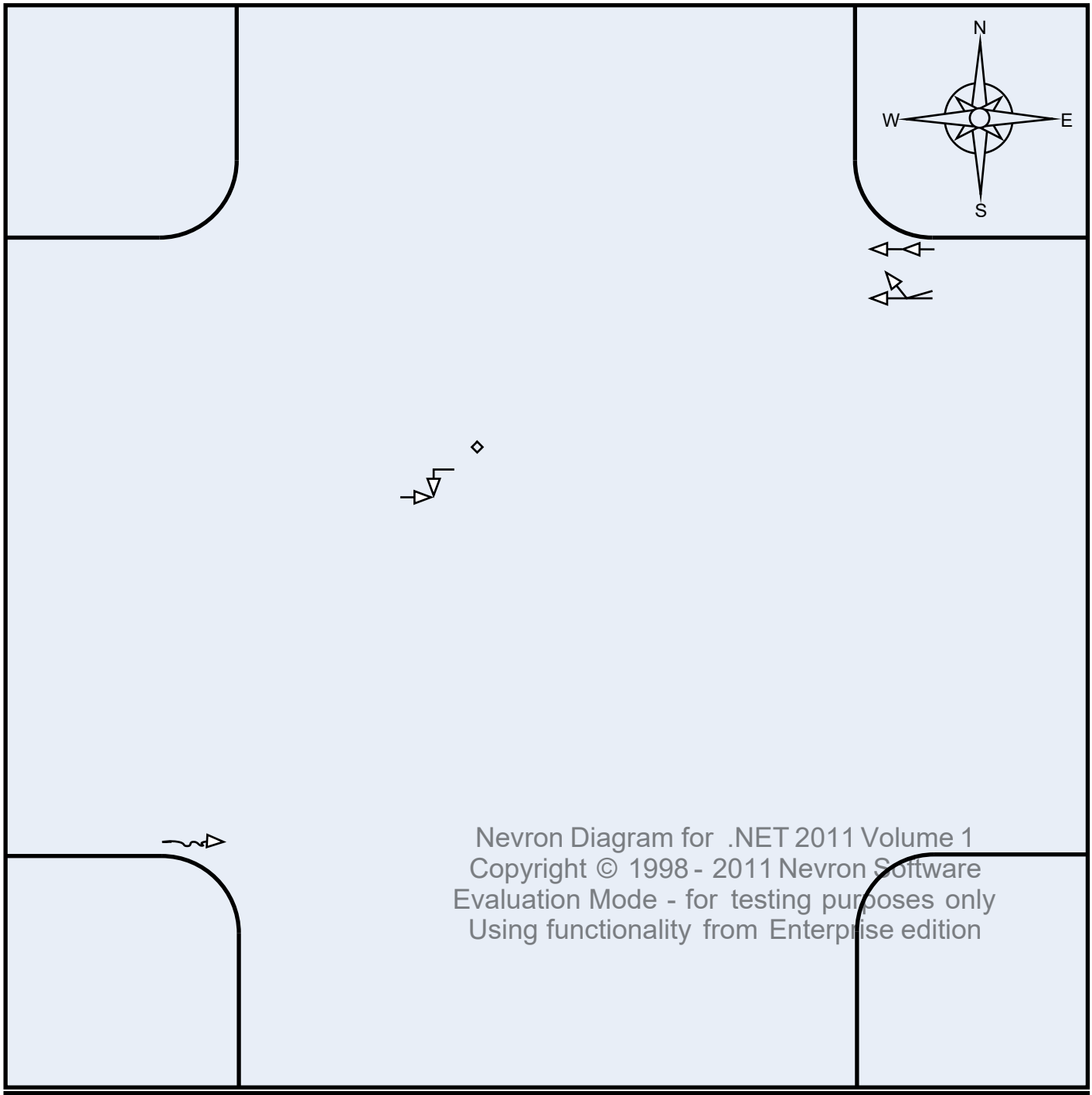
TOTAL 22



Collision Diagram

Brookfield Avenue @ Lundy's Lane (12193)

From: May 01, 2016 To: Apr 30, 2023



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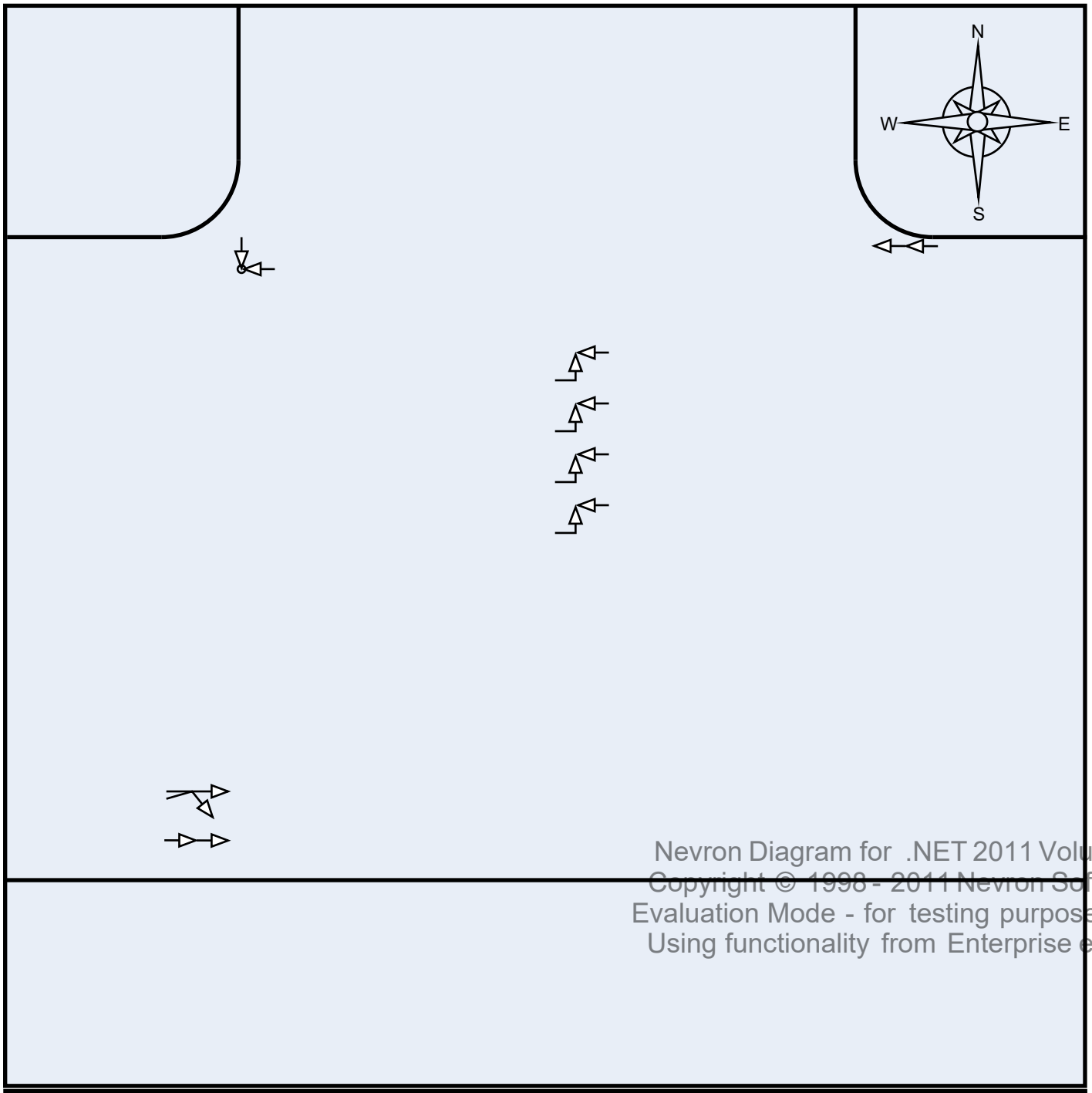
LEGEND

Turning Movement	0	Unknown	1	Angle	0	Angle Turning Left	0	Angle Turning Right	0		
Approaching	0	Rear End	1	Sideswipe	1	SMV Other	1	SMV Unattended	0	TOTAL	
Turning Movement	1	Fatal Collisions	0	Injury Collision	0						5

Collision Diagram

Byng Avenue @ Lundy's Lane (01134)

From: Feb 01, 2016 To: Jun 30, 2023



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Using functionality from Enterprise edition

LEGEND

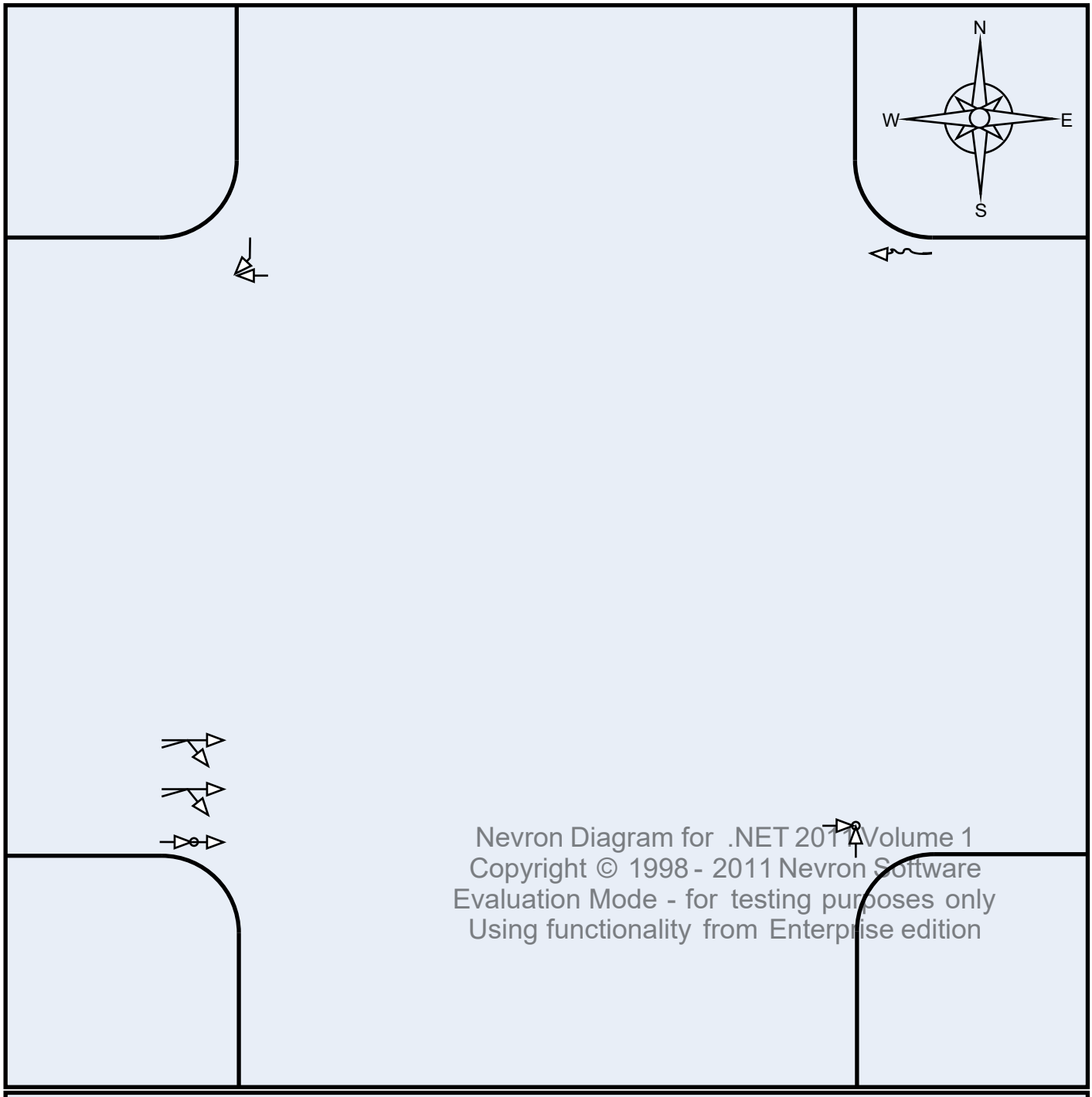
Turning Movement	0	Unknown	0	Angle	3	Angle Turning Left	1	Angle Turning Right	0		
Approaching	0	Rear End	2	Sideswipe	1	SMV Other	0	SMV Unattended	0	TOTAL	
Turning Movement	4	Fatal Collisions	0	Injury Collision	0						11



Collision Diagram

Carlton Avenue & Prince Edward Avenue @ Lundy's Lane (01133)

From: Jun 01, 2017 To: Jul 31, 2023



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Using functionality from Enterprise edition

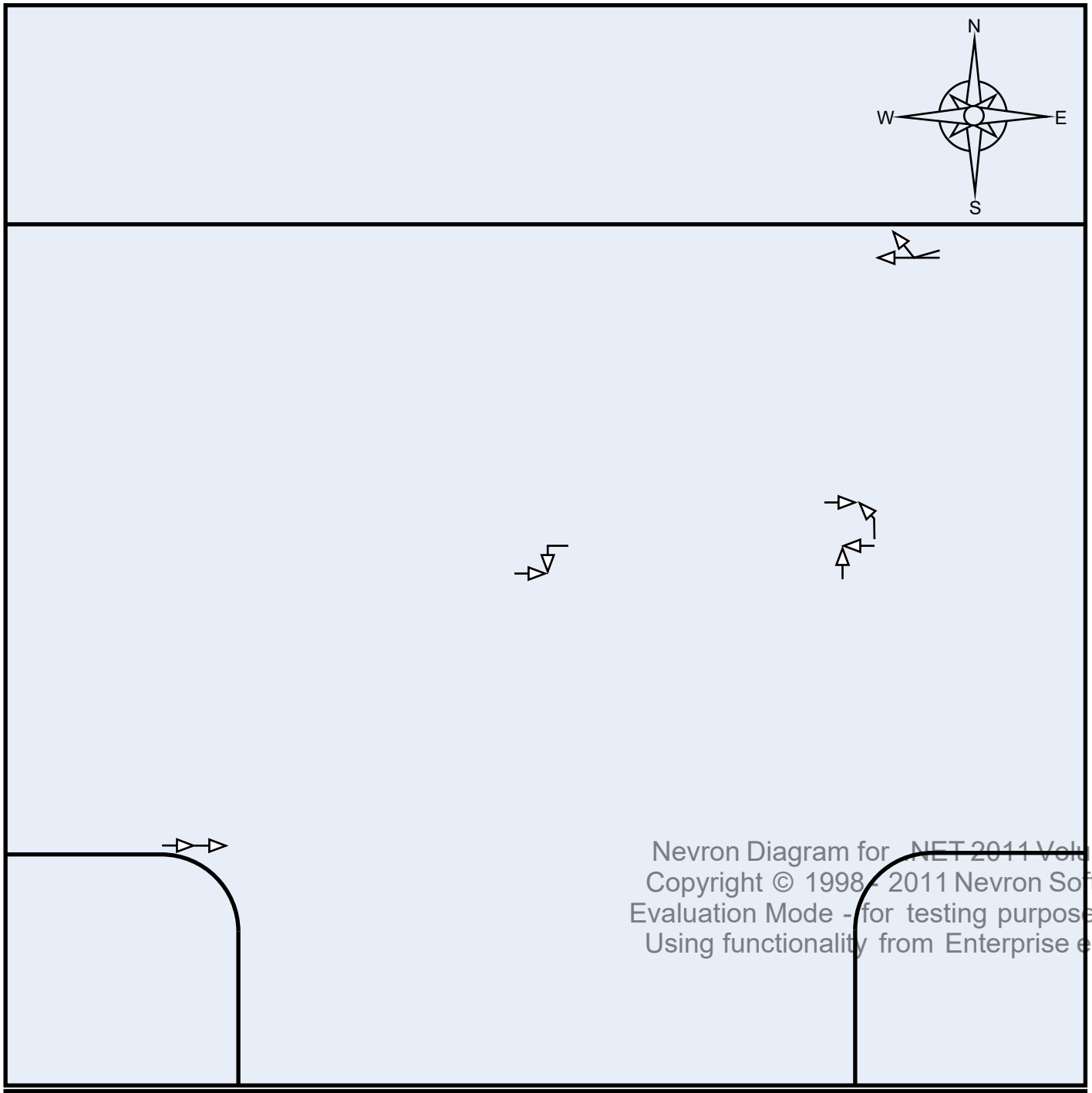
LEGEND

Turning Movement	0	Unknown	0	Angle	1	Angle Turning Left	0	Angle Turning Right	1		
Approaching	0	Rear End	1	Sideswipe	2	SMV Other	1	SMV Unattended	0	TOTAL	
Turning Movement	0	Fatal Collisions	0	Injury Collision	0						6

Collision Diagram

Corwin Avenue @ Lundy's Lane (01601)

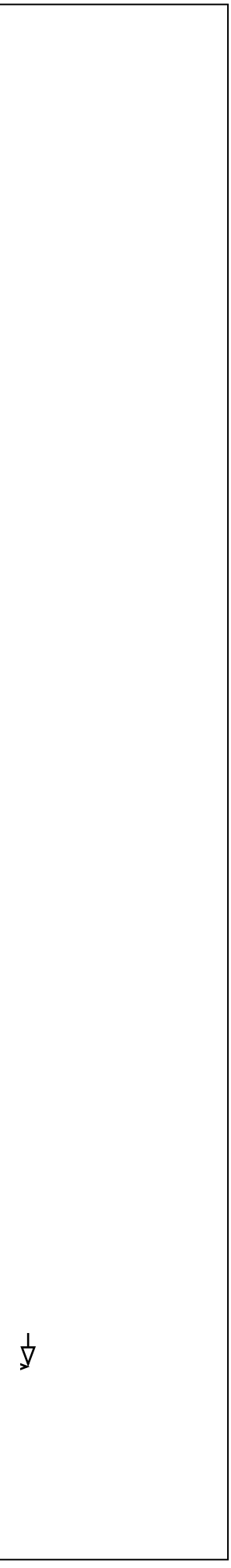
From: Dec 01, 2016 To: May 31, 2022



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Using functionality from Enterprise edition

LEGEND

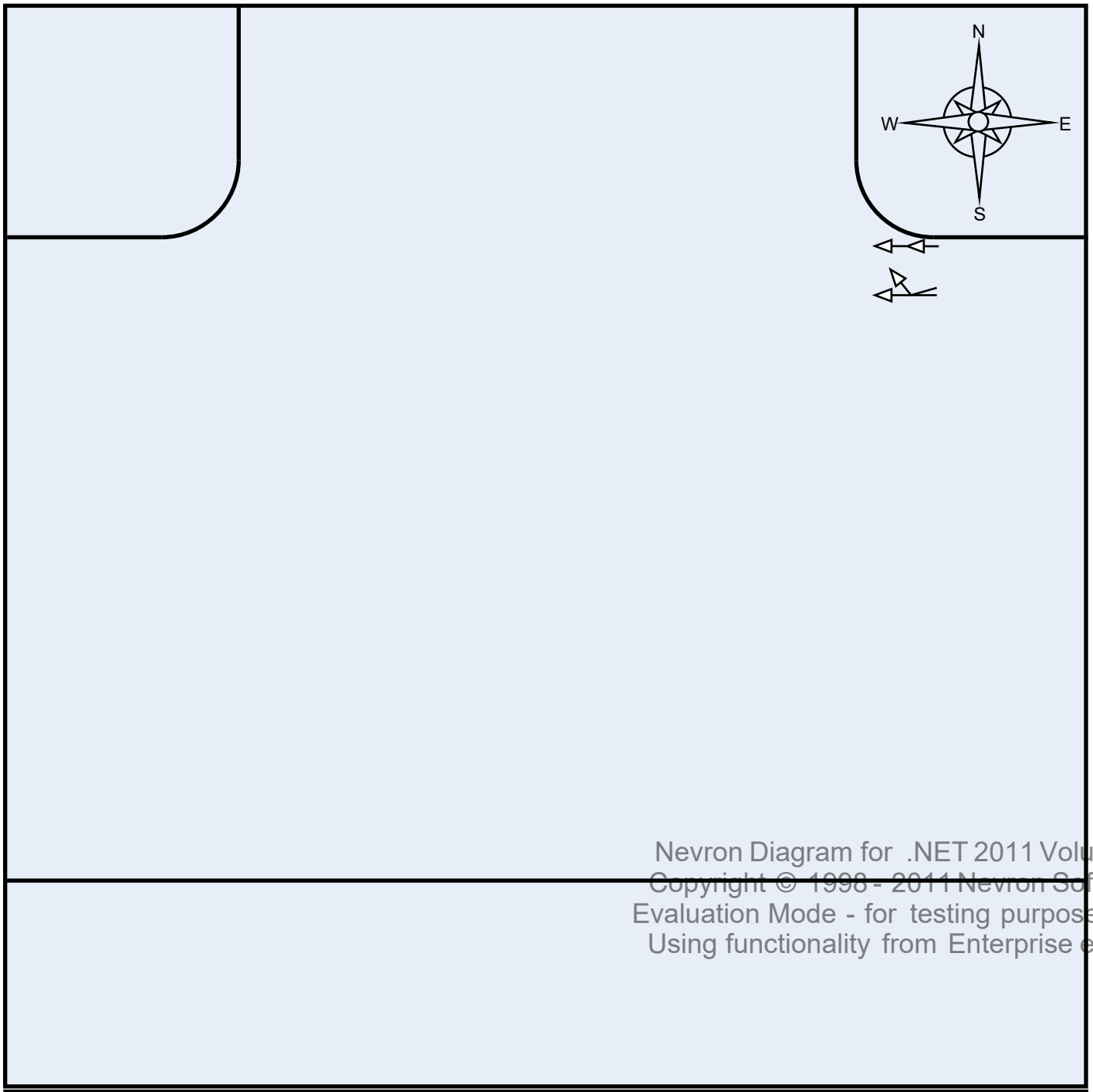
Turning Movement	0	Unknown	0	Angle	2	Angle Turning Left	1	Angle Turning Right	0	TOTAL	
Approaching	0	Rear End	1	Sideswipe	1	SMV Other	0	SMV Unattended	0		
Turning Movement	1	Fatal Collisions	0	Injury Collision	0					6	



Collision Diagram

Depew Avenue @ Lundy's Lane (01600)

From: Jan 01, 2018 To: Mar 31, 2020



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Using functionality from Enterprise edition

LEGEND

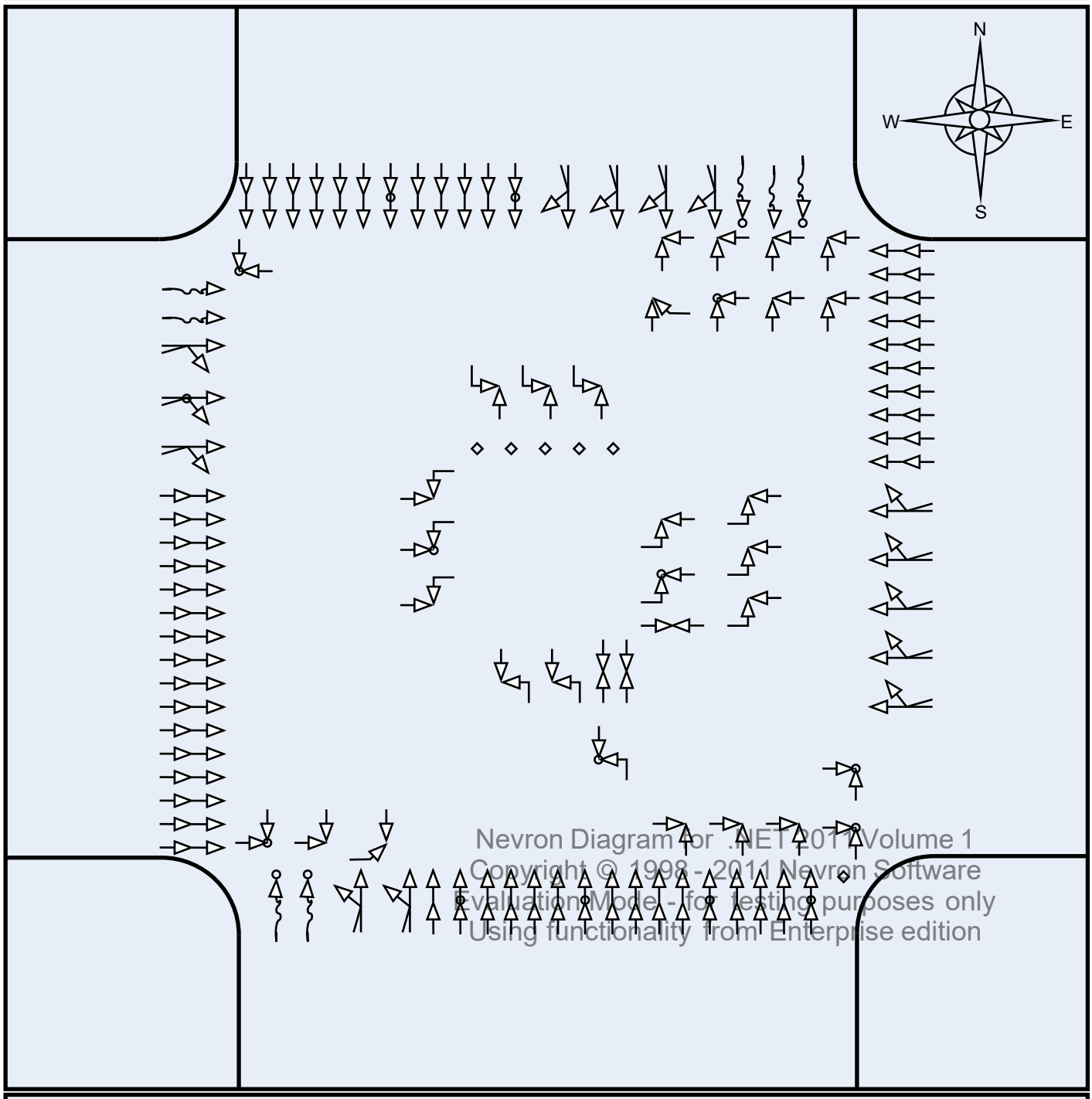
Turning Movement	0	Unknown	0	Angle	0	Angle Turning Left	0	Angle Turning Right	0		
Approaching	0	Rear End	1	Sideswipe	1	SMV Other	0	SMV Unattended	0	TOTAL	
Turning Movement	1	Fatal Collisions	0	Injury Collision	0						3



Collision Diagram

Dorchester Road @ Lundy's Lane (01599)

From: Jan 01, 2016 To: Jun 30, 2023



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Evaluation Model - for testing purposes only
Using functionality from Enterprise edition

LEGEND

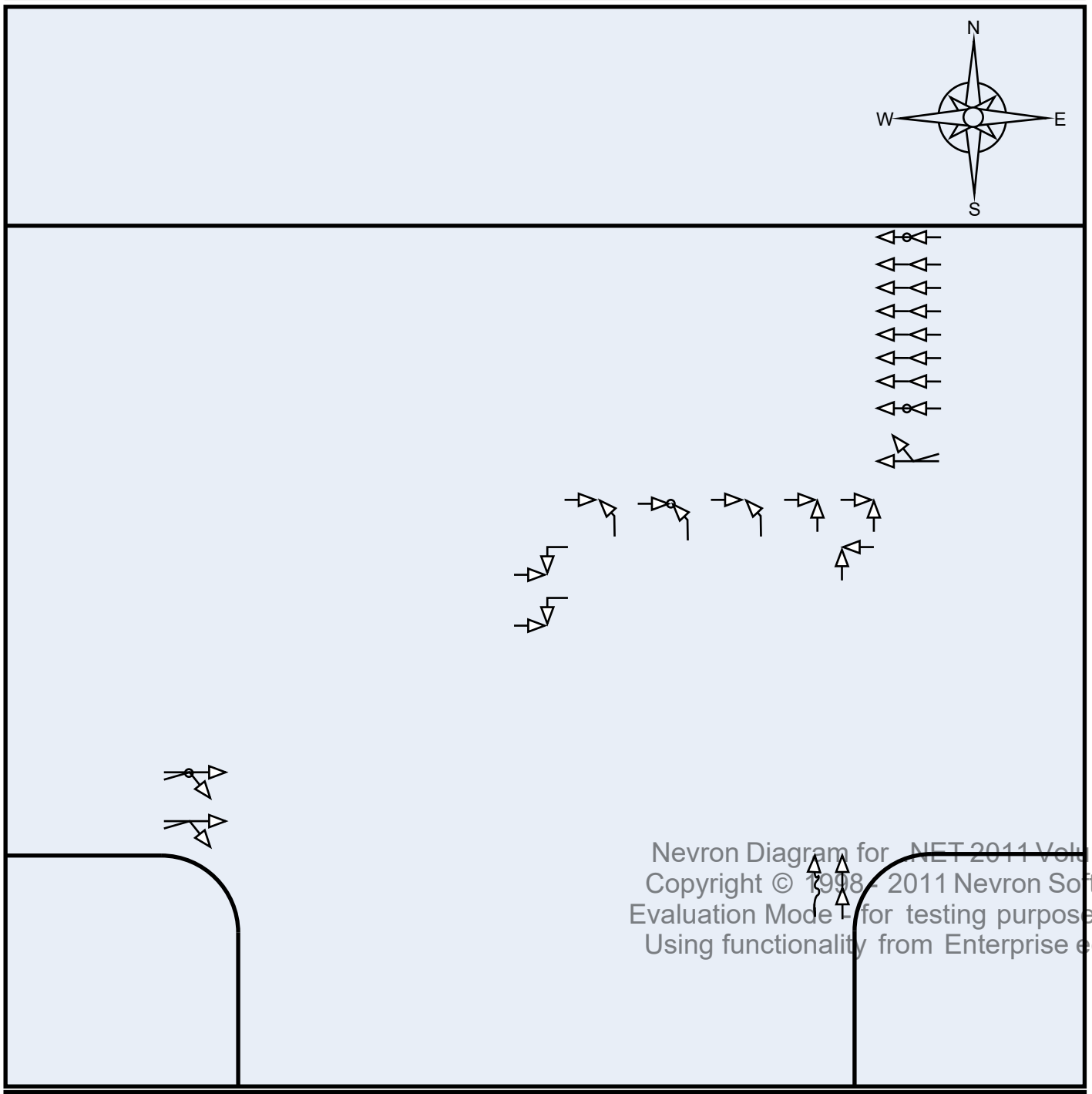
Turning Movement	0	Unknown	6	Angle	15	Angle Turning Left	1	Angle Turning Right	1		
Approaching	3	Rear End	54	Sideswipe	14	SMV Other	7	SMV Unattended	0		
Turning Movement	14	Fatal Collisions	0	Injury Collision	0						

TOTAL 115

Collision Diagram

Franklin Avenue @ Lundy's Lane (01135)

From: May 01, 2016 To: Apr 30, 2023



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Using functionality from Enterprise edition

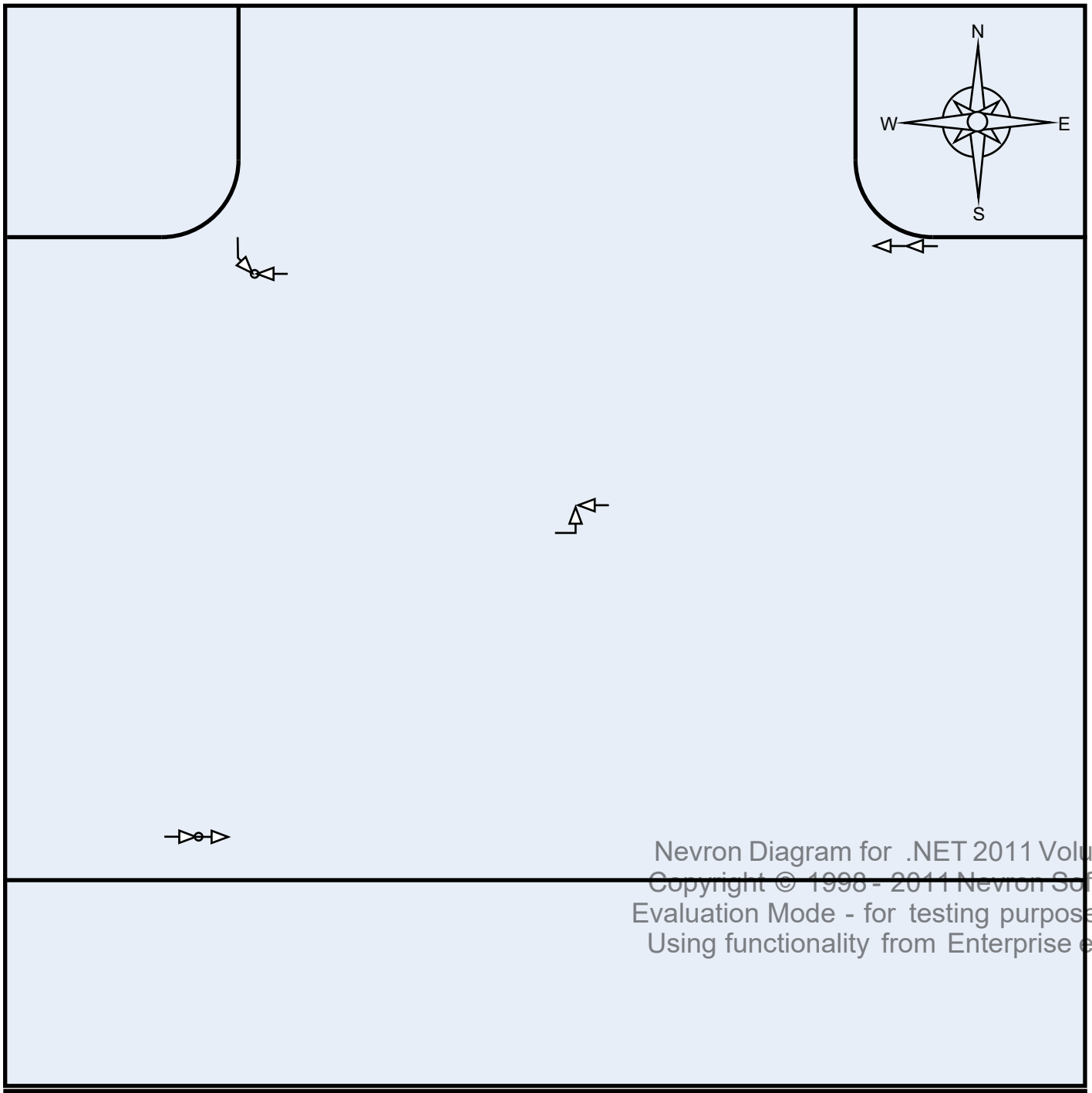
LEGEND

Turning Movement	0	Unknown	2	Angle	4	Angle Turning Left	6	Angle Turning Right	0	TOTAL	
Approaching	0	Rear End	9	Sideswipe	3	SMV Other	1	SMV Unattended	0		
Turning Movement	4	Fatal Collisions	0	Injury Collision	0						29

Collision Diagram

Glenholme Avenue @ Lundy's Lane (01136)

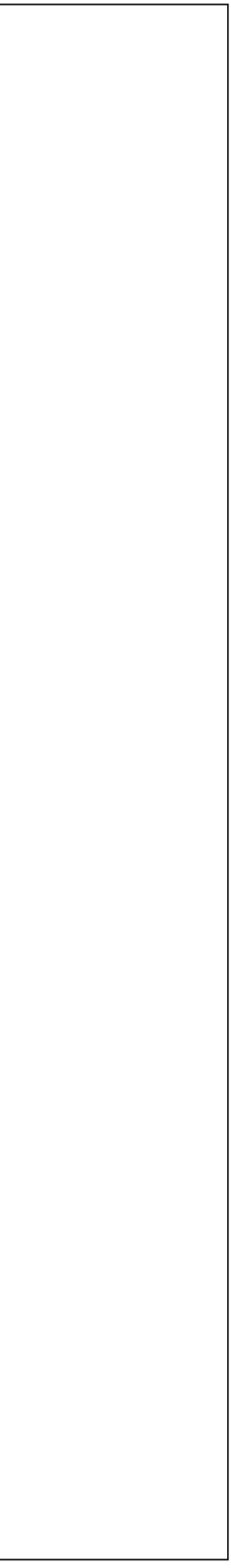
From: Jun 01, 2018 To: Jun 30, 2022



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Using functionality from Enterprise edition

LEGEND

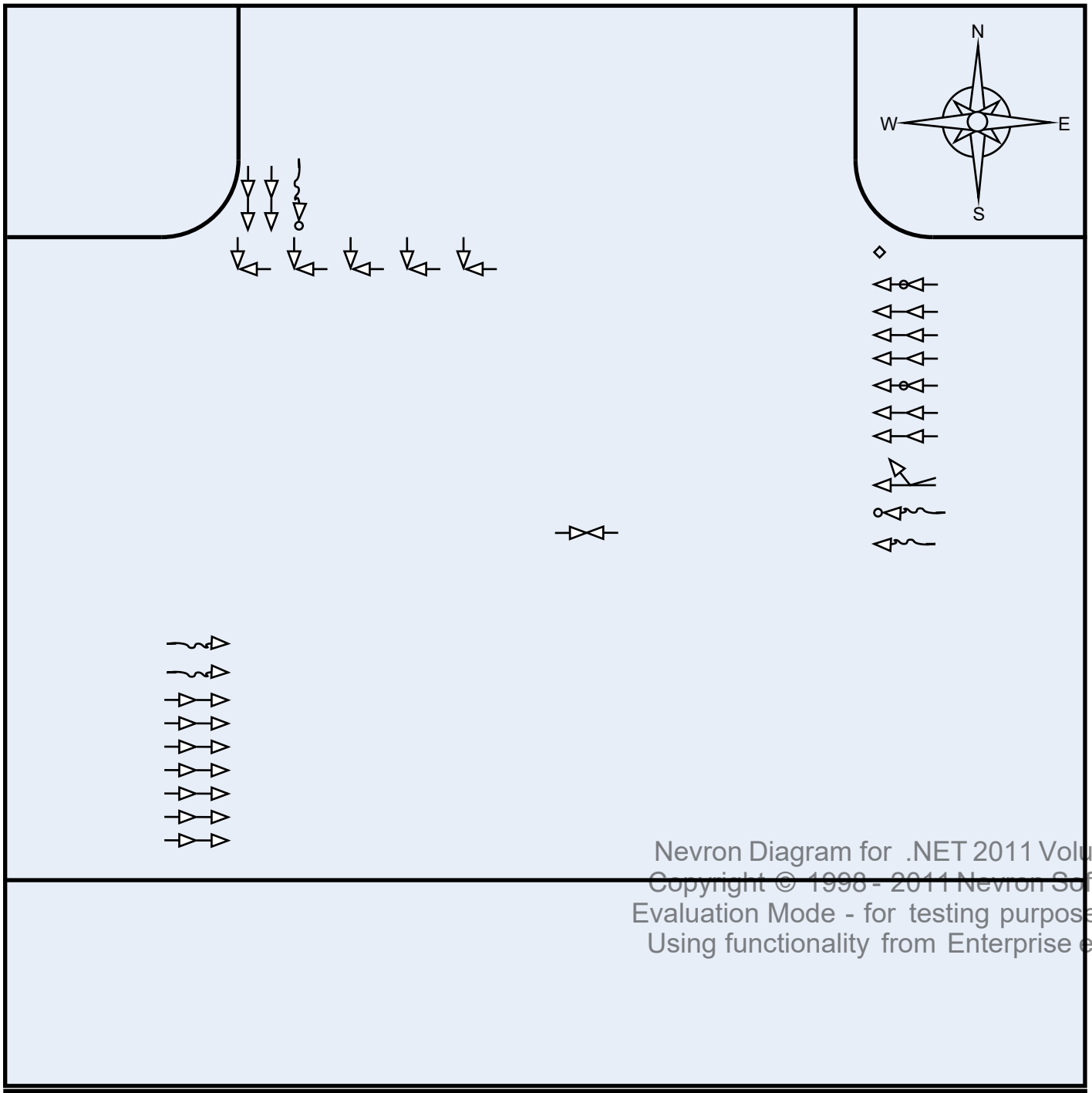
Turning Movement	0	Unknown	0	Angle	0	Angle Turning Left	1	Angle Turning Right	0		
Approaching	0	Rear End	2	Sideswipe	0	SMV Other	0	SMV Unattended	0	TOTAL	
Turning Movement	1	Fatal Collisions	0	Injury Collision	0						4



Collision Diagram

Highland Avenue @ Lundy's Lane (01137)

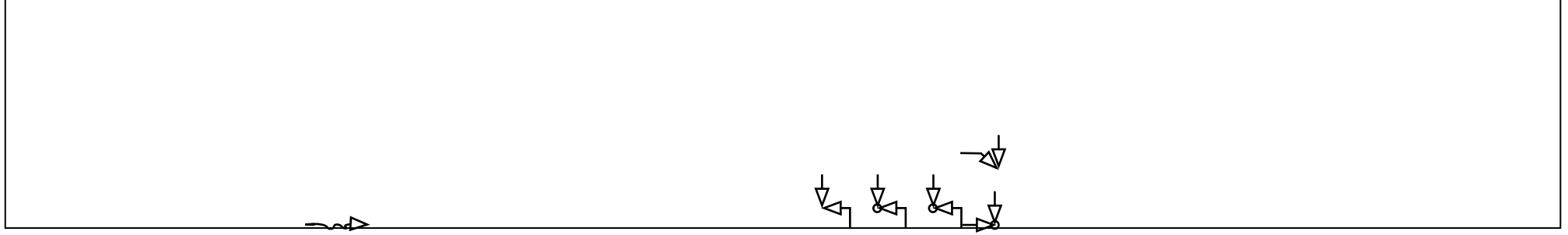
From: Jan 01, 2016 To: Jul 31, 2023



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LEGEND

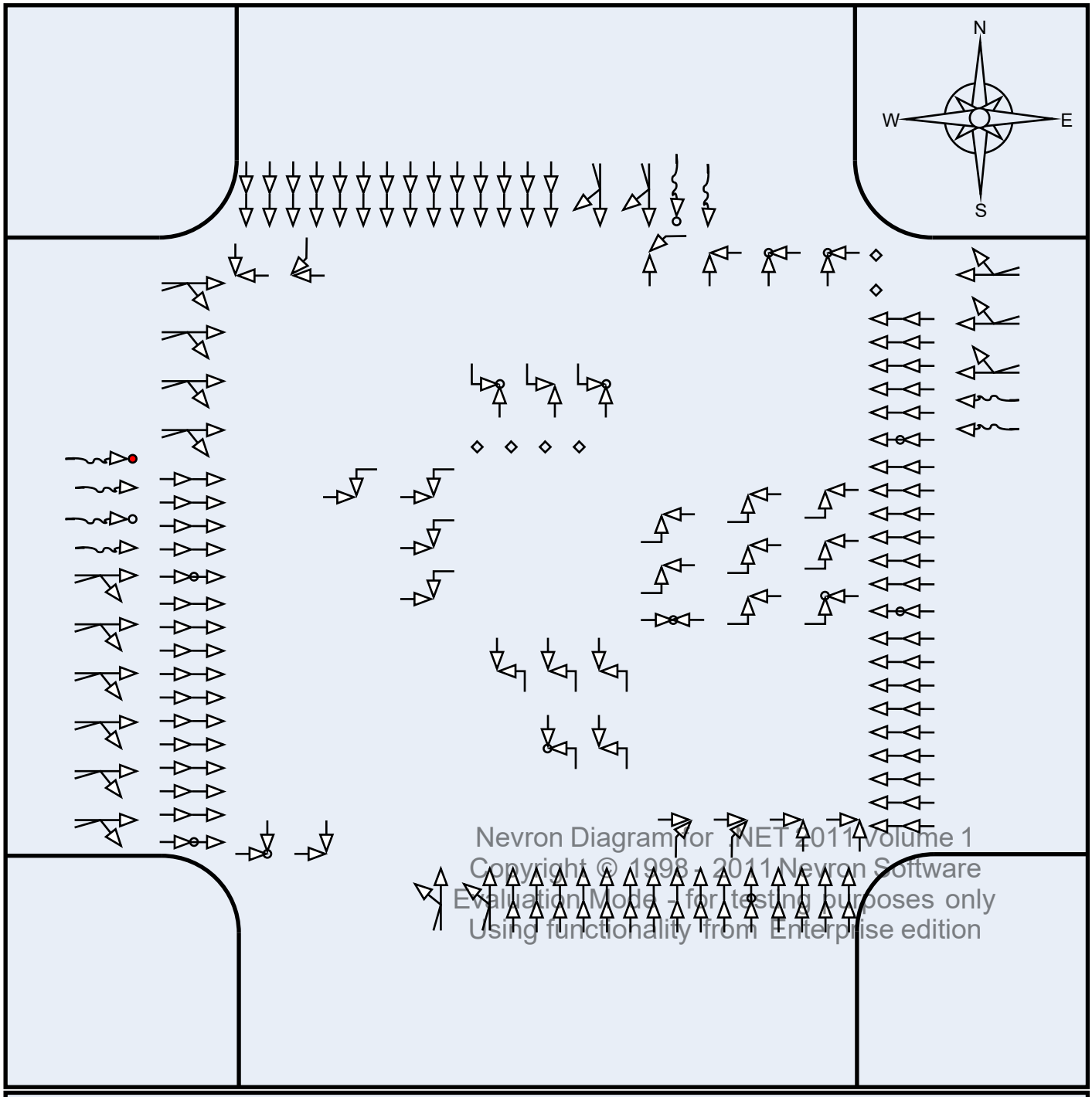
Turning Movement	0	Unknown	1	Angle	6	Angle Turning Left	0	Angle Turning Right	1		
Approaching	1	Rear End	16	Sideswipe	1	SMV Other	6	SMV Unattended	0	TOTAL	
Turning Movement	3	Fatal Collisions	0	Injury Collision	0						35



Collision Diagram

Lundy's Lane @ Montrose Road (01594)

From: Jan 01, 2016 To: May 31, 2023



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Evaluation Mode - for testing purposes only
Using functionality from Enterprise edition

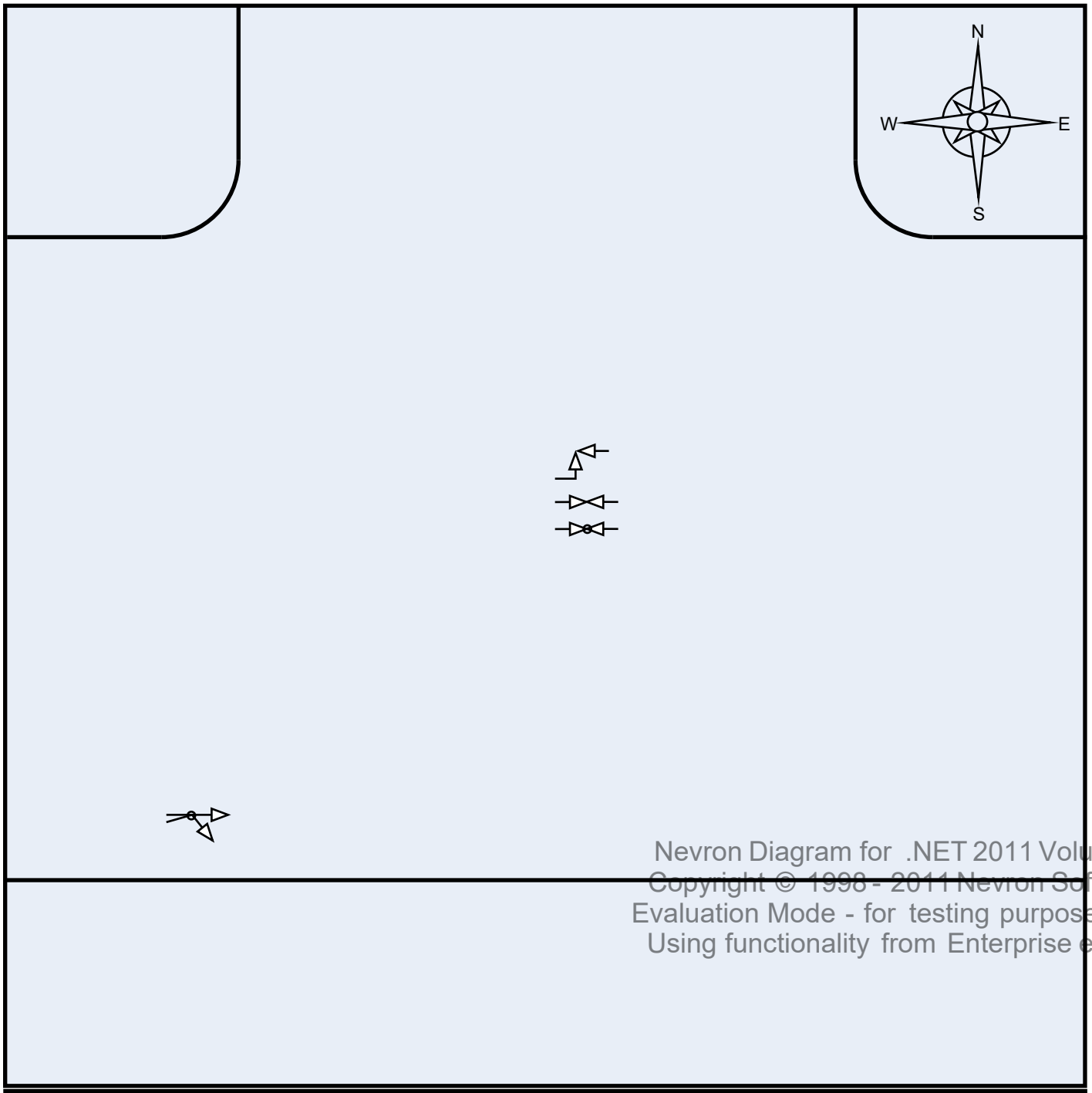
LEGEND

Turning Movement	0	Unknown	6	Angle	8	Angle Turning Left	1	Angle Turning Right	3		
Approaching	1	Rear End	67	Sideswipe	17	SMV Other	8	SMV Unattended	0	TOTAL	
Turning Movement	20	Fatal Collisions	0	Injury Collision	0						131

Collision Diagram

Lundy's Lane @ Mouland Avenue (01598)

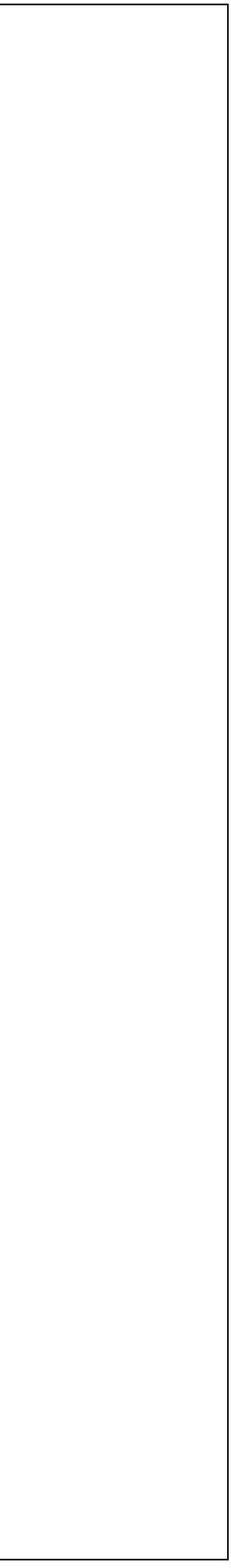
From: Sep 01, 2016 To: Aug 31, 2021



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Using functionality from Enterprise edition

LEGEND

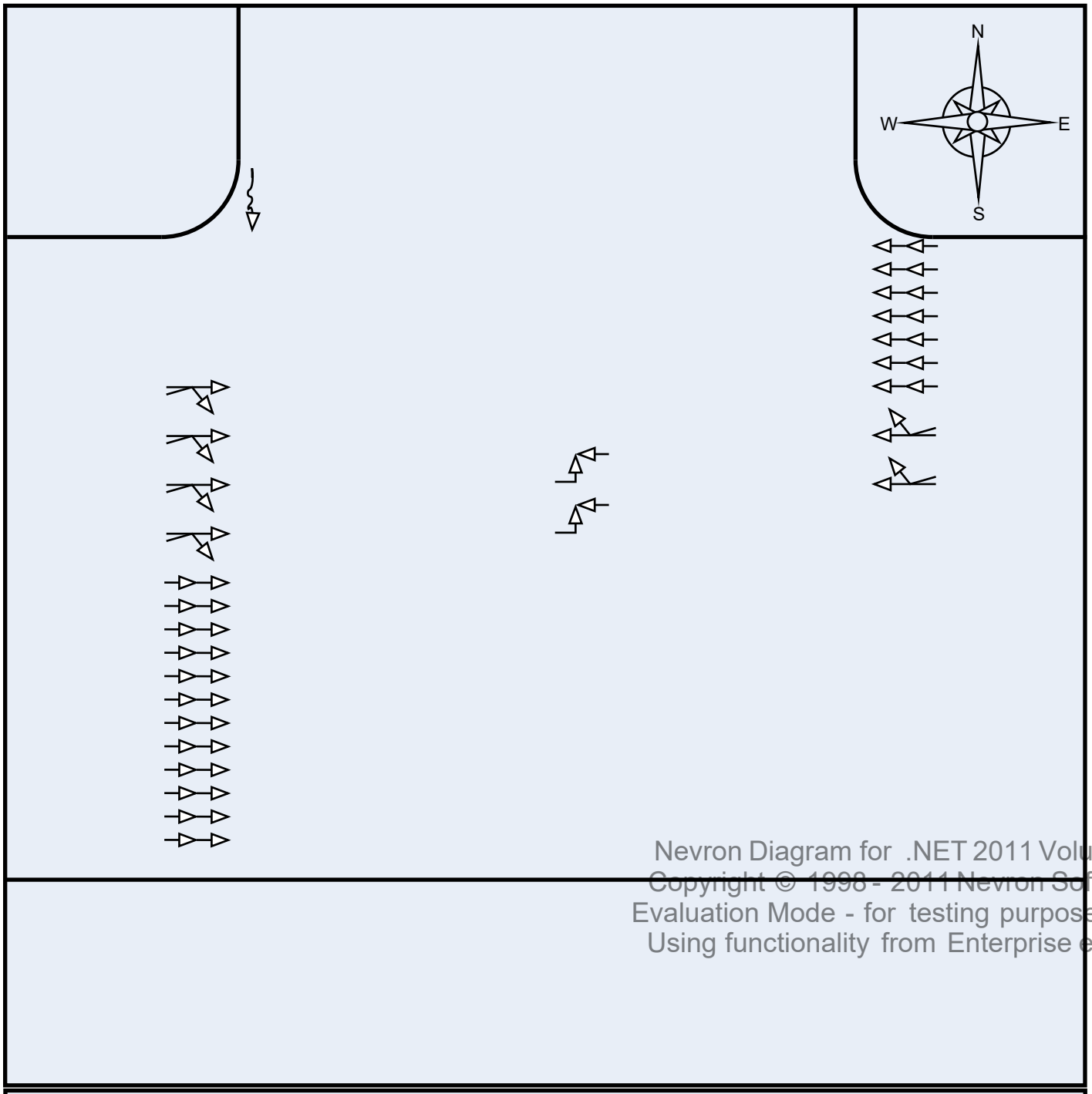
Turning Movement	0	Unknown	0	Angle	0	Angle Turning Left	0	Angle Turning Right	0		
Approaching	2	Rear End	0	Sideswipe	1	SMV Other	0	SMV Unattended	0	TOTAL	
Turning Movement	1	Fatal Collisions	0	Injury Collision	0					4	



Collision Diagram

Lundy's Lane @ Royal Manor Drive (01596)

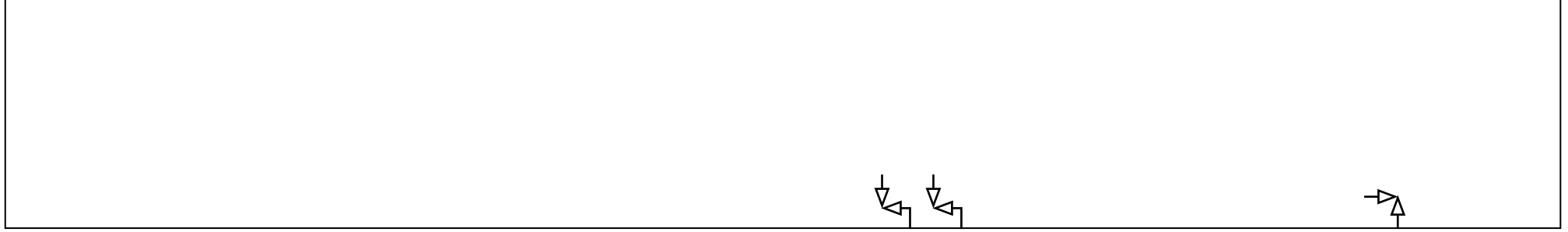
From: Jul 01, 2016 To: Jul 31, 2023



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Using functionality from Enterprise edition

LEGEND

Turning Movement	0	Unknown	0	Angle	1	Angle Turning Left	0	Angle Turning Right	0		
Approaching	0	Rear End	19	Sideswipe	6	SMV Other	1	SMV Unattended	0	TOTAL	
Turning Movement	4	Fatal Collisions	0	Injury Collision	0						31



Safety Performance Assessment

Niagara Region Safety Performance Functions

SPF Form			
Intersection Type	**Total Collisions**	**Severe Collisions**	**PDO Collisions**
3-leg Signalized		$E(Y) = \alpha \times F_{tot}^{b}$	
4-leg Signalized		$E(Y) = \alpha \times F_{tot}^{b} \times \left(\frac{F_{min}}{F_{tot}}\right)^{c}$	
3-way Stop Controlled			
4-way Stop Controlled		$E(Y) = \alpha \times F_{tot}^{b}$	
3- and 4-leg All-way Stop Controlled	$E(Y) = \alpha \times F_{tot}^{b}$		$E(Y) = \alpha \times F_{tot}^{b}$

Where:

E(Y) is the predicted number of collisions;

F_{tot} is total volume of an intersection which is equal to F_{maj} + F_{min};

F_{maj} is the total approach AADT on the major approaches;

F_{min} is the total approach AADT on the minor approaches; and

α, b, and c are the model parameters estimated through the Full Bayes approach.

Model Parameters									
Intersection Type	**Total Collisions**			**Severe Collisions**			**PDO Collisions**		
	Ln(a)	**b**	**c**	**Ln(a)**	**b**	**c**	**Ln(a)**	**b**	**c**
3-leg Signalized				-12.516	1.156	0.000	-12.844	1.344	0.000
4-leg Signalized				-10.256	1.028	0.318	-12.450	1.390	0.296
3-way Stop Controlled				-8.152	0.699	0.345	-7.444	0.764	0.205
4-way Stop Controlled				-8.00	0.686	0.000	-5.428	0.566	0.000
3- and 4-leg All-way Stop Controlled	-7.890	0.852	0.000				-10.510	1.113	0.000

Note: *Severe collisions for All-way Stop estimated based on proportion of FI/Total from RSI (14/106 = 13.2%)*

SPFs would result in negative values in higher volume years

Appendix D

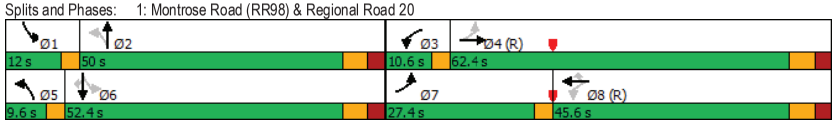
2041 Alternative Traffic Operations



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		6
Detector Phase	7	4		3	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0	10.0	3.0	8.0		6.0	8.0	8.0
Minimum Split (s)	10.5	35.0		10.5	35.0	35.0	9.5	36.0		10.5	36.0	36.0
Total Split (s)	27.4	62.4		10.6	45.6	45.6	9.6	50.0		12.0	52.4	52.4
Total Split (%)	20.3%	46.2%		7.9%	33.8%	33.8%	7.1%	37.0%		8.9%	38.8%	38.8%
Maximum Green (s)	24.4	55.4		7.6	38.6	38.6	6.6	43.0		9.0	45.4	45.4
Yellow Time (s)	3.0	4.1		3.0	4.1	4.1	3.0	4.1		3.0	4.1	4.1
All-Red Time (s)	0.0	2.9		0.0	2.9	2.9	0.0	2.9		0.0	2.9	2.9
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.0	7.0		3.0	7.0	7.0	3.0	7.0		3.0	7.0	7.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	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	3.0
Recall Mode	None	C-Max		None	C-Max	C-Max	None	Max		None	Max	Max
Walk Time (s)		10.0			10.0	10.0		11.0			11.0	11.0
Flash Dont Walk (s)		18.0			18.0	18.0		18.0			18.0	18.0
Pedestrian Calls (#/hr)		0			0	0		0			0	0
Act Effct Green (s)	70.0	55.6		50.6	39.3	39.3	53.5	43.0		58.5	47.3	47.3
Actuated g/C Ratio	0.52	0.41		0.37	0.29	0.29	0.40	0.32		0.43	0.35	0.35
v/c Ratio	0.91	0.93		0.48	0.80	0.24	0.14	0.96		0.69	0.34	0.37
Control Delay	49.0	60.0		28.0	58.0	9.3	23.3	75.3		42.8	35.2	5.9
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	49.0	60.0		28.0	58.0	9.3	23.3	75.3		42.8	35.2	5.9
LOS	D	E		C	E	A	C	E		D	D	A
Approach Delay		55.9			44.0			69.9			25.8	
Approach LOS		E			D			E			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 135			
Actuated Cycle Length: 135			
Offset: 118.2 (88%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green			
Natural Cycle: 115			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.96			
Intersection Signal Delay: 50.1		Intersection LOS: D	
Intersection Capacity Utilization 98.2%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 1: Montrose Road (RR98) & Regional Road 20



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	346	551	37	80	351	105	53	334	128	129	185	197
Future Volume (vph)	346	551	37	80	351	105	53	334	128	129	185	197
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	55.0		0.0	35.0		35.0	45.0		0.0	80.0		70.0
Storage Lanes	1		0	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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		0.99		0.96	0.95	0.99				0.92
Frt		0.991				0.850		0.958				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1554	1656	0	1511	1651	1417	1583	1606	0	1599	1683	1390
Flt Permitted	0.254			0.196			0.627			0.157		
Satd. Flow (perm)	412	1656	0	310	1651	1366	997	1606	0	264	1683	1277
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3				105		15				214
Link Speed (k/h)		60			50			50			50	
Link Distance (m)		251.8			265.0			342.9			323.7	
Travel Time (s)		15.1			19.1			24.7			23.3	
Confl. Peds. (#/hr)	17		10	10		17	27		14	14		27
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	7%	4%	11%	10%	6%	5%	5%	4%	0%	4%	4%	7%
Adj. Flow (vph)	376	599	40	87	382	114	58	363	139	140	201	214
Shared Lane Traffic (%)												
Lane Group Flow (vph)	376	639	0	87	382	114	58	502	0	140	201	214
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	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	0.0
Detector 1 Queue (s)	0.0	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	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	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	346	551	37	80	351	105	53	334	128	129	185	197
Future Volume (vph)	346	551	37	80	351	105	53	334	128	129	185	197
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	7.0		3.0	7.0	7.0	3.0	7.0		3.0	7.0	7.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.96	1.00	0.99		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.97	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1551	1655		1510	1651	1366	1538	1607		1599	1683	1277
Flt Permitted	0.25	1.00		0.20	1.00	1.00	0.63	1.00		0.16	1.00	1.00
Satd. Flow (perm)	414	1655		312	1651	1366	1015	1607		264	1683	1277
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	376	599	40	87	382	114	58	363	139	140	201	214
RTOR Reduction (vph)	0	2	0	0	0	75	0	10	0	0	0	139
Lane Group Flow (vph)	376	637	0	87	382	39	58	492	0	140	201	75
Confl. Peds. (#/hr)	17		10	10		17	27		14	14		27
Heavy Vehicles (%)	7%	4%	11%	10%	6%	5%	5%	4%	0%	4%	4%	7%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	65.4	55.0		46.1	38.7	38.7	48.9	43.6		55.6	47.3	47.3
Effective Green, g (s)	65.4	55.0		46.1	38.7	38.7	48.9	43.6		55.6	47.3	47.3
Actuated g/C Ratio	0.48	0.41		0.34	0.29	0.29	0.36	0.32		0.41	0.35	0.35
Clearance Time (s)	3.0	7.0		3.0	7.0	7.0	3.0	7.0		3.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	400	674		172	473	391	388	519		197	589	447
v/s Ratio Prot	c0.16	c0.38		0.03	0.23		0.01	c0.31		c0.05	0.12	
v/s Ratio Perm	0.29			0.15		0.03	0.05			0.24		0.06
v/c Ratio	0.94	0.95		0.51	0.81	0.10	0.15	0.95		0.71	0.34	0.17
Uniform Delay, d1	26.8	38.6		32.9	44.7	35.4	28.5	44.6		30.0	32.4	30.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	29.8	23.6		2.3	13.8	0.5	0.2	28.4		11.4	1.6	0.8
Delay (s)	56.6	62.2		35.2	58.5	35.9	28.7	73.0		41.4	33.9	31.1
Level of Service	E	E		D	E	D	C	E		D	C	C
Approach Delay (s)		60.1			50.6			68.4			34.7	
Approach LOS		E			D			E			C	

Intersection Summary				
HCM 2000 Control Delay	54.6	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.95			
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	98.2%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	376	639	87	382	114	58	502	140	201	214
v/c Ratio	0.91	0.93	0.48	0.80	0.24	0.14	0.96	0.69	0.34	0.37
Control Delay	49.0	60.0	28.0	58.0	9.3	23.3	75.3	42.8	35.2	5.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.0	60.0	28.0	58.0	9.3	23.3	75.3	42.8	35.2	5.9
Queue Length 50th (m)	65.1	169.4	12.1	99.9	1.8	9.4	135.1	23.9	42.4	0.0
Queue Length 95th (m)	#120.2	#249.7	21.7	#149.7	17.1	18.6	#208.7	#43.5	64.8	18.2
Internal Link Dist (m)		227.8		241.0			318.9		299.7	
Turn Bay Length (m)	55.0		35.0		35.0	45.0		80.0		70.0
Base Capacity (vph)	420	684	184	480	471	424	521	203	589	586
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.90	0.93	0.47	0.80	0.24	0.14	0.96	0.69	0.34	0.37

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	39.9	39.9		39.9	39.9		36.1	36.1		36.1	36.1	
Total Split (s)	73.9	73.9		73.9	73.9		36.1	36.1		36.1	36.1	
Total Split (%)	67.2%	67.2%		67.2%	67.2%		32.8%	32.8%		32.8%	32.8%	
Maximum Green (s)	67.0	67.0		67.0	67.0		29.0	29.0		29.0	29.0	
Yellow Time (s)	4.1	4.1		4.1	4.1		4.1	4.1		4.1	4.1	
All-Red Time (s)	2.8	2.8		2.8	2.8		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)	6.9	6.9		6.9	6.9		7.1	7.1			7.1	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		Max	Max		Max	Max	
Walk Time (s)	12.0	12.0		12.0	12.0		11.0	11.0		11.0	11.0	
Flash Dont Walk (s)	21.0	21.0		21.0	21.0		18.0	18.0		18.0	18.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	67.0	67.0		67.0	67.0		29.0	29.0			29.0	
Actuated g/C Ratio	0.61	0.61		0.61	0.61		0.26	0.26			0.26	
v/c Ratio	0.06	1.17		0.25	0.69		0.02	0.01			0.08	
Control Delay	9.4	111.1		17.8	14.2		30.4	0.0			6.8	
Queue Delay	0.0	0.6		0.0	0.0		0.0	0.0			0.0	
Total Delay	9.4	111.7		17.8	14.3		30.4	0.0			6.8	
LOS	A	F		B	B		C	A			A	
Approach Delay		110.2			14.3			19.0			6.8	
Approach LOS		F			B			B			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.17			
Intersection Signal Delay: 73.2		Intersection LOS: E	
Intersection Capacity Utilization 97.8%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 2: Niagara Falls Inn Driveway/Belmont Avenue & Regional Road 20



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	1066	16	15	617	23	5	0	3	17	0	8
Future Volume (vph)	16	1066	16	15	617	23	5	0	3	17	0	8
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	40.0		0.0	40.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	0		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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00						0.98			1.00	
Frt		0.998			0.995			0.850			0.955	
Flt Protected	0.950			0.950			0.950				0.968	
Satd. Flow (prot)	1662	1649	0	1662	1661	0	1330	1455	0	0	1257	0
Flt Permitted	0.280			0.060			0.740				0.861	
Satd. Flow (perm)	490	1649	0	105	1661	0	1036	1455	0	0	1117	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			3			85			39	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		265.0			231.8			75.5			218.5	
Travel Time (s)		19.1			16.7			5.4			15.7	
Confl. Peds. (#/hr)			5	5					1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	6%	0%	0%	5%	0%	25%	0%	0%	33%	0%	20%
Adj. Flow (vph)	17	1159	17	16	671	25	5	0	3	18	0	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	1176	0	16	696	0	5	3	0	0	27	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	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	1066	16	15	617	23	5	0	3	17	0	8
Future Volume (vph)	16	1066	16	15	617	23	5	0	3	17	0	8
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	6.9	6.9		6.9	6.9		7.1	7.1			7.1	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.85			0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.97	
Satd. Flow (prot)	1662	1648		1662	1661		1330	1455			1255	
Flt Permitted	0.28	1.00		0.06	1.00		0.74	1.00			0.86	
Satd. Flow (perm)	489	1648		104	1661		1035	1455			1116	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	17	1159	17	16	671	25	5	0	3	18	0	9
RTOR Reduction (vph)	0	0	0	0	1	0	0	2	0	0	20	0
Lane Group Flow (vph)	17	1176	0	16	695	0	5	1	0	0	7	0
Confl. Peds. (#/hr)			5	5					1	1		
Heavy Vehicles (%)	0%	6%	0%	0%	5%	0%	25%	0%	0%	33%	0%	20%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	67.0	67.0		67.0	67.0		29.0	29.0			29.0	
Effective Green, g (s)	67.0	67.0		67.0	67.0		29.0	29.0			29.0	
Actuated g/C Ratio	0.61	0.61		0.61	0.61		0.26	0.26			0.26	
Clearance Time (s)	6.9	6.9		6.9	6.9		7.1	7.1			7.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	297	1003		63	1011		272	383			294	
v/s Ratio Prot		c0.71			0.42			0.00				
v/s Ratio Perm	0.03			0.15			0.00				c0.01	
v/c Ratio	0.06	1.17		0.25	0.69		0.02	0.00			0.02	
Uniform Delay, d1	8.7	21.5		9.9	14.5		30.0	29.8			30.0	
Progression Factor	1.00	1.00		0.83	0.75		1.00	1.00			1.00	
Incremental Delay, d2	0.4	88.2		7.3	2.9		0.1	0.0			0.2	
Delay (s)	9.1	109.7		15.5	13.8		30.1	29.8			30.2	
Level of Service	A	F		B	B		C	C			C	
Approach Delay (s)		108.2			13.8			30.0			30.2	
Approach LOS		F			B			C			C	

Intersection Summary				
HCM 2000 Control Delay	72.2	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	0.82			
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0	
Intersection Capacity Utilization	97.8%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	17	1176	16	696	5	3	27
v/c Ratio	0.06	1.17	0.25	0.69	0.02	0.01	0.08
Control Delay	9.4	111.1	17.8	14.2	30.4	0.0	6.8
Queue Delay	0.0	0.6	0.0	0.0	0.0	0.0	0.0
Total Delay	9.4	111.7	17.8	14.3	30.4	0.0	6.8
Queue Length 50th (m)	1.5	~318.9	1.1	47.8	0.9	0.0	0.0
Queue Length 95th (m)	4.6	#402.0	m1.6	57.5	3.9	0.0	5.0
Internal Link Dist (m)		241.0		207.8		51.5	194.5
Turn Bay Length (m)	40.0		40.0				
Base Capacity (vph)	298	1004	63	1012	273	446	323
Starvation Cap Reductn	0	5	0	7	0	0	0
Spillback Cap Reductn	0	111	0	0	0	0	2
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	1.32	0.25	0.69	0.02	0.01	0.08

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	24.5	24.5		24.5	24.5		34.5	34.5		34.5	34.5	
Total Split (s)	75.5	75.5		75.5	75.5		34.5	34.5		34.5	34.5	
Total Split (%)	68.6%	68.6%		68.6%	68.6%		31.4%	31.4%		31.4%	31.4%	
Maximum Green (s)	69.0	69.0		69.0	69.0		28.0	28.0		28.0	28.0	
Yellow Time (s)	4.1	4.1		4.1	4.1		4.1	4.1		4.1	4.1	
All-Red Time (s)	2.4	2.4		2.4	2.4		2.4	2.4		2.4	2.4	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.5			6.5			6.5			6.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		Max	Max		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		18.0	18.0		18.0	18.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		69.0			69.0			28.0			28.0	
Actuated g/C Ratio		0.63			0.63			0.25			0.25	
v/c Ratio		1.10			0.66			0.01			0.09	
Control Delay		60.6			17.0			0.0			10.1	
Queue Delay		0.2			0.0			0.0			0.0	
Total Delay		60.8			17.0			0.0			10.1	
LOS		E			B			A			B	
Approach Delay		60.8			17.0						10.1	
Approach LOS		E			B						B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green			
Natural Cycle: 130			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.10			
Intersection Signal Delay: 43.4		Intersection LOS: D	
Intersection Capacity Utilization 85.2%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 3: Royal Manor Drive & Regional Road 20



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	1026	0	1	633	5	1	0	4	3	0	27
Future Volume (vph)	11	1026	0	1	633	5	1	0	4	3	0	27
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00							
Frt					0.999			0.892			0.878	
Flt Protected		0.999						0.990			0.995	
Satd. Flow (prot)	0	1648	0	0	1665	0	0	1545	0	0	1390	0
Flt Permitted		0.991			0.999			0.975			0.986	
Satd. Flow (perm)	0	1635	0	0	1664	0	0	1522	0	0	1378	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					1			35			35	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		231.8			321.7			58.1			98.8	
Travel Time (s)		16.7			23.2			4.2			7.1	
Confl. Peds. (#/hr)	2		11	11		2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	14%	6%	0%	0%	5%	0%	0%	0%	0%	0%	0%	11%
Adj. Flow (vph)	12	1115	0	1	688	5	1	0	4	3	0	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1127	0	0	694	0	0	5	0	0	32	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			0.0			0.0	
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	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	1026	0	1	633	5	1	0	4	3	0	27
Future Volume (vph)	11	1026	0	1	633	5	1	0	4	3	0	27
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		6.5			6.5			6.5			6.5	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		1.00			1.00			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		1.00			1.00			0.89			0.88	
Flt Protected		1.00			1.00			0.99			1.00	
Satd. Flow (prot)		1649			1665			1546			1390	
Flt Permitted		0.99			1.00			0.97			0.99	
Satd. Flow (perm)		1635			1664			1522			1377	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	1115	0	1	688	5	1	0	4	3	0	29
RTOR Reduction (vph)	0	0	0	0	0	0	0	4	0	0	24	0
Lane Group Flow (vph)	0	1127	0	0	694	0	0	1	0	0	8	0
Confl. Peds. (#/hr)	2		11	11		2						
Heavy Vehicles (%)	14%	6%	0%	0%	5%	0%	0%	0%	0%	0%	0%	11%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		69.0			69.0			28.0			28.0	
Effective Green, g (s)		69.0			69.0			28.0			28.0	
Actuated g/C Ratio		0.63			0.63			0.25			0.25	
Clearance Time (s)		6.5			6.5			6.5			6.5	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1025			1043			387			350	
v/s Ratio Prot												
v/s Ratio Perm		c0.69			0.42			0.00			c0.01	
v/c Ratio		1.10			0.67			0.00			0.02	
Uniform Delay, d1		20.5			13.1			30.6			30.7	
Progression Factor		0.49			1.07			1.00			1.00	
Incremental Delay, d2		46.5			2.4			0.0			0.1	
Delay (s)		56.5			16.4			30.6			30.9	
Level of Service		E			B			C			C	
Approach Delay (s)		56.5			16.4			30.6			30.9	
Approach LOS		E			B			C			C	

Intersection Summary			
HCM 2000 Control Delay	41.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	85.2%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	1127	694	5	32
v/c Ratio	1.10	0.66	0.01	0.09
Control Delay	60.6	17.0	0.0	10.1
Queue Delay	0.2	0.0	0.0	0.0
Total Delay	60.8	17.0	0.0	10.1
Queue Length 50th (m)	~284.5	94.2	0.0	0.0
Queue Length 95th (m)	m53.8	m118.1	0.0	7.3
Internal Link Dist (m)	207.8	297.7	34.1	74.8
Turn Bay Length (m)				
Base Capacity (vph)	1025	1044	413	376
Starvation Cap Reductn	10	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.11	0.66	0.01	0.09

Intersection Summary
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	796	25	8	692	4	19	3	28	0	1	16
Future Volume (Veh/h)	5	796	25	8	692	4	19	3	28	0	1	16
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	865	27	9	752	4	21	3	30	0	1	17
Pedestrians		2			2			12			5	
Lane Width (m)		3.6			3.6			3.6			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			1			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		322			221							
pX, platoon unblocked	0.68			0.43			0.59	0.59	0.43	0.59	0.59	0.68
vC, conflicting volume	761			904			1692	1680	892	1699	1691	761
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	410			110			598	577	83	610	596	410
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			91	99	93	100	100	96
cM capacity (veh/h)	783			634			227	245	416	215	239	435

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	897	765	54	18
Volume Left	5	9	21	0
Volume Right	27	4	30	17
cSH	783	634	305	416
Volume to Capacity	0.01	0.01	0.18	0.04
Queue Length 95th (m)	0.2	0.3	5.1	1.1
Control Delay (s)	0.2	0.4	19.3	14.0
Lane LOS	A	A	C	B
Approach Delay (s)	0.2	0.4	19.3	14.0
Approach LOS			C	B

Intersection Summary					
Average Delay	1.0				
Intersection Capacity Utilization	67.3%	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)	5	796	25	8	692	4	19	3	28	0	1	16
Future Volume (vph)	5	796	25	8	692	4	19	3	28	0	1	16
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.996			0.999			0.925			0.872	
Flt Protected					0.999			0.981				
Satd. Flow (prot)	0	1710	0	0	1696	0	0	1588	0	0	1526	0
Flt Permitted					0.999			0.981				
Satd. Flow (perm)	0	1710	0	0	1696	0	0	1588	0	0	1526	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		321.7			111.0			229.0			196.7	
Travel Time (s)		23.2			8.0			16.5			14.2	
Confl. Peds. (#/hr)	5		12	12		5	2		2	2		2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	5	865	27	9	752	4	21	3	30	0	1	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	897	0	0	765	0	0	54	0	0	18	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			15.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary					
Area Type:	Other				
Control Type: Unsignalized					
Intersection Capacity Utilization	67.3%		ICU Level of Service C		
Analysis Period (min)	15				

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	840	701	4	4	8
Future Volume (Veh/h)	1	840	701	4	4	8
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)	1	913	762	4	4	9
Pedestrians					5	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			110			
pX, platoon unblocked	0.62				0.62	0.62
vC, conflicting volume	771				1684	769
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	330				1795	326
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				93	98
cM capacity (veh/h)	770				55	446

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	914	766	13
Volume Left	1	0	4
Volume Right	0	4	9
cSH	770	1700	141
Volume to Capacity	0.00	0.45	0.09
Queue Length 95th (m)	0.0	0.0	2.4
Control Delay (s)	0.0	0.0	33.2
Lane LOS	A		D
Approach Delay (s)	0.0	0.0	33.2
Approach LOS			D

Intersection Summary			
Average Delay		0.3	
Intersection Capacity Utilization		58.9%	ICU Level of Service B
Analysis Period (min)		15	

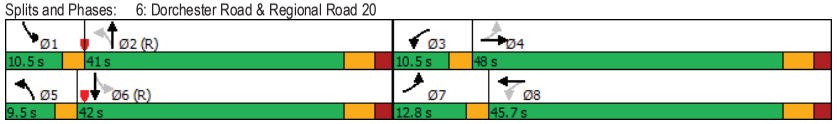
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	1	840	701	4	4	8
Future Volume (vph)	1	840	701	4	4	8
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.999		0.907	
Flt Protected					0.985	
Satd. Flow (prot)	0	1733	1698	0	1563	0
Flt Permitted					0.985	
Satd. Flow (perm)	0	1733	1698	0	1563	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		111.0	109.8		191.2	
Travel Time (s)		8.0	7.9		13.8	
Confl. Peds. (#/hr)	5			5		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	3%	0%	0%	0%
Adj. Flow (vph)	1	913	762	4	4	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	914	766	0	13	0
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	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 58.9%			ICU Level of Service B
Analysis Period (min) 15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0		3.0	8.0		6.0	8.0	
Minimum Split (s)	10.5	36.5		10.5	36.5		9.5	40.5		10.5	40.5	
Total Split (s)	12.8	48.0		10.5	45.7		9.5	41.0		10.5	42.0	
Total Split (%)	11.6%	43.6%		9.5%	41.5%		8.6%	37.3%		9.5%	38.2%	
Maximum Green (s)	9.8	41.5		7.5	39.2		6.5	34.5		7.5	35.5	
Yellow Time (s)	3.0	4.1		3.0	4.1		3.0	4.1		3.0	4.1	
All-Red Time (s)	0.0	2.4		0.0	2.4		0.0	2.4		0.0	2.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	6.5		3.0	6.5		3.0	6.5		3.0	6.5	
Lead/Lag	Lead	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	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Walk Time (s)		12.0			12.0			15.0			15.0	
Flash Dont Walk (s)		13.0			13.0			19.0			19.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	55.0	43.7		49.9	39.2		44.7	34.7		46.3	35.5	
Actuated g/C Ratio	0.50	0.40		0.45	0.36		0.41	0.32		0.42	0.32	
v/c Ratio	0.75	1.50		0.43	0.93		0.74	0.91		0.49	0.73	
Control Delay	37.7	263.4		22.4	58.0		39.9	59.4		26.7	41.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	37.7	263.4		22.4	58.0		39.9	59.4		26.7	41.4	
LOS	D	F		C	E		D	E		C	D	
Approach Delay		224.6			53.6			53.5			38.4	
Approach LOS		F			D			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 60 (55%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.50			
Intersection Signal Delay: 117.8		Intersection LOS: F	
Intersection Capacity Utilization 114.7%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 6: Dorchester Road & Regional Road 20



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	181	643	229	68	363	125	193	357	84	92	302	59
Future Volume (vph)	181	643	229	68	363	125	193	357	84	92	302	59
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	40.0		40.0	45.0		45.0	50.0		0.0	30.0		0.0
Storage Lanes	1		0	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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99			0.99		1.00	0.99		1.00	1.00	
Frt		0.961			0.962			0.972			0.976	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1568	1562	0	1630	1568	0	1630	1638	0	1539	1651	0
Flt Permitted	0.185			0.101			0.319			0.183		
Satd. Flow (perm)	305	1562	0	173	1568	0	545	1638	0	295	1651	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		19			18			11			9	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		109.8			114.2			162.1			187.2	
Travel Time (s)		7.9			8.2			11.7			13.5	
Confl. Peds. (#/hr)	5		15	15		5	5		8	8		5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	7%	4%	2%	7%	5%	2%	3%	4%	8%	3%	3%
Adj. Flow (vph)	197	699	249	74	395	136	210	388	91	100	328	64
Shared Lane Traffic (%)												
Lane Group Flow (vph)	197	948	0	74	531	0	210	479	0	100	392	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	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

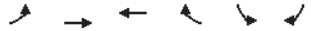
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	181	643	229	68	363	125	193	357	84	92	302	59
Future Volume (vph)	181	643	229	68	363	125	193	357	84	92	302	59
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	6.5		3.0	6.5		3.0	6.5		3.0	6.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.96		1.00	0.97		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)	1568	1561		1630	1568		1628	1637		1538	1650	
Flt Permitted	0.18	1.00		0.10	1.00		0.32	1.00		0.18	1.00	
Satd. Flow (perm)	305	1561		172	1568		546	1637		297	1650	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	197	699	249	74	395	136	210	388	91	100	328	64
RTOR Reduction (vph)	0	11	0	0	11	0	0	8	0	0	6	0
Lane Group Flow (vph)	197	937	0	74	520	0	210	471	0	100	386	0
Confl. Peds. (#/hr)	5		15	15		5	5		8	8		5
Heavy Vehicles (%)	6%	7%	4%	2%	7%	5%	2%	3%	4%	8%	3%	3%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	52.6	43.7		45.7	39.8		40.6	34.1		42.2	34.9	
Effective Green, g (s)	52.6	43.7		45.7	39.8		40.6	34.1		42.2	34.9	
Actuated g/C Ratio	0.48	0.40		0.42	0.36		0.37	0.31		0.38	0.32	
Clearance Time (s)	3.0	6.5		3.0	6.5		3.0	6.5		3.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	258	620		149	567		265	507		196	523	
v/s Ratio Prot	c0.07	c0.60		0.03	0.33		c0.05	c0.29		c0.03	0.23	
v/s Ratio Perm	0.30			0.18			0.25			0.16		
v/c Ratio	0.76	1.51		0.50	0.92		0.79	0.93		0.51	0.74	
Uniform Delay, d1	21.2	33.1		25.8	33.5		30.8	36.8		24.8	33.5	
Progression Factor	1.67	1.41		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.1	234.3		2.6	19.6		14.9	25.9		2.2	9.0	
Delay (s)	42.5	281.1		28.4	53.1		45.7	62.6		27.1	42.5	
Level of Service	D	F		C	D		D	E		C	D	
Approach Delay (s)		240.0			50.1			57.5			39.3	
Approach LOS		F			D			E			D	

Intersection Summary				
HCM 2000 Control Delay	124.2	HCM 2000 Level of Service	F	
HCM 2000 Volume to Capacity ratio	1.19			
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	19.0	
Intersection Capacity Utilization	114.7%	ICU Level of Service	H	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	197	948	74	531	210	479	100	392
v/c Ratio	0.75	1.50	0.43	0.93	0.74	0.91	0.49	0.73
Control Delay	37.7	263.4	22.4	58.0	39.9	59.4	26.7	41.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.7	263.4	22.4	58.0	39.9	59.4	26.7	41.4
Queue Length 50th (m)	37.6	~301.9	8.4	111.3	29.8	102.0	13.2	76.4
Queue Length 95th (m)	m40.3	m#291.5	16.5	#180.9	#54.7	#167.0	24.4	113.4
Internal Link Dist (m)		85.8		90.2		138.1		163.2
Turn Bay Length (m)	40.0		45.0		50.0		30.0	
Base Capacity (vph)	265	631	178	571	285	524	209	538
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	0.74	1.50	0.42	0.93	0.74	0.91	0.48	0.73

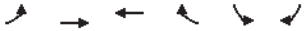
Intersection Summary
~ Volume exceeds capacity, queue is theoretically infinite. Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	736	609	4	0	3
Future Volume (Veh/h)	0	736	609	4	0	3
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	800	662	4	0	3
Pedestrians					7	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		114				
pX, platoon unblocked					0.60	
vC, conflicting volume	673				1471	671
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	673				1452	671
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	922				87	457

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	800	666	3
Volume Left	0	0	0
Volume Right	0	4	3
cSH	922	1700	457
Volume to Capacity	0.00	0.39	0.01
Queue Length 95th (m)	0.0	0.0	0.2
Control Delay (s)	0.0	0.0	12.9
Lane LOS			B
Approach Delay (s)	0.0	0.0	12.9
Approach LOS			B

Intersection Summary				
Average Delay			0.0	
Intersection Capacity Utilization			52.1%	ICU Level of Service A
Analysis Period (min)			15	



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	736	609	4	0	3
Future Volume (vph)	0	736	609	4	0	3
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.999		0.865	
Flt Protected						
Satd. Flow (prot)	0	1716	1711	0	1514	0
Flt Permitted						
Satd. Flow (perm)	0	1716	1711	0	1514	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		114.2	50.1		180.5	
Travel Time (s)		8.2	3.6		13.0	
Confl. Peds. (#/hr)	7			7		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	33%	0%	0%
Adj. Flow (vph)	0	800	662	4	0	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	800	666	0	3	0
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	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 52.1%		ICU Level of Service A	
Analysis Period (min) 15			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	716	12	9	588	8	16
Future Volume (Veh/h)	716	12	9	588	8	16
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)	778	13	10	639	9	17
Pedestrians				1	12	
Lane Width (m)				3.6	3.6	
Walking Speed (m/s)				1.2	1.2	
Percent Blockage				0	1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	164					
pX, platoon unblocked			0.62		0.62	0.62
vC, conflicting volume			803		1456	798
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			377		1428	368
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		90	96
cM capacity (veh/h)			733		91	419

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	791	649	26
Volume Left	0	10	9
Volume Right	13	0	17
cSH	1700	733	186
Volume to Capacity	0.47	0.01	0.14
Queue Length 95th (m)	0.0	0.3	3.8
Control Delay (s)	0.0	0.4	27.4
Lane LOS		A	D
Approach Delay (s)	0.0	0.4	27.4
Approach LOS			D

Intersection Summary			
Average Delay		0.6	
Intersection Capacity Utilization		52.1%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	716	12	9	588	8	16
Future Volume (vph)	716	12	9	588	8	16
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.998				0.912	
Flt Protected				0.999	0.983	
Satd. Flow (prot)	1713	0	0	1698	1569	0
Flt Permitted				0.999	0.983	
Satd. Flow (perm)	1713	0	0	1698	1569	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	50.1			206.3	147.1	
Travel Time (s)	3.6			14.9	10.6	
Confl. Peds. (#/hr)		12	12			1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	0%	3%	0%	0%
Adj. Flow (vph)	778	13	10	639	9	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	791	0	0	649	26	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	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	52.1%	ICU Level of Service A	
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	696	17	33	584	12	23	9	53	8	8	24
Future Volume (Veh/h)	8	696	17	33	584	12	23	9	53	8	8	24
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	757	18	36	635	13	25	10	58	9	9	26
Pedestrians								12			3	
Lane Width (m)								3.6			3.6	
Walking Speed (m/s)								1.2			1.2	
Percent Blockage								1			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		371			302							
pX, platoon unblocked	0.87			0.65			0.72	0.72	0.65	0.72	0.72	0.87
vC, conflicting volume	651			787			1540	1519	778	1564	1522	644
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	520			406			1136	1107	392	1169	1110	512
tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	3.4
p0 queue free %	99			95			76	93	86	91	94	94
cM capacity (veh/h)	913			737			106	142	422	95	141	469

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	784	684	93	44
Volume Left	9	36	25	9
Volume Right	18	13	58	26
cSH	913	737	210	206
Volume to Capacity	0.01	0.05	0.44	0.21
Queue Length 95th (m)	0.2	1.2	16.7	6.3
Control Delay (s)	0.3	1.3	35.2	27.2
Lane LOS	A	A	E	D
Approach Delay (s)	0.3	1.3	35.2	27.2
Approach LOS			E	D

Intersection Summary					
Average Delay	3.5				
Intersection Capacity Utilization	71.3%	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)	8	696	17	33	584	12	23	9	53	8	8	24
Future Volume (vph)	8	696	17	33	584	12	23	9	53	8	8	24
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.997			0.997			0.916			0.920	
Flt Protected		0.999			0.997			0.987			0.990	
Satd. Flow (prot)	0	1707	0	0	1696	0	0	1525	0	0	1488	0
Flt Permitted		0.999			0.997			0.987			0.990	
Satd. Flow (perm)	0	1707	0	0	1696	0	0	1525	0	0	1488	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		206.3			78.8			169.0			191.8	
Travel Time (s)		14.9			5.7			12.2			13.8	
Confl. Peds. (#/hr)	3		12	12		3						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	8%	4%	2%	25%	7%	0%	3%	0%	0%	12%
Adj. Flow (vph)	9	757	18	36	635	13	25	10	58	9	9	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	784	0	0	684	0	0	93	0	0	44	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary					
Area Type:	Other				
Control Type: Unsignalized					
Intersection Capacity Utilization	71.3%	ICU Level of Service C			
Analysis Period (min)	15				

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	24	725	605	12	13	27
Future Volume (Veh/h)	24	725	605	12	13	27
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)	26	788	658	13	14	29
Pedestrians		2			3	
Lane Width (m)		3.6			3.6	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			223			
pX, platoon unblocked	0.85				0.85	0.85
vC, conflicting volume	674				1508	670
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	523				1509	518
tC, single (s)	4.2				6.6	6.3
tC, 2 stage (s)						
tF (s)	2.3				3.7	3.4
p0 queue free %	97				86	94
cM capacity (veh/h)	863				98	455

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	814	671	43
Volume Left	26	0	14
Volume Right	0	13	29
cSH	863	1700	208
Volume to Capacity	0.03	0.39	0.21
Queue Length 95th (m)	0.7	0.0	6.0
Control Delay (s)	0.8	0.0	26.8
Lane LOS	A		D
Approach Delay (s)	0.8	0.0	26.8
Approach LOS			D

Intersection Summary			
Average Delay		1.2	
Intersection Capacity Utilization		73.1%	ICU Level of Service D
Analysis Period (min)		15	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	24	725	605	12	13	27
Future Volume (vph)	24	725	605	12	13	27
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.997		0.909	
Flt Protected		0.998			0.984	
Satd. Flow (prot)	0	1710	1703	0	1366	0
Flt Permitted		0.998			0.984	
Satd. Flow (perm)	0	1710	1703	0	1366	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		78.8	68.0		182.2	
Travel Time (s)		5.7	4.9		13.1	
Confl. Peds. (#/hr)	3			3		2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	2%	2%	25%	22%	11%
Adj. Flow (vph)	26	788	658	13	14	29
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	814	671	0	43	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		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	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	73.1%	ICU Level of Service D	
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	701	41	35	640	28	41
Future Volume (Veh/h)	701	41	35	640	28	41
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)	762	45	38	696	30	45
Pedestrians	1				11	
Lane Width (m)	3.6				3.6	
Walking Speed (m/s)	1.2				1.2	
Percent Blockage	0				1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				155		
pX, platoon unblocked					0.82	
vC, conflicting volume			818		1568	796
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			818		1584	796
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			95		67	88
cM capacity (veh/h)			794		91	381

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	807	734	75
Volume Left	0	38	30
Volume Right	45	0	45
cSH	1700	794	167
Volume to Capacity	0.47	0.05	0.45
Queue Length 95th (m)	0.0	1.2	16.6
Control Delay (s)	0.0	1.3	43.1
Lane LOS		A	E
Approach Delay (s)	0.0	1.3	43.1
Approach LOS			E

Intersection Summary			
Average Delay		2.6	
Intersection Capacity Utilization		78.7%	ICU Level of Service D
Analysis Period (min)		15	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	701	41	35	640	28	41
Future Volume (vph)	701	41	35	640	28	41
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.992				0.919	
Flt Protected				0.997	0.980	
Satd. Flow (prot)	1697	0	0	1693	1510	0
Flt Permitted				0.997	0.980	
Satd. Flow (perm)	1697	0	0	1693	1510	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	68.0			55.0	165.0	
Travel Time (s)	4.9			4.0	11.9	
Confl. Peds. (#/hr)		11	11		1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	7%	4%	3%	5%	4%
Adj. Flow (vph)	762	45	38	696	30	45
Shared Lane Traffic (%)						
Lane Group Flow (vph)	807	0	0	734	75	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	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	78.7%	ICU Level of Service D	
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	9	747	660	9	5	15
Future Volume (Veh/h)	9	747	660	9	5	15
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)	10	812	717	10	5	16
Pedestrians		1			8	
Lane Width (m)		3.6			3.6	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			100			
pX, platoon unblocked	0.81				0.81	0.81
vC, conflicting volume	735				1562	731
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	561				1576	556
tC, single (s)	4.1				6.4	6.3
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.4
p0 queue free %	99				95	96
cM capacity (veh/h)	826				98	417

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	822	727	21
Volume Left	10	0	5
Volume Right	0	10	16
cSH	826	1700	234
Volume to Capacity	0.01	0.43	0.09
Queue Length 95th (m)	0.3	0.0	2.3
Control Delay (s)	0.3	0.0	21.9
Lane LOS	A		C
Approach Delay (s)	0.3	0.0	21.9
Approach LOS			C

Intersection Summary			
Average Delay		0.5	
Intersection Capacity Utilization		60.8%	ICU Level of Service B
Analysis Period (min)		15	

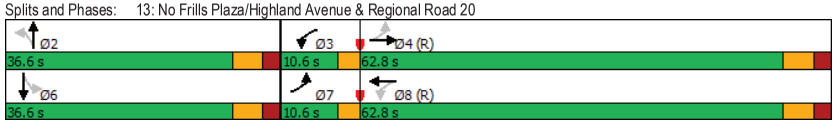
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	9	747	660	9	5	15
Future Volume (vph)	9	747	660	9	5	15
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.998		0.897	
Flt Protected		0.999			0.988	
Satd. Flow (prot)	0	1714	1713	0	1441	0
Flt Permitted		0.999			0.988	
Satd. Flow (perm)	0	1714	1713	0	1441	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		55.0	100.4		189.4	
Travel Time (s)		4.0	7.2		13.6	
Confl. Peds. (#/hr)	8			8		1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	0%	0%	10%
Adj. Flow (vph)	10	812	717	10	5	16
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	822	727	0	21	0
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	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 60.8%			ICU Level of Service B
Analysis Period (min) 15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	8.0		6.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.5	35.5		10.5	35.5		36.5	36.5		36.5	36.5	
Total Split (s)	10.6	62.8		10.6	62.8		36.6	36.6		36.6	36.6	
Total Split (%)	9.6%	57.1%		9.6%	57.1%		33.3%	33.3%		33.3%	33.3%	
Maximum Green (s)	7.6	56.3		7.6	56.3		30.1	30.1		30.1	30.1	
Yellow Time (s)	3.0	4.1		3.0	4.1		4.1	4.1		4.1	4.1	
All-Red Time (s)	0.0	2.4		0.0	2.4		2.4	2.4		2.4	2.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)	3.0	6.5		3.0	6.5		6.5	6.5			6.5	
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	
Recall Mode	None	C-Max		None	C-Max		Max	Max		Max	Max	
Walk Time (s)		11.0			11.0		11.0	11.0		11.0	11.0	
Flash Dont Walk (s)		18.0			18.0		19.0	19.0		19.0	19.0	
Pedestrian Calls (#/hr)		0			0		0	0		0	0	
Act Effct Green (s)	68.2	61.0		69.5	63.2		30.1	30.1			30.1	
Actuated g/C Ratio	0.62	0.55		0.63	0.57		0.27	0.27			0.27	
v/c Ratio	0.03	0.74		0.10	0.52		0.09	0.07			0.18	
Control Delay	7.4	25.9		8.0	17.6		30.7	15.2			26.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	7.4	25.9		8.0	17.6		30.7	15.2			26.2	
LOS	A	C		A	B		C	B			C	
Approach Delay		25.5			16.9			22.8			26.2	
Approach LOS		C			B			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 6 (5%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 22.1		Intersection LOS: C	
Intersection Capacity Utilization 72.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 13: No Frills Plaza/Highland Avenue & Regional Road 20



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	613	23	31	446	13	27	7	20	27	24	16
Future Volume (vph)	12	613	23	31	446	13	27	7	20	27	24	16
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	35.0		0.0	35.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	0		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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00	1.00		1.00	0.98			0.99	
Frt		0.995			0.996			0.890			0.968	
Flt Protected	0.950			0.950			0.950				0.980	
Satd. Flow (prot)	1662	1674	0	1662	1661	0	1662	1522	0	0	1587	0
Flt Permitted	0.396			0.229			0.710				0.889	
Satd. Flow (perm)	689	1674	0	400	1661	0	1238	1522	0	0	1434	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			2			22			14	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		100.4			342.8			50.5			193.9	
Travel Time (s)		7.2			24.7			3.6			14.0	
Confl. Peds. (#/hr)	9		8	8		9	2		6	6		2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	4%	0%	0%	5%	0%	0%	0%	0%	0%	0%	17%
Adj. Flow (vph)	13	666	25	34	485	14	29	8	22	29	26	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	13	691	0	34	499	0	29	30	0	0	72	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	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	613	23	31	446	13	27	7	20	27	24	16
Future Volume (vph)	12	613	23	31	446	13	27	7	20	27	24	16
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	6.5		3.0	6.5		6.5	6.5			6.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.89			0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.98	
Satd. Flow (prot)	1658	1674		1662	1660		1657	1522			1581	
Flt Permitted	0.40	1.00		0.23	1.00		0.71	1.00			0.89	
Satd. Flow (perm)	691	1674		401	1660		1239	1522			1434	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	13	666	25	34	485	14	29	8	22	29	26	17
RTOR Reduction (vph)	0	1	0	0	1	0	0	16	0	0	10	0
Lane Group Flow (vph)	13	690	0	34	498	0	29	14	0	0	62	0
Confl. Peds. (#/hr)	9		8	8		9	2		6	6		2
Heavy Vehicles (%)	0%	4%	0%	0%	5%	0%	0%	0%	0%	0%	0%	17%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	62.3	59.8		65.5	61.4		30.1	30.1			30.1	
Effective Green, g (s)	62.3	59.8		65.5	61.4		30.1	30.1			30.1	
Actuated g/C Ratio	0.57	0.54		0.60	0.56		0.27	0.27			0.27	
Clearance Time (s)	3.0	6.5		3.0	6.5		6.5	6.5			6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	413	910		285	926		339	416			392	
v/s Ratio Prot	0.00	c0.41		c0.00	0.30			0.01				
v/s Ratio Perm	0.02			0.07			0.02				c0.04	
v/c Ratio	0.03	0.76		0.12	0.54		0.09	0.03			0.16	
Uniform Delay, d1	10.9	19.5		12.5	15.3		29.7	29.3			30.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.0	5.9		0.2	2.2		0.5	0.2			0.9	
Delay (s)	11.0	25.4		12.7	17.6		30.2	29.4			31.2	
Level of Service	B	C		B	B		C	C			C	
Approach Delay (s)		25.1			17.3			29.8			31.2	
Approach LOS		C			B			C			C	

Intersection Summary				
HCM 2000 Control Delay	22.6	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.54			
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	72.4%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	13	691	34	499	29	30	72
v/c Ratio	0.03	0.74	0.10	0.52	0.09	0.07	0.18
Control Delay	7.4	25.9	8.0	17.6	30.7	15.2	26.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.4	25.9	8.0	17.6	30.7	15.2	26.2
Queue Length 50th (m)	1.0	120.7	2.6	58.5	4.9	1.3	10.0
Queue Length 95th (m)	3.2	179.2	6.3	106.8	12.6	8.8	22.1
Internal Link Dist (m)		76.4		318.8		26.5	169.9
Turn Bay Length (m)	35.0		35.0				
Base Capacity (vph)	500	929	341	955	338	432	402
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.74	0.10	0.52	0.09	0.07	0.18

Intersection Summary

Intersection: 4: Brookfield Avenue & Regional Road 20

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	186.0	78.6	81.6	11.7
Average Queue (m)	72.0	8.6	37.7	3.8
95th Queue (m)	202.5	46.8	86.3	11.4
Link Distance (m)	283.8	95.6	220.5	187.6
Upstream Blk Time (%)	0	0		
Queuing Penalty (veh)	1	1		
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 5: Regional Road 20 & Mouland Avenue

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (m)	100.5	5.4	31.9
Average Queue (m)	96.1	0.2	15.6
95th Queue (m)	110.7	2.8	47.7
Link Distance (m)	95.6	89.2	180.9
Upstream Blk Time (%)	30		
Queuing Penalty (veh)	246		
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 6: Dorchester Road & Regional Road 20

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (m)	47.4	93.7	52.3	100.0	57.4	159.8	37.4	126.4
Average Queue (m)	35.4	91.9	25.4	85.6	47.0	103.1	22.1	66.0
95th Queue (m)	58.3	93.4	56.8	114.8	71.9	169.1	41.1	111.5
Link Distance (m)		89.2		97.1		151.7		176.8
Upstream Blk Time (%)		43		11		9		
Queuing Penalty (veh)		363		68		0		
Storage Bay Dist (m)	40.0		45.0		50.0		30.0	
Storage Blk Time (%)	4	56		36	7	32	4	34
Queuing Penalty (veh)	33	102		25	32	61	14	31

Intersection: 1: Montrose Road (RR98) & Regional Road 20

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	T	R
Maximum Queue (m)	62.4	255.5	42.4	191.3	42.5	52.4	238.0	66.9	68.0	42.4
Average Queue (m)	57.5	234.7	23.8	108.2	17.3	22.4	135.1	29.0	30.8	19.8
95th Queue (m)	75.9	284.6	47.7	203.7	50.2	56.3	236.0	54.9	55.2	35.5
Link Distance (m)		237.6		237.1			332.6		313.3	
Upstream Blk Time (%)		46		2						
Queuing Penalty (veh)		0		13						
Storage Bay Dist (m)	55.0		35.0		35.0	45.0		80.0		70.0
Storage Blk Time (%)	25	33	2	40	0	0	51	0	0	
Queuing Penalty (veh)	146	115	8	73	1	0	27	2	0	

Intersection: 2: Niagara Falls Inn Driveway/Belmont Avenue & Regional Road 20

Movement	EB	EB	WB	WB	NB	NB	SB
Directions Served	L	TR	L	TR	L	TR	LTR
Maximum Queue (m)	47.3	239.8	31.6	107.6	13.1	7.3	23.2
Average Queue (m)	5.8	191.2	5.2	49.5	1.2	0.4	7.0
95th Queue (m)	25.7	241.3	18.5	103.0	6.9	3.3	19.9
Link Distance (m)		237.1		212.9	65.1	65.1	208.3
Upstream Blk Time (%)		0		0			
Queuing Penalty (veh)		3		0			
Storage Bay Dist (m)	40.0		40.0				
Storage Blk Time (%)		40		18			
Queuing Penalty (veh)		6		3			

Intersection: 3: Royal Manor Drive & Regional Road 20

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	174.6	109.7	9.1	22.1
Average Queue (m)	84.4	53.6	0.8	5.3
95th Queue (m)	139.9	92.1	4.8	15.2
Link Distance (m)	212.9	283.8	47.9	88.5
Upstream Blk Time (%)	0			
Queuing Penalty (veh)	1			
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 10: Regional Road 20 & Byng Avenue

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (m)	52.4	4.4	23.1
Average Queue (m)	6.8	0.1	9.2
95th Queue (m)	31.1	2.4	19.3
Link Distance (m)	63.4	47.9	173.6
Upstream Blk Time (%)	0		
Queuing Penalty (veh)	2		
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 11: Franklin Avenue & Regional Road 20

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (m)	11.8	38.4	25.0
Average Queue (m)	0.8	8.6	12.0
95th Queue (m)	6.8	27.2	22.4
Link Distance (m)	47.9	41.2	156.1
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		3	
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 12: Regional Road 20 & Glenholme Avenue

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (m)	39.3	19.1	19.4
Average Queue (m)	8.7	1.0	4.7
95th Queue (m)	29.6	11.9	14.2
Link Distance (m)	41.2	80.1	179.2
Upstream Blk Time (%)	0		
Queuing Penalty (veh)	2		
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 7: Regional Road 20 & Depew Avenue

Movement	WB	SB
Directions Served	TR	LR
Maximum Queue (m)	37.5	8.6
Average Queue (m)	13.5	0.8
95th Queue (m)	37.6	4.9
Link Distance (m)	30.5	170.2
Upstream Blk Time (%)	6	
Queuing Penalty (veh)	39	
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 8: Corwin Avenue & Regional Road 20

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (m)	1.8	59.2	14.5
Average Queue (m)	0.1	10.5	5.3
95th Queue (m)	1.3	43.0	13.5
Link Distance (m)	30.5	191.1	138.6
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 9: Calton Avenue/Prince Edward Avenue & Regional Road 20

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	36.9	43.4	27.0	15.9
Average Queue (m)	3.2	8.9	12.4	6.9
95th Queue (m)	18.4	31.2	22.7	16.1
Link Distance (m)	191.1	63.4	160.5	183.3
Upstream Blk Time (%)		0		
Queuing Penalty (veh)		0		
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	274	753	77	196	818	176	108	322	176	270	409	467
Future Volume (vph)	274	753	77	196	818	176	108	322	176	270	409	467
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	55.0		50.0	35.0		35.0	45.0		0.0	80.0		70.0
Storage Lanes	1		0	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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00				0.96	0.98	0.98				0.92
Frt		0.986				0.850		0.947				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1554	1642	0	1511	1651	1417	1583	1586	0	1599	1683	1390
Flt Permitted	0.069			0.073			0.236			0.105		
Satd. Flow (perm)	113	1642	0	116	1651	1366	384	1586	0	177	1683	1277
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5				105		20				220
Link Speed (k/h)		60			50			50			50	
Link Distance (m)		251.8			265.0			342.9			323.7	
Travel Time (s)		15.1			19.1			24.7			23.3	
Confl. Peds. (#/hr)	17		10	10		17	27		14	14		27
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	7%	4%	11%	10%	6%	5%	5%	4%	0%	4%	4%	7%
Adj. Flow (vph)	298	818	84	213	889	191	117	350	191	293	445	508
Shared Lane Traffic (%)												
Lane Group Flow (vph)	298	902	0	213	889	191	117	541	0	293	445	508
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	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	0.0
Detector 1 Queue (s)	0.0	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	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	

Intersection: 13: No Frills Plaza/Highland Avenue & Regional Road 20

Movement	EB	EB	WB	WB	NB	NB	SB
Directions Served	L	TR	L	TR	L	TR	LTR
Maximum Queue (m)	31.8	84.4	32.2	86.3	20.6	18.3	29.8
Average Queue (m)	3.5	65.3	8.0	42.5	5.3	5.1	11.5
95th Queue (m)	18.0	92.9	23.9	74.9	14.8	13.8	24.9
Link Distance (m)		80.1		332.4	40.0	40.0	183.6
Upstream Blk Time (%)		3					
Queuing Penalty (veh)		24					
Storage Bay Dist (m)	35.0		35.0				
Storage Blk Time (%)		23		10			
Queuing Penalty (veh)		3		3			

Network Summary

Network wide Queuing Penalty: 1450

Queues
2041 Alternative 1 - Two Lane
1: Montrose Road (RR98) & Regional Road 20
PM Peak Hour

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	298	902	213	889	191	117	541	293	445	508
v/c Ratio	1.48	1.27	1.31	1.32	0.31	0.62	1.27	1.49	0.88	0.95
Control Delay	271.3	167.8	208.3	189.5	13.3	44.4	178.4	271.6	65.5	54.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	271.3	167.8	208.3	189.5	13.3	44.4	178.4	271.6	65.5	54.3
Queue Length 50th (m)	~100.2	~319.9	~61.9	~321.9	15.1	21.1	~187.6	~97.6	119.2	89.3
Queue Length 95th (m)	#161.1	#402.1	#115.2	#402.9	33.8	35.6	#260.9	#157.3	#180.7	#164.7
Internal Link Dist (m)		227.8		241.0			318.9		299.7	
Turn Bay Length (m)	55.0		35.0		35.0	45.0		80.0		70.0
Base Capacity (vph)	201	708	162	672	618	188	426	197	503	536
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.48	1.27	1.31	1.32	0.31	0.62	1.27	1.49	0.88	0.95

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.

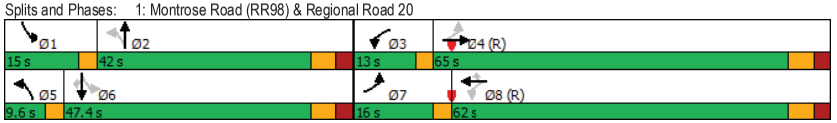
Lanes, Volumes, Timings
2041 Alternative 1 - Two Lane
1: Montrose Road (RR98) & Regional Road 20
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		6
Detector Phase	7	4		3	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0	10.0	3.0	8.0		6.0	8.0	8.0
Minimum Split (s)	10.5	35.0		10.5	35.0	35.0	9.5	36.0		10.5	36.0	36.0
Total Split (s)	16.0	65.0		13.0	62.0	62.0	9.6	42.0		15.0	47.4	47.4
Total Split (%)	11.9%	48.1%		9.6%	45.9%	45.9%	7.1%	31.1%		11.1%	35.1%	35.1%
Maximum Green (s)	13.0	58.0		10.0	55.0	55.0	6.6	35.0		12.0	40.4	40.4
Yellow Time (s)	3.0	4.1		3.0	4.1	4.1	3.0	4.1		3.0	4.1	4.1
All-Red Time (s)	0.0	2.9		0.0	2.9	2.9	0.0	2.9		0.0	2.9	2.9
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.0	7.0		3.0	7.0	7.0	3.0	7.0		3.0	7.0	7.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	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	3.0
Recall Mode	None	C-Max		None	C-Max	C-Max	None	Max		None	Max	Max
Walk Time (s)		10.0			10.0	10.0		11.0			11.0	11.0
Flash Dont Walk (s)		18.0			18.0	18.0		18.0			18.0	18.0
Pedestrian Calls (#/hr)		0			0	0		0			0	0
Act Effct Green (s)	75.0	58.0		69.0	55.0	55.0	45.6	35.0		54.0	40.4	40.4
Actuated g/C Ratio	0.56	0.43		0.51	0.41	0.41	0.34	0.26		0.40	0.30	0.30
v/c Ratio	1.48	1.27		1.31	1.32	0.31	0.62	1.27		1.49	0.88	0.95
Control Delay	271.3	167.8		208.3	189.5	13.3	44.4	178.4		271.6	65.5	54.3
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	271.3	167.8		208.3	189.5	13.3	44.4	178.4		271.6	65.5	54.3
LOS	F	F		F	F	B	D	F		F	E	D
Approach Delay		193.5			166.6			154.6			109.4	
Approach LOS		F			F			F			F	

Intersection Summary

Area Type:	Other		
Cycle Length: 135			
Actuated Cycle Length: 135			
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green			
Natural Cycle: 145			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.49			
Intersection Signal Delay: 155.9		Intersection LOS: F	
Intersection Capacity Utilization 128.3%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 1: Montrose Road (RR98) & Regional Road 20



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	1267	40	83	1308	29	64	1	84	28	4	16
Future Volume (vph)	17	1267	40	83	1308	29	64	1	84	28	4	16
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	40.0		0.0	40.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	0		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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00						0.98			1.00	
Frt		0.995			0.997			0.852			0.955	
Flt Protected	0.950			0.950			0.950				0.971	
Satd. Flow (prot)	1662	1645	0	1662	1663	0	1330	1459	0	0	1287	0
Flt Permitted	0.068			0.065			0.724				0.813	
Satd. Flow (perm)	119	1645	0	114	1663	0	1014	1459	0	0	1077	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			2			91			17	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		265.0			231.8			75.5			218.5	
Travel Time (s)		19.1			16.7			5.4			15.7	
Confl. Peds. (#/hr)			5	5					1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	6%	0%	0%	5%	0%	25%	0%	0%	33%	0%	20%
Adj. Flow (vph)	18	1377	43	90	1422	32	70	1	91	30	4	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	18	1420	0	90	1454	0	70	92	0	0	51	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	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	274	753	77	196	818	176	108	322	176	270	409	467
Future Volume (vph)	274	753	77	196	818	176	108	322	176	270	409	467
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	7.0		3.0	7.0	7.0	3.0	7.0		3.0	7.0	7.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.96	1.00	0.98		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1554	1642		1511	1651	1366	1576	1586		1599	1683	1277
Flt Permitted	0.07	1.00		0.07	1.00	1.00	0.24	1.00		0.11	1.00	1.00
Satd. Flow (perm)	113	1642		116	1651	1366	391	1586		177	1683	1277
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	298	818	84	213	889	191	117	350	191	293	445	508
RTOR Reduction (vph)	0	3	0	0	0	62	0	15	0	0	0	154
Lane Group Flow (vph)	298	899	0	213	889	129	117	526	0	293	445	354
Confl. Peds. (#/hr)	17		10	10		17	27		14	14		27
Heavy Vehicles (%)	7%	4%	11%	10%	6%	5%	5%	4%	0%	4%	4%	7%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	71.0	58.0		65.0	55.0	55.0	41.6	35.0		50.0	40.4	40.4
Effective Green, g (s)	71.0	58.0		65.0	55.0	55.0	41.6	35.0		50.0	40.4	40.4
Actuated g/C Ratio	0.53	0.43		0.48	0.41	0.41	0.31	0.26		0.37	0.30	0.30
Clearance Time (s)	3.0	7.0		3.0	7.0	7.0	3.0	7.0		3.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	198	705		159	672	556	178	411		191	503	382
v/s Ratio Prot	c0.14	0.55		0.10	0.54		0.03	0.33		c0.14	0.26	
v/s Ratio Perm	c0.65			0.55		0.09	0.17			c0.43		0.28
v/c Ratio	1.51	1.28		1.34	1.32	0.23	0.66	1.28		1.53	0.88	0.93
Uniform Delay, d1	43.3	38.5		39.7	40.0	26.2	38.2	50.0		37.2	45.1	45.9
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	251.7	134.8		188.9	155.6	1.0	8.5	143.7		264.9	19.9	30.7
Delay (s)	295.0	173.3		228.6	195.6	27.1	46.7	193.7		302.1	64.9	76.6
Level of Service	F	F		F	F	C	D	F		F	E	E
Approach Delay (s)		203.5			176.1			167.5			125.4	
Approach LOS		F			F			F			F	

Intersection Summary					
HCM 2000 Control Delay	168.0	HCM 2000 Level of Service		F	
HCM 2000 Volume to Capacity ratio	1.58				
Actuated Cycle Length (s)	135.0	Sum of lost time (s)		20.0	
Intersection Capacity Utilization	128.3%	ICU Level of Service		H	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	18	1420	90	1454	70	92	51
v/c Ratio	0.11	1.60	0.56	1.52	0.26	0.20	0.17
Control Delay	8.6	298.4	26.1	252.8	35.3	7.9	24.5
Queue Delay	0.0	3.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.6	301.4	26.1	252.8	35.3	8.0	24.5
Queue Length 50th (m)	1.4	~471.1	6.6	~443.7	12.6	0.2	5.9
Queue Length 95th (m)	4.0	#556.6	m2.5	m#300.4	25.8	12.8	16.2
Internal Link Dist (m)		241.0		207.8		51.5	194.5
Turn Bay Length (m)	40.0		40.0				
Base Capacity (vph)	165	888	163	957	267	451	296
Starvation Cap Reductn	0	0	0	4	0	0	0
Spillback Cap Reductn	0	331	0	0	0	17	3
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	2.55	0.55	1.53	0.26	0.21	0.17

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.

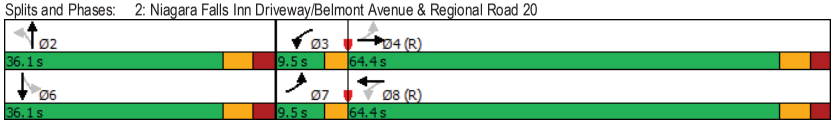
m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	8.0		6.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	9.5	39.9		9.5	39.9		36.1	36.1		36.1	36.1	
Total Split (s)	9.5	64.4		9.5	64.4		36.1	36.1		36.1	36.1	
Total Split (%)	8.6%	58.5%		8.6%	58.5%		32.8%	32.8%		32.8%	32.8%	
Maximum Green (s)	6.5	57.5		6.5	57.5		29.0	29.0		29.0	29.0	
Yellow Time (s)	3.0	4.1		3.0	4.1		4.1	4.1		4.1	4.1	
All-Red Time (s)	0.0	2.8		0.0	2.8		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)	3.0	6.9		3.0	6.9		7.1	7.1			7.1	
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	
Recall Mode	None	C-Max		None	C-Max		Max	Max		Max	Max	
Walk Time (s)		12.0			12.0		11.0	11.0		11.0	11.0	
Flash Dont Walk (s)		21.0			21.0		18.0	18.0		18.0	18.0	
Pedestrian Calls (#/hr)		0			0		0	0		0	0	
Act Effct Green (s)	68.2	59.4		69.8	63.3		29.0	29.0			29.0	
Actuated g/C Ratio	0.62	0.54		0.63	0.58		0.26	0.26			0.26	
v/c Ratio	0.11	1.60		0.56	1.52		0.26	0.20			0.17	
Control Delay	8.6	298.4		26.1	252.8		35.3	7.9			24.5	
Queue Delay	0.0	3.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	8.6	301.4		26.1	252.8		35.3	8.0			24.5	
LOS	A	F		C	F		D	A			C	
Approach Delay		297.8			239.6			19.8			24.5	
Approach LOS		F			F			B			C	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 16 (15%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.60
Intersection Signal Delay: 251.2 Intersection LOS: F
Intersection Capacity Utilization 112.5% ICU Level of Service H
Analysis Period (min) 15

Splits and Phases: 2: Niagara Falls Inn Driveway/Belmont Avenue & Regional Road 20



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	1387	0	1	1323	19	1	0	5	16	0	37
Future Volume (vph)	44	1387	0	1	1323	19	1	0	5	16	0	37
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					1.00							
Frt					0.998			0.887			0.905	
Flt Protected		0.998						0.992			0.985	
Satd. Flow (prot)	0	1644	0	0	1664	0	0	1540	0	0	1448	0
Flt Permitted		0.907			0.999			0.977			0.932	
Satd. Flow (perm)	0	1494	0	0	1662	0	0	1517	0	0	1370	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					1			35			40	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		231.8			321.7			58.1			98.8	
Travel Time (s)		16.7			23.2			4.2			7.1	
Confl. Peds. (#/hr)	2		11	11		2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	14%	6%	0%	0%	5%	0%	0%	0%	0%	0%	0%	11%
Adj. Flow (vph)	48	1508	0	1	1438	21	1	0	5	17	0	40
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1556	0	0	1460	0	0	6	0	0	57	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			0.0			0.0	
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	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	1267	40	83	1308	29	64	1	84	28	4	16
Future Volume (vph)	17	1267	40	83	1308	29	64	1	84	28	4	16
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	6.9		3.0	6.9		7.1	7.1			7.1	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.85			0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.97	
Satd. Flow (prot)	1662	1645		1662	1663		1330	1458			1286	
Flt Permitted	0.07	1.00		0.07	1.00		0.72	1.00			0.81	
Satd. Flow (perm)	119	1645		114	1663		1013	1458			1077	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	18	1377	43	90	1422	32	70	1	91	30	4	17
RTOR Reduction (vph)	0	1	0	0	1	0	0	67	0	0	13	0
Lane Group Flow (vph)	18	1419	0	90	1453	0	70	25	0	0	38	0
Confl. Peds. (#/hr)			5	5					1	1		
Heavy Vehicles (%)	0%	6%	0%	0%	5%	0%	25%	0%	0%	33%	0%	20%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	61.3	58.8		66.7	61.5		29.0	29.0			29.0	
Effective Green, g (s)	61.3	58.8		66.7	61.5		29.0	29.0			29.0	
Actuated g/C Ratio	0.56	0.53		0.61	0.56		0.26	0.26			0.26	
Clearance Time (s)	3.0	6.9		3.0	6.9		7.1	7.1			7.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	101	879		142	929		267	384			283	
v/s Ratio Prot	0.00	0.86		c0.03	c0.87			0.02				
v/s Ratio Perm	0.09			0.35			c0.07				0.04	
v/c Ratio	0.18	1.61		0.63	1.56		0.26	0.07			0.14	
Uniform Delay, d1	24.7	25.6		24.9	24.2		32.0	30.3			30.9	
Progression Factor	1.00	1.00		1.80	0.48		1.00	1.00			1.00	
Incremental Delay, d2	0.8	281.8		0.8	254.4		2.4	0.3			1.0	
Delay (s)	25.5	307.4		45.6	265.9		34.4	30.7			31.9	
Level of Service	C	F		D	F		C	C			C	
Approach Delay (s)		303.8			253.1			32.3			31.9	
Approach LOS		F			F			C			C	

Intersection Summary					
HCM 2000 Control Delay	261.2	HCM 2000 Level of Service		F	
HCM 2000 Volume to Capacity ratio	1.15				
Actuated Cycle Length (s)	110.0	Sum of lost time (s)		17.0	
Intersection Capacity Utilization	112.5%	ICU Level of Service		H	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	1556	1460	6	57
v/c Ratio	1.66	1.40	0.01	0.15
Control Delay	319.4	205.0	0.0	15.3
Queue Delay	0.0	2.3	0.0	0.0
Total Delay	319.4	207.3	0.0	15.3
Queue Length 50th (m)	~507.9	~437.2	0.0	2.9
Queue Length 95th (m)	m#273.8	m123.8	0.0	13.4
Internal Link Dist (m)	207.8	297.7	34.1	74.8
Turn Bay Length (m)				
Base Capacity (vph)	937	1042	412	378
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	355	0	8
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.66	2.13	0.01	0.15

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	24.5	24.5		24.5	24.5		34.5	34.5		34.5	34.5	
Total Split (s)	75.5	75.5		75.5	75.5		34.5	34.5		34.5	34.5	
Total Split (%)	68.6%	68.6%		68.6%	68.6%		31.4%	31.4%		31.4%	31.4%	
Maximum Green (s)	69.0	69.0		69.0	69.0		28.0	28.0		28.0	28.0	
Yellow Time (s)	4.1	4.1		4.1	4.1		4.1	4.1		4.1	4.1	
All-Red Time (s)	2.4	2.4		2.4	2.4		2.4	2.4		2.4	2.4	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.5			6.5			6.5			6.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		Max	Max		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		18.0	18.0		18.0	18.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		69.0			69.0			28.0			28.0	
Actuated g/C Ratio		0.63			0.63			0.25			0.25	
v/c Ratio		1.66			1.40			0.01			0.15	
Control Delay		319.4			205.0			0.0			15.3	
Queue Delay		0.0			2.3			0.0			0.0	
Total Delay		319.4			207.3			0.0			15.3	
LOS		F			F			A			B	
Approach Delay		319.4			207.3						15.3	
Approach LOS		F			F						B	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.66
Intersection Signal Delay: 260.0 Intersection LOS: F
Intersection Capacity Utilization 134.5% ICU Level of Service H
Analysis Period (min) 15

Splits and Phases: 3: Royal Manor Drive & Regional Road 20



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	1182	53	13	1227	8	13	1	27	1	3	24
Future Volume (vph)	11	1182	53	13	1227	8	13	1	27	1	3	24
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.994			0.999			0.911			0.883	
Flt Protected					0.999			0.984			0.998	
Satd. Flow (prot)	0	1707	0	0	1696	0	0	1569	0	0	1542	0
Flt Permitted					0.999			0.984			0.998	
Satd. Flow (perm)	0	1707	0	0	1696	0	0	1569	0	0	1542	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		321.7			111.0			229.0			196.7	
Travel Time (s)		23.2			8.0			16.5			14.2	
Confl. Peds. (#/hr)	5		12	12		5	2		2	2		2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	12	1285	58	14	1334	9	14	1	29	1	3	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1355	0	0	1357	0	0	44	0	0	30	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			15.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	95.9%	ICU Level of Service	F
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	1387	0	1	1323	19	1	0	5	16	0	37
Future Volume (vph)	44	1387	0	1	1323	19	1	0	5	16	0	37
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		6.5			6.5			6.5			6.5	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frpb, ped/bikes		1.00			1.00			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		1.00			1.00			0.89			0.91	
Flt Protected		1.00			1.00			0.99			0.99	
Satd. Flow (prot)		1645			1664			1540			1449	
Flt Permitted		0.91			1.00			0.98			0.93	
Satd. Flow (perm)		1495			1663			1517			1370	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	48	1508	0	1	1438	21	1	0	5	17	0	40
RTOR Reduction (vph)	0	0	0	0	0	0	0	4	0	0	30	0
Lane Group Flow (vph)	0	1556	0	0	1460	0	0	2	0	0	27	0
Confl. Peds. (#/hr)	2		11	11		2						
Heavy Vehicles (%)	14%	6%	0%	0%	5%	0%	0%	0%	0%	0%	0%	11%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		69.0			69.0			28.0			28.0	
Effective Green, g (s)		69.0			69.0			28.0			28.0	
Actuated g/C Ratio		0.63			0.63			0.25			0.25	
Clearance Time (s)		6.5			6.5			6.5			6.5	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		937			1043			386			348	
v/s Ratio Prot												
v/s Ratio Perm		c1.04			0.88			0.00			c0.02	
v/c Ratio		1.66			1.40			0.00			0.08	
Uniform Delay, d1		20.5			20.5			30.6			31.2	
Progression Factor		0.98			1.12			1.00			1.00	
Incremental Delay, d2		297.7			180.3			0.0			0.4	
Delay (s)		317.9			203.2			30.6			31.6	
Level of Service		F			F			C			C	
Approach Delay (s)		317.9			203.2			30.6			31.6	
Approach LOS		F			F			C			C	

Intersection Summary					
HCM 2000 Control Delay	257.6	HCM 2000 Level of Service	F		
HCM 2000 Volume to Capacity ratio	1.20				
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.0		
Intersection Capacity Utilization	134.5%	ICU Level of Service	H		
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	16	1182	1164	4	3	5
Future Volume (vph)	16	1182	1164	4	3	5
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt					0.916	
Flt Protected		0.999			0.982	
Satd. Flow (prot)	0	1731	1699	0	1574	0
Flt Permitted		0.999			0.982	
Satd. Flow (perm)	0	1731	1699	0	1574	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		111.0	109.8		191.2	
Travel Time (s)		8.0	7.9		13.8	
Confl. Peds. (#/hr)	5			5		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	3%	0%	0%	0%
Adj. Flow (vph)	17	1285	1265	4	3	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1302	1269	0	8	0
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	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	91.4%	ICU Level of Service	F
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	1182	53	13	1227	8	13	1	27	1	3	24
Future Volume (Veh/h)	11	1182	53	13	1227	8	13	1	27	1	3	24
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	1285	58	14	1334	9	14	1	29	1	3	26
Pedestrians		2			2			12			5	
Lane Width (m)		3.6			3.6			3.6			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			1			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		322			221							
pX, platoon unblocked	0.54			0.40			0.63	0.63	0.40	0.63	0.63	0.54
vC, conflicting volume	1348			1355			2746	2726	1328	2741	2750	1346
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1218			1139			1831	1799	1071	1823	1838	1213
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			94			45	98	73	96	93	78
cM capacity (veh/h)	311			247			25	46	107	25	43	120

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	1355	1357	44	30
Volume Left	12	14	14	1
Volume Right	58	9	29	26
cSH	311	247	52	92
Volume to Capacity	0.04	0.06	0.84	0.33
Queue Length 95th (m)	1.0	1.4	28.7	10.0
Control Delay (s)	3.3	5.7	205.0	62.1
Lane LOS	A	A	F	F
Approach Delay (s)	3.3	5.7	205.0	62.1
Approach LOS			F	F

Intersection Summary					
Average Delay	8.3				
Intersection Capacity Utilization	95.9%	ICU Level of Service		F	
Analysis Period (min)	15				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	214	796	277	169	917	173	313	542	134	158	439	141
Future Volume (vph)	214	796	277	169	917	173	313	542	134	158	439	141
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	40.0		0.0	45.0		0.0	50.0		0.0	30.0		0.0
Storage Lanes	1		0	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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99			1.00		1.00	0.99			0.99	
Frt		0.961			0.976			0.970			0.964	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1568	1562	0	1630	1593	0	1630	1634	0	1539	1627	0
Flt Permitted	0.103			0.104			0.108			0.110		
Satd. Flow (perm)	170	1562	0	178	1593	0	185	1634	0	178	1627	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18			9			12			16	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		109.8			114.2			162.1			187.2	
Travel Time (s)		7.9			8.2			11.7			13.5	
Confl. Peds. (#/hr)	5		15	15		5	5		8	8		5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	7%	4%	2%	7%	5%	2%	3%	4%	8%	3%	3%
Adj. Flow (vph)	233	865	301	184	997	188	340	589	146	172	477	153
Shared Lane Traffic (%)												
Lane Group Flow (vph)	233	1166	0	184	1185	0	340	735	0	172	630	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	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	16	1182	1164	4	3	5
Future Volume (Veh/h)	16	1182	1164	4	3	5
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)	17	1285	1265	4	3	5
Pedestrians					5	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			110			
pX, platoon unblocked	0.51				0.51	0.51
vC, conflicting volume	1274				2591	1272
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1056				3644	1052
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	95				0	96
cM capacity (veh/h)	338				3	141

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	1302	1269	8
Volume Left	17	0	3
Volume Right	0	4	5
cSH	338	1700	7
Volume to Capacity	0.05	0.75	1.12
Queue Length 95th (m)	1.3	0.0	14.3
Control Delay (s)	3.5	0.0	1037.1
Lane LOS	A		F
Approach Delay (s)	3.5	0.0	1037.1
Approach LOS			F

Intersection Summary			
Average Delay	5.0		
Intersection Capacity Utilization	91.4%	ICU Level of Service	F
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	233	1166	184	1185	340	735	172	630
v/c Ratio	1.30	2.06	1.03	2.10	1.83	1.32	1.02	1.15
Control Delay	170.9	506.1	100.0	526.1	413.8	187.6	99.2	119.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	170.9	506.1	100.0	526.1	413.8	187.6	99.2	119.3
Queue Length 50th (m)	~53.0	~415.5	~28.0	~429.8	~101.0	~214.6	~24.2	~165.3
Queue Length 95th (m)	m35.0	m#228.6	#74.5	#512.8	#160.0	#289.6	#70.4	#236.8
Internal Link Dist (m)		85.8		90.2		138.1		163.2
Turn Bay Length (m)	40.0		45.0		50.0		30.0	
Base Capacity (vph)	179	565	179	563	186	557	169	550
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	1.30	2.06	1.03	2.10	1.83	1.32	1.02	1.15

Intersection Summary

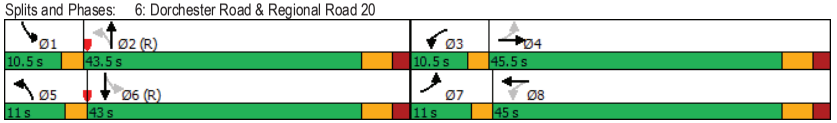
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0		3.0	8.0		6.0	8.0	
Minimum Split (s)	10.5	36.5		10.5	36.5		9.5	40.5		10.5	40.5	
Total Split (s)	11.0	45.5		10.5	45.0		11.0	43.5		10.5	43.0	
Total Split (%)	10.0%	41.4%		9.5%	40.9%		10.0%	39.5%		9.5%	39.1%	
Maximum Green (s)	8.0	39.0		7.5	38.5		8.0	37.0		7.5	36.5	
Yellow Time (s)	3.0	4.1		3.0	4.1		3.0	4.1		3.0	4.1	
All-Red Time (s)	0.0	2.4		0.0	2.4		0.0	2.4		0.0	2.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	6.5		3.0	6.5		3.0	6.5		3.0	6.5	
Lead/Lag	Lead	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	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Walk Time (s)		12.0			12.0			15.0			15.0	
Flash Dont Walk (s)		13.0			13.0			19.0			19.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	50.5	39.0		49.5	38.5		48.5	37.0		47.5	36.5	
Actuated g/C Ratio	0.46	0.35		0.45	0.35		0.44	0.34		0.43	0.33	
v/c Ratio	1.30	2.06		1.03	2.10		1.83	1.32		1.02	1.15	
Control Delay	170.9	506.1		100.0	526.1		413.8	187.6		99.2	119.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	170.9	506.1		100.0	526.1		413.8	187.6		99.2	119.3	
LOS	F	F		F	F		F	F		F	F	
Approach Delay		450.3			468.8			259.2			115.0	
Approach LOS		F			F			F			F	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 60 (55%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 2.10
Intersection Signal Delay: 353.6 Intersection LOS: F
Intersection Capacity Utilization 147.6% ICU Level of Service H
Analysis Period (min) 15

Splits and Phases: 6: Dorchester Road & Regional Road 20





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	13	1037	1219	15	1	4
Future Volume (vph)	13	1037	1219	15	1	4
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.998		0.892	
Flt Protected		0.999			0.990	
Satd. Flow (prot)	0	1714	1706	0	1545	0
Flt Permitted		0.999			0.990	
Satd. Flow (perm)	0	1714	1706	0	1545	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		114.2	50.1		180.5	
Travel Time (s)		8.2	3.6		13.0	
Confl. Peds. (#/hr)	7			7		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	33%	0%	0%
Adj. Flow (vph)	14	1127	1325	16	1	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1141	1341	0	5	0
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	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	80.7%	ICU Level of Service	D
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	214	796	277	169	917	173	313	542	134	158	439	141
Future Volume (vph)	214	796	277	169	917	173	313	542	134	158	439	141
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	6.5		3.0	6.5		3.0	6.5		3.0	6.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		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	
Frt	1.00	0.96		1.00	0.98		1.00	0.97		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1568	1562		1630	1594		1630	1635		1539	1626	
Flt Permitted	0.10	1.00		0.10	1.00		0.11	1.00		0.11	1.00	
Satd. Flow (perm)	169	1562		178	1594		185	1635		178	1626	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	233	865	301	184	997	188	340	589	146	172	477	153
RTOR Reduction (vph)	0	12	0	0	6	0	0	8	0	0	11	0
Lane Group Flow (vph)	233	1154	0	184	1179	0	340	727	0	172	619	0
Confl. Peds. (#/hr)	5		15	15		5	5		8	8		5
Heavy Vehicles (%)	6%	7%	4%	2%	7%	5%	2%	3%	4%	8%	3%	3%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	47.0	39.0		46.0	38.5		45.0	37.0		44.0	36.5	
Effective Green, g (s)	47.0	39.0		46.0	38.5		45.0	37.0		44.0	36.5	
Actuated g/C Ratio	0.43	0.35		0.42	0.35		0.41	0.34		0.40	0.33	
Clearance Time (s)	3.0	6.5		3.0	6.5		3.0	6.5		3.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	173	553		173	557		180	549		163	539	
v/s Ratio Prot	c0.10	0.74		0.07	c0.74		c0.14	0.44		0.07	0.38	
v/s Ratio Perm	0.47			0.37			c0.63			0.35		
v/c Ratio	1.35	2.09		1.06	2.12		1.89	1.32		1.06	1.15	
Uniform Delay, d1	27.0	35.5		27.1	35.8		27.3	36.5		28.4	36.8	
Progression Factor	1.66	1.48		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	159.6	489.9		86.3	508.7		420.2	158.3		85.9	86.9	
Delay (s)	204.4	542.4		113.4	544.4		447.5	194.8		114.3	123.7	
Level of Service	F	F		F	F		F	F		F	F	
Approach Delay (s)		486.1			486.5			274.7			121.6	
Approach LOS		F			F			F			F	

Intersection Summary					
HCM 2000 Control Delay	374.4	HCM 2000 Level of Service		F	
HCM 2000 Volume to Capacity ratio	1.94				
Actuated Cycle Length (s)	110.0	Sum of lost time (s)		19.0	
Intersection Capacity Utilization	147.6%	ICU Level of Service		H	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1077	17	24	1231	5	24
Future Volume (vph)	1077	17	24	1231	5	24
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.998				0.887	
Flt Protected				0.999	0.992	
Satd. Flow (prot)	1713	0	0	1698	1540	0
Flt Permitted				0.999	0.992	
Satd. Flow (perm)	1713	0	0	1698	1540	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	50.1			206.3	147.1	
Travel Time (s)	3.6			14.9	10.6	
Confl. Peds. (#/hr)		12	12			1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	0%	3%	0%	0%
Adj. Flow (vph)	1171	18	26	1338	5	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1189	0	0	1364	31	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	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	101.6%	ICU Level of Service	G
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	13	1037	1219	15	1	4
Future Volume (Veh/h)	13	1037	1219	15	1	4
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)	14	1127	1325	16	1	4
Pedestrians					7	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		114				
pX, platoon unblocked					0.59	
vC, conflicting volume	1348				2495	1340
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1348				3175	1340
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				85	98
cM capacity (veh/h)	514				7	187

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	1141	1341	5
Volume Left	14	0	1
Volume Right	0	16	4
cSH	514	1700	30
Volume to Capacity	0.03	0.79	0.17
Queue Length 95th (m)	0.7	0.0	4.2
Control Delay (s)	1.1	0.0	150.1
Lane LOS	A		F
Approach Delay (s)	1.1	0.0	150.1
Approach LOS			F

Intersection Summary				
Average Delay		0.8		
Intersection Capacity Utilization		80.7%	ICU Level of Service	D
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	1051	16	20	1211	12	15	0	48	13	5	35
Future Volume (vph)	23	1051	16	20	1211	12	15	0	48	13	5	35
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.998			0.999			0.897			0.910	
Flt Protected		0.999			0.999			0.988			0.988	
Satd. Flow (prot)	0	1710	0	0	1708	0	0	1492	0	0	1457	0
Flt Permitted		0.999			0.999			0.988			0.988	
Satd. Flow (perm)	0	1710	0	0	1708	0	0	1492	0	0	1457	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		206.3			78.8			169.0			191.8	
Travel Time (s)		14.9			5.7			12.2			13.8	
Confl. Peds. (#/hr)	3		12	12		3						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	8%	4%	2%	25%	7%	0%	3%	0%	0%	12%
Adj. Flow (vph)	25	1142	17	22	1316	13	16	0	52	14	5	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1184	0	0	1351	0	0	68	0	0	57	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	92.8%	ICU Level of Service	F
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1077	17	24	1231	5	24
Future Volume (Veh/h)	1077	17	24	1231	5	24
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)	1171	18	26	1338	5	26
Pedestrians				1	12	
Lane Width (m)				3.6	3.6	
Walking Speed (m/s)				1.2	1.2	
Percent Blockage				0	1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	164					
pX, platoon unblocked			0.61		0.61	0.61
vC, conflicting volume			1201		2582	1193
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1010		3274	997
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			94		13	86
cM capacity (veh/h)			419		6	180

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	1189	1364	31
Volume Left	0	26	5
Volume Right	18	0	26
cSH	1700	419	31
Volume to Capacity	0.70	0.06	1.02
Queue Length 95th (m)	0.0	1.6	27.5
Control Delay (s)	0.0	4.3	358.6
Lane LOS		A	F
Approach Delay (s)	0.0	4.3	358.6
Approach LOS			F

Intersection Summary			
Average Delay	6.6		
Intersection Capacity Utilization	101.6%	ICU Level of Service	G
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	52	1038	1184	8	5	56
Future Volume (vph)	52	1038	1184	8	5	56
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.999		0.875	
Flt Protected		0.998			0.996	
Satd. Flow (prot)	0	1709	1711	0	1364	0
Flt Permitted		0.998			0.996	
Satd. Flow (perm)	0	1709	1711	0	1364	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		78.8	68.0		182.2	
Travel Time (s)		5.7	4.9		13.1	
Confl. Peds. (#/hr)	3			3		2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	2%	2%	25%	22%	11%
Adj. Flow (vph)	57	1128	1287	9	5	61
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1185	1296	0	66	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		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	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	116.8%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	1051	16	20	1211	12	15	0	48	13	5	35
Future Volume (Veh/h)	23	1051	16	20	1211	12	15	0	48	13	5	35
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	25	1142	17	22	1316	13	16	0	52	14	5	38
Pedestrians								12			3	
Lane Width (m)								3.6			3.6	
Walking Speed (m/s)								1.2			1.2	
Percent Blockage								1			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		371			302							
pX, platoon unblocked	0.48			0.69			0.63	0.63	0.69	0.63	0.63	0.48
vC, conflicting volume	1332			1171			2620	2588	1162	2622	2590	1326
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1149			1022			2160	2111	1010	2164	2114	1136
tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	3.4
p0 queue free %	91			95			0	100	74	3	82	66
cM capacity (veh/h)	294			458			11	28	198	14	28	112

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	1184	1351	68	57
Volume Left	25	22	16	14
Volume Right	17	13	52	38
cSH	294	458	39	38
Volume to Capacity	0.09	0.05	1.77	1.49
Queue Length 95th (m)	2.2	1.2	57.8	47.5
Control Delay (s)	5.2	3.1	593.3	484.1
Lane LOS	A	A	F	F
Approach Delay (s)	5.2	3.1	593.3	484.1
Approach LOS			F	F

Intersection Summary					
Average Delay	29.4				
Intersection Capacity Utilization	92.8%	ICU Level of Service		F	
Analysis Period (min)	15				

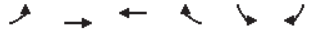
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	994	77	25	1150	32	73
Future Volume (vph)	994	77	25	1150	32	73
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.990				0.906	
Flt Protected				0.999	0.985	
Satd. Flow (prot)	1693	0	0	1697	1497	0
Flt Permitted				0.999	0.985	
Satd. Flow (perm)	1693	0	0	1697	1497	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	68.0			55.0	165.0	
Travel Time (s)	4.9			4.0	11.9	
Confl. Peds. (#/hr)		11	11		1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	7%	4%	3%	5%	4%
Adj. Flow (vph)	1080	84	27	1250	35	79
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1164	0	0	1277	114	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	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	101.0%	ICU Level of Service	G
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	52	1038	1184	8	5	56
Future Volume (Veh/h)	52	1038	1184	8	5	56
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)	57	1128	1287	9	5	61
Pedestrians		2			3	
Lane Width (m)		3.6			3.6	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			223			
pX, platoon unblocked	0.47				0.47	0.47
vC, conflicting volume	1299				2536	1296
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1075				3693	1069
tC, single (s)	4.2				6.6	6.3
tC, 2 stage (s)						
tF (s)	2.3				3.7	3.4
p0 queue free %	81				0	50
cM capacity (veh/h)	299				2	122

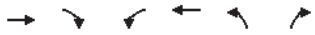
Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	1185	1296	66
Volume Left	57	0	5
Volume Right	0	9	61
cSH	299	1700	18
Volume to Capacity	0.19	0.76	3.59
Queue Length 95th (m)	5.5	0.0	Err
Control Delay (s)	11.7	0.0	Err
Lane LOS	B		F
Approach Delay (s)	11.7	0.0	Err
Approach LOS			F

Intersection Summary			
Average Delay	264.5		
Intersection Capacity Utilization	116.8%	ICU Level of Service	H
Analysis Period (min)	15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	55	1037	1156	41	13	27
Future Volume (vph)	55	1037	1156	41	13	27
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.995		0.909	
Flt Protected		0.997			0.984	
Satd. Flow (prot)	0	1712	1708	0	1466	0
Flt Permitted		0.997			0.984	
Satd. Flow (perm)	0	1712	1708	0	1466	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		55.0	100.4		189.4	
Travel Time (s)		4.0	7.2		13.6	
Confl. Peds. (#/hr)	8			8		1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	0%	0%	10%
Adj. Flow (vph)	60	1127	1257	45	14	29
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1187	1302	0	43	0
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	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	118.3%	ICU Level of Service	H
Analysis Period (min)	15		



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	994	77	25	1150	32	73
Future Volume (Veh/h)	994	77	25	1150	32	73
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)	1080	84	27	1250	35	79
Pedestrians	1				11	
Lane Width (m)	3.6				3.6	
Walking Speed (m/s)	1.2				1.2	
Percent Blockage	0				1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				155		
pX, platoon unblocked					0.45	
vC, conflicting volume			1175		2438	1133
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1175		3608	1133
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			95		0	67
cM capacity (veh/h)			582		2	242

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	1164	1277	114
Volume Left	0	27	35
Volume Right	84	0	79
cSH	1700	582	8
Volume to Capacity	0.68	0.05	14.71
Queue Length 95th (m)	0.0	1.2	Err
Control Delay (s)	0.0	2.2	Err
Lane LOS		A	F
Approach Delay (s)	0.0	2.2	Err
Approach LOS			F

Intersection Summary			
Average Delay	447.2		
Intersection Capacity Utilization	101.0%	ICU Level of Service	G
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	896	43	89	1138	20	104	21	71	49	53	36
Future Volume (vph)	24	896	43	89	1138	20	104	21	71	49	53	36
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	35.0		0.0	35.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	0		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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00		1.00	0.98			0.99	
Frt		0.993			0.997			0.884			0.965	
Flt Protected	0.950			0.950			0.950				0.983	
Satd. Flow (prot)	1662	1671	0	1662	1662	0	1662	1510	0	0	1580	0
Flt Permitted	0.070			0.067			0.644				0.857	
Satd. Flow (perm)	122	1671	0	117	1662	0	1124	1510	0	0	1373	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			1			77			16	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		100.4			342.8			50.5			193.9	
Travel Time (s)		7.2			24.7			3.6			14.0	
Confl. Peds. (#/hr)	9		8	8		9	2		6	6		2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	4%	0%	0%	5%	0%	0%	0%	0%	0%	0%	17%
Adj. Flow (vph)	26	974	47	97	1237	22	113	23	77	53	58	39
Shared Lane Traffic (%)												
Lane Group Flow (vph)	26	1021	0	97	1259	0	113	100	0	0	150	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	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	55	1037	1156	41	13	27
Future Volume (Veh/h)	55	1037	1156	41	13	27
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)	60	1127	1257	45	14	29
Pedestrians		1			8	
Lane Width (m)		3.6			3.6	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			100			
pX, platoon unblocked	0.43				0.43	0.43
vC, conflicting volume	1310				2534	1288
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1053				3934	1002
tC, single (s)	4.1				6.4	6.3
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.4
p0 queue free %	79				0	76
cM capacity (veh/h)	282				1	120

Direction, Lane #	EB 1	WB 1	SB 1
Volume Total	1187	1302	43
Volume Left	60	0	14
Volume Right	0	45	29
cSH	282	1700	4
Volume to Capacity	0.21	0.77	11.65
Queue Length 95th (m)	6.3	0.0	Err
Control Delay (s)	13.7	0.0	Err
Lane LOS	B		F
Approach Delay (s)	13.7	0.0	Err
Approach LOS			F

Intersection Summary			
Average Delay	176.2		
Intersection Capacity Utilization	118.3%	ICU Level of Service	H
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	26	1021	97	1259	113	100	150
v/c Ratio	0.16	1.18	0.56	1.36	0.37	0.21	0.39
Control Delay	9.5	120.3	26.7	193.6	36.6	11.6	32.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.5	120.3	26.7	193.6	36.6	11.6	32.5
Queue Length 50th (m)	2.0	~279.7	7.7	~390.4	20.7	3.8	24.5
Queue Length 95th (m)	5.2	#360.8	23.4	#477.7	38.1	17.3	44.2
Internal Link Dist (m)		76.4		318.8		26.5	169.9
Turn Bay Length (m)	35.0		35.0				
Base Capacity (vph)	180	864	179	926	306	467	386
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	1.18	0.54	1.36	0.37	0.21	0.39

Intersection Summary

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

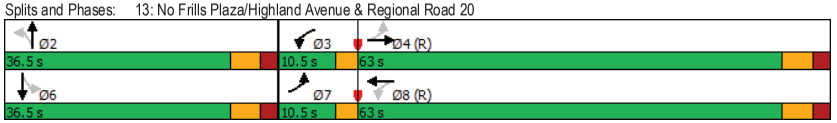
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	8.0		6.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.5	35.5		10.5	35.5		36.5	36.5		36.5	36.5	
Total Split (s)	10.5	63.0		10.5	63.0		36.5	36.5		36.5	36.5	
Total Split (%)	9.5%	57.3%		9.5%	57.3%		33.2%	33.2%		33.2%	33.2%	
Maximum Green (s)	7.5	56.5		7.5	56.5		30.0	30.0		30.0	30.0	
Yellow Time (s)	3.0	4.1		3.0	4.1		4.1	4.1		4.1	4.1	
All-Red Time (s)	0.0	2.4		0.0	2.4		2.4	2.4		2.4	2.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)	3.0	6.5		3.0	6.5		6.5	6.5			6.5	
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	
Recall Mode	None	C-Max		None	C-Max		Max	Max		Max	Max	
Walk Time (s)		11.0			11.0		11.0	11.0		11.0	11.0	
Flash Dont Walk (s)		18.0			18.0		19.0	19.0		19.0	19.0	
Pedestrian Calls (#/hr)		0			0		0	0		0	0	
Act Effct Green (s)	66.7	56.9		69.3	61.3		30.0	30.0			30.0	
Actuated g/C Ratio	0.61	0.52		0.63	0.56		0.27	0.27			0.27	
v/c Ratio	0.16	1.18		0.56	1.36		0.37	0.21			0.39	
Control Delay	9.5	120.3		26.7	193.6		36.6	11.6			32.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	9.5	120.3		26.7	193.6		36.6	11.6			32.5	
LOS	A	F		C	F		D	B			C	
Approach Delay		117.5			181.7			24.9			32.5	
Approach LOS		F			F			C			C	

Intersection Summary

Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 6 (5%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green			
Natural Cycle: 145			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.36			
Intersection Signal Delay: 137.2		Intersection LOS: F	
Intersection Capacity Utilization 110.5%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 13: No Frills Plaza/Highland Avenue & Regional Road 20



Intersection: 1: Montrose Road (RR98) & Regional Road 20

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	T	R
Maximum Queue (m)	62.4	256.1	42.5	243.4	42.5	52.4	348.3	87.5	331.2	77.5
Average Queue (m)	54.3	245.3	27.3	177.6	16.2	32.4	338.2	86.8	319.5	34.8
95th Queue (m)	81.9	252.5	48.8	267.3	49.2	67.0	357.9	89.6	339.9	76.1
Link Distance (m)		237.6		237.1			332.6		313.3	
Upstream Blk Time (%)		77		3			93		79	
Queuing Penalty (veh)		0		46			0		0	
Storage Bay Dist (m)	55.0		35.0		35.0	45.0		80.0		70.0
Storage Blk Time (%)	4	68	5	44	0	2	79	84	5	2
Queuing Penalty (veh)	31	188	49	163	1	10	86	736	40	17

Intersection: 2: Niagara Falls Inn Driveway/Belmont Avenue & Regional Road 20

Movement	EB	EB	WB	WB	NB	NB	SB
Directions Served	L	TR	L	TR	L	TR	LTR
Maximum Queue (m)	47.4	245.3	47.4	193.2	36.7	44.4	46.3
Average Queue (m)	6.8	236.1	15.9	112.6	15.7	16.2	15.6
95th Queue (m)	31.0	259.2	41.4	201.7	32.2	34.6	37.9
Link Distance (m)		237.1		212.9	65.1	65.1	208.3
Upstream Blk Time (%)		26		0		0	
Queuing Penalty (veh)		309		2		0	
Storage Bay Dist (m)	40.0		40.0				
Storage Blk Time (%)		66	0	36			
Queuing Penalty (veh)		11	0	30			

Intersection: 3: Royal Manor Drive & Regional Road 20

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	217.3	193.4	11.7	31.5
Average Queue (m)	195.7	122.7	1.4	10.1
95th Queue (m)	241.7	204.5	7.1	23.9
Link Distance (m)	212.9	283.8	47.9	88.5
Upstream Blk Time (%)	13			
Queuing Penalty (veh)	184			
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	896	43	89	1138	20	104	21	71	49	53	36
Future Volume (vph)	24	896	43	89	1138	20	104	21	71	49	53	36
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	6.5		3.0	6.5		6.5	6.5			6.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.88			0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.98	
Satd. Flow (prot)	1662	1671		1662	1663		1658	1511			1574	
Flt Permitted	0.07	1.00		0.07	1.00		0.64	1.00			0.86	
Satd. Flow (perm)	123	1671		117	1663		1123	1511			1373	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	26	974	47	97	1237	22	113	23	77	53	58	39
RTOR Reduction (vph)	0	1	0	0	0	0	0	56	0	0	12	0
Lane Group Flow (vph)	26	1020	0	97	1259	0	113	44	0	0	138	0
Confl. Peds. (#/hr)	9		8	8		9	2		6	6		2
Heavy Vehicles (%)	0%	4%	0%	0%	5%	0%	0%	0%	0%	0%	0%	17%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	60.8	56.9		67.0	60.1		30.0	30.0			30.0	
Effective Green, g (s)	60.8	56.9		67.0	60.1		30.0	30.0			30.0	
Actuated g/C Ratio	0.55	0.52		0.61	0.55		0.27	0.27			0.27	
Clearance Time (s)	3.0	6.5		3.0	6.5		6.5	6.5			6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	122	864		170	908		306	412			374	
v/s Ratio Prot	0.01	0.61		c0.04	c0.76			0.03				
v/s Ratio Perm	0.11			0.31			0.10				c0.10	
v/c Ratio	0.21	1.18		0.57	1.39		0.37	0.11			0.37	
Uniform Delay, d1	24.1	26.6		24.0	24.9		32.3	30.0			32.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.9	92.9		4.6	180.6		3.4	0.5			2.8	
Delay (s)	25.0	119.5		28.5	205.5		35.8	30.5			35.2	
Level of Service	C	F		C	F		D	C			D	
Approach Delay (s)		117.1			192.9			33.3			35.2	
Approach LOS		F			F			C			D	

Intersection Summary					
HCM 2000 Control Delay	143.4	HCM 2000 Level of Service	F		
HCM 2000 Volume to Capacity ratio	1.04				
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0		
Intersection Capacity Utilization	110.5%	ICU Level of Service	H		
Analysis Period (min)	15				

c Critical Lane Group

Intersection: 7: Regional Road 20 & Depew Avenue

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (m)	90.8	36.7	17.9
Average Queue (m)	11.8	33.4	4.3
95th Queue (m)	55.2	36.8	15.6
Link Distance (m)	97.1	30.5	170.2
Upstream Blk Time (%)	0	47	
Queuing Penalty (veh)	3	580	
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 8: Corwin Avenue & Regional Road 20

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (m)	11.9	195.6	117.5
Average Queue (m)	0.9	193.7	54.4
95th Queue (m)	5.8	195.6	123.5
Link Distance (m)	30.5	191.1	138.6
Upstream Blk Time (%)		38	2
Queuing Penalty (veh)		476	0
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 9: Calton Avenue/Prince Edward Avenue & Regional Road 20

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	71.5	68.3	167.8	178.2
Average Queue (m)	9.2	66.5	120.4	128.6
95th Queue (m)	40.2	68.0	200.4	206.6
Link Distance (m)	191.1	63.4	160.5	183.3
Upstream Blk Time (%)		39	44	23
Queuing Penalty (veh)		488	0	0
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 4: Brookfield Avenue & Regional Road 20

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (m)	239.2	61.4	47.6	19.3
Average Queue (m)	69.0	6.0	20.8	6.5
95th Queue (m)	214.0	35.0	55.5	17.5
Link Distance (m)	283.8	95.6	220.5	187.6
Upstream Blk Time (%)	1	0		
Queuing Penalty (veh)	10	1		
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 5: Regional Road 20 & Mouland Avenue

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (m)	100.6	31.8
Average Queue (m)	88.7	8.8
95th Queue (m)	124.4	29.6
Link Distance (m)	95.6	180.9
Upstream Blk Time (%)	25	
Queuing Penalty (veh)	304	
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: Dorchester Road & Regional Road 20

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (m)	47.4	93.9	52.4	101.7	57.4	168.1	37.4	193.9
Average Queue (m)	33.5	91.7	33.8	99.2	55.6	158.3	30.5	184.0
95th Queue (m)	58.0	95.6	64.2	101.1	66.1	164.2	46.7	190.3
Link Distance (m)		89.2		97.1		151.7		176.8
Upstream Blk Time (%)		43		46		81		75
Queuing Penalty (veh)		512		568		0		0
Storage Bay Dist (m)	40.0		45.0		50.0		30.0	
Storage Blk Time (%)	3	60	0	61	65	30	18	63
Queuing Penalty (veh)	32	128	0	103	436	94	103	100

Intersection: 13: No Frills Plaza/Highland Avenue & Regional Road 20

Movement	EB	EB	WB	WB	NB	NB	SB
Directions Served	L	TR	L	TR	L	TR	LTR
Maximum Queue (m)	42.2	84.8	42.4	351.6	43.9	35.8	48.4
Average Queue (m)	3.9	58.4	14.2	340.6	19.7	14.4	26.3
95th Queue (m)	18.3	95.6	40.5	347.5	36.7	29.5	44.9
Link Distance (m)		80.1		332.4	40.0	40.0	183.6
Upstream Blk Time (%)		3		89	2	1	
Queuing Penalty (veh)		33		0	0	0	
Storage Bay Dist (m)	35.0		35.0				
Storage Blk Time (%)		20	0	68			
Queuing Penalty (veh)		5	5	60			

Network Summary

Network wide Queuing Penalty: 7263

Intersection: 10: Regional Road 20 & Byng Avenue

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (m)	66.3	55.1	184.8
Average Queue (m)	13.9	49.4	135.3
95th Queue (m)	48.5	55.6	216.4
Link Distance (m)	63.4	47.9	173.6
Upstream Blk Time (%)	1	40	40
Queuing Penalty (veh)	10	478	0
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 11: Franklin Avenue & Regional Road 20

Movement	EB	WB	NB
Directions Served	TR	LT	LR
Maximum Queue (m)	41.6	51.8	167.8
Average Queue (m)	4.4	43.8	125.7
95th Queue (m)	23.2	48.7	200.5
Link Distance (m)	47.9	41.2	156.1
Upstream Blk Time (%)	0	40	51
Queuing Penalty (veh)	4	477	0
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

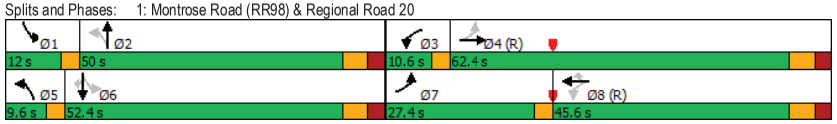
Intersection: 12: Regional Road 20 & Glenholme Avenue

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (m)	43.5	85.2	77.6
Average Queue (m)	16.2	81.6	28.1
95th Queue (m)	43.2	84.3	66.4
Link Distance (m)	41.2	80.1	179.2
Upstream Blk Time (%)	2	26	
Queuing Penalty (veh)	21	328	
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		6
Detector Phase	7	4		3	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0	10.0	3.0	8.0		6.0	8.0	8.0
Minimum Split (s)	10.5	35.0		10.5	35.0	35.0	9.5	36.0		10.5	36.0	36.0
Total Split (s)	27.4	62.4		10.6	45.6	45.6	9.6	50.0		12.0	52.4	52.4
Total Split (%)	20.3%	46.2%		7.9%	33.8%	33.8%	7.1%	37.0%		8.9%	38.8%	38.8%
Maximum Green (s)	24.4	55.4		7.6	38.6	38.6	6.6	43.0		9.0	45.4	45.4
Yellow Time (s)	3.0	4.1		3.0	4.1	4.1	3.0	4.1		3.0	4.1	4.1
All-Red Time (s)	0.0	2.9		0.0	2.9	2.9	0.0	2.9		0.0	2.9	2.9
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.0	7.0		3.0	7.0	7.0	3.0	7.0		3.0	7.0	7.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	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	3.0
Recall Mode	None	C-Max		None	C-Max	C-Max	None	Max		None	Max	Max
Walk Time (s)		10.0			10.0	10.0		11.0			11.0	11.0
Flash Dont Walk (s)		18.0			18.0	18.0		18.0			18.0	18.0
Pedestrian Calls (#/hr)		0			0	0		0			0	0
Act Effct Green (s)	70.0	55.6		50.6	39.3	39.3	53.5	43.0		58.5	47.3	47.3
Actuated g/C Ratio	0.52	0.41		0.37	0.29	0.29	0.40	0.32		0.43	0.35	0.35
v/c Ratio	0.91	0.93		0.48	0.80	0.24	0.14	0.96		0.69	0.34	0.37
Control Delay	49.0	60.0		28.0	58.0	7.5	23.3	75.3		42.8	35.2	5.9
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	49.0	60.0		28.0	58.0	7.5	23.3	75.3		42.8	35.2	5.9
LOS	D	E		C	E	A	C	E		D	D	A
Approach Delay		55.9			43.6			69.9			25.8	
Approach LOS		E			D			E			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 135			
Actuated Cycle Length: 135			
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green			
Natural Cycle: 115			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.96			
Intersection Signal Delay: 50.0		Intersection LOS: D	
Intersection Capacity Utilization 98.2%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 1: Montrose Road (RR98) & Regional Road 20



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	346	551	37	80	351	105	53	334	128	129	185	197
Future Volume (vph)	346	551	37	80	351	105	53	334	128	129	185	197
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	55.0		0.0	35.0		0.0	45.0		0.0	80.0		70.0
Storage Lanes	1		0	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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		0.99		0.96	0.95	0.99				0.92
Frt		0.991				0.850		0.958				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1554	1656	0	1511	1651	1417	1583	1606	0	1599	1683	1390
Flt Permitted	0.254			0.196			0.627			0.157		
Satd. Flow (perm)	412	1656	0	310	1651	1366	997	1606	0	264	1683	1277
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3				114		15				214
Link Speed (k/h)		60			50			50			50	
Link Distance (m)		251.8			265.0			342.9			323.7	
Travel Time (s)		15.1			19.1			24.7			23.3	
Confl. Peds. (#/hr)	17		10	10		17	27		14	14		27
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	7%	4%	11%	10%	6%	5%	5%	4%	0%	4%	4%	7%
Adj. Flow (vph)	376	599	40	87	382	114	58	363	139	140	201	214
Shared Lane Traffic (%)												
Lane Group Flow (vph)	376	639	0	87	382	114	58	502	0	140	201	214
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					Yes							
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	0.0
Detector 1 Queue (s)	0.0	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	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	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	346	551	37	80	351	105	53	334	128	129	185	197
Future Volume (vph)	346	551	37	80	351	105	53	334	128	129	185	197
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	7.0		3.0	7.0	7.0	3.0	7.0		3.0	7.0	7.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.96	1.00	0.99		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.97	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1551	1655		1510	1651	1366	1538	1607		1599	1683	1277
Flt Permitted	0.25	1.00		0.20	1.00	1.00	0.63	1.00		0.16	1.00	1.00
Satd. Flow (perm)	414	1655		312	1651	1366	1015	1607		264	1683	1277
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	376	599	40	87	382	114	58	363	139	140	201	214
RTOR Reduction (vph)	0	2	0	0	0	81	0	10	0	0	0	139
Lane Group Flow (vph)	376	637	0	87	382	33	58	492	0	140	201	75
Confl. Peds. (#/hr)	17		10	10		17	27		14	14		27
Heavy Vehicles (%)	7%	4%	11%	10%	6%	5%	5%	4%	0%	4%	4%	7%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	65.4	55.0		46.1	38.7	38.7	48.9	43.6		55.6	47.3	47.3
Effective Green, g (s)	65.4	55.0		46.1	38.7	38.7	48.9	43.6		55.6	47.3	47.3
Actuated g/C Ratio	0.48	0.41		0.34	0.29	0.29	0.36	0.32		0.41	0.35	0.35
Clearance Time (s)	3.0	7.0		3.0	7.0	7.0	3.0	7.0		3.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	400	674		172	473	391	388	519		197	589	447
v/s Ratio Prot	c0.16	c0.38		0.03	0.23		0.01	c0.31		c0.05	0.12	
v/s Ratio Perm	0.29			0.15		0.02	0.05			0.24		0.06
v/c Ratio	0.94	0.95		0.51	0.81	0.08	0.15	0.95		0.71	0.34	0.17
Uniform Delay, d1	26.8	38.6		32.9	44.7	35.2	28.5	44.6		30.0	32.4	30.3
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	29.8	23.6		2.3	13.8	0.4	0.2	28.4		11.4	1.6	0.8
Delay (s)	56.6	62.2		35.2	58.5	35.6	28.7	73.0		41.4	33.9	31.1
Level of Service	E	E		D	E	D	C	E		D	C	C
Approach Delay (s)		60.1			50.5			68.4			34.7	
Approach LOS		E			D			E			C	

Intersection Summary				
HCM 2000 Control Delay	54.6	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.95			
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	98.2%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	376	639	87	382	114	58	502	140	201	214
v/c Ratio	0.91	0.93	0.48	0.80	0.24	0.14	0.96	0.69	0.34	0.37
Control Delay	49.0	60.0	28.0	58.0	7.5	23.3	75.3	42.8	35.2	5.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.0	60.0	28.0	58.0	7.5	23.3	75.3	42.8	35.2	5.9
Queue Length 50th (m)	65.1	169.4	12.1	99.9	0.0	9.4	135.1	23.9	42.4	0.0
Queue Length 95th (m)	#120.2	#249.7	21.7	#149.7	15.1	18.6	#208.7	#43.5	64.8	18.2
Internal Link Dist (m)		227.8		241.0			318.9		299.7	
Turn Bay Length (m)	55.0		35.0			45.0		80.0		70.0
Base Capacity (vph)	420	684	184	480	477	424	521	203	589	586
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.90	0.93	0.47	0.80	0.24	0.14	0.96	0.69	0.34	0.37

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	8.0	8.0		8.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	39.9	39.9		39.9	39.9		36.1	36.1		36.1	36.1	
Total Split (s)	73.9	73.9		73.9	73.9		36.1	36.1		36.1	36.1	
Total Split (%)	67.2%	67.2%		67.2%	67.2%		32.8%	32.8%		32.8%	32.8%	
Maximum Green (s)	67.0	67.0		67.0	67.0		29.0	29.0		29.0	29.0	
Yellow Time (s)	4.1	4.1		4.1	4.1		4.1	4.1		4.1	4.1	
All-Red Time (s)	2.8	2.8		2.8	2.8		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)	6.9	6.9		6.9	6.9		7.1	7.1			7.1	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		Max	Max		Max	Max	
Walk Time (s)	12.0	12.0		12.0	12.0		11.0	11.0		11.0	11.0	
Flash Dont Walk (s)	21.0	21.0		21.0	21.0		18.0	18.0		18.0	18.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	67.0	67.0		67.0	67.0		29.0	29.0			29.0	
Actuated g/C Ratio	0.61	0.61		0.61	0.61		0.26	0.26			0.26	
v/c Ratio	0.06	1.17		0.25	0.69		0.02	0.01			0.08	
Control Delay	9.4	111.1		13.3	8.3		30.4	0.0			6.8	
Queue Delay	0.0	0.5		0.0	0.0		0.0	0.0			0.0	
Total Delay	9.4	111.6		13.3	8.3		30.4	0.0			6.8	
LOS	A	F		B	A		C	A			A	
Approach Delay		110.1			8.4			19.0			6.8	
Approach LOS		F			A			B			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.17			
Intersection Signal Delay: 71.0		Intersection LOS: E	
Intersection Capacity Utilization 97.8%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 2: Niagara Falls Inn Driveway/Belmont Avenue & Regional Road 20



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	1066	16	15	617	23	5	0	3	17	0	8
Future Volume (vph)	16	1066	16	15	617	23	5	0	3	17	0	8
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	15.0		0.0	15.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	0		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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00						0.98			1.00	
Frt		0.998			0.995			0.850			0.955	
Flt Protected	0.950			0.950			0.950				0.968	
Satd. Flow (prot)	1662	1649	0	1662	1661	0	1330	1455	0	0	1257	0
Flt Permitted	0.280			0.060			0.740				0.861	
Satd. Flow (perm)	490	1649	0	105	1661	0	1036	1455	0	0	1117	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1			3			85			39	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		265.0			231.8			75.5			218.5	
Travel Time (s)		19.1			16.7			5.4			15.7	
Confl. Peds. (#/hr)			5	5					1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	6%	0%	0%	5%	0%	25%	0%	0%	33%	0%	20%
Adj. Flow (vph)	17	1159	17	16	671	25	5	0	3	18	0	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	1176	0	16	696	0	5	3	0	0	27	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		Yes			Yes							
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	1066	16	15	617	23	5	0	3	17	0	8
Future Volume (vph)	16	1066	16	15	617	23	5	0	3	17	0	8
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	6.9	6.9		6.9	6.9		7.1	7.1			7.1	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.85			0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.97	
Satd. Flow (prot)	1662	1648		1662	1661		1330	1455			1255	
Flt Permitted	0.28	1.00		0.06	1.00		0.74	1.00			0.86	
Satd. Flow (perm)	489	1648		104	1661		1035	1455			1116	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	17	1159	17	16	671	25	5	0	3	18	0	9
RTOR Reduction (vph)	0	0	0	0	1	0	0	2	0	0	20	0
Lane Group Flow (vph)	17	1176	0	16	695	0	5	1	0	0	7	0
Confl. Peds. (#/hr)			5	5					1	1		
Heavy Vehicles (%)	0%	6%	0%	0%	5%	0%	25%	0%	0%	33%	0%	20%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	67.0	67.0		67.0	67.0		29.0	29.0			29.0	
Effective Green, g (s)	67.0	67.0		67.0	67.0		29.0	29.0			29.0	
Actuated g/C Ratio	0.61	0.61		0.61	0.61		0.26	0.26			0.26	
Clearance Time (s)	6.9	6.9		6.9	6.9		7.1	7.1			7.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	297	1003		63	1011		272	383			294	
v/s Ratio Prot		c0.71			0.42			0.00				
v/s Ratio Perm	0.03			0.15			0.00				c0.01	
v/c Ratio	0.06	1.17		0.25	0.69		0.02	0.00			0.02	
Uniform Delay, d1	8.7	21.5		9.9	14.5		30.0	29.8			30.0	
Progression Factor	1.00	1.00		0.47	0.35		1.00	1.00			1.00	
Incremental Delay, d2	0.4	88.2		7.3	2.9		0.1	0.0			0.2	
Delay (s)	9.1	109.7		12.0	8.1		30.1	29.8			30.2	
Level of Service	A	F		B	A		C	C			C	
Approach Delay (s)		108.2			8.2			30.0			30.2	
Approach LOS		F			A			C			C	

Intersection Summary				
HCM 2000 Control Delay	70.1	HCM 2000 Level of Service	E	
HCM 2000 Volume to Capacity ratio	0.82			
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	14.0	
Intersection Capacity Utilization	97.8%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group

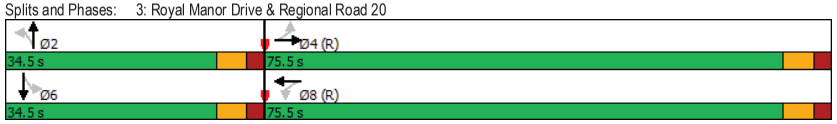
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	17	1176	16	696	5	3	27
v/c Ratio	0.06	1.17	0.25	0.69	0.02	0.01	0.08
Control Delay	9.4	111.1	13.3	8.3	30.4	0.0	6.8
Queue Delay	0.0	0.5	0.0	0.0	0.0	0.0	0.0
Total Delay	9.4	111.6	13.3	8.3	30.4	0.0	6.8
Queue Length 50th (m)	1.5	~318.9	0.6	22.6	0.9	0.0	0.0
Queue Length 95th (m)	4.6	#402.0	m1.1	37.3	3.9	0.0	5.0
Internal Link Dist (m)		241.0		207.8		51.5	194.5
Turn Bay Length (m)	15.0		15.0				
Base Capacity (vph)	298	1004	63	1012	273	446	323
Starvation Cap Reductn	0	5	0	6	0	0	0
Spillback Cap Reductn	0	97	0	0	0	0	2
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	1.30	0.25	0.69	0.02	0.01	0.08

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	24.5	24.5		24.5	24.5		34.5	34.5		34.5	34.5	
Total Split (s)	75.5	75.5		75.5	75.5		34.5	34.5		34.5	34.5	
Total Split (%)	68.6%	68.6%		68.6%	68.6%		31.4%	31.4%		31.4%	31.4%	
Maximum Green (s)	69.0	69.0		69.0	69.0		28.0	28.0		28.0	28.0	
Yellow Time (s)	4.1	4.1		4.1	4.1		4.1	4.1		4.1	4.1	
All-Red Time (s)	2.4	2.4		2.4	2.4		2.4	2.4		2.4	2.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5			6.5			6.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		Max	Max		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		18.0	18.0		18.0	18.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	69.0	69.0		69.0	69.0			28.0			28.0	
Actuated g/C Ratio	0.63	0.63		0.63	0.63			0.25			0.25	
v/c Ratio	0.04	1.08		0.02	0.66			0.01			0.09	
Control Delay	7.9	50.5		6.0	13.4			0.0			10.1	
Queue Delay	0.0	5.6		0.0	0.0			0.0			0.0	
Total Delay	7.9	56.1		6.0	13.4			0.0			10.1	
LOS	A	E		A	B			A			B	
Approach Delay		55.6			13.4						10.1	
Approach LOS		E			B						B	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.08			
Intersection Signal Delay: 38.9		Intersection LOS: D	
Intersection Capacity Utilization 76.1%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Royal Manor Drive & Regional Road 20



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	1026	0	1	633	5	1	0	4	3	0	27
Future Volume (vph)	11	1026	0	1	633	5	1	0	4	3	0	27
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	15.0		0.0	15.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					1.00							
Frt					0.999			0.892			0.878	
Flt Protected	0.950			0.950				0.990			0.995	
Satd. Flow (prot)	1458	1651	0	1662	1665	0	0	1545	0	0	1390	0
Flt Permitted	0.290			0.058				0.975			0.986	
Satd. Flow (perm)	445	1651	0	102	1665	0	0	1522	0	0	1378	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					1			35			35	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		231.8			321.7			58.1			98.8	
Travel Time (s)		16.7			23.2			4.2			7.1	
Confl. Peds. (#/hr)	2		11	11		2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	14%	6%	0%	0%	5%	0%	0%	0%	0%	0%	0%	11%
Adj. Flow (vph)	12	1115	0	1	688	5	1	0	4	3	0	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	1115	0	1	693	0	0	5	0	0	32	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			0.0			0.0	
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		Yes			Yes							
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	1026	0	1	633	5	1	0	4	3	0	27
Future Volume (vph)	11	1026	0	1	633	5	1	0	4	3	0	27
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	6.5	6.5		6.5	6.5			6.5			6.5	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.89			0.88	
Flt Protected	0.95	1.00		0.95	1.00			0.99			1.00	
Satd. Flow (prot)	1458	1651		1662	1665			1546			1390	
Flt Permitted	0.29	1.00		0.06	1.00			0.97			0.99	
Satd. Flow (perm)	445	1651		101	1665			1522			1377	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	1115	0	1	688	5	1	0	4	3	0	29
RTOR Reduction (vph)	0	0	0	0	0	0	0	4	0	0	24	0
Lane Group Flow (vph)	12	1115	0	1	693	0	0	1	0	0	8	0
Confl. Peds. (#/hr)	2		11	11		2						
Heavy Vehicles (%)	14%	6%	0%	0%	5%	0%	0%	0%	0%	0%	0%	11%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	69.0	69.0		69.0	69.0			28.0			28.0	
Effective Green, g (s)	69.0	69.0		69.0	69.0			28.0			28.0	
Actuated g/C Ratio	0.63	0.63		0.63	0.63			0.25			0.25	
Clearance Time (s)	6.5	6.5		6.5	6.5			6.5			6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	279	1035		63	1044			387			350	
v/s Ratio Prot		c0.68			0.42							
v/s Ratio Perm	0.03			0.01				0.00			c0.01	
v/c Ratio	0.04	1.08		0.02	0.66			0.00			0.02	
Uniform Delay, d1	7.9	20.5		7.7	13.1			30.6			30.7	
Progression Factor	0.97	0.48		0.66	0.81			1.00			1.00	
Incremental Delay, d2	0.0	36.8		0.3	2.4			0.0			0.1	
Delay (s)	7.6	46.7		5.4	12.9			30.6			30.9	
Level of Service	A	D		A	B			C			C	
Approach Delay (s)		46.3			12.9			30.6			30.9	
Approach LOS		D			B			C			C	

Intersection Summary				
HCM 2000 Control Delay	33.5	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.77			
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	76.1%	ICU Level of Service	D	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	12	1115	1	693	5	32
v/c Ratio	0.04	1.08	0.02	0.66	0.01	0.09
Control Delay	7.9	50.5	6.0	13.4	0.0	10.1
Queue Delay	0.0	5.6	0.0	0.0	0.0	0.0
Total Delay	7.9	56.1	6.0	13.4	0.0	10.1
Queue Length 50th (m)	0.6	~276.6	0.0	101.7	0.0	0.0
Queue Length 95th (m)	m0.6	m53.3	m0.2	m124.3	0.0	7.3
Internal Link Dist (m)		207.8		297.7	34.1	74.8
Turn Bay Length (m)	15.0		15.0			
Base Capacity (vph)	279	1035	63	1044	413	376
Starvation Cap Reductn	0	13	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.04	1.09	0.02	0.66	0.01	0.09

Intersection Summary
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	796	25	8	692	4	19	3	28	0	1	16
Future Volume (Veh/h)	5	796	25	8	692	4	19	3	28	0	1	16
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	865	27	9	752	4	21	3	30	0	1	17
Pedestrians		2			2			12			5	
Lane Width (m)		3.6			3.6			3.6			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			1			0	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		322			221							
pX, platoon unblocked	0.68			0.43			0.59	0.59	0.43	0.59	0.59	0.68
vC, conflicting volume	761			904			1690	1680	892	1686	1691	761
vC1, stage 1 conf vol							900	900		777	777	
vC2, stage 2 conf vol							790	779		908	914	
vCu, unblocked vol	420			114			615	597	87	608	617	420
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			93	99	93	100	100	96
cM capacity (veh/h)	784			633			317	311	415	305	300	434

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	5	892	9	756	54	18
Volume Left	5	0	9	0	21	0
Volume Right	0	27	0	4	30	17
cSH	784	1700	633	1700	364	423
Volume to Capacity	0.01	0.52	0.01	0.44	0.15	0.04
Queue Length 95th (m)	0.2	0.0	0.3	0.0	4.1	1.1
Control Delay (s)	9.6	0.0	10.8	0.0	16.6	13.9
Lane LOS	A		B		C	B
Approach Delay (s)	0.1		0.1		16.6	13.9
Approach LOS					C	B

Intersection Summary					
Average Delay	0.7				
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)	5	796	25	8	692	4	19	3	28	0	1	16
Future Volume (vph)	5	796	25	8	692	4	19	3	28	0	1	16
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	15.0		0.0	15.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.995			0.999			0.925			0.872	
Flt Protected	0.950			0.950				0.981				
Satd. Flow (prot)	1662	1708	0	1662	1698	0	0	1588	0	0	1526	0
Flt Permitted	0.950			0.950				0.981				
Satd. Flow (perm)	1662	1708	0	1662	1698	0	0	1588	0	0	1526	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		321.7			111.0			229.0			196.7	
Travel Time (s)		23.2			8.0			16.5			14.2	
Confl. Peds. (#/hr)	5		12	12		5	2		2	2		2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	5	865	27	9	752	4	21	3	30	0	1	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	5	892	0	9	756	0	0	54	0	0	18	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			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			15.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			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)	1	840	701	4	4	8
Future Volume (Veh/h)	1	840	701	4	4	8
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)	1	913	762	4	4	9
Pedestrians					5	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (m)			110			
pX, platoon unblocked	0.62				0.62	0.62
vC, conflicting volume	771				1684	769
vC1, stage 1 conf vol					769	
vC2, stage 2 conf vol					915	
vCu, unblocked vol	330				1795	326
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	98
cM capacity (veh/h)	770				292	446

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	1	913	766	13
Volume Left	1	0	0	4
Volume Right	0	0	4	9
cSH	770	1700	1700	384
Volume to Capacity	0.00	0.54	0.45	0.03
Queue Length 95th (m)	0.0	0.0	0.0	0.8
Control Delay (s)	9.7	0.0	0.0	14.7
Lane LOS	A			B
Approach Delay (s)	0.0		0.0	14.7
Approach LOS				B

Intersection Summary				
Average Delay			0.1	
Intersection Capacity Utilization			58.0%	ICU Level of Service B
Analysis Period (min)			15	



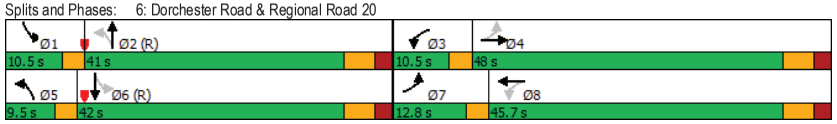
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	1	840	701	4	4	8
Future Volume (vph)	1	840	701	4	4	8
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.999		0.907	
Flt Protected	0.950				0.985	
Satd. Flow (prot)	1662	1733	1698	0	1563	0
Flt Permitted	0.950				0.985	
Satd. Flow (perm)	1662	1733	1698	0	1563	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		111.0	109.8		191.2	
Travel Time (s)		8.0	7.9		13.8	
Confl. Peds. (#/hr)	5			5		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	3%	0%	0%	0%
Adj. Flow (vph)	1	913	762	4	4	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1	913	766	0	13	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		7.2	7.2		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		Yes	Yes			
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 58.0%		ICU Level of Service B	
Analysis Period (min) 15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0		3.0	8.0		6.0	8.0	
Minimum Split (s)	10.5	36.5		10.5	36.5		9.5	40.5		10.5	40.5	
Total Split (s)	12.8	48.0		10.5	45.7		9.5	41.0		10.5	42.0	
Total Split (%)	11.6%	43.6%		9.5%	41.5%		8.6%	37.3%		9.5%	38.2%	
Maximum Green (s)	9.8	41.5		7.5	39.2		6.5	34.5		7.5	35.5	
Yellow Time (s)	3.0	4.1		3.0	4.1		3.0	4.1		3.0	4.1	
All-Red Time (s)	0.0	2.4		0.0	2.4		0.0	2.4		0.0	2.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	6.5		3.0	6.5		3.0	6.5		3.0	6.5	
Lead/Lag	Lead	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	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Walk Time (s)		12.0			12.0			15.0			15.0	
Flash Dont Walk (s)		13.0			13.0			19.0			19.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	55.0	43.7		49.9	39.2		44.7	34.7		46.3	35.5	
Actuated g/C Ratio	0.50	0.40		0.45	0.36		0.41	0.32		0.42	0.32	
v/c Ratio	0.75	1.50		0.43	0.93		0.74	0.91		0.49	0.73	
Control Delay	27.1	254.1		22.4	58.0		39.9	59.4		26.7	41.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	27.1	254.1		22.4	58.0		39.9	59.4		26.7	41.4	
LOS	C	F		C	E		D	E		C	D	
Approach Delay		215.1			53.6			53.5			38.4	
Approach LOS		F			D			D			D	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.50			
Intersection Signal Delay: 114.1		Intersection LOS: F	
Intersection Capacity Utilization 114.7%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 6: Dorchester Road & Regional Road 20



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	181	643	229	68	363	125	193	357	84	92	302	59
Future Volume (vph)	181	643	229	68	363	125	193	357	84	92	302	59
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	40.0		0.0	45.0		0.0	50.0		0.0	30.0		0.0
Storage Lanes	1		0	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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99			0.99		1.00	0.99		1.00	1.00	
Frt		0.961			0.962			0.972			0.976	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1568	1562	0	1630	1568	0	1630	1638	0	1539	1651	0
Flt Permitted	0.185			0.101			0.319			0.183		
Satd. Flow (perm)	305	1562	0	173	1568	0	545	1638	0	295	1651	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		19			18			11			9	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		109.8			114.2			162.1			187.2	
Travel Time (s)		7.9			8.2			11.7			13.5	
Confl. Peds. (#/hr)	5		15	15		5	5		8	8		5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	7%	4%	2%	7%	5%	2%	3%	4%	8%	3%	3%
Adj. Flow (vph)	197	699	249	74	395	136	210	388	91	100	328	64
Shared Lane Traffic (%)												
Lane Group Flow (vph)	197	948	0	74	531	0	210	479	0	100	392	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		Yes			Yes							
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

HCM Signalized Intersection Capacity Analysis — 2041 Alternative 2 - Three Lanes
6: Dorchester Road & Regional Road 20 — AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	181	643	229	68	363	125	193	357	84	92	302	59
Future Volume (vph)	181	643	229	68	363	125	193	357	84	92	302	59
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	6.5		3.0	6.5		3.0	6.5		3.0	6.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.96		1.00	0.97		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)	1568	1561		1630	1568		1628	1637		1538	1650	
Flt Permitted	0.18	1.00		0.10	1.00		0.32	1.00		0.18	1.00	
Satd. Flow (perm)	305	1561		172	1568		546	1637		297	1650	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	197	699	249	74	395	136	210	388	91	100	328	64
RTOR Reduction (vph)	0	11	0	0	11	0	0	8	0	0	6	0
Lane Group Flow (vph)	197	937	0	74	520	0	210	471	0	100	386	0
Confl. Peds. (#/hr)	5		15	15		5	5		8	8		5
Heavy Vehicles (%)	6%	7%	4%	2%	7%	5%	2%	3%	4%	8%	3%	3%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	52.6	43.7		45.7	39.8		40.6	34.1		42.2	34.9	
Effective Green, g (s)	52.6	43.7		45.7	39.8		40.6	34.1		42.2	34.9	
Actuated g/C Ratio	0.48	0.40		0.42	0.36		0.37	0.31		0.38	0.32	
Clearance Time (s)	3.0	6.5		3.0	6.5		3.0	6.5		3.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	258	620		149	567		265	507		196	523	
v/s Ratio Prot	c0.07	c0.60		0.03	0.33		c0.05	c0.29		c0.03	0.23	
v/s Ratio Perm	0.30			0.18			0.25			0.16		
v/c Ratio	0.76	1.51		0.50	0.92		0.79	0.93		0.51	0.74	
Uniform Delay, d1	21.2	33.1		25.8	33.5		30.8	36.8		24.8	33.5	
Progression Factor	0.95	0.73		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.4	234.5		2.6	19.6		14.9	25.9		2.2	9.0	
Delay (s)	27.5	258.8		28.4	53.1		45.7	62.6		27.1	42.5	
Level of Service	C	F		C	D		D	E		C	D	
Approach Delay (s)		219.0			50.1			57.5			39.3	
Approach LOS		F			D			E			D	

Intersection Summary				
HCM 2000 Control Delay	116.0	HCM 2000 Level of Service	F	
HCM 2000 Volume to Capacity ratio	1.19			
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	19.0	
Intersection Capacity Utilization	114.7%	ICU Level of Service	H	
Analysis Period (min)	15			

c Critical Lane Group

Queues — 2041 Alternative 2 - Three Lanes
6: Dorchester Road & Regional Road 20 — AM Peak Hour

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	197	948	74	531	210	479	100	392
v/c Ratio	0.75	1.50	0.43	0.93	0.74	0.91	0.49	0.73
Control Delay	27.1	254.1	22.4	58.0	39.9	59.4	26.7	41.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.1	254.1	22.4	58.0	39.9	59.4	26.7	41.4
Queue Length 50th (m)	11.8	~301.6	8.4	111.3	29.8	102.0	13.2	76.4
Queue Length 95th (m)	m13.1	m#297.8	16.5	#180.9	#54.7	#167.0	24.4	113.4
Internal Link Dist (m)		85.8		90.2		138.1		163.2
Turn Bay Length (m)	40.0		45.0		50.0		30.0	
Base Capacity (vph)	265	631	178	571	285	524	209	538
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	0.74	1.50	0.42	0.93	0.74	0.91	0.48	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.
m Volume for 95th percentile queue is metered by upstream signal.

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	736	609	4	0	3
Future Volume (Veh/h)	0	736	609	4	0	3
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	800	662	4	0	3
Pedestrians					7	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (m)		114				
pX, platoon unblocked					0.60	
vC, conflicting volume	673				1471	671
vC1, stage 1 conf vol					671	
vC2, stage 2 conf vol					800	
vCu, unblocked vol	673				1452	671
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	99
cM capacity (veh/h)	922				334	457

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	0	800	666	3
Volume Left	0	0	0	0
Volume Right	0	0	4	3
cSH	1700	1700	1700	457
Volume to Capacity	0.00	0.47	0.39	0.01
Queue Length 95th (m)	0.0	0.0	0.0	0.2
Control Delay (s)	0.0	0.0	0.0	12.9
Lane LOS				B
Approach Delay (s)	0.0		0.0	12.9
Approach LOS				B

Intersection Summary			
Average Delay		0.0	
Intersection Capacity Utilization		52.1%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	736	609	4	0	3
Future Volume (vph)	0	736	609	4	0	3
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Storage Length (m)	15.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.999		0.865	
Flt Protected						
Satd. Flow (prot)	1750	1716	1711	0	1514	0
Flt Permitted						
Satd. Flow (perm)	1750	1716	1711	0	1514	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		114.2	50.1		180.5	
Travel Time (s)		8.2	3.6		13.0	
Confl. Peds. (#/hr)	7			7		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	33%	0%	0%
Adj. Flow (vph)	0	800	662	4	0	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	800	666	0	3	0
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		Yes	Yes			
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	52.1%	ICU Level of Service A	
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	716	12	9	588	8	16
Future Volume (Veh/h)	716	12	9	588	8	16
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)	778	13	10	639	9	17
Pedestrians				1	12	
Lane Width (m)				3.6	3.6	
Walking Speed (m/s)				1.2	1.2	
Percent Blockage				0	1	
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (m)	164					
pX, platoon unblocked			0.62		0.62	0.62
vC, conflicting volume			803		1456	798
vC1, stage 1 conf vol					796	
vC2, stage 2 conf vol					659	
vCu, unblocked vol			377		1428	368
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			99		97	96
cM capacity (veh/h)			733		334	419

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	791	10	639	26
Volume Left	0	10	0	9
Volume Right	13	0	0	17
cSH	1700	733	1700	385
Volume to Capacity	0.47	0.01	0.38	0.07
Queue Length 95th (m)	0.0	0.3	0.0	1.7
Control Delay (s)	0.0	10.0	0.0	15.0
Lane LOS		A		C
Approach Delay (s)	0.0	0.2		15.0
Approach LOS				C

Intersection Summary			
Average Delay		0.3	
Intersection Capacity Utilization		52.1%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	716	12	9	588	8	16
Future Volume (vph)	716	12	9	588	8	16
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Storage Length (m)		0.0	15.0		0.0	0.0
Storage Lanes		0	1		1	0
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.998				0.912	
Flt Protected			0.950		0.983	
Satd. Flow (prot)	1713	0	1662	1699	1569	0
Flt Permitted			0.950		0.983	
Satd. Flow (perm)	1713	0	1662	1699	1569	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	50.1			206.3	147.1	
Travel Time (s)	3.6			14.9	10.6	
Confl. Peds. (#/hr)		12	12			1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	0%	3%	0%	0%
Adj. Flow (vph)	778	13	10	639	9	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	791	0	10	639	26	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	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	Yes			Yes		
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	52.1%	ICU Level of Service A	
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	696	17	33	584	12	23	9	53	8	8	24
Future Volume (Veh/h)	8	696	17	33	584	12	23	9	53	8	8	24
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	757	18	36	635	13	25	10	58	9	9	26
Pedestrians								12			3	
Lane Width (m)								3.6			3.6	
Walking Speed (m/s)								1.2			1.2	
Percent Blockage								1			0	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		371			302							
pX, platoon unblocked	0.88			0.65			0.71	0.71	0.65	0.71	0.71	0.88
vC, conflicting volume	651			787			1534	1519	778	1554	1522	644
vC1, stage 1 conf vol							796	796		716	716	
vC2, stage 2 conf vol							738	723		838	805	
vCu, unblocked vol	537			410			1174	1153	397	1203	1157	530
tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.5	6.3
tC, 2 stage (s)							6.2	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	3.4
p0 queue free %	99			95			91	97	86	96	97	94
cM capacity (veh/h)	916			737			269	295	421	235	281	466

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	9	775	36	648	93	44
Volume Left	9	0	36	0	25	9
Volume Right	0	18	0	13	58	26
cSH	916	1700	737	1700	352	349
Volume to Capacity	0.01	0.46	0.05	0.38	0.26	0.13
Queue Length 95th (m)	0.2	0.0	1.2	0.0	8.4	3.4
Control Delay (s)	9.0	0.0	10.1	0.0	18.9	16.8
Lane LOS	A		B		C	C
Approach Delay (s)	0.1		0.5		18.9	16.8
Approach LOS					C	C

Intersection Summary					
Average Delay	1.8				
Intersection Capacity Utilization	55.8%	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)	8	696	17	33	584	12	23	9	53	8	8	24
Future Volume (vph)	8	696	17	33	584	12	23	9	53	8	8	24
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	15.0		0.0	15.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.997			0.997			0.916			0.920	
Flt Protected	0.950			0.950				0.987			0.990	
Satd. Flow (prot)	1662	1708	0	1599	1703	0	0	1525	0	0	1488	0
Flt Permitted	0.950			0.950				0.987			0.990	
Satd. Flow (perm)	1662	1708	0	1599	1703	0	0	1525	0	0	1488	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		206.3			78.8			169.0			191.8	
Travel Time (s)		14.9			5.7			12.2			13.8	
Confl. Peds. (#/hr)	3		12	12		3						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	8%	4%	2%	25%	7%	0%	3%	0%	0%	12%
Adj. Flow (vph)	9	757	18	36	635	13	25	10	58	9	9	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	9	775	0	36	648	0	0	93	0	0	44	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			0.0			0.0	
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		Yes			Yes							
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary					
Area Type:	Other				
Control Type: Unsignalized					
Intersection Capacity Utilization	55.8%	ICU Level of Service B			
Analysis Period (min)	15				

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	24	725	605	12	13	27
Future Volume (Veh/h)	24	725	605	12	13	27
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)	26	788	658	13	14	29
Pedestrians		2			3	
Lane Width (m)		3.6			3.6	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			0	
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (m)			223			
pX, platoon unblocked	0.85				0.85	0.85
vC, conflicting volume	674				1508	670
vC1, stage 1 conf vol					668	
vC2, stage 2 conf vol					840	
vCu, unblocked vol	523				1509	518
tC, single (s)	4.2				6.6	6.3
tC, 2 stage (s)					5.6	
tF (s)	2.3				3.7	3.4
p0 queue free %	97				95	94
cM capacity (veh/h)	863				304	455

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	26	788	671	43
Volume Left	26	0	0	14
Volume Right	0	0	13	29
cSH	863	1700	1700	391
Volume to Capacity	0.03	0.46	0.39	0.11
Queue Length 95th (m)	0.7	0.0	0.0	2.9
Control Delay (s)	9.3	0.0	0.0	15.3
Lane LOS	A			C
Approach Delay (s)	0.3		0.0	15.3
Approach LOS				C

Intersection Summary			
Average Delay		0.6	
Intersection Capacity Utilization		52.1%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	24	725	605	12	13	27
Future Volume (vph)	24	725	605	12	13	27
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Storage Length (m)	15.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.997		0.909	
Flt Protected	0.950				0.984	
Satd. Flow (prot)	1568	1716	1703	0	1366	0
Flt Permitted	0.950				0.984	
Satd. Flow (perm)	1568	1716	1703	0	1366	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		78.8	68.0		182.2	
Travel Time (s)		5.7	4.9		13.1	
Confl. Peds. (#/hr)	3			3		2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	2%	2%	25%	22%	11%
Adj. Flow (vph)	26	788	658	13	14	29
Shared Lane Traffic (%)						
Lane Group Flow (vph)	26	788	671	0	43	0
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		Yes	Yes			
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	52.1%	ICU Level of Service A	
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	701	41	35	640	28	41
Future Volume (Veh/h)	701	41	35	640	28	41
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)	762	45	38	696	30	45
Pedestrians	1				11	
Lane Width (m)	3.6				3.6	
Walking Speed (m/s)	1.2				1.2	
Percent Blockage	0				1	
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (m)				155		
pX, platoon unblocked					0.82	
vC, conflicting volume			818		1568	796
vC1, stage 1 conf vol					796	
vC2, stage 2 conf vol					773	
vCu, unblocked vol			818		1583	796
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			95		90	88
cM capacity (veh/h)			794		307	381

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	807	38	696	75
Volume Left	0	38	0	30
Volume Right	45	0	0	45
cSH	1700	794	1700	347
Volume to Capacity	0.47	0.05	0.41	0.22
Queue Length 95th (m)	0.0	1.2	0.0	6.5
Control Delay (s)	0.0	9.8	0.0	18.2
Lane LOS		A		C
Approach Delay (s)	0.0	0.5		18.2
Approach LOS				C

Intersection Summary			
Average Delay		1.1	
Intersection Capacity Utilization		53.9%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	701	41	35	640	28	41
Future Volume (vph)	701	41	35	640	28	41
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Storage Length (m)		0.0	15.0		0.0	0.0
Storage Lanes		0	1		1	0
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.992				0.919	
Flt Protected			0.950		0.980	
Satd. Flow (prot)	1697	0	1599	1699	1510	0
Flt Permitted			0.950		0.980	
Satd. Flow (perm)	1697	0	1599	1699	1510	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	68.0			55.0	165.0	
Travel Time (s)	4.9			4.0	11.9	
Confl. Peds. (#/hr)		11	11		1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	7%	4%	3%	5%	4%
Adj. Flow (vph)	762	45	38	696	30	45
Shared Lane Traffic (%)						
Lane Group Flow (vph)	807	0	38	696	75	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	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	Yes			Yes		
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	53.9%	ICU Level of Service A	
Analysis Period (min)	15		



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	9	747	660	9	5	15
Future Volume (Veh/h)	9	747	660	9	5	15
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)	10	812	717	10	5	16
Pedestrians		1			8	
Lane Width (m)		3.6			3.6	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			1	
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (m)			100			
pX, platoon unblocked	0.81				0.81	0.81
vC, conflicting volume	735				1562	731
vC1, stage 1 conf vol					730	
vC2, stage 2 conf vol					832	
vCu, unblocked vol	561				1576	556
tC, single (s)	4.1				6.4	6.3
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.4
p0 queue free %	99				98	96
cM capacity (veh/h)	826				321	417

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	10	812	727	21
Volume Left	10	0	0	5
Volume Right	0	0	10	16
cSH	826	1700	1700	389
Volume to Capacity	0.01	0.48	0.43	0.05
Queue Length 95th (m)	0.3	0.0	0.0	1.4
Control Delay (s)	9.4	0.0	0.0	14.8
Lane LOS	A			B
Approach Delay (s)	0.1		0.0	14.8
Approach LOS				B

Intersection Summary				
Average Delay			0.3	
Intersection Capacity Utilization			53.0%	ICU Level of Service A
Analysis Period (min)			15	



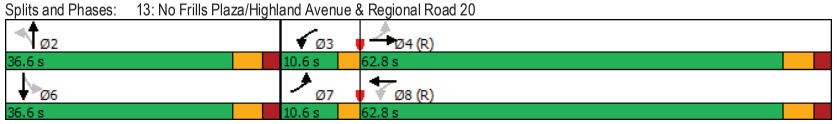
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	9	747	660	9	5	15
Future Volume (vph)	9	747	660	9	5	15
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Storage Length (m)	15.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.998		0.897	
Flt Protected	0.950				0.988	
Satd. Flow (prot)	1662	1716	1713	0	1441	0
Flt Permitted	0.950				0.988	
Satd. Flow (perm)	1662	1716	1713	0	1441	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		55.0	100.4		189.4	
Travel Time (s)		4.0	7.2		13.6	
Confl. Peds. (#/hr)	8			8		1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	0%	0%	10%
Adj. Flow (vph)	10	812	717	10	5	16
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	812	727	0	21	0
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		Yes	Yes			
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 53.0%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	8.0		6.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.5	35.5		10.5	35.5		36.5	36.5		36.5	36.5	
Total Split (s)	10.6	62.8		10.6	62.8		36.6	36.6		36.6	36.6	
Total Split (%)	9.6%	57.1%		9.6%	57.1%		33.3%	33.3%		33.3%	33.3%	
Maximum Green (s)	7.6	56.3		7.6	56.3		30.1	30.1		30.1	30.1	
Yellow Time (s)	3.0	4.1		3.0	4.1		4.1	4.1		4.1	4.1	
All-Red Time (s)	0.0	2.4		0.0	2.4		2.4	2.4		2.4	2.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)	3.0	6.5		3.0	6.5		6.5	6.5			6.5	
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	
Recall Mode	None	C-Max		None	C-Max		Max	Max		Max	Max	
Walk Time (s)		11.0			11.0		11.0	11.0		11.0	11.0	
Flash Dont Walk (s)		18.0			18.0		19.0	19.0		19.0	19.0	
Pedestrian Calls (#/hr)		0			0		0	0		0	0	
Act Effct Green (s)	68.2	61.0		69.5	63.2		30.1	30.1			30.1	
Actuated g/C Ratio	0.62	0.55		0.63	0.57		0.27	0.27			0.27	
v/c Ratio	0.03	0.74		0.10	0.52		0.09	0.07			0.18	
Control Delay	7.4	25.9		8.0	17.6		30.7	15.2			26.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	7.4	25.9		8.0	17.6		30.7	15.2			26.2	
LOS	A	C		A	B		C	B			C	
Approach Delay		25.5			16.9			22.8			26.2	
Approach LOS		C			B			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 6 (5%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 22.1		Intersection LOS: C	
Intersection Capacity Utilization 72.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 13: No Frills Plaza/Highland Avenue & Regional Road 20



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	613	23	31	446	13	27	7	20	27	24	16
Future Volume (vph)	12	613	23	31	446	13	27	7	20	27	24	16
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	35.0		0.0	35.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	0		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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00	1.00		1.00	0.98			0.99	
Frt		0.995			0.996			0.890			0.968	
Flt Protected	0.950			0.950			0.950				0.980	
Satd. Flow (prot)	1662	1674	0	1662	1661	0	1662	1522	0	0	1587	0
Flt Permitted	0.396			0.229			0.710				0.889	
Satd. Flow (perm)	689	1674	0	400	1661	0	1238	1522	0	0	1434	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			2			22			14	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		100.4			342.8			50.5			193.9	
Travel Time (s)		7.2			24.7			3.6			14.0	
Confl. Peds. (#/hr)	9		8	8		9	2		6	6		2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	4%	0%	0%	5%	0%	0%	0%	0%	0%	0%	17%
Adj. Flow (vph)	13	666	25	34	485	14	29	8	22	29	26	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	13	691	0	34	499	0	29	30	0	0	72	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		Yes			Yes							
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	613	23	31	446	13	27	7	20	27	24	16
Future Volume (vph)	12	613	23	31	446	13	27	7	20	27	24	16
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	6.5		3.0	6.5		6.5	6.5			6.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.89			0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.98	
Satd. Flow (prot)	1658	1674		1662	1660		1657	1522			1581	
Flt Permitted	0.40	1.00		0.23	1.00		0.71	1.00			0.89	
Satd. Flow (perm)	691	1674		401	1660		1239	1522			1434	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	13	666	25	34	485	14	29	8	22	29	26	17
RTOR Reduction (vph)	0	1	0	0	1	0	0	16	0	0	10	0
Lane Group Flow (vph)	13	690	0	34	498	0	29	14	0	0	62	0
Confl. Peds. (#/hr)	9		8	8		9	2		6	6		2
Heavy Vehicles (%)	0%	4%	0%	0%	5%	0%	0%	0%	0%	0%	0%	17%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	62.3	59.8		65.5	61.4		30.1	30.1			30.1	
Effective Green, g (s)	62.3	59.8		65.5	61.4		30.1	30.1			30.1	
Actuated g/C Ratio	0.57	0.54		0.60	0.56		0.27	0.27			0.27	
Clearance Time (s)	3.0	6.5		3.0	6.5		6.5	6.5			6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	413	910		285	926		339	416			392	
v/s Ratio Prot	0.00	c0.41		c0.00	0.30			0.01				
v/s Ratio Perm	0.02			0.07			0.02				c0.04	
v/c Ratio	0.03	0.76		0.12	0.54		0.09	0.03			0.16	
Uniform Delay, d1	10.9	19.5		12.5	15.3		29.7	29.3			30.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.0	5.9		0.2	2.2		0.5	0.2			0.9	
Delay (s)	11.0	25.4		12.7	17.6		30.2	29.4			31.2	
Level of Service	B	C		B	B		C	C			C	
Approach Delay (s)		25.1			17.3			29.8			31.2	
Approach LOS		C			B			C			C	

Intersection Summary				
HCM 2000 Control Delay	22.6	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.54			
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	72.4%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	13	691	34	499	29	30	72
v/c Ratio	0.03	0.74	0.10	0.52	0.09	0.07	0.18
Control Delay	7.4	25.9	8.0	17.6	30.7	15.2	26.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.4	25.9	8.0	17.6	30.7	15.2	26.2
Queue Length 50th (m)	1.0	120.7	2.6	58.5	4.9	1.3	10.0
Queue Length 95th (m)	3.2	179.2	6.3	106.8	12.6	8.8	22.1
Internal Link Dist (m)		76.4		318.8		26.5	169.9
Turn Bay Length (m)	35.0		35.0				
Base Capacity (vph)	500	929	341	955	338	432	402
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.74	0.10	0.52	0.09	0.07	0.18

Intersection Summary

Intersection: 4: Brookfield Avenue & Regional Road 20

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	LTR	LTR
Maximum Queue (m)	13.9	143.8	10.2	13.4	78.9	11.6
Average Queue (m)	0.6	68.1	1.2	0.5	33.6	4.0
95th Queue (m)	5.7	180.5	5.9	5.0	118.6	11.5
Link Distance (m)		286.6		96.4	214.8	185.8
Upstream Blk Time (%)					1	
Queuing Penalty (veh)					0	
Storage Bay Dist (m)	15.0		15.0			
Storage Blk Time (%)		22	0	0		
Queuing Penalty (veh)		1	1	0		

Intersection: 5: Regional Road 20 & Mouland Avenue

Movement	EB	EB	SB
Directions Served	L	T	LR
Maximum Queue (m)	27.5	100.0	25.6
Average Queue (m)	1.0	86.3	6.1
95th Queue (m)	12.5	127.6	21.8
Link Distance (m)	96.4	96.4	179.2
Upstream Blk Time (%)		18	
Queuing Penalty (veh)		74	
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 6: Dorchester Road & Regional Road 20

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (m)	47.4	93.5	52.4	99.5	57.4	163.7	37.4	135.1
Average Queue (m)	35.1	91.5	19.9	70.6	48.4	107.7	24.0	67.5
95th Queue (m)	60.1	93.9	45.3	114.4	70.3	176.1	42.9	113.3
Link Distance (m)		89.1		97.1		151.7		176.7
Upstream Blk Time (%)		38		7		17		
Queuing Penalty (veh)		323		41		0		
Storage Bay Dist (m)	40.0		45.0		50.0		30.0	
Storage Blk Time (%)	3	57		30	12	32	2	34
Queuing Penalty (veh)	30	103		20	55	61	7	31

Intersection: 1: Montrose Road (RR98) & Regional Road 20

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	T	R
Maximum Queue (m)	62.4	253.2	42.4	168.8	29.2	52.3	218.9	60.6	67.6	55.7
Average Queue (m)	58.6	236.4	23.9	86.5	3.2	20.1	119.7	26.9	32.9	18.7
95th Queue (m)	74.0	286.5	48.2	144.1	16.6	52.8	214.3	49.0	57.6	37.1
Link Distance (m)		237.6		237.2	237.2		332.6		313.3	
Upstream Blk Time (%)		49					0			
Queuing Penalty (veh)		0					0			
Storage Bay Dist (m)	55.0		35.0			45.0		80.0		70.0
Storage Blk Time (%)	24	35	2	39		0	45	0	0	0
Queuing Penalty (veh)	142	122	8	31		0	24	2	1	0

Intersection: 2: Niagara Falls Inn Driveway/Belmont Avenue & Regional Road 20

Movement	EB	EB	WB	WB	NB	NB	SB
Directions Served	L	TR	L	TR	L	TR	LTR
Maximum Queue (m)	22.2	242.2	19.5	73.8	15.4	7.3	23.7
Average Queue (m)	3.0	188.9	4.7	28.5	1.6	1.0	5.6
95th Queue (m)	12.1	243.8	14.6	56.9	8.2	5.4	17.0
Link Distance (m)		237.2		212.9	65.1	65.1	204.5
Upstream Blk Time (%)		1					
Queuing Penalty (veh)		6					
Storage Bay Dist (m)	15.0		15.0				
Storage Blk Time (%)	0	39	5	23			
Queuing Penalty (veh)	3	6	31	4			

Intersection: 3: Royal Manor Drive & Regional Road 20

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	LTR	LTR
Maximum Queue (m)	12.9	85.3	1.8	105.1	9.1	25.5
Average Queue (m)	2.1	63.2	0.1	58.5	1.0	7.0
95th Queue (m)	8.8	79.8	1.4	96.8	5.5	18.5
Link Distance (m)		212.9		286.6	47.8	88.5
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)	15.0		15.0			
Storage Blk Time (%)	0	34		25		
Queuing Penalty (veh)	0	4		0		

Intersection: 10: Regional Road 20 & Byng Avenue

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (m)	10.2	6.6	3.7	23.9
Average Queue (m)	2.3	0.4	0.1	9.8
95th Queue (m)	8.8	4.3	1.9	20.5
Link Distance (m)		63.4	48.1	171.8
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)	15.0			
Storage Blk Time (%)	0	0		
Queuing Penalty (veh)	0	0		

Intersection: 11: Franklin Avenue & Regional Road 20

Movement	EB	WB	WB	NB
Directions Served	TR	L	T	LR
Maximum Queue (m)	5.5	13.9	1.9	25.2
Average Queue (m)	0.4	3.2	0.1	10.8
95th Queue (m)	3.7	10.8	1.3	19.9
Link Distance (m)	48.1		41.1	154.4
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)		15.0		
Storage Blk Time (%)		0		
Queuing Penalty (veh)		2		

Intersection: 12: Regional Road 20 & Glenholme Avenue

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (m)	9.0	21.6	1.8	15.9
Average Queue (m)	1.1	1.2	0.1	4.7
95th Queue (m)	5.8	9.7	1.6	13.2
Link Distance (m)		41.1	80.1	179.1
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)	15.0			
Storage Blk Time (%)	0	0		
Queuing Penalty (veh)	0	0		

Intersection: 7: Regional Road 20 & Depew Avenue

Movement	WB	SB
Directions Served	TR	LR
Maximum Queue (m)	34.3	6.9
Average Queue (m)	9.3	0.7
95th Queue (m)	31.6	4.5
Link Distance (m)	30.7	170.2
Upstream Blk Time (%)	4	
Queuing Penalty (veh)	21	
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 8: Corwin Avenue & Regional Road 20

Movement	WB	WB	NB
Directions Served	L	T	LR
Maximum Queue (m)	14.3	73.7	13.1
Average Queue (m)	1.6	8.3	4.9
95th Queue (m)	8.0	45.6	12.6
Link Distance (m)		191.0	136.8
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)	15.0		
Storage Blk Time (%)	0	3	
Queuing Penalty (veh)	0	0	

Intersection: 9: Calton Avenue/Prince Edward Avenue & Regional Road 20

Movement	EB	WB	NB	SB
Directions Served	L	L	LTR	LTR
Maximum Queue (m)	10.0	12.6	33.0	21.6
Average Queue (m)	0.7	4.0	12.6	9.0
95th Queue (m)	4.6	11.8	24.5	18.3
Link Distance (m)			158.7	181.5
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)	15.0	15.0		
Storage Blk Time (%)	0	0		
Queuing Penalty (veh)	0	1		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	274	753	77	196	818	176	108	322	176	270	409	467
Future Volume (vph)	274	753	77	196	818	176	108	322	176	270	409	467
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	55.0		0.0	35.0		0.0	45.0		0.0	80.0		70.0
Storage Lanes	1		0	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	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00				0.96	0.98	0.98				0.92
Frt		0.986				0.850		0.947				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1554	1642	0	1511	1651	1417	1583	1586	0	1599	1683	1390
Flt Permitted	0.069			0.073			0.236			0.105		
Satd. Flow (perm)	113	1642	0	116	1651	1366	384	1586	0	177	1683	1277
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5				106		20				220
Link Speed (k/h)		60			50			50			50	
Link Distance (m)		251.8			265.0			342.9			323.7	
Travel Time (s)		15.1			19.1			24.7			23.3	
Confl. Peds. (#/hr)	17		10	10		17	27		14	14		27
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	7%	4%	11%	10%	6%	5%	5%	4%	0%	4%	4%	7%
Adj. Flow (vph)	298	818	84	213	889	191	117	350	191	293	445	508
Shared Lane Traffic (%)												
Lane Group Flow (vph)	298	902	0	213	889	191	117	541	0	293	445	508
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					Yes							
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	0.0
Detector 1 Queue (s)	0.0	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	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	

Intersection: 13: No Frills Plaza/Highland Avenue & Regional Road 20

Movement	EB	EB	WB	WB	NB	NB	SB
Directions Served	L	TR	L	TR	L	TR	LTR
Maximum Queue (m)	18.2	79.0	36.9	84.6	18.6	15.5	31.4
Average Queue (m)	2.4	39.9	6.9	41.1	6.2	5.0	11.4
95th Queue (m)	10.8	71.1	20.6	74.8	16.3	13.4	24.8
Link Distance (m)		80.1		332.4	40.0	40.0	183.6
Upstream Blk Time (%)		0					
Queuing Penalty (veh)		1					
Storage Bay Dist (m)	35.0		35.0				
Storage Blk Time (%)		8		10			
Queuing Penalty (veh)		1		3			

Network Summary

Network wide Queuing Penalty: 1161

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	298	902	213	889	191	117	541	293	445	508
v/c Ratio	1.48	1.27	1.31	1.32	0.31	0.62	1.27	1.49	0.88	0.95
Control Delay	271.3	167.8	208.3	189.5	13.2	44.4	178.4	271.6	65.5	54.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	271.3	167.8	208.3	189.5	13.2	44.4	178.4	271.6	65.5	54.3
Queue Length 50th (m)	~100.2	~319.9	~61.9	~321.9	14.9	21.1	~187.6	~97.6	119.2	89.3
Queue Length 95th (m)	#161.1	#402.1	#115.2	#402.9	33.5	35.6	#260.9	#157.3	#180.7	#164.7
Internal Link Dist (m)		227.8		241.0			318.9		299.7	
Turn Bay Length (m)	55.0		35.0			45.0		80.0		70.0
Base Capacity (vph)	201	708	162	672	619	188	426	197	503	536
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.48	1.27	1.31	1.32	0.31	0.62	1.27	1.49	0.88	0.95

Intersection Summary

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

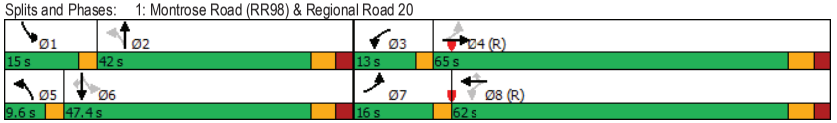
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		6
Detector Phase	7	4		3	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0	10.0	3.0	8.0		6.0	8.0	8.0
Minimum Split (s)	10.5	35.0		10.5	35.0	35.0	9.5	36.0		10.5	36.0	36.0
Total Split (s)	16.0	65.0		13.0	62.0	62.0	9.6	42.0		15.0	47.4	47.4
Total Split (%)	11.9%	48.1%		9.6%	45.9%	45.9%	7.1%	31.1%		11.1%	35.1%	35.1%
Maximum Green (s)	13.0	58.0		10.0	55.0	55.0	6.6	35.0		12.0	40.4	40.4
Yellow Time (s)	3.0	4.1		3.0	4.1	4.1	3.0	4.1		3.0	4.1	4.1
All-Red Time (s)	0.0	2.9		0.0	2.9	2.9	0.0	2.9		0.0	2.9	2.9
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.0	7.0		3.0	7.0	7.0	3.0	7.0		3.0	7.0	7.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	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	3.0
Recall Mode	None	C-Max		None	C-Max	C-Max	None	Max		None	Max	Max
Walk Time (s)		10.0			10.0	10.0		11.0			11.0	11.0
Flash Dont Walk (s)		18.0			18.0	18.0		18.0			18.0	18.0
Pedestrian Calls (#/hr)		0			0	0		0			0	0
Act Effct Green (s)	75.0	58.0		69.0	55.0	55.0	45.6	35.0		54.0	40.4	40.4
Actuated g/C Ratio	0.56	0.43		0.51	0.41	0.41	0.34	0.26		0.40	0.30	0.30
v/c Ratio	1.48	1.27		1.31	1.32	0.31	0.62	1.27		1.49	0.88	0.95
Control Delay	271.3	167.8		208.3	189.5	13.2	44.4	178.4		271.6	65.5	54.3
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	271.3	167.8		208.3	189.5	13.2	44.4	178.4		271.6	65.5	54.3
LOS	F	F		F	F	B	D	F		F	E	D
Approach Delay		193.5			166.5			154.6			109.4	
Approach LOS		F			F			F			F	

Intersection Summary

Area Type:	Other
Cycle Length: 135	
Actuated Cycle Length: 135	
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green	
Natural Cycle: 145	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.49	
Intersection Signal Delay: 155.9	Intersection LOS: F
Intersection Capacity Utilization 128.3%	ICU Level of Service H
Analysis Period (min) 15	

Splits and Phases: 1: Montrose Road (RR98) & Regional Road 20



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	1267	40	83	1308	29	64	1	84	28	4	16
Future Volume (vph)	17	1267	40	83	1308	29	64	1	84	28	4	16
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	15.0		0.0	15.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	0		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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00						0.98			1.00	
Frt		0.995			0.997			0.852			0.955	
Flt Protected	0.950			0.950			0.950				0.971	
Satd. Flow (prot)	1662	1645	0	1662	1663	0	1330	1459	0	0	1287	0
Flt Permitted	0.068			0.065			0.724				0.813	
Satd. Flow (perm)	119	1645	0	114	1663	0	1014	1459	0	0	1077	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			2			91			17	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		265.0			231.8			75.5			218.5	
Travel Time (s)		19.1			16.7			5.4			15.7	
Confl. Peds. (#/hr)			5	5					1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	6%	0%	0%	5%	0%	25%	0%	0%	33%	0%	20%
Adj. Flow (vph)	18	1377	43	90	1422	32	70	1	91	30	4	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	18	1420	0	90	1454	0	70	92	0	0	51	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		Yes			Yes							
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	274	753	77	196	818	176	108	322	176	270	409	467
Future Volume (vph)	274	753	77	196	818	176	108	322	176	270	409	467
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	7.0		3.0	7.0	7.0	3.0	7.0		3.0	7.0	7.0
Lane Util. Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.96	1.00	0.98		1.00	1.00	0.92
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1554	1642		1511	1651	1366	1576	1586		1599	1683	1277
Flt Permitted	0.07	1.00		0.07	1.00	1.00	0.24	1.00		0.11	1.00	1.00
Satd. Flow (perm)	113	1642		116	1651	1366	391	1586		177	1683	1277
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	298	818	84	213	889	191	117	350	191	293	445	508
RTOR Reduction (vph)	0	3	0	0	0	63	0	15	0	0	0	154
Lane Group Flow (vph)	298	899	0	213	889	128	117	526	0	293	445	354
Confl. Peds. (#/hr)	17		10	10		17	27		14	14		27
Heavy Vehicles (%)	7%	4%	11%	10%	6%	5%	5%	4%	0%	4%	4%	7%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	71.0	58.0		65.0	55.0	55.0	41.6	35.0		50.0	40.4	40.4
Effective Green, g (s)	71.0	58.0		65.0	55.0	55.0	41.6	35.0		50.0	40.4	40.4
Actuated g/C Ratio	0.53	0.43		0.48	0.41	0.41	0.31	0.26		0.37	0.30	0.30
Clearance Time (s)	3.0	7.0		3.0	7.0	7.0	3.0	7.0		3.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	198	705		159	672	556	178	411		191	503	382
v/s Ratio Prot	c0.14	0.55		0.10	0.54		0.03	0.33		c0.14	0.26	
v/s Ratio Perm	c0.65			0.55		0.09	0.17			c0.43		0.28
v/c Ratio	1.51	1.28		1.34	1.32	0.23	0.66	1.28		1.53	0.88	0.93
Uniform Delay, d1	43.3	38.5		39.7	40.0	26.2	38.2	50.0		37.2	45.1	45.9
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	251.7	134.8		188.9	155.6	1.0	8.5	143.7		264.9	19.9	30.7
Delay (s)	295.0	173.3		228.6	195.6	27.1	46.7	193.7		302.1	64.9	76.6
Level of Service	F	F		F	F	C	D	F		F	E	E
Approach Delay (s)		203.5			176.1			167.5			125.4	
Approach LOS		F			F			F			F	

Intersection Summary					
HCM 2000 Control Delay	168.0	HCM 2000 Level of Service		F	
HCM 2000 Volume to Capacity ratio	1.58				
Actuated Cycle Length (s)	135.0	Sum of lost time (s)		20.0	
Intersection Capacity Utilization	128.3%	ICU Level of Service		H	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	18	1420	90	1454	70	92	51
v/c Ratio	0.11	1.60	0.56	1.52	0.26	0.20	0.17
Control Delay	8.6	298.4	26.0	252.8	35.3	7.9	24.5
Queue Delay	0.0	1.8	0.0	0.0	0.0	0.0	0.0
Total Delay	8.6	300.3	26.0	252.8	35.3	8.0	24.5
Queue Length 50th (m)	1.4	~471.1	6.6	~443.1	12.6	0.2	5.9
Queue Length 95th (m)	4.0	#556.6	m2.5	m#301.1	25.8	12.8	16.2
Internal Link Dist (m)		241.0		207.8		51.5	194.5
Turn Bay Length (m)	15.0		15.0				
Base Capacity (vph)	165	888	163	957	267	451	296
Starvation Cap Reductn	0	0	0	3	0	0	0
Spillback Cap Reductn	0	232	0	0	0	12	2
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.11	2.16	0.55	1.52	0.26	0.21	0.17

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.

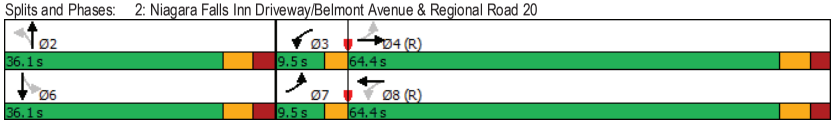
m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	8.0		6.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	9.5	39.9		9.5	39.9		36.1	36.1		36.1	36.1	
Total Split (s)	9.5	64.4		9.5	64.4		36.1	36.1		36.1	36.1	
Total Split (%)	8.6%	58.5%		8.6%	58.5%		32.8%	32.8%		32.8%	32.8%	
Maximum Green (s)	6.5	57.5		6.5	57.5		29.0	29.0		29.0	29.0	
Yellow Time (s)	3.0	4.1		3.0	4.1		4.1	4.1		4.1	4.1	
All-Red Time (s)	0.0	2.8		0.0	2.8		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)	3.0	6.9		3.0	6.9		7.1	7.1			7.1	
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	
Recall Mode	None	C-Max		None	C-Max		Max	Max		Max	Max	
Walk Time (s)		12.0			12.0		11.0	11.0		11.0	11.0	
Flash Dont Walk (s)		21.0			21.0		18.0	18.0		18.0	18.0	
Pedestrian Calls (#/hr)		0			0		0	0		0	0	
Act Effct Green (s)	68.2	59.4		69.8	63.3		29.0	29.0			29.0	
Actuated g/C Ratio	0.62	0.54		0.63	0.58		0.26	0.26			0.26	
v/c Ratio	0.11	1.60		0.56	1.52		0.26	0.20			0.17	
Control Delay	8.6	298.4		26.0	252.8		35.3	7.9			24.5	
Queue Delay	0.0	1.8		0.0	0.0		0.0	0.0			0.0	
Total Delay	8.6	300.3		26.0	252.8		35.3	8.0			24.5	
LOS	A	F		C	F		D	A			C	
Approach Delay		296.6			239.6			19.8			24.5	
Approach LOS		F			F			B			C	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 16 (15%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.60
Intersection Signal Delay: 250.7 Intersection LOS: F
Intersection Capacity Utilization 112.5% ICU Level of Service H
Analysis Period (min) 15

Splits and Phases: 2: Niagara Falls Inn Driveway/Belmont Avenue & Regional Road 20



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	1387	0	1	1323	19	1	0	5	16	0	37
Future Volume (vph)	44	1387	0	1	1323	19	1	0	5	16	0	37
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	15.0		0.0	15.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					1.00							
Frt					0.998			0.887			0.905	
Flt Protected	0.950			0.950				0.992			0.985	
Satd. Flow (prot)	1458	1651	0	1662	1664	0	0	1540	0	0	1448	0
Flt Permitted	0.058			0.058				0.977			0.932	
Satd. Flow (perm)	89	1651	0	102	1664	0	0	1517	0	0	1370	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					1			35			40	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		231.8			321.7			58.1			98.8	
Travel Time (s)		16.7			23.2			4.2			7.1	
Confl. Peds. (#/hr)	2		11	11		2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	14%	6%	0%	0%	5%	0%	0%	0%	0%	0%	0%	11%
Adj. Flow (vph)	48	1508	0	1	1438	21	1	0	5	17	0	40
Shared Lane Traffic (%)												
Lane Group Flow (vph)	48	1508	0	1	1459	0	0	6	0	0	57	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			0.0			0.0	
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		Yes			Yes							
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	1267	40	83	1308	29	64	1	84	28	4	16
Future Volume (vph)	17	1267	40	83	1308	29	64	1	84	28	4	16
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	6.9		3.0	6.9		7.1	7.1			7.1	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.85			0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.97	
Satd. Flow (prot)	1662	1645		1662	1663		1330	1458			1286	
Flt Permitted	0.07	1.00		0.07	1.00		0.72	1.00			0.81	
Satd. Flow (perm)	119	1645		114	1663		1013	1458			1077	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	18	1377	43	90	1422	32	70	1	91	30	4	17
RTOR Reduction (vph)	0	1	0	0	1	0	0	67	0	0	13	0
Lane Group Flow (vph)	18	1419	0	90	1453	0	70	25	0	0	38	0
Confl. Peds. (#/hr)			5	5					1	1		
Heavy Vehicles (%)	0%	6%	0%	0%	5%	0%	25%	0%	0%	33%	0%	20%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	61.3	58.8		66.7	61.5		29.0	29.0			29.0	
Effective Green, g (s)	61.3	58.8		66.7	61.5		29.0	29.0			29.0	
Actuated g/C Ratio	0.56	0.53		0.61	0.56		0.26	0.26			0.26	
Clearance Time (s)	3.0	6.9		3.0	6.9		7.1	7.1			7.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	101	879		142	929		267	384			283	
v/s Ratio Prot	0.00	0.86		c0.03	c0.87			0.02				
v/s Ratio Perm	0.09			0.35			c0.07				0.04	
v/c Ratio	0.18	1.61		0.63	1.56		0.26	0.07			0.14	
Uniform Delay, d1	24.7	25.6		24.9	24.2		32.0	30.3			30.9	
Progression Factor	1.00	1.00		1.79	0.48		1.00	1.00			1.00	
Incremental Delay, d2	0.8	281.8		0.8	254.4		2.4	0.3			1.0	
Delay (s)	25.5	307.4		45.4	266.0		34.4	30.7			31.9	
Level of Service	C	F		D	F		C	C			C	
Approach Delay (s)		303.8			253.1			32.3			31.9	
Approach LOS		F			F			C			C	

Intersection Summary					
HCM 2000 Control Delay	261.2	HCM 2000 Level of Service		F	
HCM 2000 Volume to Capacity ratio	1.15				
Actuated Cycle Length (s)	110.0	Sum of lost time (s)		17.0	
Intersection Capacity Utilization	112.5%	ICU Level of Service		H	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	48	1508	1	1459	6	57
v/c Ratio	0.87	1.46	0.02	1.40	0.01	0.15
Control Delay	44.1	228.6	13.0	203.4	0.0	15.3
Queue Delay	0.0	0.0	0.0	2.3	0.0	0.0
Total Delay	44.1	228.6	13.0	205.7	0.0	15.3
Queue Length 50th (m)	4.6	~460.9	0.1	~436.1	0.0	2.9
Queue Length 95th (m)	m3.8	m117.5	m0.1	m123.8	0.0	13.4
Internal Link Dist (m)		207.8		297.7	34.1	74.8
Turn Bay Length (m)	15.0		15.0			
Base Capacity (vph)	55	1035	63	1044	412	378
Starvation Cap Reductn	0	1	0	0	0	0
Spillback Cap Reductn	0	0	0	356	0	8
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.87	1.46	0.02	2.12	0.01	0.15

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	24.5	24.5		24.5	24.5		34.5	34.5		34.5	34.5	
Total Split (s)	75.5	75.5		75.5	75.5		34.5	34.5		34.5	34.5	
Total Split (%)	68.6%	68.6%		68.6%	68.6%		31.4%	31.4%		31.4%	31.4%	
Maximum Green (s)	69.0	69.0		69.0	69.0		28.0	28.0		28.0	28.0	
Yellow Time (s)	4.1	4.1		4.1	4.1		4.1	4.1		4.1	4.1	
All-Red Time (s)	2.4	2.4		2.4	2.4		2.4	2.4		2.4	2.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5			6.5			6.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		Max	Max		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		18.0	18.0		18.0	18.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	69.0	69.0		69.0	69.0			28.0			28.0	
Actuated g/C Ratio	0.63	0.63		0.63	0.63			0.25			0.25	
v/c Ratio	0.87	1.46		0.02	1.40			0.01			0.15	
Control Delay	44.1	228.6		13.0	203.4			0.0			15.3	
Queue Delay	0.0	0.0		0.0	2.3			0.0			0.0	
Total Delay	44.1	228.6		13.0	205.7			0.0			15.3	
LOS	D	F		B	F			A			B	
Approach Delay		222.9			205.5						15.3	
Approach LOS		F			F						B	

Intersection Summary

Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.46			
Intersection Signal Delay: 210.4		Intersection LOS: F	
Intersection Capacity Utilization 96.8%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 3: Royal Manor Drive & Regional Road 20



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	1182	53	13	1227	8	13	1	27	1	3	24
Future Volume (vph)	11	1182	53	13	1227	8	13	1	27	1	3	24
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	15.0		0.0	15.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.994			0.999			0.911			0.883	
Flt Protected	0.950			0.950				0.984			0.998	
Satd. Flow (prot)	1662	1707	0	1662	1698	0	0	1569	0	0	1542	0
Flt Permitted	0.950			0.950				0.984			0.998	
Satd. Flow (perm)	1662	1707	0	1662	1698	0	0	1569	0	0	1542	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		321.7			111.0			229.0			196.7	
Travel Time (s)		23.2			8.0			16.5			14.2	
Confl. Peds. (#/hr)	5		12	12		5	2		2	2		2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	12	1285	58	14	1334	9	14	1	29	1	3	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	1343	0	14	1343	0	0	44	0	0	30	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			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			15.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

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

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	1387	0	1	1323	19	1	0	5	16	0	37
Future Volume (vph)	44	1387	0	1	1323	19	1	0	5	16	0	37
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	6.5	6.5		6.5	6.5			6.5			6.5	
Lane Util. Factor	1.00	1.00		1.00	1.00			1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	1.00		1.00	1.00			0.89			0.91	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1458	1651		1662	1664			1540			1449	
Flt Permitted	0.06	1.00		0.06	1.00			0.98			0.93	
Satd. Flow (perm)	89	1651		101	1664			1517			1370	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	48	1508	0	1	1438	21	1	0	5	17	0	40
RTOR Reduction (vph)	0	0	0	0	0	0	0	4	0	0	30	0
Lane Group Flow (vph)	48	1508	0	1	1459	0	0	2	0	0	27	0
Confl. Peds. (#/hr)	2		11	11		2						
Heavy Vehicles (%)	14%	6%	0%	0%	5%	0%	0%	0%	0%	0%	0%	11%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	69.0	69.0		69.0	69.0			28.0			28.0	
Effective Green, g (s)	69.0	69.0		69.0	69.0			28.0			28.0	
Actuated g/C Ratio	0.63	0.63		0.63	0.63			0.25			0.25	
Clearance Time (s)	6.5	6.5		6.5	6.5			6.5			6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	55	1035		63	1043			386			348	
v/s Ratio Prot		c0.91			0.88							
v/s Ratio Perm	0.54			0.01				0.00			c0.02	
v/c Ratio	0.87	1.46		0.02	1.40			0.00			0.08	
Uniform Delay, d1	16.9	20.5		7.7	20.5			30.6			31.2	
Progression Factor	1.03	0.98		1.56	1.12			1.00			1.00	
Incremental Delay, d2	15.8	206.1		0.0	179.9			0.0			0.4	
Delay (s)	33.2	226.3		12.1	202.8			30.6			31.6	
Level of Service	C	F		B	F			C			C	
Approach Delay (s)		220.3			202.7			30.6			31.6	
Approach LOS		F			F			C			C	

Intersection Summary					
HCM 2000 Control Delay	208.1	HCM 2000 Level of Service		F	
HCM 2000 Volume to Capacity ratio	1.06				
Actuated Cycle Length (s)	110.0	Sum of lost time (s)		13.0	
Intersection Capacity Utilization	96.8%	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)	16	1182	1164	4	3	5
Future Volume (vph)	16	1182	1164	4	3	5
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Storage Length (m)	15.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt					0.916	
Flt Protected	0.950				0.982	
Satd. Flow (prot)	1662	1733	1699	0	1574	0
Flt Permitted	0.950				0.982	
Satd. Flow (perm)	1662	1733	1699	0	1574	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		111.0	109.8		191.2	
Travel Time (s)		8.0	7.9		13.8	
Confl. Peds. (#/hr)	5			5		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	3%	0%	0%	0%
Adj. Flow (vph)	17	1285	1265	4	3	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	17	1285	1269	0	8	0
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		Yes	Yes			
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	77.5%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	1182	53	13	1227	8	13	1	27	1	3	24
Future Volume (Veh/h)	11	1182	53	13	1227	8	13	1	27	1	3	24
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	1285	58	14	1334	9	14	1	29	1	3	26
Pedestrians		2			2			12			5	
Lane Width (m)		3.6			3.6			3.6			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			1			0	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		322			221							
pX, platoon unblocked	0.54			0.40			0.63	0.63	0.40	0.63	0.63	0.54
vC, conflicting volume	1348			1355			2742	2726	1328	2712	2750	1346
vC1, stage 1 conf vol							1350	1350		1372	1372	
vC2, stage 2 conf vol							1392	1376		1340	1379	
vCu, unblocked vol	1219			1138			1832	1807	1071	1785	1846	1214
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)							6.1	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			94			76	99	73	98	96	78
cM capacity (veh/h)	312			246			58	86	107	54	77	120

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	12	1343	14	1343	44	30
Volume Left	12	0	14	0	14	1
Volume Right	0	58	0	9	29	26
cSH	312	1700	246	1700	84	109
Volume to Capacity	0.04	0.79	0.06	0.79	0.52	0.27
Queue Length 95th (m)	1.0	0.0	1.4	0.0	18.2	8.2
Control Delay (s)	17.0	0.0	20.5	0.0	87.9	49.9
Lane LOS	C		C		F	E
Approach Delay (s)	0.2		0.2		87.9	49.9
Approach LOS					F	E

Intersection Summary					
Average Delay	2.1				
Intersection Capacity Utilization	87.5%	ICU Level of Service		E	
Analysis Period (min)	15				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	214	796	277	169	917	173	313	542	134	158	439	141
Future Volume (vph)	214	796	277	169	917	173	313	542	134	158	439	141
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	40.0		0.0	45.0		0.0	50.0		0.0	30.0		0.0
Storage Lanes	1		0	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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99			1.00		1.00	1.00			0.99	
Frt		0.961			0.976			0.970			0.964	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1568	1562	0	1630	1593	0	1630	1638	0	1539	1627	0
Flt Permitted	0.103			0.104			0.108			0.110		
Satd. Flow (perm)	170	1562	0	178	1593	0	185	1638	0	178	1627	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		18			9			12			16	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		109.8			114.2			162.1			187.2	
Travel Time (s)		7.9			8.2			11.7			13.5	
Confl. Peds. (#/hr)	5		15	15		5	5		8	8		5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	7%	4%	2%	7%	5%	2%	3%	4%	8%	3%	3%
Adj. Flow (vph)	233	865	301	184	997	188	340	589	146	172	477	153
Shared Lane Traffic (%)												
Lane Group Flow (vph)	233	1166	0	184	1185	0	340	735	0	172	630	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		Yes			Yes							
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	16	1182	1164	4	3	5
Future Volume (Veh/h)	16	1182	1164	4	3	5
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)	17	1285	1265	4	3	5
Pedestrians					5	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (m)			110			
pX, platoon unblocked	0.51				0.51	0.51
vC, conflicting volume	1274				2591	1272
vC1, stage 1 conf vol					1272	
vC2, stage 2 conf vol					1319	
vCu, unblocked vol	1056				3644	1052
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	95				98	96
cM capacity (veh/h)	338				130	141

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	17	1285	1269	8
Volume Left	17	0	0	3
Volume Right	0	0	4	5
cSH	338	1700	1700	136
Volume to Capacity	0.05	0.76	0.75	0.06
Queue Length 95th (m)	1.3	0.0	0.0	1.5
Control Delay (s)	16.2	0.0	0.0	33.0
Lane LOS	C			D
Approach Delay (s)	0.2		0.0	33.0
Approach LOS				D

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	77.5%	ICU Level of Service	D
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	233	1166	184	1185	340	735	172	630
v/c Ratio	1.30	2.06	1.03	2.10	1.83	1.32	1.02	1.15
Control Delay	170.9	506.1	100.0	526.1	413.8	186.6	99.2	119.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	170.9	506.1	100.0	526.1	413.8	186.6	99.2	119.3
Queue Length 50th (m)	~53.1	~415.6	~28.0	~429.8	~101.0	~214.3	~24.2	~165.3
Queue Length 95th (m)	m#40.0	m#271.3	#74.5	#512.8	#160.0	#289.2	#70.4	#236.8
Internal Link Dist (m)		85.8		90.2		138.1		163.2
Turn Bay Length (m)	40.0		45.0		50.0		30.0	
Base Capacity (vph)	179	565	179	563	186	558	169	550
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	1.30	2.06	1.03	2.10	1.83	1.32	1.02	1.15

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.

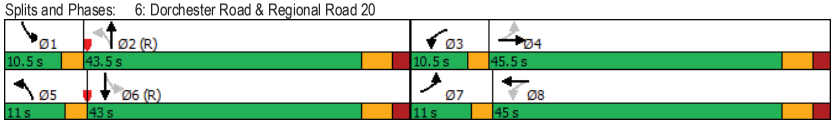
m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0		3.0	8.0		6.0	8.0	
Minimum Split (s)	10.5	36.5		10.5	36.5		9.5	40.5		10.5	40.5	
Total Split (s)	11.0	45.5		10.5	45.0		11.0	43.5		10.5	43.0	
Total Split (%)	10.0%	41.4%		9.5%	40.9%		10.0%	39.5%		9.5%	39.1%	
Maximum Green (s)	8.0	39.0		7.5	38.5		8.0	37.0		7.5	36.5	
Yellow Time (s)	3.0	4.1		3.0	4.1		3.0	4.1		3.0	4.1	
All-Red Time (s)	0.0	2.4		0.0	2.4		0.0	2.4		0.0	2.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	6.5		3.0	6.5		3.0	6.5		3.0	6.5	
Lead/Lag	Lead	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	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Walk Time (s)		12.0			12.0			15.0			15.0	
Flash Dont Walk (s)		13.0			13.0			19.0			19.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	50.5	39.0		49.5	38.5		48.5	37.0		47.5	36.5	
Actuated g/C Ratio	0.46	0.35		0.45	0.35		0.44	0.34		0.43	0.33	
v/c Ratio	1.30	2.06		1.03	2.10		1.83	1.32		1.02	1.15	
Control Delay	170.9	506.1		100.0	526.1		413.8	186.6		99.2	119.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	170.9	506.1		100.0	526.1		413.8	186.6		99.2	119.3	
LOS	F	F		F	F		F	F		F	F	
Approach Delay		450.3			468.8			258.5			115.0	
Approach LOS		F			F			F			F	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 60 (55%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 2.10
Intersection Signal Delay: 353.5 Intersection LOS: F
Intersection Capacity Utilization 147.6% ICU Level of Service H
Analysis Period (min) 15

Splits and Phases: 6: Dorchester Road & Regional Road 20



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	13	1037	1219	15	1	4
Future Volume (vph)	13	1037	1219	15	1	4
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.998		0.892	
Flt Protected	0.950				0.990	
Satd. Flow (prot)	1662	1716	1706	0	1545	0
Flt Permitted	0.950				0.990	
Satd. Flow (perm)	1662	1716	1706	0	1545	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		114.2	50.1		180.5	
Travel Time (s)		8.2	3.6		13.0	
Confl. Peds. (#/hr)	7			7		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	33%	0%	0%
Adj. Flow (vph)	14	1127	1325	16	1	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	14	1127	1341	0	5	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		7.2	7.2		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		Yes	Yes			
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	80.7%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	214	796	277	169	917	173	313	542	134	158	439	141
Future Volume (vph)	214	796	277	169	917	173	313	542	134	158	439	141
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	6.5		3.0	6.5		3.0	6.5		3.0	6.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		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	
Frt	1.00	0.96		1.00	0.98		1.00	0.97		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1568	1562		1630	1594		1630	1639		1539	1626	
Flt Permitted	0.10	1.00		0.10	1.00		0.11	1.00		0.11	1.00	
Satd. Flow (perm)	169	1562		178	1594		185	1639		178	1626	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	233	865	301	184	997	188	340	589	146	172	477	153
RTOR Reduction (vph)	0	12	0	0	6	0	0	8	0	0	11	0
Lane Group Flow (vph)	233	1154	0	184	1179	0	340	727	0	172	619	0
Confl. Peds. (#/hr)	5		15	15		5	5		8	8		5
Heavy Vehicles (%)	6%	7%	4%	2%	7%	5%	2%	3%	4%	8%	3%	3%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	47.0	39.0		46.0	38.5		45.0	37.0		44.0	36.5	
Effective Green, g (s)	47.0	39.0		46.0	38.5		45.0	37.0		44.0	36.5	
Actuated g/C Ratio	0.43	0.35		0.42	0.35		0.41	0.34		0.40	0.33	
Clearance Time (s)	3.0	6.5		3.0	6.5		3.0	6.5		3.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	173	553		173	557		180	551		163	539	
v/s Ratio Prot	c0.10	0.74		0.07	c0.74		c0.14	0.44		0.07	0.38	
v/s Ratio Perm	0.47			0.37			c0.63			0.35		
v/c Ratio	1.35	2.09		1.06	2.12		1.89	1.32		1.06	1.15	
Uniform Delay, d1	27.0	35.5		27.1	35.8		27.3	36.5		28.4	36.8	
Progression Factor	1.66	1.48		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	159.6	489.9		86.3	508.7		420.2	156.2		85.9	86.9	
Delay (s)	204.5	542.4		113.4	544.4		447.5	192.7		114.3	123.7	
Level of Service	F	F		F	F		F	F		F	F	
Approach Delay (s)		486.1			486.5			273.3			121.6	
Approach LOS		F			F			F			F	

Intersection Summary					
HCM 2000 Control Delay	374.0	HCM 2000 Level of Service	F		
HCM 2000 Volume to Capacity ratio	1.94				
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	19.0		
Intersection Capacity Utilization	147.6%	ICU Level of Service	H		
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1077	17	24	1231	5	24
Future Volume (vph)	1077	17	24	1231	5	24
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Storage Length (m)		0.0	15.0		0.0	0.0
Storage Lanes		0	1		1	0
Taper Length (m)			7.5		7.5	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.998				0.887	
Flt Protected			0.950		0.992	
Satd. Flow (prot)	1713	0	1662	1699	1540	0
Flt Permitted			0.950		0.992	
Satd. Flow (perm)	1713	0	1662	1699	1540	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	50.1			206.3	147.1	
Travel Time (s)	3.6			14.9	10.6	
Confl. Peds. (#/hr)		12	12			1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	0%	3%	0%	0%
Adj. Flow (vph)	1171	18	26	1338	5	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1189	0	26	1338	31	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	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	Yes			Yes		
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	80.7%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	13	1037	1219	15	1	4
Future Volume (Veh/h)	13	1037	1219	15	1	4
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)	14	1127	1325	16	1	4
Pedestrians					7	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (m)		114				
pX, platoon unblocked					0.60	
vC, conflicting volume	1348				2495	1340
vC1, stage 1 conf vol					1340	
vC2, stage 2 conf vol					1155	
vCu, unblocked vol	1348				3172	1340
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.3
p0 queue free %	97				99	98
cM capacity (veh/h)	514				155	187

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	14	1127	1341	5
Volume Left	14	0	0	1
Volume Right	0	0	16	4
cSH	514	1700	1700	180
Volume to Capacity	0.03	0.66	0.79	0.03
Queue Length 95th (m)	0.7	0.0	0.0	0.7
Control Delay (s)	12.2	0.0	0.0	25.6
Lane LOS	B			D
Approach Delay (s)	0.1		0.0	25.6
Approach LOS				D

Intersection Summary				
Average Delay		0.1		
Intersection Capacity Utilization		80.7%	ICU Level of Service	D
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	1051	16	20	1211	12	15	0	48	13	5	35
Future Volume (vph)	23	1051	16	20	1211	12	15	0	48	13	5	35
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	15.0		0.0	15.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.998			0.999			0.897			0.910	
Flt Protected	0.950			0.950				0.988			0.988	
Satd. Flow (prot)	1662	1711	0	1599	1710	0	0	1492	0	0	1457	0
Flt Permitted	0.950			0.950				0.988			0.988	
Satd. Flow (perm)	1662	1711	0	1599	1710	0	0	1492	0	0	1457	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		206.3			78.8			169.0			191.8	
Travel Time (s)		14.9			5.7			12.2			13.8	
Confl. Peds. (#/hr)	3		12	12		3						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	8%	4%	2%	25%	7%	0%	3%	0%	0%	12%
Adj. Flow (vph)	25	1142	17	22	1316	13	16	0	52	14	5	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	25	1159	0	22	1329	0	0	68	0	0	57	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			0.0			0.0	
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		Yes			Yes							
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	82.1%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1077	17	24	1231	5	24
Future Volume (Veh/h)	1077	17	24	1231	5	24
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)	1171	18	26	1338	5	26
Pedestrians				1	12	
Lane Width (m)				3.6	3.6	
Walking Speed (m/s)				1.2	1.2	
Percent Blockage				0	1	
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (m)	164					
pX, platoon unblocked			0.61		0.61	0.61
vC, conflicting volume			1201		2582	1193
vC1, stage 1 conf vol					1192	
vC2, stage 2 conf vol					1390	
vCu, unblocked vol			1010		3274	997
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			94		97	86
cM capacity (veh/h)			419		144	180

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	1189	26	1338	31
Volume Left	0	26	0	5
Volume Right	18	0	0	26
cSH	1700	419	1700	173
Volume to Capacity	0.70	0.06	0.79	0.18
Queue Length 95th (m)	0.0	1.6	0.0	5.0
Control Delay (s)	0.0	14.2	0.0	30.2
Lane LOS		B		D
Approach Delay (s)	0.0	0.3		30.2
Approach LOS				D

Intersection Summary				
Average Delay		0.5		
Intersection Capacity Utilization		80.7%	ICU Level of Service	D
Analysis Period (min)		15		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	52	1038	1184	8	5	56
Future Volume (vph)	52	1038	1184	8	5	56
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.999		0.875	
Flt Protected	0.950				0.996	
Satd. Flow (prot)	1568	1716	1711	0	1364	0
Flt Permitted	0.950				0.996	
Satd. Flow (perm)	1568	1716	1711	0	1364	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		78.8	68.0		182.2	
Travel Time (s)		5.7	4.9		13.1	
Confl. Peds. (#/hr)	3			3		2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	2%	2%	25%	22%	11%
Adj. Flow (vph)	57	1128	1287	9	5	61
Shared Lane Traffic (%)						
Lane Group Flow (vph)	57	1128	1296	0	66	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		7.2	7.2		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		Yes	Yes			
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 79.7%		ICU Level of Service D	
Analysis Period (min) 15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	1051	16	20	1211	12	15	0	48	13	5	35
Future Volume (Veh/h)	23	1051	16	20	1211	12	15	0	48	13	5	35
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	25	1142	17	22	1316	13	16	0	52	14	5	38
Pedestrians								12			3	
Lane Width (m)								3.6			3.6	
Walking Speed (m/s)								1.2			1.2	
Percent Blockage								1			0	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		371			302							
pX, platoon unblocked	0.48			0.69			0.63	0.63	0.69	0.63	0.63	0.48
vC, conflicting volume	1332			1171			2613	2588	1162	2614	2590	1326
vC1, stage 1 conf vol							1212	1212		1370	1370	
vC2, stage 2 conf vol							1400	1376		1244	1221	
vCu, unblocked vol	1149			1022			2150	2111	1010	2151	2114	1136
tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.5	6.3
tC, 2 stage (s)							6.2	5.5		6.1	5.5	
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	3.4
p0 queue free %	91			95			47	100	74	79	95	66
cM capacity (veh/h)	294			458			30	81	198	68	95	112

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	25	1159	22	1329	68	57
Volume Left	25	0	22	0	16	14
Volume Right	0	17	0	13	52	38
cSH	294	1700	458	1700	86	95
Volume to Capacity	0.09	0.68	0.05	0.78	0.79	0.60
Queue Length 95th (m)	2.2	0.0	1.2	0.0	32.4	22.5
Control Delay (s)	18.4	0.0	13.3	0.0	130.5	87.7
Lane LOS	C		B		F	F
Approach Delay (s)	0.4		0.2		130.5	87.7
Approach LOS					F	F

Intersection Summary				
Average Delay	5.5			
Intersection Capacity Utilization	82.1%	ICU Level of Service	E	
Analysis Period (min)	15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	994	77	25	1150	32	73
Future Volume (vph)	994	77	25	1150	32	73
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.990				0.906	
Flt Protected			0.950		0.985	
Satd. Flow (prot)	1693	0	1599	1699	1497	0
Flt Permitted			0.950		0.985	
Satd. Flow (perm)	1693	0	1599	1699	1497	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	68.0			55.0	165.0	
Travel Time (s)	4.9			4.0	11.9	
Confl. Peds. (#/hr)		11	11		1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	7%	4%	3%	5%	4%
Adj. Flow (vph)	1080	84	27	1250	35	79
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1164	0	27	1250	114	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	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	Yes			Yes		
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	79.2%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	52	1038	1184	8	5	56
Future Volume (Veh/h)	52	1038	1184	8	5	56
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)	57	1128	1287	9	5	61
Pedestrians		2			3	
Lane Width (m)		3.6			3.6	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			0	
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (m)			223			
pX, platoon unblocked	0.47				0.47	0.47
vC, conflicting volume	1299				2536	1296
vC1, stage 1 conf vol					1294	
vC2, stage 2 conf vol					1242	
vCu, unblocked vol	1075				3693	1069
tC, single (s)	4.2				6.6	6.3
tC, 2 stage (s)					5.6	
tF (s)	2.3				3.7	3.4
p0 queue free %	81				95	50
cM capacity (veh/h)	299				108	122

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	57	1128	1296	66
Volume Left	57	0	0	5
Volume Right	0	0	9	61
cSH	299	1700	1700	120
Volume to Capacity	0.19	0.66	0.76	0.55
Queue Length 95th (m)	5.5	0.0	0.0	21.0
Control Delay (s)	19.9	0.0	0.0	66.3
Lane LOS	C			F
Approach Delay (s)	1.0		0.0	66.3
Approach LOS				F

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	79.7%	ICU Level of Service	D
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	55	1037	1156	41	13	27
Future Volume (vph)	55	1037	1156	41	13	27
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.995		0.909	
Flt Protected	0.950				0.984	
Satd. Flow (prot)	1662	1716	1708	0	1466	0
Flt Permitted	0.950				0.984	
Satd. Flow (perm)	1662	1716	1708	0	1466	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		55.0	100.4		189.4	
Travel Time (s)		4.0	7.2		13.6	
Confl. Peds. (#/hr)	8			8		1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	0%	0%	10%
Adj. Flow (vph)	60	1127	1257	45	14	29
Shared Lane Traffic (%)						
Lane Group Flow (vph)	60	1127	1302	0	43	0
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		Yes	Yes			
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	79.1%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	994	77	25	1150	32	73
Future Volume (Veh/h)	994	77	25	1150	32	73
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)	1080	84	27	1250	35	79
Pedestrians	1				11	
Lane Width (m)	3.6				3.6	
Walking Speed (m/s)	1.2				1.2	
Percent Blockage	0				1	
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (m)				155		
pX, platoon unblocked					0.45	
vC, conflicting volume			1175		2438	1133
vC1, stage 1 conf vol					1133	
vC2, stage 2 conf vol					1305	
vCu, unblocked vol			1175		3597	1133
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.2		3.5	3.3
p0 queue free %			95		71	67
cM capacity (veh/h)			582		119	242

Direction, Lane #	EB 1	WB 1	WB 2	NB 1
Volume Total	1164	27	1250	114
Volume Left	0	27	0	35
Volume Right	84	0	0	79
cSH	1700	582	1700	184
Volume to Capacity	0.68	0.05	0.74	0.62
Queue Length 95th (m)	0.0	1.2	0.0	27.9
Control Delay (s)	0.0	11.5	0.0	52.0
Lane LOS		B		F
Approach Delay (s)	0.0	0.2		52.0
Approach LOS				F

Intersection Summary				
Average Delay		2.4		
Intersection Capacity Utilization		79.2%	ICU Level of Service	D
Analysis Period (min)		15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	896	43	89	1138	20	104	21	71	49	53	36
Future Volume (vph)	24	896	43	89	1138	20	104	21	71	49	53	36
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	35.0		0.0	35.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	0		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	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00		1.00	0.98			0.99	
Frt		0.993			0.997			0.884			0.965	
Flt Protected	0.950			0.950			0.950				0.983	
Satd. Flow (prot)	1662	1671	0	1662	1662	0	1662	1510	0	0	1580	0
Flt Permitted	0.070			0.067			0.644				0.857	
Satd. Flow (perm)	122	1671	0	117	1662	0	1124	1510	0	0	1373	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			1			77			16	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		100.4			342.8			50.5			193.9	
Travel Time (s)		7.2			24.7			3.6			14.0	
Confl. Peds. (#/hr)	9		8	8		9	2		6	6		2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	4%	0%	0%	5%	0%	0%	0%	0%	0%	0%	17%
Adj. Flow (vph)	26	974	47	97	1237	22	113	23	77	53	58	39
Shared Lane Traffic (%)												
Lane Group Flow (vph)	26	1021	0	97	1259	0	113	100	0	0	150	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		Yes			Yes							
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	55	1037	1156	41	13	27
Future Volume (Veh/h)	55	1037	1156	41	13	27
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)	60	1127	1257	45	14	29
Pedestrians		1			8	
Lane Width (m)		3.6			3.6	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			1	
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (m)			100			
pX, platoon unblocked	0.43				0.43	0.43
vC, conflicting volume	1310				2534	1288
vC1, stage 1 conf vol					1288	
vC2, stage 2 conf vol					1247	
vCu, unblocked vol	1053				3934	1002
tC, single (s)	4.1				6.4	6.3
tC, 2 stage (s)					5.4	
tF (s)	2.2				3.5	3.4
p0 queue free %	79				88	76
cM capacity (veh/h)	282				115	120

Direction, Lane #	EB 1	EB 2	WB 1	SB 1
Volume Total	60	1127	1302	43
Volume Left	60	0	0	14
Volume Right	0	0	45	29
cSH	282	1700	1700	118
Volume to Capacity	0.21	0.66	0.77	0.36
Queue Length 95th (m)	6.3	0.0	0.0	11.9
Control Delay (s)	21.2	0.0	0.0	51.9
Lane LOS	C			F
Approach Delay (s)	1.1		0.0	51.9
Approach LOS				F

Intersection Summary			
Average Delay	1.4		
Intersection Capacity Utilization	79.1%	ICU Level of Service	D
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	26	1021	97	1259	113	100	150
v/c Ratio	0.16	1.18	0.56	1.36	0.37	0.21	0.39
Control Delay	9.5	120.3	26.7	193.6	36.6	11.6	32.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.5	120.3	26.7	193.6	36.6	11.6	32.5
Queue Length 50th (m)	2.0	~279.7	7.7	~390.4	20.7	3.8	24.5
Queue Length 95th (m)	5.2	#360.8	23.4	#477.7	38.1	17.3	44.2
Internal Link Dist (m)		76.4		318.8		26.5	169.9
Turn Bay Length (m)	35.0		35.0				
Base Capacity (vph)	180	864	179	926	306	467	386
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	1.18	0.54	1.36	0.37	0.21	0.39

Intersection Summary

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

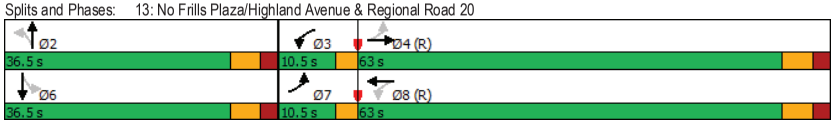
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	8.0		6.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.5	35.5		10.5	35.5		36.5	36.5		36.5	36.5	
Total Split (s)	10.5	63.0		10.5	63.0		36.5	36.5		36.5	36.5	
Total Split (%)	9.5%	57.3%		9.5%	57.3%		33.2%	33.2%		33.2%	33.2%	
Maximum Green (s)	7.5	56.5		7.5	56.5		30.0	30.0		30.0	30.0	
Yellow Time (s)	3.0	4.1		3.0	4.1		4.1	4.1		4.1	4.1	
All-Red Time (s)	0.0	2.4		0.0	2.4		2.4	2.4		2.4	2.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)	3.0	6.5		3.0	6.5		6.5	6.5			6.5	
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	
Recall Mode	None	C-Max		None	C-Max		Max	Max		Max	Max	
Walk Time (s)		11.0			11.0		11.0	11.0		11.0	11.0	
Flash Dont Walk (s)		18.0			18.0		19.0	19.0		19.0	19.0	
Pedestrian Calls (#/hr)		0			0		0	0		0	0	
Act Effct Green (s)	66.7	56.9		69.3	61.3		30.0	30.0			30.0	
Actuated g/C Ratio	0.61	0.52		0.63	0.56		0.27	0.27			0.27	
v/c Ratio	0.16	1.18		0.56	1.36		0.37	0.21			0.39	
Control Delay	9.5	120.3		26.7	193.6		36.6	11.6			32.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	9.5	120.3		26.7	193.6		36.6	11.6			32.5	
LOS	A	F		C	F		D	B			C	
Approach Delay		117.5			181.7			24.9			32.5	
Approach LOS		F			F			C			C	

Intersection Summary

Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 6 (5%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green			
Natural Cycle: 145			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.36			
Intersection Signal Delay: 137.2		Intersection LOS: F	
Intersection Capacity Utilization 110.5%		ICU Level of Service H	
Analysis Period (min) 15			

Splits and Phases: 13: No Frills Plaza/Highland Avenue & Regional Road 20



Intersection: 1: Montrose Road (RR98) & Regional Road 20

Movement	EB	EB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	T	R	L	TR	L	T	R
Maximum Queue (m)	62.4	252.6	42.4	231.5	19.1	52.4	347.5	87.5	330.6	77.5
Average Queue (m)	54.7	244.8	30.4	156.9	1.5	37.4	337.9	86.8	321.0	39.7
95th Queue (m)	80.4	250.4	50.3	250.0	10.0	71.0	354.1	89.9	327.3	83.9
Link Distance (m)		237.6		237.2	237.2		332.6		313.3	
Upstream Blk Time (%)		76		1			89		77	
Queuing Penalty (veh)		0		6			0		0	
Storage Bay Dist (m)	55.0		35.0			45.0		80.0		70.0
Storage Blk Time (%)	3	66	7	45		1	78	78	6	6
Queuing Penalty (veh)	24	182	57	89		4	84	684	41	41

Intersection: 2: Niagara Falls Inn Driveway/Belmont Avenue & Regional Road 20

Movement	EB	EB	WB	WB	NB	NB	SB
Directions Served	L	TR	L	TR	L	TR	LTR
Maximum Queue (m)	20.5	245.3	22.3	178.1	41.7	39.8	42.7
Average Queue (m)	3.0	235.5	10.3	108.5	16.4	14.9	13.2
95th Queue (m)	13.1	263.4	22.3	195.3	34.1	29.8	31.0
Link Distance (m)		237.2		212.9	65.1	65.1	204.5
Upstream Blk Time (%)		18		0			
Queuing Penalty (veh)		210		2			
Storage Bay Dist (m)	15.0		15.0				
Storage Blk Time (%)	0	59	6	38			
Queuing Penalty (veh)	6	10	77	31			

Intersection: 3: Royal Manor Drive & Regional Road 20

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	LTR	LTR
Maximum Queue (m)	22.4	216.5	3.5	187.5	10.4	27.9
Average Queue (m)	8.8	200.6	0.2	120.9	1.2	9.4
95th Queue (m)	21.3	236.4	2.2	194.4	6.2	22.1
Link Distance (m)		212.9		286.6	47.8	88.5
Upstream Blk Time (%)		7				
Queuing Penalty (veh)		97				
Storage Bay Dist (m)	15.0		15.0			
Storage Blk Time (%)	3	52		37		
Queuing Penalty (veh)	47	23		0		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	896	43	89	1138	20	104	21	71	49	53	36
Future Volume (vph)	24	896	43	89	1138	20	104	21	71	49	53	36
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	6.5		3.0	6.5		6.5	6.5			6.5	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.98			0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.88			0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.98	
Satd. Flow (prot)	1662	1671		1662	1663		1658	1511			1574	
Flt Permitted	0.07	1.00		0.07	1.00		0.64	1.00			0.86	
Satd. Flow (perm)	123	1671		117	1663		1123	1511			1373	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	26	974	47	97	1237	22	113	23	77	53	58	39
RTOR Reduction (vph)	0	1	0	0	0	0	0	56	0	0	12	0
Lane Group Flow (vph)	26	1020	0	97	1259	0	113	44	0	0	138	0
Confl. Peds. (#/hr)	9		8	8		9	2		6	6		2
Heavy Vehicles (%)	0%	4%	0%	0%	5%	0%	0%	0%	0%	0%	0%	17%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	60.8	56.9		67.0	60.1		30.0	30.0			30.0	
Effective Green, g (s)	60.8	56.9		67.0	60.1		30.0	30.0			30.0	
Actuated g/C Ratio	0.55	0.52		0.61	0.55		0.27	0.27			0.27	
Clearance Time (s)	3.0	6.5		3.0	6.5		6.5	6.5			6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	122	864		170	908		306	412			374	
v/s Ratio Prot	0.01	0.61		c0.04	c0.76			0.03				
v/s Ratio Perm	0.11			0.31			0.10				c0.10	
v/c Ratio	0.21	1.18		0.57	1.39		0.37	0.11			0.37	
Uniform Delay, d1	24.1	26.6		24.0	24.9		32.3	30.0			32.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.9	92.9		4.6	180.6		3.4	0.5			2.8	
Delay (s)	25.0	119.5		28.5	205.5		35.8	30.5			35.2	
Level of Service	C	F		C	F		D	C			D	
Approach Delay (s)		117.1			192.9			33.3			35.2	
Approach LOS		F			F			C			D	

Intersection Summary					
HCM 2000 Control Delay	143.4	HCM 2000 Level of Service		F	
HCM 2000 Volume to Capacity ratio	1.04				
Actuated Cycle Length (s)	110.0	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	110.5%	ICU Level of Service		H	
Analysis Period (min)	15				

c Critical Lane Group

Intersection: 7: Regional Road 20 & Depew Avenue

Movement	EB	WB	SB
Directions Served	L	TR	LR
Maximum Queue (m)	11.9	36.8	18.0
Average Queue (m)	1.9	35.0	6.0
95th Queue (m)	8.5	36.9	17.7
Link Distance (m)	97.4	30.9	168.5
Upstream Blk Time (%)		50	
Queuing Penalty (veh)		619	
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 8: Corwin Avenue & Regional Road 20

Movement	EB	WB	WB	NB
Directions Served	TR	L	T	LR
Maximum Queue (m)	8.4	22.3	196.1	55.0
Average Queue (m)	0.5	4.5	193.5	20.6
95th Queue (m)	3.7	16.5	195.4	56.4
Link Distance (m)	30.9		191.0	136.8
Upstream Blk Time (%)			39	
Queuing Penalty (veh)			493	
Storage Bay Dist (m)		15.0		
Storage Blk Time (%)		0	60	
Queuing Penalty (veh)		2	14	

Intersection: 9: Calton Avenue/Prince Edward Avenue & Regional Road 20

Movement	EB	WB	WB	NB	SB
Directions Served	L	L	TR	LTR	LTR
Maximum Queue (m)	12.9	22.3	68.4	157.2	184.3
Average Queue (m)	2.8	3.5	66.4	98.1	149.0
95th Queue (m)	10.1	15.8	67.8	178.7	220.9
Link Distance (m)			63.3	154.8	181.3
Upstream Blk Time (%)			39	26	52
Queuing Penalty (veh)			486	0	0
Storage Bay Dist (m)	15.0	15.0			
Storage Blk Time (%)	1	0	63		
Queuing Penalty (veh)	7	1	13		

Intersection: 4: Brookfield Avenue & Regional Road 20

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	TR	LTR	LTR
Maximum Queue (m)	22.2	290.0	7.4	18.3	192.2	16.6
Average Queue (m)	1.8	275.7	1.3	1.1	108.1	6.0
95th Queue (m)	11.3	316.7	5.8	7.8	201.8	14.1
Link Distance (m)		286.6		96.0	218.8	185.7
Upstream Blk Time (%)		4			2	
Queuing Penalty (veh)		62			0	
Storage Bay Dist (m)	15.0		15.0			
Storage Blk Time (%)		60		0		
Queuing Penalty (veh)		7		0		

Intersection: 5: Regional Road 20 & Mouland Avenue

Movement	EB	EB	SB
Directions Served	L	T	LR
Maximum Queue (m)	21.0	100.7	38.3
Average Queue (m)	3.1	98.6	20.0
95th Queue (m)	13.8	100.2	67.1
Link Distance (m)		96.0	180.9
Upstream Blk Time (%)		42	
Queuing Penalty (veh)		507	
Storage Bay Dist (m)	15.0		
Storage Blk Time (%)	0	59	
Queuing Penalty (veh)	0	9	

Intersection: 6: Dorchester Road & Regional Road 20

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (m)	47.4	93.8	52.3	101.6	57.4	162.7	37.5	193.8
Average Queue (m)	33.6	92.0	29.3	99.3	56.2	154.0	30.5	184.2
95th Queue (m)	59.1	93.3	60.0	101.0	65.5	158.8	46.8	190.2
Link Distance (m)		89.2		97.4		148.0		176.8
Upstream Blk Time (%)		47		48		81		75
Queuing Penalty (veh)		563		589		0		0
Storage Bay Dist (m)	40.0		45.0		50.0		30.0	
Storage Blk Time (%)	2	61	0	62	69	27	14	62
Queuing Penalty (veh)	24	131	5	104	470	85	79	98

Intersection: 13: No Frills Plaza/Highland Avenue & Regional Road 20

Movement	EB	EB	WB	WB	NB	NB	SB
Directions Served	L	TR	L	TR	L	TR	LTR
Maximum Queue (m)	35.7	84.5	42.5	350.9	43.9	30.2	58.2
Average Queue (m)	5.9	69.0	15.7	341.5	21.3	12.9	24.6
95th Queue (m)	24.3	92.4	43.8	348.9	39.3	24.4	48.2
Link Distance (m)		80.1		332.4	40.0	40.0	183.6
Upstream Blk Time (%)		4		88	3	0	
Queuing Penalty (veh)		41		0	0	0	
Storage Bay Dist (m)	35.0		35.0				
Storage Blk Time (%)		24	0	66			
Queuing Penalty (veh)		6	1	59			

Network Summary

Network wide Queuing Penalty: 7183

Intersection: 10: Regional Road 20 & Byng Avenue

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (m)	18.0	12.4	56.0	182.4
Average Queue (m)	4.7	0.5	50.0	138.1
95th Queue (m)	14.0	5.5	53.0	218.3
Link Distance (m)	63.3	63.3	48.2	170.2
Upstream Blk Time (%)			41	47
Queuing Penalty (veh)			488	0
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 11: Franklin Avenue & Regional Road 20

Movement	EB	WB	WB	NB
Directions Served	TR	L	T	LR
Maximum Queue (m)	12.3	11.8	56.6	161.2
Average Queue (m)	0.9	2.2	45.0	138.1
95th Queue (m)	6.3	9.0	51.1	187.9
Link Distance (m)	48.2	42.3	42.3	150.6
Upstream Blk Time (%)			36	68
Queuing Penalty (veh)			214	0
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

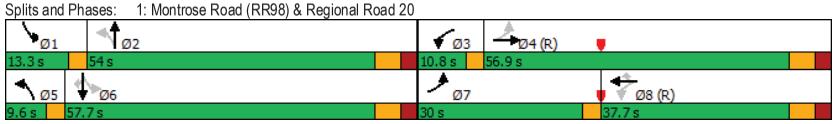
Intersection: 12: Regional Road 20 & Glenholme Avenue

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (m)	17.3	44.6	85.0	44.2
Average Queue (m)	4.7	9.5	81.1	16.6
95th Queue (m)	14.2	32.6	87.8	43.0
Link Distance (m)	42.3	42.3	80.1	175.1
Upstream Blk Time (%)		1	23	
Queuing Penalty (veh)		3	290	
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		6
Detector Phase	7	4		3	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0	10.0	3.0	8.0		6.0	8.0	8.0
Minimum Split (s)	10.5	35.0		10.5	35.0	35.0	9.5	36.0		10.5	36.0	36.0
Total Split (s)	30.0	56.9		10.8	37.7	37.7	9.6	54.0		13.3	57.7	57.7
Total Split (%)	22.2%	42.1%		8.0%	27.9%	27.9%	7.1%	40.0%		9.9%	42.7%	42.7%
Maximum Green (s)	27.0	49.9		7.8	30.7	30.7	6.6	47.0		10.3	50.7	50.7
Yellow Time (s)	3.0	4.1		3.0	4.1	4.1	3.0	4.1		3.0	4.1	4.1
All-Red Time (s)	0.0	2.9		0.0	2.9	2.9	0.0	2.9		0.0	2.9	2.9
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.0	7.0		3.0	7.0	7.0	3.0	7.0		3.0	7.0	7.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	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	3.0
Recall Mode	None	C-Max		None	C-Max	C-Max	None	Max		None	Max	Max
Walk Time (s)		10.0			10.0	10.0		11.0			11.0	11.0
Flash Dont Walk (s)		18.0			18.0	18.0		18.0			18.0	18.0
Pedestrian Calls (#/hr)		0			0	0		0			0	0
Act Effct Green (s)	64.7	50.1		44.3	32.7	32.7	57.8	47.4		64.3	52.6	52.6
Actuated g/C Ratio	0.48	0.37		0.33	0.24	0.24	0.43	0.35		0.48	0.39	0.39
v/c Ratio	0.79	0.55		0.34	0.50	0.27	0.12	0.87		0.55	0.31	0.33
Control Delay	38.1	35.3		25.2	47.4	6.7	20.2	56.7		29.1	30.9	5.0
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	38.1	35.3		25.2	47.4	6.7	20.2	56.7		29.1	30.9	5.0
LOS	D	D		C	D	A	C	E		C	C	A
Approach Delay		36.4			36.1			52.9			20.5	
Approach LOS		D			D			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 135			
Actuated Cycle Length: 135			
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 36.5		Intersection LOS: D	
Intersection Capacity Utilization 98.2%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 1: Montrose Road (RR98) & Regional Road 20



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	346	551	37	80	351	105	53	334	128	129	185	197
Future Volume (vph)	346	551	37	80	351	105	53	334	128	129	185	197
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	55.0		0.0	35.0		0.0	45.0		0.0	80.0		70.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		0.99		0.96	0.97	0.99				0.95
Frt		0.991				0.850		0.958				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1554	3146	0	1511	3137	1417	1583	1615	0	1599	1683	1390
Flt Permitted	0.392			0.409			0.632			0.201		
Satd. Flow (perm)	633	3146	0	644	3137	1366	1023	1615	0	338	1683	1322
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6				129		16				214
Link Speed (k/h)		60			50			50			50	
Link Distance (m)		251.8			265.0			342.9			323.7	
Travel Time (s)		15.1			19.1			24.7			23.3	
Confl. Peds. (#/hr)	17		10	10		17	27		14	14		27
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	7%	4%	11%	10%	6%	5%	5%	4%	0%	4%	4%	7%
Adj. Flow (vph)	376	599	40	87	382	114	58	363	139	140	201	214
Shared Lane Traffic (%)												
Lane Group Flow (vph)	376	639	0	87	382	114	58	502	0	140	201	214
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					Yes							
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	0.0
Detector 1 Queue (s)	0.0	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	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	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	346	551	37	80	351	105	53	334	128	129	185	197
Future Volume (vph)	346	551	37	80	351	105	53	334	128	129	185	197
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	7.0		3.0	7.0	7.0	3.0	7.0		3.0	7.0	7.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.96	1.00	0.99		1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.98	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1547	3145		1506	3137	1366	1556	1616		1599	1683	1322
Flt Permitted	0.39	1.00		0.41	1.00	1.00	0.63	1.00		0.20	1.00	1.00
Satd. Flow (perm)	638	3145		649	3137	1366	1034	1616		338	1683	1322
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	376	599	40	87	382	114	58	363	139	140	201	214
RTOR Reduction (vph)	0	4	0	0	0	87	0	10	0	0	0	131
Lane Group Flow (vph)	376	635	0	87	382	27	58	492	0	140	201	83
Confl. Peds. (#/hr)	17		10	10		17	27		14	14		27
Heavy Vehicles (%)	7%	4%	11%	10%	6%	5%	5%	4%	0%	4%	4%	7%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	60.1	49.5		39.7	32.1	32.1	53.3	48.0		60.9	52.6	52.6
Effective Green, g (s)	60.1	49.5		39.7	32.1	32.1	53.3	48.0		60.9	52.6	52.6
Actuated g/C Ratio	0.45	0.37		0.29	0.24	0.24	0.39	0.36		0.45	0.39	0.39
Clearance Time (s)	3.0	7.0		3.0	7.0	7.0	3.0	7.0		3.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	452	1153		239	745	324	428	574		244	655	515
v/s Ratio Prot	c0.15	0.20		0.02	0.12		0.01	c0.30		c0.04	0.12	
v/s Ratio Perm	c0.22			0.09		0.02	0.05			0.22		0.06
v/c Ratio	0.83	0.55		0.36	0.51	0.08	0.14	0.86		0.57	0.31	0.16
Uniform Delay, d1	28.0	33.9		35.7	44.7	40.0	25.7	40.3		26.2	28.6	26.8
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	12.3	1.9		0.9	2.5	0.5	0.1	15.2		3.2	1.2	0.7
Delay (s)	40.3	35.8		36.6	47.2	40.5	25.8	55.5		29.5	29.8	27.5
Level of Service	D	D		D	D	D	C	E		C	C	C
Approach Delay (s)		37.5			44.3			52.4			28.8	
Approach LOS		D			D			D			C	

Intersection Summary				
HCM 2000 Control Delay	40.3	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.84			
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	98.2%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group

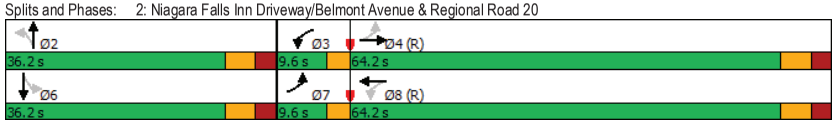
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	376	639	87	382	114	58	502	140	201	214
v/c Ratio	0.79	0.55	0.34	0.50	0.27	0.12	0.87	0.55	0.31	0.33
Control Delay	38.1	35.3	25.2	47.4	6.7	20.2	56.7	29.1	30.9	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.1	35.3	25.2	47.4	6.7	20.2	56.7	29.1	30.9	5.0
Queue Length 50th (m)	70.9	73.4	13.2	50.0	0.0	8.7	128.2	22.1	39.7	0.0
Queue Length 95th (m)	101.4	93.4	23.6	67.2	12.8	17.2	#193.4	36.2	60.7	16.8
Internal Link Dist (m)		227.8		241.0			318.9		299.7	
Turn Bay Length (m)	55.0		35.0			45.0		80.0		70.0
Base Capacity (vph)	487	1172	262	760	429	466	577	257	656	646
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.55	0.33	0.50	0.27	0.12	0.87	0.54	0.31	0.33

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	8.0		6.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	9.5	39.9		9.5	39.9		36.1	36.1		36.1	36.1	
Total Split (s)	9.6	64.2		9.6	64.2		36.2	36.2		36.2	36.2	
Total Split (%)	8.7%	58.4%		8.7%	58.4%		32.9%	32.9%		32.9%	32.9%	
Maximum Green (s)	6.6	57.3		6.6	57.3		29.1	29.1		29.1	29.1	
Yellow Time (s)	3.0	4.1		3.0	4.1		4.1	4.1		4.1	4.1	
All-Red Time (s)	0.0	2.8		0.0	2.8		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)	3.0	6.9		3.0	6.9		7.1	7.1			7.1	
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	
Recall Mode	None	C-Max		None	C-Max		Max	Max		Max	Max	
Walk Time (s)		12.0			12.0		11.0	11.0		11.0	11.0	
Flash Dont Walk (s)		21.0			21.0		18.0	18.0		18.0	18.0	
Pedestrian Calls (#/hr)		0			0		0	0		0	0	
Act Effct Green (s)	69.6	63.2		69.6	63.2		29.1	29.1			29.1	
Actuated g/C Ratio	0.63	0.57		0.63	0.57		0.26	0.26			0.26	
v/c Ratio	0.04	0.65		0.06	0.38		0.02	0.01			0.08	
Control Delay	7.3	18.9		6.5	12.0		30.4	0.0			0.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	7.3	18.9		6.5	12.0		30.4	0.0			0.4	
LOS	A	B		A	B		C	A			A	
Approach Delay		18.7			11.8			19.0			0.4	
Approach LOS		B			B			B			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 16 (15%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 16.0		Intersection LOS: B	
Intersection Capacity Utilization 68.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Niagara Falls Inn Driveway/Belmont Avenue & Regional Road 20



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	1066	16	15	617	23	5	0	3	17	0	8
Future Volume (vph)	16	1066	16	15	617	23	5	0	3	17	0	8
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	15.0		0.0	15.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		1.00				0.99			1.00	
Frt		0.998			0.995			0.850			0.955	
Flt Protected	0.950			0.950			0.950				0.968	
Satd. Flow (prot)	1662	3132	0	1662	3156	0	1330	1468	0	0	1257	0
Flt Permitted	0.352			0.168			0.740				0.861	
Satd. Flow (perm)	616	3132	0	294	3156	0	1036	1468	0	0	1118	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			5			161			68	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		265.0			231.8			75.5			218.5	
Travel Time (s)		19.1			16.7			5.4			15.7	
Confl. Peds. (#/hr)			5	5					1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	6%	0%	0%	5%	0%	25%	0%	0%	33%	0%	20%
Adj. Flow (vph)	17	1159	17	16	671	25	5	0	3	18	0	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	1176	0	16	696	0	5	3	0	0	27	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		Yes			Yes							
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	1066	16	15	617	23	5	0	3	17	0	8
Future Volume (vph)	16	1066	16	15	617	23	5	0	3	17	0	8
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	6.9		3.0	6.9		7.1	7.1			7.1	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.85			0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.97	
Satd. Flow (prot)	1662	3132		1662	3155		1330	1468			1256	
Flt Permitted	0.35	1.00		0.17	1.00		0.74	1.00			0.86	
Satd. Flow (perm)	616	3132		293	3155		1035	1468			1117	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	17	1159	17	16	671	25	5	0	3	18	0	9
RTOR Reduction (vph)	0	1	0	0	2	0	0	2	0	0	20	0
Lane Group Flow (vph)	17	1175	0	16	694	0	5	1	0	0	7	0
Confl. Peds. (#/hr)			5	5					1	1		
Heavy Vehicles (%)	0%	6%	0%	0%	5%	0%	25%	0%	0%	33%	0%	20%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	63.9	61.4		63.9	61.4		29.1	29.1			29.1	
Effective Green, g (s)	63.9	61.4		63.9	61.4		29.1	29.1			29.1	
Actuated g/C Ratio	0.58	0.56		0.58	0.56		0.26	0.26			0.26	
Clearance Time (s)	3.0	6.9		3.0	6.9		7.1	7.1			7.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	381	1748		201	1761		273	388			295	
v/s Ratio Prot	0.00	c0.38		c0.00	0.22			0.00				
v/s Ratio Perm	0.02			0.04			0.00				c0.01	
v/c Ratio	0.04	0.67		0.08	0.39		0.02	0.00			0.02	
Uniform Delay, d1	9.9	17.2		11.4	13.8		29.9	29.8			29.9	
Progression Factor	1.00	1.00		0.84	0.84		1.00	1.00			1.00	
Incremental Delay, d2	0.0	2.1		0.2	0.6		0.1	0.0			0.2	
Delay (s)	10.0	19.3		9.8	12.2		30.0	29.8			30.1	
Level of Service	A	B		A	B		C	C			C	
Approach Delay (s)		19.1			12.2			29.9			30.1	
Approach LOS		B			B			C			C	

Intersection Summary				
HCM 2000 Control Delay	16.8	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.45			
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	17.0	
Intersection Capacity Utilization	68.4%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

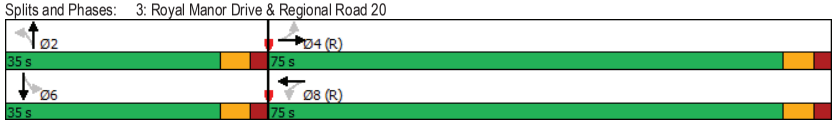
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	17	1176	16	696	5	3	27
v/c Ratio	0.04	0.65	0.06	0.38	0.02	0.01	0.08
Control Delay	7.3	18.9	6.5	12.0	30.4	0.0	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.3	18.9	6.5	12.0	30.4	0.0	0.4
Queue Length 50th (m)	1.3	81.5	0.6	21.5	0.9	0.0	0.0
Queue Length 95th (m)	3.8	129.0	m2.1	80.4	3.9	0.0	0.0
Internal Link Dist (m)		241.0		207.8		51.5	194.5
Turn Bay Length (m)	15.0		15.0				
Base Capacity (vph)	453	1799	268	1814	274	506	345
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.65	0.06	0.38	0.02	0.01	0.08

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	24.5	24.5		24.5	24.5		34.5	34.5		34.5	34.5	
Total Split (s)	75.0	75.0		75.0	75.0		35.0	35.0		35.0	35.0	
Total Split (%)	68.2%	68.2%		68.2%	68.2%		31.8%	31.8%		31.8%	31.8%	
Maximum Green (s)	68.5	68.5		68.5	68.5		28.5	28.5		28.5	28.5	
Yellow Time (s)	4.1	4.1		4.1	4.1		4.1	4.1		4.1	4.1	
All-Red Time (s)	2.4	2.4		2.4	2.4		2.4	2.4		2.4	2.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5			6.5			6.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		Max	Max		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		18.0	18.0		18.0	18.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	68.5	68.5		68.5	68.5			28.5			28.5	
Actuated g/C Ratio	0.62	0.62		0.62	0.62			0.26			0.26	
v/c Ratio	0.03	0.57		0.00	0.35			0.01			0.08	
Control Delay	8.3	8.8		9.0	9.8			0.0			9.9	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	8.3	8.8		9.0	9.8			0.0			9.9	
LOS	A	A		A	A			A			A	
Approach Delay		8.8			9.8						9.9	
Approach LOS		A			A						A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay: 9.2		Intersection LOS: A	
Intersection Capacity Utilization 48.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Royal Manor Drive & Regional Road 20



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	1026	0	1	633	5	1	0	4	3	0	27
Future Volume (vph)	11	1026	0	1	633	5	1	0	4	3	0	27
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	15.0		0.0	15.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00			1.00	1.00							
Frt					0.999			0.892			0.878	
Flt Protected	0.950			0.950				0.990			0.995	
Satd. Flow (prot)	1458	3137	0	1662	3164	0	0	1545	0	0	1390	0
Flt Permitted	0.365			0.205				0.975			0.986	
Satd. Flow (perm)	559	3137	0	357	3164	0	0	1522	0	0	1378	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					1			35			35	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		231.8			321.7			58.1			98.8	
Travel Time (s)		16.7			23.2			4.2			7.1	
Confl. Peds. (#/hr)	2		11	11		2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	14%	6%	0%	0%	5%	0%	0%	0%	0%	0%	0%	11%
Adj. Flow (vph)	12	1115	0	1	688	5	1	0	4	3	0	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	1115	0	1	693	0	0	5	0	0	32	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			0.0			0.0	
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		Yes			Yes							
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	1026	0	1	633	5	1	0	4	3	0	27
Future Volume (vph)	11	1026	0	1	633	5	1	0	4	3	0	27
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	6.5	6.5		6.5	6.5			6.5			6.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	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	
Frt	1.00	1.00		1.00	1.00			0.89			0.88	
Flt Protected	0.95	1.00		0.95	1.00			0.99			1.00	
Satd. Flow (prot)	1455	3137		1655	3164			1546			1390	
Flt Permitted	0.37	1.00		0.20	1.00			0.98			0.99	
Satd. Flow (perm)	559	3137		357	3164			1522			1377	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	1115	0	1	688	5	1	0	4	3	0	29
RTOR Reduction (vph)	0	0	0	0	0	0	0	4	0	0	24	0
Lane Group Flow (vph)	12	1115	0	1	693	0	0	1	0	0	8	0
Confl. Peds. (#/hr)	2		11	11		2						
Heavy Vehicles (%)	14%	6%	0%	0%	5%	0%	0%	0%	0%	0%	0%	11%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	68.5	68.5		68.5	68.5			28.5			28.5	
Effective Green, g (s)	68.5	68.5		68.5	68.5			28.5			28.5	
Actuated g/C Ratio	0.62	0.62		0.62	0.62			0.26			0.26	
Clearance Time (s)	6.5	6.5		6.5	6.5			6.5			6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	348	1953		222	1970			394			356	
v/s Ratio Prot		c0.36			0.22							
v/s Ratio Perm	0.02			0.00				0.00			c0.01	
v/c Ratio	0.03	0.57		0.00	0.35			0.00			0.02	
Uniform Delay, d1	8.0	12.1		7.9	10.0			30.2			30.4	
Progression Factor	0.99	0.64		1.10	0.93			1.00			1.00	
Incremental Delay, d2	0.1	0.9		0.0	0.4			0.0			0.1	
Delay (s)	8.0	8.7		8.7	9.7			30.2			30.5	
Level of Service	A	A		A	A			C			C	
Approach Delay (s)		8.7			9.7			30.2			30.5	
Approach LOS		A			A			C			C	

Intersection Summary				
HCM 2000 Control Delay	9.5	HCM 2000 Level of Service	A	
HCM 2000 Volume to Capacity ratio	0.41			
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.0	
Intersection Capacity Utilization	48.3%	ICU Level of Service	A	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	12	1115	1	693	5	32
v/c Ratio	0.03	0.57	0.00	0.35	0.01	0.08
Control Delay	8.3	8.8	9.0	9.8	0.0	9.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.3	8.8	9.0	9.8	0.0	9.9
Queue Length 50th (m)	0.6	28.6	0.0	33.4	0.0	0.0
Queue Length 95th (m)	m1.3	47.4	m0.3	47.6	0.0	7.3
Internal Link Dist (m)		207.8		297.7	34.1	74.8
Turn Bay Length (m)	15.0		15.0			
Base Capacity (vph)	348	1953	222	1970	420	382
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.57	0.00	0.35	0.01	0.08

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

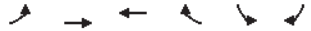
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	796	25	8	692	4	19	3	28	0	1	16
Future Volume (Veh/h)	5	796	25	8	692	4	19	3	28	0	1	16
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	865	27	9	752	4	21	3	30	0	1	17
Pedestrians		2			2			12			5	
Lane Width (m)		3.6			3.6			3.6			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			1			0	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		322			221							
pX, platoon unblocked	0.95			0.87			0.90	0.90	0.87	0.90	0.90	0.95
vC, conflicting volume	761			904			1314	1680	460	1253	1691	385
vC1, stage 1 conf vol							900	900		777	777	
vC2, stage 2 conf vol							414	779		476	914	
vCu, unblocked vol	635			587			850	1258	76	782	1271	238
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			94	99	96	100	100	98
cM capacity (veh/h)	903			858			372	328	838	379	324	724

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	5	577	315	9	501	255	54	18
Volume Left	5	0	0	9	0	0	21	0
Volume Right	0	0	27	0	0	4	30	17
cSH	903	1700	1700	858	1700	1700	533	677
Volume to Capacity	0.01	0.34	0.19	0.01	0.29	0.15	0.10	0.03
Queue Length 95th (m)	0.1	0.0	0.0	0.3	0.0	0.0	2.7	0.7
Control Delay (s)	9.0	0.0	0.0	9.2	0.0	0.0	12.5	10.5
Lane LOS	A			A			B	B
Approach Delay (s)	0.1			0.1			12.5	10.5
Approach LOS							B	B

Intersection Summary					
Average Delay	0.6				
Intersection Capacity Utilization	41.6%	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)	5	796	25	8	692	4	19	3	28	0	1	16
Future Volume (vph)	5	796	25	8	692	4	19	3	28	0	1	16
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	15.0		0.0	15.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.995			0.999			0.925			0.872	
Flt Protected	0.950			0.950				0.981				
Satd. Flow (prot)	1662	3245	0	1662	3225	0	0	1588	0	0	1526	0
Flt Permitted	0.950			0.950				0.981				
Satd. Flow (perm)	1662	3245	0	1662	3225	0	0	1588	0	0	1526	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		321.7			111.0			229.0			196.7	
Travel Time (s)		23.2			8.0			16.5			14.2	
Confl. Peds. (#/hr)	5		12	12		5	2		2	2		2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	5	865	27	9	752	4	21	3	30	0	1	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	5	892	0	9	756	0	0	54	0	0	18	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			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			15.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

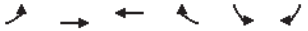
Intersection Summary					
Area Type:	Other				
Control Type: Unsignalized					
Intersection Capacity Utilization	41.6%	ICU Level of Service A			
Analysis Period (min)	15				



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	840	701	4	4	8
Future Volume (Veh/h)	1	840	701	4	4	8
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)	1	913	762	4	4	9
Pedestrians					5	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (m)			110			
pX, platoon unblocked	0.89				0.89	0.89
vC, conflicting volume	771				1228	388
vC1, stage 1 conf vol					769	
vC2, stage 2 conf vol					458	
vCu, unblocked vol	500				1012	70
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				99	99
cM capacity (veh/h)	954				430	874

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	1	456	456	508	258	13
Volume Left	1	0	0	0	0	4
Volume Right	0	0	0	0	4	9
cSH	954	1700	1700	1700	1700	663
Volume to Capacity	0.00	0.27	0.27	0.30	0.15	0.02
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.5
Control Delay (s)	8.8	0.0	0.0	0.0	0.0	10.5
Lane LOS	A					B
Approach Delay (s)	0.0			0.0		10.5
Approach LOS						B

Intersection Summary				
Average Delay		0.1		
Intersection Capacity Utilization		35.2%	ICU Level of Service	A
Analysis Period (min)		15		



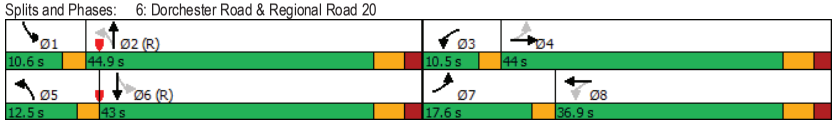
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	1	840	701	4	4	8
Future Volume (vph)	1	840	701	4	4	8
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999		0.907	
Flt Protected	0.950				0.985	
Satd. Flow (prot)	1662	3292	3225	0	1563	0
Flt Permitted	0.950				0.985	
Satd. Flow (perm)	1662	3292	3225	0	1563	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		111.0	109.8		191.2	
Travel Time (s)		8.0	7.9		13.8	
Confl. Peds. (#/hr)	5			5		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	3%	0%	0%	0%
Adj. Flow (vph)	1	913	762	4	4	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1	913	766	0	13	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		7.2	7.2		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		Yes	Yes			
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	35.2%	ICU Level of Service A	
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0		3.0	8.0		6.0	8.0	
Minimum Split (s)	10.5	36.5		10.5	36.5		9.5	40.5		10.5	40.5	
Total Split (s)	17.6	44.0		10.5	36.9		12.5	44.9		10.6	43.0	
Total Split (%)	16.0%	40.0%		9.5%	33.5%		11.4%	40.8%		9.6%	39.1%	
Maximum Green (s)	14.6	37.5		7.5	30.4		9.5	38.4		7.6	36.5	
Yellow Time (s)	3.0	4.1		3.0	4.1		3.0	4.1		3.0	4.1	
All-Red Time (s)	0.0	2.4		0.0	2.4		0.0	2.4		0.0	2.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	6.5		3.0	6.5		3.0	6.5		3.0	6.5	
Lead/Lag	Lead	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	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Walk Time (s)		12.0			12.0			15.0			15.0	
Flash Dont Walk (s)		13.0			13.0			19.0			19.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	48.4	36.6		39.5	28.9		54.5	41.7		50.6	39.7	
Actuated g/C Ratio	0.44	0.33		0.36	0.26		0.50	0.38		0.46	0.36	
v/c Ratio	0.58	0.93		0.41	0.65		0.56	0.76		0.35	0.65	
Control Delay	31.8	59.4		24.2	36.9		23.4	39.8		19.6	36.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	31.8	59.4		24.2	36.9		23.4	39.8		19.6	36.0	
LOS	C	E		C	D		C	D		B	D	
Approach Delay		54.6			35.3			34.8			32.6	
Approach LOS		D			D			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 60 (55%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay: 42.3		Intersection LOS: D	
Intersection Capacity Utilization 90.1%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 6: Dorchester Road & Regional Road 20



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	181	643	229	68	363	125	193	357	84	92	302	59
Future Volume (vph)	181	643	229	68	363	125	193	357	84	92	302	59
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	40.0		0.0	45.0		0.0	50.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.99		0.99	0.99		1.00	1.00		1.00	1.00	
Frt		0.961			0.962			0.972			0.976	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1568	2967	0	1630	2980	0	1630	1642	0	1539	1654	0
Flt Permitted	0.297			0.153			0.335			0.282		
Satd. Flow (perm)	488	2967	0	261	2980	0	574	1642	0	456	1654	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		49			43			12			10	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		109.8			114.2			162.1			187.2	
Travel Time (s)		7.9			8.2			11.7			13.5	
Confl. Peds. (#/hr)	5		15	15		5	5		8	8		5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	7%	4%	2%	7%	5%	2%	3%	4%	8%	3%	3%
Adj. Flow (vph)	197	699	249	74	395	136	210	388	91	100	328	64
Shared Lane Traffic (%)												
Lane Group Flow (vph)	197	948	0	74	531	0	210	479	0	100	392	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		Yes			Yes							
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	181	643	229	68	363	125	193	357	84	92	302	59
Future Volume (vph)	181	643	229	68	363	125	193	357	84	92	302	59
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	6.5		3.0	6.5		3.0	6.5		3.0	6.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		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	0.96		1.00	0.96		1.00	0.97		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)	1567	2966		1629	2979		1629	1641		1538	1653	
Flt Permitted	0.30	1.00		0.15	1.00		0.34	1.00		0.28	1.00	
Satd. Flow (perm)	489	2966		262	2979		575	1641		457	1653	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	197	699	249	74	395	136	210	388	91	100	328	64
RTOR Reduction (vph)	0	33	0	0	31	0	0	8	0	0	6	0
Lane Group Flow (vph)	197	915	0	74	500	0	210	471	0	100	386	0
Confl. Peds. (#/hr)	5		15	15		5	5		8	8		5
Heavy Vehicles (%)	6%	7%	4%	2%	7%	5%	2%	3%	4%	8%	3%	3%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	45.5	36.6		35.4	29.5		50.4	41.1		46.6	39.2	
Effective Green, g (s)	45.5	36.6		35.4	29.5		50.4	41.1		46.6	39.2	
Actuated g/C Ratio	0.41	0.33		0.32	0.27		0.46	0.37		0.42	0.36	
Clearance Time (s)	3.0	6.5		3.0	6.5		3.0	6.5		3.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	329	986		157	798		352	613		266	589	
v/s Ratio Prot	c0.07	c0.31		0.03	0.17		c0.05	c0.29		0.03	0.23	
v/s Ratio Perm	0.18			0.13			0.22			0.13		
v/c Ratio	0.60	0.93		0.47	0.63		0.60	0.77		0.38	0.65	
Uniform Delay, d1	22.4	35.4		27.6	35.4		19.9	30.3		21.0	29.7	
Progression Factor	1.33	1.33		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.7	13.4		2.2	1.5		2.7	9.0		0.9	5.6	
Delay (s)	32.5	60.5		29.9	36.9		22.6	39.3		21.9	35.3	
Level of Service	C	E		C	D		C	D		C	D	
Approach Delay (s)		55.7			36.1			34.2			32.6	
Approach LOS		E			D			C			C	

Intersection Summary				
HCM 2000 Control Delay	42.7	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.82			
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	19.0	
Intersection Capacity Utilization	90.1%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	197	948	74	531	210	479	100	392
v/c Ratio	0.58	0.93	0.41	0.65	0.56	0.76	0.35	0.65
Control Delay	31.8	59.4	24.2	36.9	23.4	39.8	19.6	36.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.8	59.4	24.2	36.9	23.4	39.8	19.6	36.0
Queue Length 50th (m)	38.0	110.1	9.0	50.3	27.6	96.0	12.2	75.0
Queue Length 95th (m)	60.8	#142.8	17.9	69.7	44.0	#152.3	22.6	111.5
Internal Link Dist (m)		85.8		90.2		138.1		163.2
Turn Bay Length (m)	40.0		45.0		50.0		30.0	
Base Capacity (vph)	358	1043	188	870	377	630	286	603
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	0.55	0.91	0.39	0.61	0.56	0.76	0.35	0.65

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

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	736	609	4	0	3
Future Volume (Veh/h)	0	736	609	4	0	3
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	800	662	4	0	3
Pedestrians					7	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (m)		114				
pX, platoon unblocked						
vC, conflicting volume	673				1071	340
vC1, stage 1 conf vol					671	
vC2, stage 2 conf vol					400	
vCu, unblocked vol	673				1071	340
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	922				417	658

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	0	400	400	441	225	3
Volume Left	0	0	0	0	0	0
Volume Right	0	0	0	0	4	3
cSH	1700	1700	1700	1700	1700	658
Volume to Capacity	0.00	0.24	0.24	0.26	0.13	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.0	0.1
Control Delay (s)	0.0	0.0	0.0	0.0	0.0	10.5
Lane LOS						B
Approach Delay (s)	0.0			0.0		10.5
Approach LOS						B

Intersection Summary				
Average Delay		0.0		
Intersection Capacity Utilization		32.1%	ICU Level of Service	A
Analysis Period (min)		15		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	736	609	4	0	3
Future Volume (vph)	0	736	609	4	0	3
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Storage Length (m)	15.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
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		0.865	
Flt Protected						
Satd. Flow (prot)	1750	3260	3251	0	1514	0
Flt Permitted						
Satd. Flow (perm)	1750	3260	3251	0	1514	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		114.2	50.1		180.5	
Travel Time (s)		8.2	3.6		13.0	
Confl. Peds. (#/hr)	7			7		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	33%	0%	0%
Adj. Flow (vph)	0	800	662	4	0	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	800	666	0	3	0
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		Yes	Yes			
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	32.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	716	12	9	588	8	16
Future Volume (Veh/h)	716	12	9	588	8	16
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)	778	13	10	639	9	17
Pedestrians				1	12	
Lane Width (m)				3.6	3.6	
Walking Speed (m/s)				1.2	1.2	
Percent Blockage				0	1	
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (m)	164					
pX, platoon unblocked						
vC, conflicting volume			803		1136	408
vC1, stage 1 conf vol					796	
vC2, stage 2 conf vol					340	
vCu, unblocked vol			803		1136	408
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			99		98	97
cM capacity (veh/h)			821		373	591

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	519	272	10	320	320	26
Volume Left	0	0	10	0	0	9
Volume Right	0	13	0	0	0	17
cSH	1700	1700	821	1700	1700	491
Volume to Capacity	0.31	0.16	0.01	0.19	0.19	0.05
Queue Length 95th (m)	0.0	0.0	0.3	0.0	0.0	1.3
Control Delay (s)	0.0	0.0	9.4	0.0	0.0	12.7
Lane LOS			A			B
Approach Delay (s)	0.0		0.1			12.7
Approach LOS						B

Intersection Summary				
Average Delay	0.3			
Intersection Capacity Utilization	32.3%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	716	12	9	588	8	16
Future Volume (vph)	716	12	9	588	8	16
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Storage Length (m)		0.0	15.0		0.0	0.0
Storage Lanes		0	1		1	0
Taper Length (m)			7.5		7.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Ped Bike Factor						
Frt	0.998				0.912	
Flt Protected			0.950		0.983	
Satd. Flow (prot)	3254	0	1662	3228	1569	0
Flt Permitted			0.950		0.983	
Satd. Flow (perm)	3254	0	1662	3228	1569	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	50.1			206.3	147.1	
Travel Time (s)	3.6			14.9	10.6	
Confl. Peds. (#/hr)		12	12			1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	0%	3%	0%	0%
Adj. Flow (vph)	778	13	10	639	9	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	791	0	10	639	26	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	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	Yes			Yes		
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	32.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	696	17	33	584	12	23	9	53	8	8	24
Future Volume (Veh/h)	8	696	17	33	584	12	23	9	53	8	8	24
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	757	18	36	635	13	25	10	58	9	9	26
Pedestrians								12			3	
Lane Width (m)								3.6			3.6	
Walking Speed (m/s)								1.2			1.2	
Percent Blockage								1			0	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		371			302							
pX, platoon unblocked												
vC, conflicting volume	651			787			1216	1519	400	1176	1522	327
vC1, stage 1 conf vol							796	796		716	716	
vC2, stage 2 conf vol							420	723		460	805	
vCu, unblocked vol	651			787			1216	1519	400	1176	1522	327
tC, single (s)	4.1			4.2			7.6	6.5	7.0	7.5	6.5	7.1
tC, 2 stage (s)							6.6	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	3.4
p0 queue free %	99			96			91	97	90	97	97	96
cM capacity (veh/h)	943			807			287	296	591	303	284	639

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	9	505	270	36	423	225	93	44
Volume Left	9	0	0	36	0	0	25	9
Volume Right	0	0	18	0	0	13	58	26
cSH	943	1700	1700	807	1700	1700	425	431
Volume to Capacity	0.01	0.30	0.16	0.04	0.25	0.13	0.22	0.10
Queue Length 95th (m)	0.2	0.0	0.0	1.1	0.0	0.0	6.6	2.7
Control Delay (s)	8.9	0.0	0.0	9.7	0.0	0.0	15.8	14.3
Lane LOS	A			A			C	B
Approach Delay (s)	0.1			0.5			15.8	14.3
Approach LOS							C	B

Intersection Summary					
Average Delay	1.6				
Intersection Capacity Utilization	43.0%	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)	8	696	17	33	584	12	23	9	53	8	8	24
Future Volume (vph)	8	696	17	33	584	12	23	9	53	8	8	24
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	15.0		0.0	15.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.997			0.997			0.916			0.920	
Flt Protected	0.950			0.950				0.987			0.990	
Satd. Flow (prot)	1662	3246	0	1599	3235	0	0	1525	0	0	1488	0
Flt Permitted	0.950			0.950				0.987			0.990	
Satd. Flow (perm)	1662	3246	0	1599	3235	0	0	1525	0	0	1488	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		206.3			78.8			169.0			191.8	
Travel Time (s)		14.9			5.7			12.2			13.8	
Confl. Peds. (#/hr)	3		12	12		3						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	8%	4%	2%	25%	7%	0%	3%	0%	0%	12%
Adj. Flow (vph)	9	757	18	36	635	13	25	10	58	9	9	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	9	775	0	36	648	0	0	93	0	0	44	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			0.0			0.0	
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		Yes			Yes							
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary					
Area Type:	Other				
Control Type: Unsignalized					
Intersection Capacity Utilization	43.0%	ICU Level of Service A			
Analysis Period (min)	15				



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	24	725	605	12	13	27
Future Volume (Veh/h)	24	725	605	12	13	27
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)	26	788	658	13	14	29
Pedestrians		2			3	
Lane Width (m)		3.6			3.6	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			0	
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (m)			223			
pX, platoon unblocked	0.96				0.96	0.96
vC, conflicting volume	674				1114	340
vC1, stage 1 conf vol					668	
vC2, stage 2 conf vol					446	
vCu, unblocked vol	579				1036	232
tC, single (s)	4.2				7.2	7.1
tC, 2 stage (s)					6.2	
tF (s)	2.3				3.7	3.4
p0 queue free %	97				96	96
cM capacity (veh/h)	924				379	711

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	26	394	394	439	232	43
Volume Left	26	0	0	0	0	14
Volume Right	0	0	0	0	13	29
cSH	924	1700	1700	1700	1700	553
Volume to Capacity	0.03	0.23	0.23	0.26	0.14	0.08
Queue Length 95th (m)	0.7	0.0	0.0	0.0	0.0	2.0
Control Delay (s)	9.0	0.0	0.0	0.0	0.0	12.1
Lane LOS	A					B
Approach Delay (s)	0.3			0.0		12.1
Approach LOS						B

Intersection Summary				
Average Delay		0.5		
Intersection Capacity Utilization		32.4%	ICU Level of Service	A
Analysis Period (min)		15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	24	725	605	12	13	27
Future Volume (vph)	24	725	605	12	13	27
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Storage Length (m)	15.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
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			0.997		0.909	
Flt Protected	0.950				0.984	
Satd. Flow (prot)	1568	3260	3236	0	1366	0
Flt Permitted	0.950				0.984	
Satd. Flow (perm)	1568	3260	3236	0	1366	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		78.8	68.0		182.2	
Travel Time (s)		5.7	4.9		13.1	
Confl. Peds. (#/hr)	3			3		2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	2%	2%	25%	22%	11%
Adj. Flow (vph)	26	788	658	13	14	29
Shared Lane Traffic (%)						
Lane Group Flow (vph)	26	788	671	0	43	0
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		Yes	Yes			
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	32.4%	ICU Level of Service A	
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	701	41	35	640	28	41
Future Volume (Veh/h)	701	41	35	640	28	41
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)	762	45	38	696	30	45
Pedestrians	1				11	
Lane Width (m)	3.6				3.6	
Walking Speed (m/s)	1.2				1.2	
Percent Blockage	0				1	
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (m)				155		
pX, platoon unblocked					0.93	
vC, conflicting volume			818		1220	414
vC1, stage 1 conf vol					796	
vC2, stage 2 conf vol					425	
vCu, unblocked vol			818		1096	414
tC, single (s)			4.2		6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)			2.2		3.5	3.3
p0 queue free %			95		92	92
cM capacity (veh/h)			786		360	576

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	508	299	38	348	348	75
Volume Left	0	0	38	0	0	30
Volume Right	0	45	0	0	0	45
cSH	1700	1700	786	1700	1700	465
Volume to Capacity	0.30	0.18	0.05	0.20	0.20	0.16
Queue Length 95th (m)	0.0	0.0	1.2	0.0	0.0	4.6
Control Delay (s)	0.0	0.0	9.8	0.0	0.0	14.2
Lane LOS			A			B
Approach Delay (s)	0.0		0.5			14.2
Approach LOS						B

Intersection Summary				
Average Delay	0.9			
Intersection Capacity Utilization	40.3%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	701	41	35	640	28	41
Future Volume (vph)	701	41	35	640	28	41
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Storage Length (m)		0.0	15.0		0.0	0.0
Storage Lanes		0	1		1	0
Taper Length (m)			7.5		7.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Ped Bike Factor						
Frt	0.992				0.919	
Flt Protected			0.950		0.980	
Satd. Flow (prot)	3225	0	1599	3228	1510	0
Flt Permitted			0.950		0.980	
Satd. Flow (perm)	3225	0	1599	3228	1510	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	68.0			55.0	165.0	
Travel Time (s)	4.9			4.0	11.9	
Confl. Peds. (#/hr)		11	11		1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	7%	4%	3%	5%	4%
Adj. Flow (vph)	762	45	38	696	30	45
Shared Lane Traffic (%)						
Lane Group Flow (vph)	807	0	38	696	75	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	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	Yes			Yes		
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	40.3%	ICU Level of Service A	
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	9	747	660	9	5	15
Future Volume (Veh/h)	9	747	660	9	5	15
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)	10	812	717	10	5	16
Pedestrians		1			8	
Lane Width (m)		3.6			3.6	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			1	
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (m)			100			
pX, platoon unblocked	0.92				0.92	0.92
vC, conflicting volume	735				1156	372
vC1, stage 1 conf vol					730	
vC2, stage 2 conf vol					426	
vCu, unblocked vol	541				998	147
tC, single (s)	4.1				6.8	7.1
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.4
p0 queue free %	99				99	98
cM capacity (veh/h)	950				433	776

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	10	406	406	478	249	21
Volume Left	10	0	0	0	0	5
Volume Right	0	0	0	0	10	16
cSH	950	1700	1700	1700	1700	653
Volume to Capacity	0.01	0.24	0.24	0.28	0.15	0.03
Queue Length 95th (m)	0.3	0.0	0.0	0.0	0.0	0.8
Control Delay (s)	8.8	0.0	0.0	0.0	0.0	10.7
Lane LOS	A					B
Approach Delay (s)	0.1			0.0		10.7
Approach LOS						B

Intersection Summary			
Average Delay		0.2	
Intersection Capacity Utilization		32.7%	ICU Level of Service A
Analysis Period (min)		15	

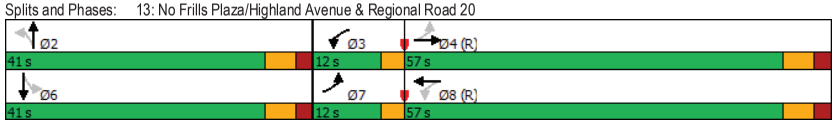
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	9	747	660	9	5	15
Future Volume (vph)	9	747	660	9	5	15
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Storage Length (m)	15.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
Taper Length (m)	7.5				7.5	
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.998		0.897	
Flt Protected	0.950				0.988	
Satd. Flow (prot)	1662	3260	3254	0	1441	0
Flt Permitted	0.950				0.988	
Satd. Flow (perm)	1662	3260	3254	0	1441	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		55.0	100.4		189.4	
Travel Time (s)		4.0	7.2		13.6	
Confl. Peds. (#/hr)	8			8		1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	0%	0%	10%
Adj. Flow (vph)	10	812	717	10	5	16
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	812	727	0	21	0
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		Yes	Yes			
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 32.7%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	8.0		6.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.5	35.5		10.5	35.5		36.5	36.5		36.5	36.5	
Total Split (s)	12.0	57.0		12.0	57.0		41.0	41.0		41.0	41.0	
Total Split (%)	10.9%	51.8%		10.9%	51.8%		37.3%	37.3%		37.3%	37.3%	
Maximum Green (s)	9.0	50.5		9.0	50.5		34.5	34.5		34.5	34.5	
Yellow Time (s)	3.0	4.1		3.0	4.1		4.1	4.1		4.1	4.1	
All-Red Time (s)	0.0	2.4		0.0	2.4		2.4	2.4		2.4	2.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)	3.0	6.5		3.0	6.5		6.5	6.5			6.5	
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	
Recall Mode	None	C-Max		None	C-Max		Max	Max		Max	Max	
Walk Time (s)		11.0			11.0		11.0	11.0		11.0	11.0	
Flash Dont Walk (s)		18.0			18.0		19.0	19.0		19.0	19.0	
Pedestrian Calls (#/hr)		0			0		0	0		0	0	
Act Effct Green (s)	63.7	56.5		65.2	58.8		34.5	34.5			34.5	
Actuated g/C Ratio	0.58	0.51		0.59	0.53		0.31	0.31			0.31	
v/c Ratio	0.03	0.42		0.08	0.30		0.07	0.06			0.16	
Control Delay	9.1	18.3		9.5	15.4		27.3	13.5			22.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	9.1	18.3		9.5	15.4		27.3	13.5			22.9	
LOS	A	B		A	B		C	B			C	
Approach Delay		18.1			15.0			20.3			22.9	
Approach LOS		B			B			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 6 (5%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.42			
Intersection Signal Delay: 17.2		Intersection LOS: B	
Intersection Capacity Utilization 63.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 13: No Frills Plaza/Highland Avenue & Regional Road 20



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	613	23	31	446	13	27	7	20	27	24	16
Future Volume (vph)	12	613	23	31	446	13	27	7	20	27	24	16
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	35.0		0.0	35.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00	1.00		1.00	0.99			0.99	
Frt		0.995			0.996			0.890			0.968	
Flt Protected	0.950			0.950			0.950				0.980	
Satd. Flow (prot)	1662	3182	0	1662	3155	0	1662	1536	0	0	1591	0
Flt Permitted	0.462			0.327			0.710				0.893	
Satd. Flow (perm)	802	3182	0	569	3155	0	1240	1536	0	0	1446	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			3			22			15	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		100.4			342.8			50.5			193.9	
Travel Time (s)		7.2			24.7			3.6			14.0	
Confl. Peds. (#/hr)	9		8	8		9	2		6	6		2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	4%	0%	0%	5%	0%	0%	0%	0%	0%	0%	17%
Adj. Flow (vph)	13	666	25	34	485	14	29	8	22	29	26	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	13	691	0	34	499	0	29	30	0	0	72	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		Yes			Yes							
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	613	23	31	446	13	27	7	20	27	24	16
Future Volume (vph)	12	613	23	31	446	13	27	7	20	27	24	16
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	6.5		3.0	6.5		6.5	6.5			6.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.89			0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.98	
Satd. Flow (prot)	1656	3180		1660	3154		1659	1536			1587	
Flt Permitted	0.46	1.00		0.33	1.00		0.71	1.00			0.89	
Satd. Flow (perm)	805	3180		572	3154		1240	1536			1446	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	13	666	25	34	485	14	29	8	22	29	26	17
RTOR Reduction (vph)	0	2	0	0	1	0	0	15	0	0	10	0
Lane Group Flow (vph)	13	689	0	34	498	0	29	15	0	0	62	0
Confl. Peds. (#/hr)	9		8	8		9	2		6	6		2
Heavy Vehicles (%)	0%	4%	0%	0%	5%	0%	0%	0%	0%	0%	0%	17%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	57.8	55.3		61.2	57.0		34.5	34.5			34.5	
Effective Green, g (s)	57.8	55.3		61.2	57.0		34.5	34.5			34.5	
Actuated g/C Ratio	0.53	0.50		0.56	0.52		0.31	0.31			0.31	
Clearance Time (s)	3.0	6.5		3.0	6.5		6.5	6.5			6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	442	1598		359	1634		388	481			453	
v/s Ratio Prot	0.00	c0.22		c0.00	0.16			0.01				
v/s Ratio Perm	0.01			0.05			0.02				c0.04	
v/c Ratio	0.03	0.43		0.09	0.30		0.07	0.03			0.14	
Uniform Delay, d1	12.5	17.4		11.4	15.2		26.5	26.2			27.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.0	0.9		0.1	0.5		0.4	0.1			0.6	
Delay (s)	12.5	18.2		11.6	15.6		26.9	26.3			27.7	
Level of Service	B	B		B	B		C	C			C	
Approach Delay (s)		18.1			15.4			26.6			27.7	
Approach LOS		B			B			C			C	

Intersection Summary				
HCM 2000 Control Delay	17.9	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.31			
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	63.8%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	13	691	34	499	29	30	72
v/c Ratio	0.03	0.42	0.08	0.30	0.07	0.06	0.16
Control Delay	9.1	18.3	9.5	15.4	27.3	13.5	22.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.1	18.3	9.5	15.4	27.3	13.5	22.9
Queue Length 50th (m)	1.1	52.2	2.9	28.5	4.6	1.3	9.2
Queue Length 95th (m)	3.7	69.6	7.1	47.4	11.8	8.3	20.6
Internal Link Dist (m)		76.4		318.8		26.5	169.9
Turn Bay Length (m)	35.0		35.0				
Base Capacity (vph)	547	1636	430	1687	388	496	463
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.42	0.08	0.30	0.07	0.06	0.16

Intersection Summary

Intersection: 4: Brookfield Avenue & Regional Road 20

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	TR	L	T	TR	LTR	LTR
Maximum Queue (m)	2.9	3.0	18.8	7.3	2.8	4.7	24.9	10.6
Average Queue (m)	0.1	0.1	1.1	0.8	0.1	0.2	9.3	3.5
95th Queue (m)	1.4	2.1	10.4	4.4	2.0	2.1	19.9	10.6
Link Distance (m)		288.6	288.6		96.8	96.8	211.2	182.2
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (m)	15.0			15.0				
Storage Blk Time (%)		0			0			
Queuing Penalty (veh)		0			0			

Intersection: 5: Regional Road 20 & Mouland Avenue

Movement	EB	EB	SB
Directions Served	T	T	LR
Maximum Queue (m)	35.0	40.8	10.5
Average Queue (m)	5.1	7.9	3.4
95th Queue (m)	22.3	28.0	10.5
Link Distance (m)	96.8	96.8	175.6
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 6: Dorchester Road & Regional Road 20

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (m)	47.4	97.1	102.7	52.3	81.8	86.8	57.4	152.7	37.4	116.8
Average Queue (m)	37.4	77.7	84.5	17.8	43.5	50.0	38.1	78.3	24.0	63.3
95th Queue (m)	59.7	100.7	102.5	39.3	68.9	75.4	65.3	138.3	45.1	109.7
Link Distance (m)		89.0	89.0		97.0	97.0		148.1		173.1
Upstream Blk Time (%)		5	8		0	0		2		
Queuing Penalty (veh)		19	33		0	0		0		
Storage Bay Dist (m)	40.0			45.0			50.0		30.0	
Storage Blk Time (%)	3	30		0	8		1	22	2	32
Queuing Penalty (veh)	10	54		0	5		2	42	8	29

Intersection: 1: Montrose Road (RR98) & Regional Road 20

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	TR	L	T	R
Maximum Queue (m)	62.4	141.3	117.4	42.3	66.3	65.5	26.5	52.4	185.4	52.0	57.5	45.9
Average Queue (m)	54.8	65.3	51.4	17.5	36.2	38.4	3.6	15.3	101.8	23.5	28.4	17.7
95th Queue (m)	71.8	118.5	91.7	37.8	60.5	61.1	16.4	45.9	168.2	42.5	49.9	33.2
Link Distance (m)		237.7	237.7		237.5	237.5	237.5		329.0		309.7	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	55.0			35.0				45.0		80.0		70.0
Storage Blk Time (%)	15	3		1	13			0	40		0	0
Queuing Penalty (veh)	41	9		1	10			0	21		0	0

Intersection: 2: Niagara Falls Inn Driveway/Belmont Avenue & Regional Road 20

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	LTR
Maximum Queue (m)	18.0	116.8	117.1	19.4	40.6	46.5	13.6	9.2	24.3
Average Queue (m)	3.4	54.1	57.4	4.2	17.2	23.1	1.6	0.9	6.9
95th Queue (m)	11.7	101.3	104.0	13.9	34.7	41.4	9.0	5.4	19.1
Link Distance (m)		237.5	237.5		212.7	212.7	61.4	61.4	200.9
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (m)	15.0			15.0					
Storage Blk Time (%)	0	25		1	17				
Queuing Penalty (veh)	1	4		2	3				

Intersection: 3: Royal Manor Drive & Regional Road 20

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	TR	L	T	TR	LTR	LTR
Maximum Queue (m)	13.1	73.1	77.7	4.4	48.5	51.1	8.9	15.4
Average Queue (m)	2.4	31.9	39.3	0.1	21.3	25.1	1.2	5.2
95th Queue (m)	9.9	59.2	66.2	3.1	37.9	42.3	5.9	14.2
Link Distance (m)		212.7	212.7		288.6	288.6	44.2	84.9
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (m)	15.0			15.0				
Storage Blk Time (%)	0	20			15			
Queuing Penalty (veh)	2	2			0			

Intersection: 10: Regional Road 20 & Byng Avenue

Movement	EB	EB	EB	WB	WB	SB
Directions Served	L	T	T	T	TR	LR
Maximum Queue (m)	12.7	8.0	7.4	3.2	5.8	19.4
Average Queue (m)	3.4	0.3	0.2	0.1	0.2	7.8
95th Queue (m)	11.0	3.7	3.8	2.3	3.3	16.8
Link Distance (m)		63.2	63.2	48.4	48.4	168.2
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)	15.0					
Storage Blk Time (%)	0	0				
Queuing Penalty (veh)	0	0				

Intersection: 11: Franklin Avenue & Regional Road 20

Movement	EB	EB	WB	WB	WB	NB
Directions Served	T	TR	L	T	T	LR
Maximum Queue (m)	6.6	7.7	12.7	12.8	3.5	25.6
Average Queue (m)	0.2	0.3	4.8	0.4	0.1	10.5
95th Queue (m)	2.9	3.0	12.6	4.3	1.8	21.0
Link Distance (m)	48.4	48.4		40.9	40.9	150.8
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)			15.0			
Storage Blk Time (%)			0	0		
Queuing Penalty (veh)			1	0		

Intersection: 12: Regional Road 20 & Glenholme Avenue

Movement	EB	EB	EB	WB	WB	SB
Directions Served	L	T	T	T	TR	LR
Maximum Queue (m)	10.5	5.2	12.6	3.7	4.4	15.4
Average Queue (m)	1.1	0.2	0.6	0.1	0.1	4.8
95th Queue (m)	6.0	3.7	6.0	1.9	3.1	13.3
Link Distance (m)		40.9	40.9	80.2	80.2	175.5
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)	15.0					
Storage Blk Time (%)	0	0				
Queuing Penalty (veh)	0	0				

Intersection: 7: Regional Road 20 & Depew Avenue

Movement	WB	SB
Directions Served	T	LR
Maximum Queue (m)	1.8	8.7
Average Queue (m)	0.1	0.9
95th Queue (m)	1.3	5.3
Link Distance (m)	31.5	166.6
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (m)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 8: Corwin Avenue & Regional Road 20

Movement	EB	EB	WB	NB
Directions Served	T	TR	L	LR
Maximum Queue (m)	1.8	1.8	9.1	11.7
Average Queue (m)	0.1	0.1	1.1	4.7
95th Queue (m)	1.3	1.3	5.9	12.2
Link Distance (m)	31.5	31.5		133.2
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)			15.0	
Storage Blk Time (%)			0	
Queuing Penalty (veh)			0	

Intersection: 9: Calton Avenue/Prince Edward Avenue & Regional Road 20

Movement	EB	EB	WB	WB	NB	SB
Directions Served	L	TR	L	T	LTR	LTR
Maximum Queue (m)	9.0	1.3	15.9	6.0	32.4	19.8
Average Queue (m)	1.5	0.1	4.6	0.2	12.3	8.5
95th Queue (m)	6.8	1.3	13.1	4.3	23.0	17.2
Link Distance (m)		190.9		63.2	155.1	177.9
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)	15.0		15.0			
Storage Blk Time (%)			0	0		
Queuing Penalty (veh)			1	0		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	274	753	77	196	818	176	108	322	176	270	409	467
Future Volume (vph)	274	753	77	196	818	176	108	322	176	270	409	467
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	55.0		0.0	35.0		0.0	45.0		0.0	80.0		70.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		1.00		0.96	0.98	0.99				0.95
Frt		0.986				0.850		0.947				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1554	3120	0	1511	3137	1417	1583	1598	0	1599	1683	1390
Flt Permitted	0.097			0.140			0.392			0.095		
Satd. Flow (perm)	159	3120	0	222	3137	1366	642	1598	0	160	1683	1322
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8				167		20				349
Link Speed (k/h)		60			50			50			50	
Link Distance (m)		251.8			265.0			342.9			323.7	
Travel Time (s)		15.1			19.1			24.7			23.3	
Confl. Peds. (#/hr)	17		10	10		17	27		14	14		27
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	7%	4%	11%	10%	6%	5%	5%	4%	0%	4%	4%	7%
Adj. Flow (vph)	298	818	84	213	889	191	117	350	191	293	445	508
Shared Lane Traffic (%)												
Lane Group Flow (vph)	298	902	0	213	889	191	117	541	0	293	445	508
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					Yes							
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	0.0
Detector 1 Queue (s)	0.0	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	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	

Intersection: 13: No Frills Plaza/Highland Avenue & Regional Road 20

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	LTR
Maximum Queue (m)	23.4	73.5	79.3	28.3	54.6	44.7	21.3	15.7	29.8
Average Queue (m)	2.9	44.8	50.2	6.2	26.9	19.1	5.2	5.3	10.9
95th Queue (m)	12.9	71.6	77.0	17.4	45.6	38.4	15.7	13.5	23.2
Link Distance (m)		80.2	80.2		332.3	332.3	36.4	36.4	180.0
Upstream Blk Time (%)		0	0						
Queuing Penalty (veh)		0	1						
Storage Bay Dist (m)	35.0			35.0					
Storage Blk Time (%)		15			4				
Queuing Penalty (veh)		2			1				

Network Summary

Network wide Queuing Penalty: 307

Queues
2041 Alternative 3 - Five Lane
1: Montrose Road (RR98) & Regional Road 20
PM Peak Hour

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	298	902	213	889	191	117	541	293	445	508
v/c Ratio	1.09	0.91	0.93	1.00	0.38	0.41	1.14	1.06	0.70	0.71
Control Delay	116.0	57.2	73.1	79.4	10.0	26.8	127.0	107.9	42.8	16.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	116.0	57.2	73.1	79.4	10.0	26.8	127.0	107.9	42.8	16.7
Queue Length 50th (m)	~78.0	126.6	38.7	~132.7	4.9	18.1	~172.8	~74.1	105.1	37.3
Queue Length 95th (m)	#138.9	#165.6	#89.3	#179.4	25.1	30.5	#246.2	#133.8	146.5	83.9
Internal Link Dist (m)		227.8		241.0			318.9		299.7	
Turn Bay Length (m)	55.0		35.0			45.0		80.0		70.0
Base Capacity (vph)	274	996	230	885	505	284	475	276	634	715
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.09	0.91	0.93	1.00	0.38	0.41	1.14	1.06	0.70	0.71

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.

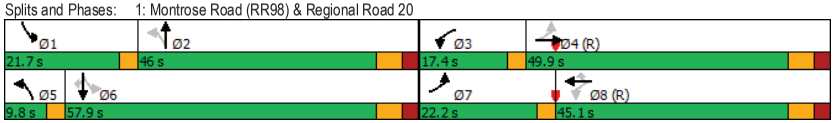
Lanes, Volumes, Timings
2041 Alternative 3 - Five Lane
1: Montrose Road (RR98) & Regional Road 20
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		6
Detector Phase	7	4		3	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0	10.0	3.0	8.0		6.0	8.0	8.0
Minimum Split (s)	10.5	35.0		10.5	35.0	35.0	9.5	36.0		10.5	36.0	36.0
Total Split (s)	22.2	49.9		17.4	45.1	45.1	9.8	46.0		21.7	57.9	57.9
Total Split (%)	16.4%	37.0%		12.9%	33.4%	33.4%	7.3%	34.1%		16.1%	42.9%	42.9%
Maximum Green (s)	19.2	42.9		14.4	38.1	38.1	6.8	39.0		18.7	50.9	50.9
Yellow Time (s)	3.0	4.1		3.0	4.1	4.1	3.0	4.1		3.0	4.1	4.1
All-Red Time (s)	0.0	2.9		0.0	2.9	2.9	0.0	2.9		0.0	2.9	2.9
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.0	7.0		3.0	7.0	7.0	3.0	7.0		3.0	7.0	7.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	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	3.0
Recall Mode	None	C-Max		None	C-Max	C-Max	None	Max		None	Max	Max
Walk Time (s)		10.0			10.0	10.0		11.0			11.0	11.0
Flash Dont Walk (s)		18.0			18.0	18.0		18.0			18.0	18.0
Pedestrian Calls (#/hr)		0			0	0		0			0	0
Act Effct Green (s)	64.3	42.9		56.5	38.1	38.1	49.8	39.0		64.7	50.9	50.9
Actuated g/C Ratio	0.48	0.32		0.42	0.28	0.28	0.37	0.29		0.48	0.38	0.38
v/c Ratio	1.09	0.91		0.93	1.00	0.38	0.41	1.14		1.06	0.70	0.71
Control Delay	116.0	57.2		73.1	79.4	10.0	26.8	127.0		107.9	42.8	16.7
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	116.0	57.2		73.1	79.4	10.0	26.8	127.0		107.9	42.8	16.7
LOS	F	E		E	E	B	C	F		F	D	B
Approach Delay		71.8			68.1			109.2			47.5	
Approach LOS		E			E			F			D	

Intersection Summary

Area Type: Other
Cycle Length: 135
Actuated Cycle Length: 135
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.14
Intersection Signal Delay: 69.4 Intersection LOS: E
Intersection Capacity Utilization 106.2% ICU Level of Service G
Analysis Period (min) 15

Splits and Phases: 1: Montrose Road (RR98) & Regional Road 20



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	1267	40	83	1308	29	64	1	84	28	4	16
Future Volume (vph)	17	1267	40	83	1308	29	64	1	84	28	4	16
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	15.0		0.0	15.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		1.00				0.99			1.00	
Frt		0.995			0.997			0.852			0.955	
Flt Protected	0.950			0.950			0.950				0.971	
Satd. Flow (prot)	1662	3125	0	1662	3160	0	1330	1472	0	0	1287	0
Flt Permitted	0.099			0.088			0.724				0.814	
Satd. Flow (perm)	173	3125	0	154	3160	0	1014	1472	0	0	1078	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			3			91			17	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		265.0			231.8			75.5			218.5	
Travel Time (s)		19.1			16.7			5.4			15.7	
Confl. Peds. (#/hr)			5	5					1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	6%	0%	0%	5%	0%	25%	0%	0%	33%	0%	20%
Adj. Flow (vph)	18	1377	43	90	1422	32	70	1	91	30	4	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	18	1420	0	90	1454	0	70	92	0	0	51	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		Yes			Yes							
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	274	753	77	196	818	176	108	322	176	270	409	467
Future Volume (vph)	274	753	77	196	818	176	108	322	176	270	409	467
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	7.0		3.0	7.0	7.0	3.0	7.0		3.0	7.0	7.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.96	1.00	0.99		1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.99	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1554	3120		1511	3137	1366	1573	1598		1599	1683	1322
Flt Permitted	0.10	1.00		0.14	1.00	1.00	0.39	1.00		0.10	1.00	1.00
Satd. Flow (perm)	159	3120		223	3137	1366	650	1598		160	1683	1322
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	298	818	84	213	889	191	117	350	191	293	445	508
RTOR Reduction (vph)	0	5	0	0	0	120	0	14	0	0	0	217
Lane Group Flow (vph)	298	897	0	213	889	71	117	527	0	293	445	291
Confl. Peds. (#/hr)	17		10	10		17	27		14	14		27
Heavy Vehicles (%)	7%	4%	11%	10%	6%	5%	5%	4%	0%	4%	4%	7%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	60.3	42.9		52.5	38.1	38.1	45.8	39.0		60.7	50.9	50.9
Effective Green, g (s)	60.3	42.9		52.5	38.1	38.1	45.8	39.0		60.7	50.9	50.9
Actuated g/C Ratio	0.45	0.32		0.39	0.28	0.28	0.34	0.29		0.45	0.38	0.38
Clearance Time (s)	3.0	7.0		3.0	7.0	7.0	3.0	7.0		3.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	269	991		224	885	385	267	461		271	634	498
v/s Ratio Prot	c0.16	0.29		0.10	0.28		0.02	0.33		c0.15	0.26	
v/s Ratio Perm	c0.34			0.27		0.05	0.13			c0.34		0.22
v/c Ratio	1.11	0.90		0.95	1.00	0.18	0.44	1.14		1.08	0.70	0.58
Uniform Delay, d1	41.7	44.1		32.2	48.5	36.7	32.5	48.0		42.3	35.6	33.6
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	86.9	13.2		46.3	31.4	1.1	1.2	87.2		78.0	6.4	4.9
Delay (s)	128.6	57.3		78.5	79.8	37.7	33.7	135.2		120.3	42.0	38.5
Level of Service	F	E		E	E	D	C	F		F	D	D
Approach Delay (s)		75.0			73.4			117.2			59.0	
Approach LOS		E			E			F			E	

Intersection Summary			
HCM 2000 Control Delay	76.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.14		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	106.2%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	18	1420	90	1454	70	92	51
v/c Ratio	0.09	0.85	0.48	0.80	0.26	0.20	0.17
Control Delay	8.3	28.5	23.3	17.7	35.0	7.8	24.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.3	28.5	23.3	17.7	35.0	7.8	24.3
Queue Length 50th (m)	1.4	143.0	4.5	47.0	12.5	0.2	5.8
Queue Length 95th (m)	4.0	179.8	m9.6	173.9	25.6	12.8	16.1
Internal Link Dist (m)		241.0		207.8		51.5	194.5
Turn Bay Length (m)	15.0		15.0				
Base Capacity (vph)	196	1674	190	1809	270	458	299
Starvation Cap Reductn	0	0	0	8	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.85	0.47	0.81	0.26	0.20	0.17

Intersection Summary

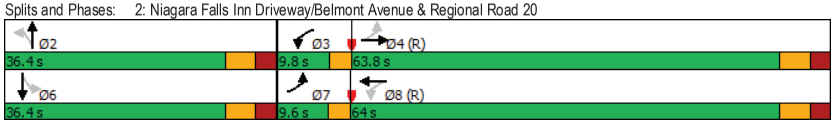
m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	8.0		6.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	9.5	39.9		9.5	39.9		36.1	36.1		36.1	36.1	
Total Split (s)	9.6	63.8		9.8	64.0		36.4	36.4		36.4	36.4	
Total Split (%)	8.7%	58.0%		8.9%	58.2%		33.1%	33.1%		33.1%	33.1%	
Maximum Green (s)	6.6	56.9		6.8	57.1		29.3	29.3		29.3	29.3	
Yellow Time (s)	3.0	4.1		3.0	4.1		4.1	4.1		4.1	4.1	
All-Red Time (s)	0.0	2.8		0.0	2.8		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)	3.0	6.9		3.0	6.9		7.1	7.1			7.1	
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	
Recall Mode	None	C-Max		None	C-Max		Max	Max		Max	Max	
Walk Time (s)		12.0			12.0		11.0	11.0		11.0	11.0	
Flash Dont Walk (s)		21.0			21.0		18.0	18.0		18.0	18.0	
Pedestrian Calls (#/hr)		0			0		0	0		0	0	
Act Effct Green (s)	67.7	58.9		69.6	62.9		29.3	29.3			29.3	
Actuated g/C Ratio	0.62	0.54		0.63	0.57		0.27	0.27			0.27	
v/c Ratio	0.09	0.85		0.48	0.80		0.26	0.20			0.17	
Control Delay	8.3	28.5		23.3	17.7		35.0	7.8			24.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	8.3	28.5		23.3	17.7		35.0	7.8			24.3	
LOS	A	C		C	B		C	A			C	
Approach Delay		28.3			18.0			19.6			24.3	
Approach LOS		C			B			B			C	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 16 (15%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.85
Intersection Signal Delay: 22.8 Intersection LOS: C
Intersection Capacity Utilization 84.4% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 2: Niagara Falls Inn Driveway/Belmont Avenue & Regional Road 20



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	1387	0	1	1323	19	1	0	5	16	0	37
Future Volume (vph)	44	1387	0	1	1323	19	1	0	5	16	0	37
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	15.0		0.0	15.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					1.00							
Frt					0.998			0.887			0.905	
Flt Protected	0.950			0.950				0.992			0.985	
Satd. Flow (prot)	1458	3137	0	1662	3161	0	0	1540	0	0	1448	0
Flt Permitted	0.118			0.108				0.977			0.932	
Satd. Flow (perm)	181	3137	0	189	3161	0	0	1517	0	0	1370	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					2			35			40	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		231.8			321.7			58.1			98.8	
Travel Time (s)		16.7			23.2			4.2			7.1	
Confl. Peds. (#/hr)	2		11	11		2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	14%	6%	0%	0%	5%	0%	0%	0%	0%	0%	0%	11%
Adj. Flow (vph)	48	1508	0	1	1438	21	1	0	5	17	0	40
Shared Lane Traffic (%)												
Lane Group Flow (vph)	48	1508	0	1	1459	0	0	6	0	0	57	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			0.0			0.0	
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		Yes			Yes							
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	1267	40	83	1308	29	64	1	84	28	4	16
Future Volume (vph)	17	1267	40	83	1308	29	64	1	84	28	4	16
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	6.9		3.0	6.9		7.1	7.1			7.1	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.85			0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.97	
Satd. Flow (prot)	1662	3126		1662	3160		1330	1471			1287	
Flt Permitted	0.10	1.00		0.09	1.00		0.72	1.00			0.81	
Satd. Flow (perm)	174	3126		153	3160		1013	1471			1078	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	18	1377	43	90	1422	32	70	1	91	30	4	17
RTOR Reduction (vph)	0	2	0	0	1	0	0	67	0	0	12	0
Lane Group Flow (vph)	18	1418	0	90	1453	0	70	25	0	0	39	0
Confl. Peds. (#/hr)			5	5					1	1		
Heavy Vehicles (%)	0%	6%	0%	0%	5%	0%	25%	0%	0%	33%	0%	20%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	60.9	58.3		66.5	61.1		29.3	29.3			29.3	
Effective Green, g (s)	60.9	58.3		66.5	61.1		29.3	29.3			29.3	
Actuated g/C Ratio	0.55	0.53		0.60	0.56		0.27	0.27			0.27	
Clearance Time (s)	3.0	6.9		3.0	6.9		7.1	7.1			7.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	131	1656		166	1755		269	391			287	
v/s Ratio Prot	0.00	0.45		c0.03	c0.46			0.02				
v/s Ratio Perm	0.07			0.30			c0.07				0.04	
v/c Ratio	0.14	0.86		0.54	0.83		0.26	0.06			0.13	
Uniform Delay, d1	14.5	22.2		15.7	20.1		31.8	30.1			30.7	
Progression Factor	1.00	1.00		1.88	0.73		1.00	1.00			1.00	
Incremental Delay, d2	0.5	5.9		2.6	3.4		2.3	0.3			1.0	
Delay (s)	14.9	28.2		32.2	18.0		34.1	30.4			31.7	
Level of Service	B	C		C	B		C	C			C	
Approach Delay (s)		28.0			18.8			32.0			31.7	
Approach LOS		C			B			C			C	

Intersection Summary					
HCM 2000 Control Delay	23.8	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.65				
Actuated Cycle Length (s)	110.0	Sum of lost time (s)		17.0	
Intersection Capacity Utilization	84.4%	ICU Level of Service		E	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBT	SBT
Lane Group Flow (vph)	48	1508	1	1459	6	57
v/c Ratio	0.42	0.77	0.01	0.74	0.01	0.15
Control Delay	19.9	13.6	13.0	17.3	0.0	15.3
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0
Total Delay	19.9	13.6	13.0	17.4	0.0	15.3
Queue Length 50th (m)	3.5	58.3	0.1	96.0	0.0	2.9
Queue Length 95th (m)	m5.9	87.1	m0.1	m74.5	0.0	13.4
Internal Link Dist (m)		207.8		297.7	34.1	74.8
Turn Bay Length (m)	15.0		15.0			
Base Capacity (vph)	113	1967	118	1983	412	378
Starvation Cap Reductn	0	11	0	0	0	0
Spillback Cap Reductn	0	0	0	32	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.77	0.01	0.75	0.01	0.15

Intersection Summary

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	24.5	24.5		24.5	24.5		34.5	34.5		34.5	34.5	
Total Split (s)	75.5	75.5		75.5	75.5		34.5	34.5		34.5	34.5	
Total Split (%)	68.6%	68.6%		68.6%	68.6%		31.4%	31.4%		31.4%	31.4%	
Maximum Green (s)	69.0	69.0		69.0	69.0		28.0	28.0		28.0	28.0	
Yellow Time (s)	4.1	4.1		4.1	4.1		4.1	4.1		4.1	4.1	
All-Red Time (s)	2.4	2.4		2.4	2.4		2.4	2.4		2.4	2.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0			0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5			6.5			6.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		Max	Max		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		18.0	18.0		18.0	18.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)	69.0	69.0		69.0	69.0			28.0			28.0	
Actuated g/C Ratio	0.63	0.63		0.63	0.63			0.25			0.25	
v/c Ratio	0.42	0.77		0.01	0.74			0.01			0.15	
Control Delay	19.9	13.6		13.0	17.3			0.0			15.3	
Queue Delay	0.0	0.0		0.0	0.1			0.0			0.0	
Total Delay	19.9	13.6		13.0	17.4			0.0			15.3	
LOS	B	B		B	B			A			B	
Approach Delay		13.8			17.4						15.3	
Approach LOS		B			B						B	

Intersection Summary

Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 15.5		Intersection LOS: B	
Intersection Capacity Utilization 59.1%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 3: Royal Manor Drive & Regional Road 20



Lanes, Volumes, Timings
4: Brookfield Avenue & Regional Road 20

2041 Alternative 3 - Five Lane
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	1182	53	13	1227	8	13	1	27	1	3	24
Future Volume (vph)	11	1182	53	13	1227	8	13	1	27	1	3	24
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	15.0		0.0	15.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.994			0.999			0.911			0.883	
Flt Protected	0.950			0.950				0.984			0.998	
Satd. Flow (prot)	1662	3243	0	1662	3226	0	0	1569	0	0	1542	0
Flt Permitted	0.950			0.950				0.984			0.998	
Satd. Flow (perm)	1662	3243	0	1662	3226	0	0	1569	0	0	1542	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		321.7			111.0			229.0			196.7	
Travel Time (s)		23.2			8.0			16.5			14.2	
Confl. Peds. (#/hr)	5		12	12		5	2		2	2		2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	12	1285	58	14	1334	9	14	1	29	1	3	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	1343	0	14	1343	0	0	44	0	0	30	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			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			15.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane		Yes			Yes							
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	53.7%	ICU Level of Service A	
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
3: Royal Manor Drive & Regional Road 20

2041 Alternative 3 - Five Lane
PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	1387	0	1	1323	19	1	0	5	16	0	37
Future Volume (vph)	44	1387	0	1	1323	19	1	0	5	16	0	37
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	6.5	6.5		6.5	6.5			6.5			6.5	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00			1.00	
Frpb, ped/bikes	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	
Frt	1.00	1.00		1.00	1.00			0.89			0.91	
Flt Protected	0.95	1.00		0.95	1.00			0.99			0.99	
Satd. Flow (prot)	1458	3137		1662	3161			1540			1449	
Flt Permitted	0.12	1.00		0.11	1.00			0.98			0.93	
Satd. Flow (perm)	181	3137		188	3161			1517			1370	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	48	1508	0	1	1438	21	1	0	5	17	0	40
RTOR Reduction (vph)	0	0	0	0	1	0	0	4	0	0	30	0
Lane Group Flow (vph)	48	1508	0	1	1458	0	0	2	0	0	27	0
Confl. Peds. (#/hr)	2		11	11		2						
Heavy Vehicles (%)	14%	6%	0%	0%	5%	0%	0%	0%	0%	0%	0%	11%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	69.0	69.0		69.0	69.0			28.0			28.0	
Effective Green, g (s)	69.0	69.0		69.0	69.0			28.0			28.0	
Actuated g/C Ratio	0.63	0.63		0.63	0.63			0.25			0.25	
Clearance Time (s)	6.5	6.5		6.5	6.5			6.5			6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0			3.0			3.0	
Lane Grp Cap (vph)	113	1967		117	1982			386			348	
v/s Ratio Prot		c0.48			0.46							
v/s Ratio Perm	0.27			0.01				0.00			c0.02	
v/c Ratio	0.42	0.77		0.01	0.74			0.00			0.08	
Uniform Delay, d1	10.4	14.7		7.7	14.2			30.6			31.2	
Progression Factor	0.95	0.78		1.58	1.17			1.00			1.00	
Incremental Delay, d2	7.1	1.8		0.0	0.2			0.0			0.4	
Delay (s)	17.0	13.3		12.2	16.9			30.6			31.6	
Level of Service	B	B		B	B			C			C	
Approach Delay (s)		13.4			16.9			30.6			31.6	
Approach LOS		B			B			C			C	

Intersection Summary					
HCM 2000 Control Delay	15.4	HCM 2000 Level of Service		B	
HCM 2000 Volume to Capacity ratio	0.57				
Actuated Cycle Length (s)	110.0	Sum of lost time (s)		13.0	
Intersection Capacity Utilization	59.1%	ICU Level of Service		B	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	16	1182	1164	4	3	5
Future Volume (vph)	16	1182	1164	4	3	5
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Storage Length (m)	15.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
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					0.916	
Flt Protected	0.950				0.982	
Satd. Flow (prot)	1662	3292	3228	0	1574	0
Flt Permitted	0.950				0.982	
Satd. Flow (perm)	1662	3292	3228	0	1574	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		111.0	109.8		191.2	
Travel Time (s)		8.0	7.9		13.8	
Confl. Peds. (#/hr)	5			5		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	3%	0%	0%	0%
Adj. Flow (vph)	17	1285	1265	4	3	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	17	1285	1269	0	8	0
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		Yes	Yes			
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	45.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	1182	53	13	1227	8	13	1	27	1	3	24
Future Volume (Veh/h)	11	1182	53	13	1227	8	13	1	27	1	3	24
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	1285	58	14	1334	9	14	1	29	1	3	26
Pedestrians		2			2			12			5	
Lane Width (m)		3.6			3.6			3.6			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			1			0	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		322			221							
pX, platoon unblocked	0.74			0.69			0.82	0.82	0.69	0.82	0.82	0.74
vC, conflicting volume	1348			1355			2074	2726	686	2070	2750	678
vC1, stage 1 conf vol							1350	1350		1372	1372	
vC2, stage 2 conf vol							724	1376		698	1379	
vCu, unblocked vol	757			608			423	1218	0	417	1248	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)							6.5	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			98			95	100	96	100	99	97
cM capacity (veh/h)	633			667			306	240	741	300	237	799

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	12	857	486	14	889	454	44	30
Volume Left	12	0	0	14	0	0	14	1
Volume Right	0	0	58	0	0	9	29	26
cSH	633	1700	1700	667	1700	1700	494	618
Volume to Capacity	0.02	0.50	0.29	0.02	0.52	0.27	0.09	0.05
Queue Length 95th (m)	0.5	0.0	0.0	0.5	0.0	0.0	2.3	1.2
Control Delay (s)	10.8	0.0	0.0	10.5	0.0	0.0	13.0	11.1
Lane LOS	B			B			B	B
Approach Delay (s)	0.1			0.1			13.0	11.1
Approach LOS							B	B

Intersection Summary					
Average Delay	0.4				
Intersection Capacity Utilization	53.7%	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)	214	796	277	169	917	173	313	542	134	158	439	141
Future Volume (vph)	214	796	277	169	917	173	313	542	134	158	439	141
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	40.0		0.0	45.0		0.0	50.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99			1.00		1.00	1.00			1.00	
Frt		0.961			0.976			0.970			0.964	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1568	2967	0	1630	3027	0	1630	1638	0	1539	1631	0
Flt Permitted	0.118			0.119			0.095			0.101		
Satd. Flow (perm)	195	2967	0	204	3027	0	163	1638	0	164	1631	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		46			20			13			16	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		109.8			114.2			162.1			187.2	
Travel Time (s)		7.9			8.2			11.7			13.5	
Confl. Peds. (#/hr)	5		15	15		5	5		8	8		5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	7%	4%	2%	7%	5%	2%	3%	4%	8%	3%	3%
Adj. Flow (vph)	233	865	301	184	997	188	340	589	146	172	477	153
Shared Lane Traffic (%)												
Lane Group Flow (vph)	233	1166	0	184	1185	0	340	735	0	172	630	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		Yes			Yes							
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	16	1182	1164	4	3	5
Future Volume (Veh/h)	16	1182	1164	4	3	5
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)	17	1285	1265	4	3	5
Pedestrians					5	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (m)			110			
pX, platoon unblocked	0.72				0.72	0.72
vC, conflicting volume	1274				1948	640
vC1, stage 1 conf vol					1272	
vC2, stage 2 conf vol					676	
vCu, unblocked vol	592				1533	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	98				99	99
cM capacity (veh/h)	709				291	779

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	17	642	642	843	426	8
Volume Left	17	0	0	0	0	3
Volume Right	0	0	0	0	4	5
cSH	709	1700	1700	1700	1700	478
Volume to Capacity	0.02	0.38	0.38	0.50	0.25	0.02
Queue Length 95th (m)	0.6	0.0	0.0	0.0	0.0	0.4
Control Delay (s)	10.2	0.0	0.0	0.0	0.0	12.7
Lane LOS	B					B
Approach Delay (s)	0.1			0.0		12.7
Approach LOS						B

Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	45.5%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	233	1166	184	1185	340	735	172	630
v/c Ratio	1.29	1.23	1.03	1.27	1.58	1.16	1.02	1.06
Control Delay	191.7	153.5	100.8	162.1	306.4	121.2	99.6	87.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	191.7	153.5	100.8	162.1	306.4	121.2	99.6	87.8
Queue Length 50th (m)	~53.3	~169.6	~27.6	~177.2	~94.1	~196.1	~24.7	~154.3
Queue Length 95th (m)	m#90.2	#214.0	#74.2	#221.0	#153.1	#271.0	#70.7	#225.8
Internal Link Dist (m)		85.8		90.2		138.1		163.2
Turn Bay Length (m)	40.0		45.0		50.0		30.0	
Base Capacity (vph)	180	948	179	935	215	633	169	595
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	1.29	1.23	1.03	1.27	1.58	1.16	1.02	1.06

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.

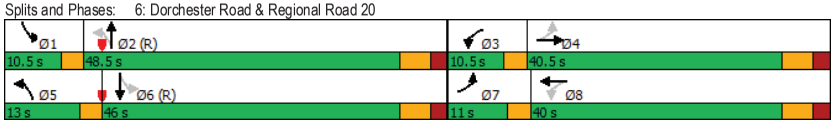
m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0		3.0	8.0		6.0	8.0	
Minimum Split (s)	10.5	36.5		10.5	36.5		9.5	40.5		10.5	40.5	
Total Split (s)	11.0	40.5		10.5	40.0		13.0	48.5		10.5	46.0	
Total Split (%)	10.0%	36.8%		9.5%	36.4%		11.8%	44.1%		9.5%	41.8%	
Maximum Green (s)	8.0	34.0		7.5	33.5		10.0	42.0		7.5	39.5	
Yellow Time (s)	3.0	4.1		3.0	4.1		3.0	4.1		3.0	4.1	
All-Red Time (s)	0.0	2.4		0.0	2.4		0.0	2.4		0.0	2.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	6.5		3.0	6.5		3.0	6.5		3.0	6.5	
Lead/Lag	Lead	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	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Walk Time (s)		12.0			12.0			15.0			15.0	
Flash Dont Walk (s)		13.0			13.0			19.0			19.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	45.5	34.0		44.5	33.5		55.5	42.0		50.5	39.5	
Actuated g/C Ratio	0.41	0.31		0.40	0.30		0.50	0.38		0.46	0.36	
v/c Ratio	1.29	1.23		1.03	1.27		1.58	1.16		1.02	1.06	
Control Delay	191.7	153.5		100.8	162.1		306.4	121.2		99.6	87.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	191.7	153.5		100.8	162.1		306.4	121.2		99.6	87.8	
LOS	F	F		F	F		F	F		F	F	
Approach Delay		159.9			153.9			179.8			90.3	
Approach LOS		F			F			F			F	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 60 (55%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.58
Intersection Signal Delay: 150.7 Intersection LOS: F
Intersection Capacity Utilization 117.3% ICU Level of Service H
Analysis Period (min) 15

Splits and Phases: 6: Dorchester Road & Regional Road 20



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	13	1037	1219	15	1	4
Future Volume (vph)	13	1037	1219	15	1	4
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.998		0.892	
Flt Protected	0.950				0.990	
Satd. Flow (prot)	1662	3260	3242	0	1545	0
Flt Permitted	0.950				0.990	
Satd. Flow (perm)	1662	3260	3242	0	1545	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		114.2	50.1		180.5	
Travel Time (s)		8.2	3.6		13.0	
Confl. Peds. (#/hr)	7			7		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	33%	0%	0%
Adj. Flow (vph)	14	1127	1325	16	1	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	14	1127	1341	0	5	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		7.2	7.2		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		Yes	Yes			
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	47.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	214	796	277	169	917	173	313	542	134	158	439	141
Future Volume (vph)	214	796	277	169	917	173	313	542	134	158	439	141
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	6.5		3.0	6.5		3.0	6.5		3.0	6.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
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	0.96		1.00	0.98		1.00	0.97		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1568	2968		1630	3028		1630	1639		1539	1630	
Flt Permitted	0.12	1.00		0.12	1.00		0.10	1.00		0.10	1.00	
Satd. Flow (perm)	194	2968		205	3028		163	1639		164	1630	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	233	865	301	184	997	188	340	589	146	172	477	153
RTOR Reduction (vph)	0	32	0	0	14	0	0	8	0	0	10	0
Lane Group Flow (vph)	233	1134	0	184	1171	0	340	727	0	172	620	0
Confl. Peds. (#/hr)	5		15	15		5	5		8	8		5
Heavy Vehicles (%)	6%	7%	4%	2%	7%	5%	2%	3%	4%	8%	3%	3%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	42.0	34.0		41.0	33.5		52.0	42.0		47.0	39.5	
Effective Green, g (s)	42.0	34.0		41.0	33.5		52.0	42.0		47.0	39.5	
Actuated g/C Ratio	0.38	0.31		0.37	0.30		0.47	0.38		0.43	0.36	
Clearance Time (s)	3.0	6.5		3.0	6.5		3.0	6.5		3.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	174	917		173	922		210	625		163	585	
v/s Ratio Prot	c0.10	0.38		0.07	0.39		c0.15	0.44		0.07	0.38	
v/s Ratio Perm	c0.41			0.32			c0.62			0.38		
v/c Ratio	1.34	1.24		1.06	1.27		1.62	1.16		1.06	1.06	
Uniform Delay, d1	29.4	38.0		30.4	38.2		30.1	34.0		26.5	35.2	
Progression Factor	1.76	1.43		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	178.0	113.6		86.3	130.1		299.4	90.1		85.9	53.9	
Delay (s)	229.9	167.9		116.7	168.4		329.5	124.1		112.4	89.2	
Level of Service	F	F		F	F		F	F		F	F	
Approach Delay (s)		178.2			161.4			189.1			94.2	
Approach LOS		F			F			F			F	

Intersection Summary					
HCM 2000 Control Delay	161.3	HCM 2000 Level of Service		F	
HCM 2000 Volume to Capacity ratio	1.54				
Actuated Cycle Length (s)	110.0	Sum of lost time (s)		19.0	
Intersection Capacity Utilization	117.3%	ICU Level of Service		H	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1077	17	24	1231	5	24
Future Volume (vph)	1077	17	24	1231	5	24
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Storage Length (m)		0.0	15.0		0.0	0.0
Storage Lanes		0	1		1	0
Taper Length (m)			7.5		7.5	
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Ped Bike Factor						
Frt	0.998				0.887	
Flt Protected			0.950		0.992	
Satd. Flow (prot)	3254	0	1662	3228	1540	0
Flt Permitted			0.950		0.992	
Satd. Flow (perm)	3254	0	1662	3228	1540	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	50.1			206.3	147.1	
Travel Time (s)	3.6			14.9	10.6	
Confl. Peds. (#/hr)		12	12			1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	0%	3%	0%	0%
Adj. Flow (vph)	1171	18	26	1338	5	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1189	0	26	1338	31	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	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	Yes			Yes		
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	47.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	13	1037	1219	15	1	4
Future Volume (Veh/h)	13	1037	1219	15	1	4
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)	14	1127	1325	16	1	4
Pedestrians					7	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (m)		114				
pX, platoon unblocked					0.72	
vC, conflicting volume	1348				1932	678
vC1, stage 1 conf vol					1340	
vC2, stage 2 conf vol					592	
vCu, unblocked vol	1348				1509	678
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.3
p0 queue free %	97				100	99
cM capacity (veh/h)	514				202	397

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	14	564	564	883	458	5
Volume Left	14	0	0	0	0	1
Volume Right	0	0	0	0	16	4
cSH	514	1700	1700	1700	1700	333
Volume to Capacity	0.03	0.33	0.33	0.52	0.27	0.02
Queue Length 95th (m)	0.7	0.0	0.0	0.0	0.0	0.4
Control Delay (s)	12.2	0.0	0.0	0.0	0.0	16.0
Lane LOS	B					C
Approach Delay (s)	0.1			0.0		16.0
Approach LOS						C

Intersection Summary				
Average Delay	0.1			
Intersection Capacity Utilization	47.1%	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)	23	1051	16	20	1211	12	15	0	48	13	5	35
Future Volume (vph)	23	1051	16	20	1211	12	15	0	48	13	5	35
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	15.0		0.0	15.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.998			0.999			0.897			0.910	
Flt Protected	0.950			0.950				0.988			0.988	
Satd. Flow (prot)	1662	3250	0	1599	3249	0	0	1492	0	0	1457	0
Flt Permitted	0.950			0.950				0.988			0.988	
Satd. Flow (perm)	1662	3250	0	1599	3249	0	0	1492	0	0	1457	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		206.3			78.8			169.0			191.8	
Travel Time (s)		14.9			5.7			12.2			13.8	
Confl. Peds. (#/hr)	3		12	12		3						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	8%	4%	2%	25%	7%	0%	3%	0%	0%	12%
Adj. Flow (vph)	25	1142	17	22	1316	13	16	0	52	14	5	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	25	1159	0	22	1329	0	0	68	0	0	57	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			0.0			0.0	
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		Yes			Yes							
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	48.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1077	17	24	1231	5	24
Future Volume (Veh/h)	1077	17	24	1231	5	24
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)	1171	18	26	1338	5	26
Pedestrians				1	12	
Lane Width (m)				3.6	3.6	
Walking Speed (m/s)				1.2	1.2	
Percent Blockage				0	1	
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (m)	164					
pX, platoon unblocked			0.73		0.73	0.73
vC, conflicting volume			1201		1913	608
vC1, stage 1 conf vol					1192	
vC2, stage 2 conf vol					721	
vCu, unblocked vol			523		1503	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)					5.8	
tF (s)			2.2		3.5	3.3
p0 queue free %			97		98	97
cM capacity (veh/h)			758		300	784

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	781	408	26	669	669	31
Volume Left	0	0	26	0	0	5
Volume Right	0	18	0	0	0	26
cSH	1700	1700	758	1700	1700	622
Volume to Capacity	0.46	0.24	0.03	0.39	0.39	0.05
Queue Length 95th (m)	0.0	0.0	0.9	0.0	0.0	1.3
Control Delay (s)	0.0	0.0	9.9	0.0	0.0	11.1
Lane LOS			A			B
Approach Delay (s)	0.0		0.2			11.1
Approach LOS						B

Intersection Summary					
Average Delay	0.2				
Intersection Capacity Utilization	47.3%	ICU Level of Service	A		
Analysis Period (min)	15				

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	52	1038	1184	8	5	56
Future Volume (vph)	52	1038	1184	8	5	56
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Storage Length (m)	15.0			0.0	0.0	0.0
Storage Lanes	1			0	1	0
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		0.875	
Flt Protected	0.950				0.996	
Satd. Flow (prot)	1568	3260	3251	0	1364	0
Flt Permitted	0.950				0.996	
Satd. Flow (perm)	1568	3260	3251	0	1364	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		78.8	68.0		182.2	
Travel Time (s)		5.7	4.9		13.1	
Confl. Peds. (#/hr)	3			3		2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	2%	2%	25%	22%	11%
Adj. Flow (vph)	57	1128	1287	9	5	61
Shared Lane Traffic (%)						
Lane Group Flow (vph)	57	1128	1296	0	66	0
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		Yes	Yes			
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	1051	16	20	1211	12	15	0	48	13	5	35
Future Volume (Veh/h)	23	1051	16	20	1211	12	15	0	48	13	5	35
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	25	1142	17	22	1316	13	16	0	52	14	5	38
Pedestrians								12			3	
Lane Width (m)								3.6			3.6	
Walking Speed (m/s)								1.2			1.2	
Percent Blockage								1			0	
Right turn flare (veh)												
Median type		TWLTL			TWLTL							
Median storage veh)		2			2							
Upstream signal (m)		371			302							
pX, platoon unblocked	0.74			0.78			0.85	0.85	0.78	0.85	0.85	0.74
vC, conflicting volume	1332			1171			1955	2588	592	2042	2590	668
vC1, stage 1 conf vol							1212	1212		1370	1370	
vC2, stage 2 conf vol							742	1376		673	1221	
vCu, unblocked vol	758			654			615	1357	0	718	1359	0
tC, single (s)	4.1			4.2			7.6	6.5	7.0	7.5	6.5	7.1
tC, 2 stage (s)							6.6	5.5		6.5	5.5	
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	3.4
p0 queue free %	96			97			94	100	94	94	98	95
cM capacity (veh/h)	640			707			276	223	834	242	229	781

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	25	761	398	22	877	452	68	57
Volume Left	25	0	0	22	0	0	16	14
Volume Right	0	0	17	0	0	13	52	38
cSH	640	1700	1700	707	1700	1700	565	444
Volume to Capacity	0.04	0.45	0.23	0.03	0.52	0.27	0.12	0.13
Queue Length 95th (m)	1.0	0.0	0.0	0.8	0.0	0.0	3.3	3.5
Control Delay (s)	10.9	0.0	0.0	10.3	0.0	0.0	12.2	14.3
Lane LOS	B			B			B	B
Approach Delay (s)	0.2			0.2			12.2	14.3
Approach LOS							B	B

Intersection Summary					
Average Delay	0.8				
Intersection Capacity Utilization	48.9%	ICU Level of Service		A	
Analysis Period (min)	15				

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	994	77	25	1150	32	73
Future Volume (vph)	994	77	25	1150	32	73
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Util. Factor	0.95	0.95	1.00	0.95	1.00	1.00
Ped Bike Factor						
Frt	0.989				0.906	
Flt Protected			0.950		0.985	
Satd. Flow (prot)	3213	0	1599	3228	1497	0
Flt Permitted			0.950		0.985	
Satd. Flow (perm)	3213	0	1599	3228	1497	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	68.0			55.0	165.0	
Travel Time (s)	4.9			4.0	11.9	
Confl. Peds. (#/hr)		11	11		1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	7%	4%	3%	5%	4%
Adj. Flow (vph)	1080	84	27	1250	35	79
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1164	0	27	1250	114	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Left	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	Yes			Yes		
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	48.0%	ICU Level of Service A	
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	52	1038	1184	8	5	56
Future Volume (Veh/h)	52	1038	1184	8	5	56
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)	57	1128	1287	9	5	61
Pedestrians		2			3	
Lane Width (m)		3.6			3.6	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			0	
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (m)			223			
pX, platoon unblocked	0.73				0.73	0.73
vC, conflicting volume	1299				1972	653
vC1, stage 1 conf vol					1294	
vC2, stage 2 conf vol					678	
vCu, unblocked vol	661				1587	0
tC, single (s)	4.2				7.2	7.1
tC, 2 stage (s)					6.2	
tF (s)	2.3				3.7	3.4
p0 queue free %	91				98	92
cM capacity (veh/h)	650				238	765

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	57	564	564	858	438	66
Volume Left	57	0	0	0	0	5
Volume Right	0	0	0	0	9	61
cSH	650	1700	1700	1700	1700	655
Volume to Capacity	0.09	0.33	0.33	0.50	0.26	0.10
Queue Length 95th (m)	2.3	0.0	0.0	0.0	0.0	2.7
Control Delay (s)	11.1	0.0	0.0	0.0	0.0	11.1
Lane LOS	B					B
Approach Delay (s)	0.5			0.0		11.1
Approach LOS						B

Intersection Summary			
Average Delay	0.5		
Intersection Capacity Utilization	54.0%	ICU Level of Service	A
Analysis Period (min)	15		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	55	1037	1156	41	13	27
Future Volume (vph)	55	1037	1156	41	13	27
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Util. Factor	1.00	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.995		0.909	
Flt Protected	0.950				0.984	
Satd. Flow (prot)	1662	3260	3246	0	1466	0
Flt Permitted	0.950				0.984	
Satd. Flow (perm)	1662	3260	3246	0	1466	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		55.0	100.4		189.4	
Travel Time (s)		4.0	7.2		13.6	
Confl. Peds. (#/hr)	8			8		1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	0%	0%	10%
Adj. Flow (vph)	60	1127	1257	45	14	29
Shared Lane Traffic (%)						
Lane Group Flow (vph)	60	1127	1302	0	43	0
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		Yes	Yes			
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	53.1%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	994	77	25	1150	32	73
Future Volume (Veh/h)	994	77	25	1150	32	73
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)	1080	84	27	1250	35	79
Pedestrians	1				11	
Lane Width (m)	3.6				3.6	
Walking Speed (m/s)	1.2				1.2	
Percent Blockage	0				1	
Right turn flare (veh)						
Median type	TWLTL			TWLTL		
Median storage veh)	2			2		
Upstream signal (m)				155		
pX, platoon unblocked					0.72	
vC, conflicting volume			1175		1813	593
vC1, stage 1 conf vol					1133	
vC2, stage 2 conf vol					680	
vCu, unblocked vol			1175		1348	593
tC, single (s)			4.2		6.9	7.0
tC, 2 stage (s)					5.9	
tF (s)			2.2		3.5	3.3
p0 queue free %			95		86	82
cM capacity (veh/h)			574		245	440

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	WB 3	NB 1
Volume Total	720	444	27	625	625	114
Volume Left	0	0	27	0	0	35
Volume Right	0	84	0	0	0	79
cSH	1700	1700	574	1700	1700	354
Volume to Capacity	0.42	0.26	0.05	0.37	0.37	0.32
Queue Length 95th (m)	0.0	0.0	1.2	0.0	0.0	10.9
Control Delay (s)	0.0	0.0	11.6	0.0	0.0	20.0
Lane LOS			B			C
Approach Delay (s)	0.0		0.2			20.0
Approach LOS						C

Intersection Summary				
Average Delay	1.0			
Intersection Capacity Utilization	48.0%	ICU Level of Service		A
Analysis Period (min)	15			

Lanes, Volumes, Timings
13: No Frills Plaza/Highland Avenue & Regional Road 20

2041 Alternative 3 - Five Lane
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	896	43	89	1138	20	104	21	71	49	53	36
Future Volume (vph)	24	896	43	89	1138	20	104	21	71	49	53	36
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	35.0		0.0	35.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	1.00		1.00	0.99			0.99	
Frt		0.993			0.997			0.884			0.965	
Flt Protected	0.950			0.950			0.950				0.983	
Satd. Flow (prot)	1662	3175	0	1662	3158	0	1662	1525	0	0	1584	0
Flt Permitted	0.145			0.188			0.645				0.858	
Satd. Flow (perm)	253	3175	0	328	3158	0	1127	1525	0	0	1380	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			2			77			16	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		100.4			342.8			50.5			193.9	
Travel Time (s)		7.2			24.7			3.6			14.0	
Confl. Peds. (#/hr)	9		8	8		9	2		6	6		2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	4%	0%	0%	5%	0%	0%	0%	0%	0%	0%	17%
Adj. Flow (vph)	26	974	47	97	1237	22	113	23	77	53	58	39
Shared Lane Traffic (%)												
Lane Group Flow (vph)	26	1021	0	97	1259	0	113	100	0	0	150	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		Yes			Yes							
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

HCM Unsignalized Intersection Capacity Analysis
12: Regional Road 20 & Glenholme Avenue

2041 Alternative 3 - Five Lane
PM Peak Hour

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	55	1037	1156	41	13	27
Future Volume (Veh/h)	55	1037	1156	41	13	27
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)	60	1127	1257	45	14	29
Pedestrians		1			8	
Lane Width (m)		3.6			3.6	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			1	
Right turn flare (veh)						
Median type		TWLTL	TWLTL			
Median storage veh)		2	2			
Upstream signal (m)			100			
pX, platoon unblocked	0.71				0.71	0.71
vC, conflicting volume	1310				1971	660
vC1, stage 1 conf vol					1288	
vC2, stage 2 conf vol					684	
vCu, unblocked vol	604				1541	0
tC, single (s)	4.1				6.8	7.1
tC, 2 stage (s)					5.8	
tF (s)	2.2				3.5	3.4
p0 queue free %	91				95	96
cM capacity (veh/h)	689				281	741

Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1
Volume Total	60	564	564	838	464	43
Volume Left	60	0	0	0	0	14
Volume Right	0	0	0	0	45	29
cSH	689	1700	1700	1700	1700	484
Volume to Capacity	0.09	0.33	0.33	0.49	0.27	0.09
Queue Length 95th (m)	2.3	0.0	0.0	0.0	0.0	2.3
Control Delay (s)	10.7	0.0	0.0	0.0	0.0	13.2
Lane LOS	B					B
Approach Delay (s)	0.5			0.0		13.2
Approach LOS						B

Intersection Summary				
Average Delay	0.5			
Intersection Capacity Utilization	53.1%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	26	1021	97	1259	113	100	150
v/c Ratio	0.11	0.63	0.33	0.72	0.36	0.21	0.38
Control Delay	8.5	21.7	10.8	22.2	36.0	11.4	31.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.5	21.7	10.8	22.2	36.0	11.4	31.9
Queue Length 50th (m)	2.0	84.6	7.8	114.0	20.5	3.8	24.3
Queue Length 95th (m)	5.3	108.0	14.4	145.8	37.8	17.1	43.8
Internal Link Dist (m)		76.4		318.8		26.5	169.9
Turn Bay Length (m)	35.0		35.0				
Base Capacity (vph)	251	1619	305	1745	312	478	394
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.63	0.32	0.72	0.36	0.21	0.38

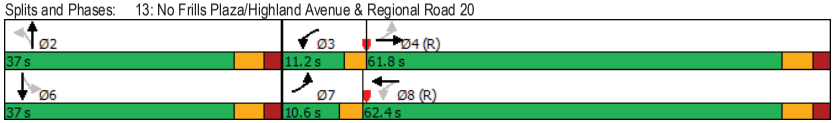
Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	8.0		6.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.5	35.5		10.5	35.5		36.5	36.5		36.5	36.5	
Total Split (s)	10.6	61.8		11.2	62.4		37.0	37.0		37.0	37.0	
Total Split (%)	9.6%	56.2%		10.2%	56.7%		33.6%	33.6%		33.6%	33.6%	
Maximum Green (s)	7.6	55.3		8.2	55.9		30.5	30.5		30.5	30.5	
Yellow Time (s)	3.0	4.1		3.0	4.1		4.1	4.1		4.1	4.1	
All-Red Time (s)	0.0	2.4		0.0	2.4		2.4	2.4		2.4	2.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)	3.0	6.5		3.0	6.5		6.5	6.5			6.5	
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	
Recall Mode	None	C-Max		None	C-Max		Max	Max		Max	Max	
Walk Time (s)		11.0			11.0		11.0	11.0		11.0	11.0	
Flash Dont Walk (s)		18.0			18.0		19.0	19.0		19.0	19.0	
Pedestrian Calls (#/hr)		0			0		0	0		0	0	
Act Effct Green (s)	65.8	56.0		69.1	60.8		30.5	30.5			30.5	
Actuated g/C Ratio	0.60	0.51		0.63	0.55		0.28	0.28			0.28	
v/c Ratio	0.11	0.63		0.33	0.72		0.36	0.21			0.38	
Control Delay	8.5	21.7		10.8	22.2		36.0	11.4			31.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	8.5	21.7		10.8	22.2		36.0	11.4			31.9	
LOS	A	C		B	C		D	B			C	
Approach Delay		21.4			21.3			24.5			31.9	
Approach LOS		C			C			C			C	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 6 (5%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.72
Intersection Signal Delay: 22.2 Intersection LOS: C
Intersection Capacity Utilization 79.0% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 13: No Frills Plaza/Highland Avenue & Regional Road 20



Intersection: 1: Montrose Road (RR98) & Regional Road 20

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	TR	L	T	R
Maximum Queue (m)	62.4	253.1	250.5	42.4	121.9	116.1	26.2	52.4	345.3	87.5	325.5	77.5
Average Queue (m)	53.8	221.1	214.2	32.8	68.9	70.2	5.3	33.1	320.0	81.3	284.4	47.5
95th Queue (m)	85.6	308.8	310.8	52.6	111.6	108.6	19.4	70.0	404.2	106.7	410.2	95.0
Link Distance (m)		237.7	237.7		237.5	237.5	237.5		329.0		309.7	
Upstream Blk Time (%)		70	46						81		53	
Queuing Penalty (veh)		0	0						0		0	
Storage Bay Dist (m)	55.0			35.0				45.0		80.0		70.0
Storage Blk Time (%)	8	74		12	30			0	82	54	10	4
Queuing Penalty (veh)	31	203		50	59			2	89	469	73	27

Intersection: 2: Niagara Falls Inn Driveway/Belmont Avenue & Regional Road 20

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	LTR
Maximum Queue (m)	22.4	249.2	251.8	22.4	55.3	60.7	40.4	65.9	191.1
Average Queue (m)	5.5	226.1	227.0	11.4	33.6	37.0	9.9	48.3	111.5
95th Queue (m)	20.6	302.0	305.3	23.9	53.5	55.8	28.3	81.6	221.7
Link Distance (m)		237.5	237.5		212.7	212.7	61.4	61.4	200.9
Upstream Blk Time (%)		38	42					53	19
Queuing Penalty (veh)		226	250					0	0
Storage Bay Dist (m)	15.0			15.0					
Storage Blk Time (%)	0	84		8	30				
Queuing Penalty (veh)	0	14		54	25				

Intersection: 3: Royal Manor Drive & Regional Road 20

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	TR	L	T	TR	LTR	LTR
Maximum Queue (m)	22.4	223.8	221.7	7.9	87.8	85.6	8.8	32.1
Average Queue (m)	7.8	211.7	211.9	0.4	55.5	58.4	1.0	10.0
95th Queue (m)	22.5	242.8	240.2	4.1	81.3	83.5	5.4	26.3
Link Distance (m)		212.7	212.7		288.6	288.6	44.2	84.9
Upstream Blk Time (%)		51	56					
Queuing Penalty (veh)		351	384					
Storage Bay Dist (m)	15.0			15.0				
Storage Blk Time (%)	3	78			30			
Queuing Penalty (veh)	19	34			0			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	896	43	89	1138	20	104	21	71	49	53	36
Future Volume (vph)	24	896	43	89	1138	20	104	21	71	49	53	36
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	6.5		3.0	6.5		6.5	6.5			6.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.88			0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.98	
Satd. Flow (prot)	1662	3176		1662	3159		1660	1526			1580	
Flt Permitted	0.15	1.00		0.19	1.00		0.64	1.00			0.86	
Satd. Flow (perm)	254	3176		329	3159		1127	1526			1379	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	26	974	47	97	1237	22	113	23	77	53	58	39
RTOR Reduction (vph)	0	3	0	0	1	0	0	56	0	0	12	0
Lane Group Flow (vph)	26	1018	0	97	1258	0	113	44	0	0	138	0
Confl. Peds. (#/hr)	9		8	8		9	2		6	6		2
Heavy Vehicles (%)	0%	4%	0%	0%	5%	0%	0%	0%	0%	0%	0%	17%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	59.9	56.0		66.5	59.6		30.5	30.5			30.5	
Effective Green, g (s)	59.9	56.0		66.5	59.6		30.5	30.5			30.5	
Actuated g/C Ratio	0.54	0.51		0.60	0.54		0.28	0.28			0.28	
Clearance Time (s)	3.0	6.5		3.0	6.5		6.5	6.5			6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	188	1616		289	1711		312	423			382	
v/s Ratio Prot	0.00	0.32		c0.02	c0.40			0.03				
v/s Ratio Perm	0.07			0.18			0.10				c0.10	
v/c Ratio	0.14	0.63		0.34	0.74		0.36	0.10			0.36	
Uniform Delay, d1	13.4	19.5		11.3	19.2		31.9	29.6			31.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.3	1.9		0.7	2.9		3.2	0.5			2.7	
Delay (s)	13.7	21.4		12.0	22.0		35.2	30.1			34.6	
Level of Service	B	C		B	C		D	C			C	
Approach Delay (s)		21.2			21.3			32.8			34.6	
Approach LOS		C			C			C			C	

Intersection Summary					
HCM 2000 Control Delay	22.9	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.60				
Actuated Cycle Length (s)	110.0	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	79.0%	ICU Level of Service		D	
Analysis Period (min)	15				

c Critical Lane Group

Intersection: 7: Regional Road 20 & Depew Avenue

Movement	EB	WB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (m)	12.8	41.6	46.2	18.1
Average Queue (m)	1.3	35.1	36.1	6.2
95th Queue (m)	6.8	44.1	46.5	18.6
Link Distance (m)	97.4	31.6	31.6	164.9
Upstream Blk Time (%)		51	53	
Queuing Penalty (veh)		315	327	
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 8: Corwin Avenue & Regional Road 20

Movement	EB	EB	WB	WB	WB	NB
Directions Served	T	TR	L	T	T	LR
Maximum Queue (m)	1.8	14.8	22.3	199.1	198.5	82.1
Average Queue (m)	0.1	0.7	5.2	148.7	150.9	36.1
95th Queue (m)	1.3	6.3	18.2	241.2	243.2	97.9
Link Distance (m)	31.6	31.6		190.9	190.9	133.2
Upstream Blk Time (%)		0		15	17	3
Queuing Penalty (veh)		0		92	105	0
Storage Bay Dist (m)			15.0			
Storage Blk Time (%)			0	60		
Queuing Penalty (veh)			2	14		

Intersection: 9: Calton Avenue/Prince Edward Avenue & Regional Road 20

Movement	EB	WB	WB	WB	NB	SB
Directions Served	L	L	T	TR	LTR	LTR
Maximum Queue (m)	14.7	19.7	58.6	60.4	79.0	101.5
Average Queue (m)	3.4	3.5	21.4	23.7	28.8	37.3
95th Queue (m)	11.1	13.2	67.4	70.8	93.4	117.5
Link Distance (m)			63.2	63.2	155.1	177.9
Upstream Blk Time (%)			6	7	4	4
Queuing Penalty (veh)			36	46	0	0
Storage Bay Dist (m)	15.0	15.0				
Storage Blk Time (%)	1	0	19			
Queuing Penalty (veh)	3	1	4			

Intersection: 4: Brookfield Avenue & Regional Road 20

Movement	EB	EB	EB	WB	WB	WB	NB	SB
Directions Served	L	T	TR	L	T	TR	LTR	LTR
Maximum Queue (m)	22.1	299.0	300.3	10.8	19.4	22.4	194.4	46.8
Average Queue (m)	1.8	292.2	292.1	2.3	3.5	3.2	121.7	16.1
95th Queue (m)	11.6	296.5	296.8	9.5	31.7	31.4	216.9	64.1
Link Distance (m)		288.6	288.6		96.3	96.3	215.2	182.1
Upstream Blk Time (%)		41	44		2	2	14	
Queuing Penalty (veh)		286	311		15	12	0	
Storage Bay Dist (m)	15.0			15.0				
Storage Blk Time (%)		74		5	0			
Queuing Penalty (veh)		8		29	0			

Intersection: 5: Regional Road 20 & Mouland Avenue

Movement	EB	EB	EB	WB	WB	SB
Directions Served	L	T	T	T	TR	LR
Maximum Queue (m)	11.9	113.6	108.3	18.6	18.2	42.3
Average Queue (m)	2.2	98.7	97.5	2.0	1.9	20.3
95th Queue (m)	9.3	133.3	129.6	23.0	22.7	61.0
Link Distance (m)		96.3	96.3	89.1	89.1	177.3
Upstream Blk Time (%)		52	68	1	1	
Queuing Penalty (veh)		313	411	10	10	
Storage Bay Dist (m)	15.0					
Storage Blk Time (%)	0	24				
Queuing Penalty (veh)	0	4				

Intersection: 6: Dorchester Road & Regional Road 20

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (m)	47.4	104.4	105.0	52.4	105.2	111.3	57.4	160.8	37.4	191.1
Average Queue (m)	28.0	85.3	92.5	47.4	99.6	100.7	54.0	151.0	33.4	180.5
95th Queue (m)	51.3	122.5	105.7	64.6	103.4	107.4	68.7	157.0	46.8	186.9
Link Distance (m)		89.1	89.1		97.4	97.4		144.4		173.2
Upstream Blk Time (%)		34	66		50	51		65		77
Queuing Penalty (veh)		203	393		309	310		0		0
Storage Bay Dist (m)	40.0			45.0			50.0		30.0	
Storage Blk Time (%)	9	13		30	57		31	43	23	61
Queuing Penalty (veh)	35	29		135	97		210	135	134	97

Intersection: 10: Regional Road 20 & Byng Avenue

Movement	EB	EB	EB	WB	WB	SB
Directions Served	L	T	T	T	TR	LR
Maximum Queue (m)	17.8	9.6	8.2	35.2	39.6	47.4
Average Queue (m)	6.5	0.5	0.3	8.0	9.0	13.9
95th Queue (m)	15.8	6.0	3.5	36.7	39.2	40.0
Link Distance (m)		63.2	63.2	48.4	48.4	168.2
Upstream Blk Time (%)				2	3	
Queuing Penalty (veh)				13	18	
Storage Bay Dist (m)	15.0					
Storage Blk Time (%)	3	0				
Queuing Penalty (veh)	15	0				

Intersection: 11: Franklin Avenue & Regional Road 20

Movement	EB	WB	WB	WB	NB
Directions Served	TR	L	T	T	LR
Maximum Queue (m)	11.7	16.2	35.0	35.2	49.6
Average Queue (m)	0.5	3.6	3.7	3.8	15.6
95th Queue (m)	4.9	12.2	23.7	23.2	34.0
Link Distance (m)	48.4	42.6	42.6	42.6	147.0
Upstream Blk Time (%)			1	1	
Queuing Penalty (veh)			4	4	
Storage Bay Dist (m)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 12: Regional Road 20 & Glenholme Avenue

Movement	EB	EB	EB	WB	WB	SB
Directions Served	L	T	T	T	TR	LR
Maximum Queue (m)	21.9	3.6	1.9	33.6	100.6	25.4
Average Queue (m)	7.3	0.2	0.1	1.1	15.6	9.1
95th Queue (m)	18.2	2.3	1.3	16.2	70.2	21.1
Link Distance (m)	42.6	42.6	42.6	80.2	80.2	171.5
Upstream Blk Time (%)				0	1	
Queuing Penalty (veh)				0	8	
Storage Bay Dist (m)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 13: No Frills Plaza/Highland Avenue & Regional Road 20

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	LTR
Maximum Queue (m)	30.2	68.7	69.4	42.3	289.1	302.6	41.0	28.8	54.8
Average Queue (m)	5.3	39.2	40.1	13.3	193.6	208.4	20.2	12.0	26.4
95th Queue (m)	18.9	61.2	61.4	34.2	308.6	324.5	38.9	23.9	47.3
Link Distance (m)		80.2	80.2		332.3	332.3	36.4	36.4	180.0
Upstream Blk Time (%)		0	0		4	5	3	0	
Queuing Penalty (veh)		0	0		0	0	0	0	
Storage Bay Dist (m)	35.0			35.0					
Storage Blk Time (%)		10		0	19				
Queuing Penalty (veh)		2		0	17				

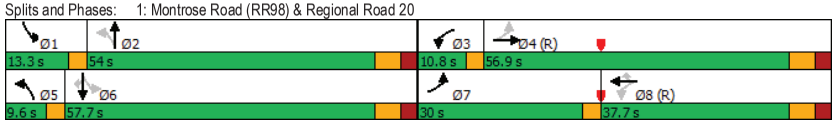
Network Summary

Network wide Queuing Penalty: 6885

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		6
Detector Phase	7	4		3	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0	10.0	3.0	8.0		6.0	8.0	8.0
Minimum Split (s)	10.5	35.0		10.5	35.0	35.0	9.5	36.0		10.5	36.0	36.0
Total Split (s)	30.0	56.9		10.8	37.7	37.7	9.6	54.0		13.3	57.7	57.7
Total Split (%)	22.2%	42.1%		8.0%	27.9%	27.9%	7.1%	40.0%		9.9%	42.7%	42.7%
Maximum Green (s)	27.0	49.9		7.8	30.7	30.7	6.6	47.0		10.3	50.7	50.7
Yellow Time (s)	3.0	4.1		3.0	4.1	4.1	3.0	4.1		3.0	4.1	4.1
All-Red Time (s)	0.0	2.9		0.0	2.9	2.9	0.0	2.9		0.0	2.9	2.9
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.0	7.0		3.0	7.0	7.0	3.0	7.0		3.0	7.0	7.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	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	3.0
Recall Mode	None	C-Max		None	C-Max	C-Max	None	Max		None	Max	Max
Walk Time (s)		10.0			10.0	10.0		11.0			11.0	11.0
Flash Dont Walk (s)		18.0			18.0	18.0		18.0			18.0	18.0
Pedestrian Calls (#/hr)		0			0	0		0			0	0
Act Effct Green (s)	64.7	50.1		44.3	32.7	32.7	57.8	47.4		64.3	52.6	52.6
Actuated g/C Ratio	0.48	0.37		0.33	0.24	0.24	0.43	0.35		0.48	0.39	0.39
v/c Ratio	0.79	0.55		0.34	0.50	0.27	0.12	0.87		0.55	0.31	0.33
Control Delay	38.1	35.3		25.2	47.4	6.7	20.2	56.7		29.1	30.9	5.0
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	38.1	35.3		25.2	47.4	6.7	20.2	56.7		29.1	30.9	5.0
LOS	D	D		C	D	A	C	E		C	C	A
Approach Delay		36.4			36.1			52.9			20.5	
Approach LOS		D			D			D			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 135			
Actuated Cycle Length: 135			
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 36.5		Intersection LOS: D	
Intersection Capacity Utilization 98.2%		ICU Level of Service F	
Analysis Period (min) 15			

Splits and Phases: 1: Montrose Road (RR98) & Regional Road 20



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	346	551	37	80	351	105	53	334	128	129	185	197
Future Volume (vph)	346	551	37	80	351	105	53	334	128	129	185	197
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	55.0		0.0	35.0		0.0	45.0		0.0	80.0		70.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		0.99		0.96	0.97	0.99				0.95
Frt		0.991				0.850		0.958				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1554	3146	0	1511	3137	1417	1583	1615	0	1599	1683	1390
Flt Permitted	0.392			0.409			0.632			0.201		
Satd. Flow (perm)	633	3146	0	644	3137	1366	1023	1615	0	338	1683	1322
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6				129		16				214
Link Speed (k/h)		60			50			50			50	
Link Distance (m)		251.8			265.0			342.9			323.7	
Travel Time (s)		15.1			19.1			24.7			23.3	
Confl. Peds. (#/hr)	17		10	10		17	27		14	14		27
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	7%	4%	11%	10%	6%	5%	5%	4%	0%	4%	4%	7%
Adj. Flow (vph)	376	599	40	87	382	114	58	363	139	140	201	214
Shared Lane Traffic (%)												
Lane Group Flow (vph)	376	639	0	87	382	114	58	502	0	140	201	214
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	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	0.0
Detector 1 Queue (s)	0.0	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	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	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	346	551	37	80	351	105	53	334	128	129	185	197
Future Volume (vph)	346	551	37	80	351	105	53	334	128	129	185	197
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	7.0		3.0	7.0	7.0	3.0	7.0		3.0	7.0	7.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.96	1.00	0.99		1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.98	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.96		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1547	3145		1506	3137	1366	1556	1616		1599	1683	1322
Flt Permitted	0.39	1.00		0.41	1.00	1.00	0.63	1.00		0.20	1.00	1.00
Satd. Flow (perm)	638	3145		649	3137	1366	1034	1616		338	1683	1322
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	376	599	40	87	382	114	58	363	139	140	201	214
RTOR Reduction (vph)	0	4	0	0	0	87	0	10	0	0	0	131
Lane Group Flow (vph)	376	635	0	87	382	27	58	492	0	140	201	83
Confl. Peds. (#/hr)	17		10	10		17	27		14	14		27
Heavy Vehicles (%)	7%	4%	11%	10%	6%	5%	5%	4%	0%	4%	4%	7%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	60.1	49.5		39.7	32.1	32.1	53.3	48.0		60.9	52.6	52.6
Effective Green, g (s)	60.1	49.5		39.7	32.1	32.1	53.3	48.0		60.9	52.6	52.6
Actuated g/C Ratio	0.45	0.37		0.29	0.24	0.24	0.39	0.36		0.45	0.39	0.39
Clearance Time (s)	3.0	7.0		3.0	7.0	7.0	3.0	7.0		3.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	452	1153		239	745	324	428	574		244	655	515
v/s Ratio Prot	c0.15	0.20		0.02	0.12		0.01	c0.30		c0.04	0.12	
v/s Ratio Perm	c0.22			0.09		0.02	0.05			0.22		0.06
v/c Ratio	0.83	0.55		0.36	0.51	0.08	0.14	0.86		0.57	0.31	0.16
Uniform Delay, d1	28.0	33.9		35.7	44.7	40.0	25.7	40.3		26.2	28.6	26.8
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	12.3	1.9		0.9	2.5	0.5	0.1	15.2		3.2	1.2	0.7
Delay (s)	40.3	35.8		36.6	47.2	40.5	25.8	55.5		29.5	29.8	27.5
Level of Service	D	D		D	D	D	C	E		C	C	C
Approach Delay (s)		37.5			44.3			52.4			28.8	
Approach LOS		D			D			D			C	

Intersection Summary				
HCM 2000 Control Delay	40.3	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.84			
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	98.2%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group

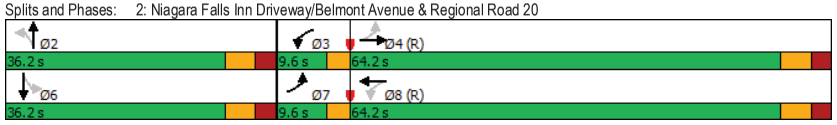
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	376	639	87	382	114	58	502	140	201	214
v/c Ratio	0.79	0.55	0.34	0.50	0.27	0.12	0.87	0.55	0.31	0.33
Control Delay	38.1	35.3	25.2	47.4	6.7	20.2	56.7	29.1	30.9	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	38.1	35.3	25.2	47.4	6.7	20.2	56.7	29.1	30.9	5.0
Queue Length 50th (m)	70.9	73.4	13.2	50.0	0.0	8.7	128.2	22.1	39.7	0.0
Queue Length 95th (m)	101.4	93.4	23.6	67.2	12.8	17.2	#193.4	36.2	60.7	16.8
Internal Link Dist (m)		227.8		241.0			318.9		299.7	
Turn Bay Length (m)	55.0		35.0			45.0		80.0		70.0
Base Capacity (vph)	487	1172	262	760	429	466	577	257	656	646
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.55	0.33	0.50	0.27	0.12	0.87	0.54	0.31	0.33

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	8.0		6.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	9.5	39.9		9.5	39.9		36.1	36.1		36.1	36.1	
Total Split (s)	9.6	64.2		9.6	64.2		36.2	36.2		36.2	36.2	
Total Split (%)	8.7%	58.4%		8.7%	58.4%		32.9%	32.9%		32.9%	32.9%	
Maximum Green (s)	6.6	57.3		6.6	57.3		29.1	29.1		29.1	29.1	
Yellow Time (s)	3.0	4.1		3.0	4.1		4.1	4.1		4.1	4.1	
All-Red Time (s)	0.0	2.8		0.0	2.8		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)	3.0	6.9		3.0	6.9		7.1	7.1			7.1	
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	
Recall Mode	None	C-Max		None	C-Max		Max	Max		Max	Max	
Walk Time (s)		12.0			12.0		11.0	11.0		11.0	11.0	
Flash Dont Walk (s)		21.0			21.0		18.0	18.0		18.0	18.0	
Pedestrian Calls (#/hr)		0			0		0	0		0	0	
Act Effct Green (s)	69.6	63.2		69.6	63.2		29.1	29.1			29.1	
Actuated g/C Ratio	0.63	0.57		0.63	0.57		0.26	0.26			0.26	
v/c Ratio	0.04	0.65		0.06	0.38		0.02	0.01			0.08	
Control Delay	7.3	18.9		6.5	11.9		30.4	0.0			0.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	7.3	18.9		6.5	11.9		30.4	0.0			0.4	
LOS	A	B		A	B		C	A			A	
Approach Delay		18.7			11.8			19.0			0.4	
Approach LOS		B			B			B			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 16 (15%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 15.9		Intersection LOS: B	
Intersection Capacity Utilization 68.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: Niagara Falls Inn Driveway/Belmont Avenue & Regional Road 20



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	1066	16	15	617	23	5	0	3	17	0	8
Future Volume (vph)	16	1066	16	15	617	23	5	0	3	17	0	8
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		1.00				0.99			1.00	
Frt		0.998			0.995			0.850			0.955	
Flt Protected	0.950			0.950			0.950				0.968	
Satd. Flow (prot)	1662	3132	0	1662	3156	0	1330	1468	0	0	1257	0
Flt Permitted	0.352			0.168			0.740				0.861	
Satd. Flow (perm)	616	3132	0	294	3156	0	1036	1468	0	0	1118	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			5			161			68	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		265.0			231.8			75.5			218.5	
Travel Time (s)		19.1			16.7			5.4			15.7	
Confl. Peds. (#/hr)			5	5					1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	6%	0%	0%	5%	0%	25%	0%	0%	33%	0%	20%
Adj. Flow (vph)	17	1159	17	16	671	25	5	0	3	18	0	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	17	1176	0	16	696	0	5	3	0	0	27	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)		7.2			7.2			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	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	1066	16	15	617	23	5	0	3	17	0	8
Future Volume (vph)	16	1066	16	15	617	23	5	0	3	17	0	8
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	6.9		3.0	6.9		7.1	7.1			7.1	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	1.00	1.00		1.00	0.99		1.00	0.85			0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.97	
Satd. Flow (prot)	1662	3132		1662	3155		1330	1468			1256	
Flt Permitted	0.35	1.00		0.17	1.00		0.74	1.00			0.86	
Satd. Flow (perm)	616	3132		293	3155		1035	1468			1117	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	17	1159	17	16	671	25	5	0	3	18	0	9
RTOR Reduction (vph)	0	1	0	0	2	0	0	2	0	0	20	0
Lane Group Flow (vph)	17	1175	0	16	694	0	5	1	0	0	7	0
Confl. Peds. (#/hr)			5	5					1	1		
Heavy Vehicles (%)	0%	6%	0%	0%	5%	0%	25%	0%	0%	33%	0%	20%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	63.9	61.4		63.9	61.4		29.1	29.1			29.1	
Effective Green, g (s)	63.9	61.4		63.9	61.4		29.1	29.1			29.1	
Actuated g/C Ratio	0.58	0.56		0.58	0.56		0.26	0.26			0.26	
Clearance Time (s)	3.0	6.9		3.0	6.9		7.1	7.1			7.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	381	1748		201	1761		273	388			295	
v/s Ratio Prot	0.00	c0.38		c0.00	0.22			0.00				
v/s Ratio Perm	0.02			0.04			0.00				c0.01	
v/c Ratio	0.04	0.67		0.08	0.39		0.02	0.00			0.02	
Uniform Delay, d1	9.9	17.2		11.4	13.8		29.9	29.8			29.9	
Progression Factor	1.00	1.00		0.84	0.84		1.00	1.00			1.00	
Incremental Delay, d2	0.0	2.1		0.2	0.6		0.1	0.0			0.2	
Delay (s)	10.0	19.3		9.8	12.1		30.0	29.8			30.1	
Level of Service	A	B		A	B		C	C			C	
Approach Delay (s)		19.1			12.1			29.9			30.1	
Approach LOS		B			B			C			C	

Intersection Summary				
HCM 2000 Control Delay	16.7	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.45			
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	17.0	
Intersection Capacity Utilization	68.4%	ICU Level of Service	C	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	17	1176	16	696	5	3	27
v/c Ratio	0.04	0.65	0.06	0.38	0.02	0.01	0.08
Control Delay	7.3	18.9	6.5	11.9	30.4	0.0	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.3	18.9	6.5	11.9	30.4	0.0	0.4
Queue Length 50th (m)	1.3	81.5	0.6	21.6	0.9	0.0	0.0
Queue Length 95th (m)	3.8	129.0	m2.0	59.7	3.9	0.0	0.0
Internal Link Dist (m)		241.0		207.8		51.5	194.5
Turn Bay Length (m)							
Base Capacity (vph)	453	1799	268	1814	274	506	345
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.65	0.06	0.38	0.02	0.01	0.08

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	24.5	24.5		24.5	24.5		34.5	34.5		34.5	34.5	
Total Split (s)	75.0	75.0		75.0	75.0		35.0	35.0		35.0	35.0	
Total Split (%)	68.2%	68.2%		68.2%	68.2%		31.8%	31.8%		31.8%	31.8%	
Maximum Green (s)	68.5	68.5		68.5	68.5		28.5	28.5		28.5	28.5	
Yellow Time (s)	4.1	4.1		4.1	4.1		4.1	4.1		4.1	4.1	
All-Red Time (s)	2.4	2.4		2.4	2.4		2.4	2.4		2.4	2.4	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.5			6.5			6.5			6.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		Max	Max		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		18.0	18.0		18.0	18.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		68.5			68.5			28.5			28.5	
Actuated g/C Ratio		0.62			0.62			0.26			0.26	
v/c Ratio		0.61			0.37			0.01			0.08	
Control Delay		9.2			10.0			0.0			9.9	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		9.2			10.0			0.0			9.9	
LOS		A			B			A			A	
Approach Delay		9.2			10.0						9.9	
Approach LOS		A			B						A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.61			
Intersection Signal Delay: 9.5		Intersection LOS: A	
Intersection Capacity Utilization 56.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 3: Royal Manor Drive & Regional Road 20



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	1026	0	1	633	5	1	0	4	3	0	27
Future Volume (vph)	11	1026	0	1	633	5	1	0	4	3	0	27
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00							
Frt					0.999			0.892			0.878	
Flt Protected		0.999						0.990			0.995	
Satd. Flow (prot)	0	3131	0	0	3164	0	0	1545	0	0	1390	0
Flt Permitted		0.945			0.954			0.975			0.986	
Satd. Flow (perm)	0	2962	0	0	3019	0	0	1522	0	0	1378	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					1			35			35	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		231.8			321.7			58.1			98.8	
Travel Time (s)		16.7			23.2			4.2			7.1	
Confl. Peds. (#/hr)	2		11	11		2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	14%	6%	0%	0%	5%	0%	0%	0%	0%	0%	0%	11%
Adj. Flow (vph)	12	1115	0	1	688	5	1	0	4	3	0	29
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1127	0	0	694	0	0	5	0	0	32	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	1026	0	1	633	5	1	0	4	3	0	27
Future Volume (vph)	11	1026	0	1	633	5	1	0	4	3	0	27
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		6.5			6.5			6.5			6.5	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frpb, ped/bikes		1.00			1.00			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		1.00			1.00			0.89			0.88	
Flt Protected		1.00			1.00			0.99			1.00	
Satd. Flow (prot)		3133			3164			1546			1390	
Flt Permitted		0.95			0.95			0.98			0.99	
Satd. Flow (perm)		2963			3019			1522			1377	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	12	1115	0	1	688	5	1	0	4	3	0	29
RTOR Reduction (vph)	0	0	0	0	0	0	0	4	0	0	24	0
Lane Group Flow (vph)	0	1127	0	0	694	0	0	1	0	0	8	0
Confl. Peds. (#/hr)	2		11	11		2						
Heavy Vehicles (%)	14%	6%	0%	0%	5%	0%	0%	0%	0%	0%	0%	11%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		68.5			68.5			28.5			28.5	
Effective Green, g (s)		68.5			68.5			28.5			28.5	
Actuated g/C Ratio		0.62			0.62			0.26			0.26	
Clearance Time (s)		6.5			6.5			6.5			6.5	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1845			1880			394			356	
v/s Ratio Prot												
v/s Ratio Perm		c0.38			0.23			0.00			c0.01	
v/c Ratio		0.61			0.37			0.00			0.02	
Uniform Delay, d1		12.6			10.2			30.2			30.4	
Progression Factor		0.63			0.93			1.00			1.00	
Incremental Delay, d2		1.2			0.5			0.0			0.1	
Delay (s)		9.1			9.9			30.2			30.5	
Level of Service		A			A			C			C	
Approach Delay (s)		9.1			9.9			30.2			30.5	
Approach LOS		A			A			C			C	

Intersection Summary			
HCM 2000 Control Delay	9.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	56.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	1127	694	5	32
v/c Ratio	0.61	0.37	0.01	0.08
Control Delay	9.2	10.0	0.0	9.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	9.2	10.0	0.0	9.9
Queue Length 50th (m)	28.9	33.7	0.0	0.0
Queue Length 95th (m)	47.9	48.4	0.0	7.3
Internal Link Dist (m)	207.8	297.7	34.1	74.8
Turn Bay Length (m)				
Base Capacity (vph)	1844	1880	420	382
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.61	0.37	0.01	0.08

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	5	796	25	8	692	4	19	3	28	0	1	16
Future Volume (Veh/h)	5	796	25	8	692	4	19	3	28	0	1	16
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	5	865	27	9	752	4	21	3	30	0	1	17
Pedestrians		2			2			12			5	
Lane Width (m)		3.6			3.6			3.6			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			1			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		322			221							
pX, platoon unblocked	0.94			0.87			0.90	0.90	0.87	0.90	0.90	0.94
vC, conflicting volume	761			904			1314	1680	460	1253	1691	385
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	620			582			821	1229	69	753	1242	220
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			91	98	96	100	99	98
cM capacity (veh/h)	909			860			227	156	844	250	153	739

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	438	460	385	380	54	18
Volume Left	5	0	9	0	21	0
Volume Right	0	27	0	4	30	17
cSH	909	1700	860	1700	367	610
Volume to Capacity	0.01	0.27	0.01	0.22	0.15	0.03
Queue Length 95th (m)	0.1	0.0	0.3	0.0	4.1	0.7
Control Delay (s)	0.2	0.0	0.3	0.0	16.5	11.1
Lane LOS	A		A		C	B
Approach Delay (s)	0.1		0.2		16.5	11.1
Approach LOS					C	B

Intersection Summary					
Average Delay	0.7				
Intersection Capacity Utilization	45.5%	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)	5	796	25	8	692	4	19	3	28	0	1	16
Future Volume (vph)	5	796	25	8	692	4	19	3	28	0	1	16
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.995			0.999			0.925			0.872	
Flt Protected					0.999			0.981				
Satd. Flow (prot)	0	3246	0	0	3223	0	0	1588	0	0	1526	0
Flt Permitted					0.999			0.981				
Satd. Flow (perm)	0	3246	0	0	3223	0	0	1588	0	0	1526	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		321.7			111.0			229.0			196.7	
Travel Time (s)		23.2			8.0			16.5			14.2	
Confl. Peds. (#/hr)	5		12	12		5	2		2	2		2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	5	865	27	9	752	4	21	3	30	0	1	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	897	0	0	765	0	0	54	0	0	18	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			15.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary					
Area Type:	Other				
Control Type: Unsignalized					
Intersection Capacity Utilization	45.5%	ICU Level of Service A			
Analysis Period (min)	15				



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	1	840	701	4	4	8
Future Volume (Veh/h)	1	840	701	4	4	8
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)	1	913	762	4	4	9
Pedestrians					5	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			110			
pX, platoon unblocked	0.89				0.89	0.89
vC, conflicting volume	771				1228	388
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	500				1012	70
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				98	99
cM capacity (veh/h)	954				212	874

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	305	609	508	258	13
Volume Left	1	0	0	0	4
Volume Right	0	0	0	4	9
cSH	954	1700	1700	1700	446
Volume to Capacity	0.00	0.36	0.30	0.15	0.03
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.7
Control Delay (s)	0.0	0.0	0.0	0.0	13.3
Lane LOS	A				B
Approach Delay (s)	0.0		0.0		13.3
Approach LOS					B

Intersection Summary				
Average Delay		0.1		
Intersection Capacity Utilization		36.0%	ICU Level of Service	A
Analysis Period (min)		15		



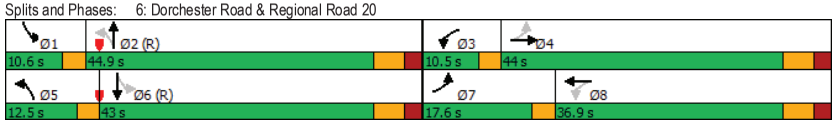
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	1	840	701	4	4	8
Future Volume (vph)	1	840	701	4	4	8
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999		0.907	
Flt Protected					0.985	
Satd. Flow (prot)	0	3292	3225	0	1563	0
Flt Permitted					0.985	
Satd. Flow (perm)	0	3292	3225	0	1563	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		111.0	109.8		191.2	
Travel Time (s)		8.0	7.9		13.8	
Confl. Peds. (#/hr)	5			5		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	3%	0%	0%	0%
Adj. Flow (vph)	1	913	762	4	4	9
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	914	766	0	13	0
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	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	36.0%	ICU Level of Service A	
Analysis Period (min)	15		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0		3.0	8.0		6.0	8.0	
Minimum Split (s)	10.5	36.5		10.5	36.5		9.5	40.5		10.5	40.5	
Total Split (s)	17.6	44.0		10.5	36.9		12.5	44.9		10.6	43.0	
Total Split (%)	16.0%	40.0%		9.5%	33.5%		11.4%	40.8%		9.6%	39.1%	
Maximum Green (s)	14.6	37.5		7.5	30.4		9.5	38.4		7.6	36.5	
Yellow Time (s)	3.0	4.1		3.0	4.1		3.0	4.1		3.0	4.1	
All-Red Time (s)	0.0	2.4		0.0	2.4		0.0	2.4		0.0	2.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	6.5		3.0	6.5		3.0	6.5		3.0	6.5	
Lead/Lag	Lead	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	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Walk Time (s)		12.0			12.0			15.0			15.0	
Flash Dont Walk (s)		13.0			13.0			19.0			19.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	48.4	36.6		39.5	28.9		54.5	41.7		50.6	39.7	
Actuated g/C Ratio	0.44	0.33		0.36	0.26		0.50	0.38		0.46	0.36	
v/c Ratio	0.58	0.93		0.41	0.65		0.56	0.76		0.35	0.65	
Control Delay	31.8	59.4		24.2	36.9		23.4	39.8		19.6	36.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	31.8	59.4		24.2	36.9		23.4	39.8		19.6	36.0	
LOS	C	E		C	D		C	D		B	D	
Approach Delay		54.6			35.3			34.8			32.6	
Approach LOS		D			D			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 60 (55%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.93			
Intersection Signal Delay: 42.3		Intersection LOS: D	
Intersection Capacity Utilization 90.1%		ICU Level of Service E	
Analysis Period (min) 15			

Splits and Phases: 6: Dorchester Road & Regional Road 20



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	181	643	229	68	363	125	193	357	84	92	302	59
Future Volume (vph)	181	643	229	68	363	125	193	357	84	92	302	59
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	40.0		0.0	45.0		0.0	50.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.99		0.99	0.99		1.00	1.00		1.00	1.00	
Frt		0.961			0.962			0.972			0.976	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1568	2967	0	1630	2980	0	1630	1642	0	1539	1654	0
Flt Permitted	0.297			0.153			0.335			0.282		
Satd. Flow (perm)	488	2967	0	261	2980	0	574	1642	0	456	1654	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		49			43			12			10	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		109.8			114.2			162.1			187.2	
Travel Time (s)		7.9			8.2			11.7			13.5	
Confl. Peds. (#/hr)	5		15	15		5	5		8	8		5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	7%	4%	2%	7%	5%	2%	3%	4%	8%	3%	3%
Adj. Flow (vph)	197	699	249	74	395	136	210	388	91	100	328	64
Shared Lane Traffic (%)												
Lane Group Flow (vph)	197	948	0	74	531	0	210	479	0	100	392	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	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	181	643	229	68	363	125	193	357	84	92	302	59
Future Volume (vph)	181	643	229	68	363	125	193	357	84	92	302	59
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	6.5		3.0	6.5		3.0	6.5		3.0	6.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		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	0.96		1.00	0.96		1.00	0.97		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)	1567	2966		1629	2979		1629	1641		1538	1653	
Flt Permitted	0.30	1.00		0.15	1.00		0.34	1.00		0.28	1.00	
Satd. Flow (perm)	489	2966		262	2979		575	1641		457	1653	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	197	699	249	74	395	136	210	388	91	100	328	64
RTOR Reduction (vph)	0	33	0	0	31	0	0	8	0	0	6	0
Lane Group Flow (vph)	197	915	0	74	500	0	210	471	0	100	386	0
Confl. Peds. (#/hr)	5		15	15		5	5		8	8		5
Heavy Vehicles (%)	6%	7%	4%	2%	7%	5%	2%	3%	4%	8%	3%	3%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	45.5	36.6		35.4	29.5		50.4	41.1		46.6	39.2	
Effective Green, g (s)	45.5	36.6		35.4	29.5		50.4	41.1		46.6	39.2	
Actuated g/C Ratio	0.41	0.33		0.32	0.27		0.46	0.37		0.42	0.36	
Clearance Time (s)	3.0	6.5		3.0	6.5		3.0	6.5		3.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	329	986		157	798		352	613		266	589	
v/s Ratio Prot	c0.07	c0.31		0.03	0.17		c0.05	c0.29		0.03	0.23	
v/s Ratio Perm	0.18			0.13			0.22			0.13		
v/c Ratio	0.60	0.93		0.47	0.63		0.60	0.77		0.38	0.65	
Uniform Delay, d1	22.4	35.4		27.6	35.4		19.9	30.3		21.0	29.7	
Progression Factor	1.34	1.33		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.6	13.2		2.2	1.5		2.7	9.0		0.9	5.6	
Delay (s)	32.6	60.5		29.9	36.9		22.6	39.3		21.9	35.3	
Level of Service	C	E		C	D		C	D		C	D	
Approach Delay (s)		55.7			36.1			34.2			32.6	
Approach LOS		E			D			C			C	

Intersection Summary				
HCM 2000 Control Delay	42.7	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	0.82			
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	19.0	
Intersection Capacity Utilization	90.1%	ICU Level of Service	E	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	197	948	74	531	210	479	100	392
v/c Ratio	0.58	0.93	0.41	0.65	0.56	0.76	0.35	0.65
Control Delay	31.8	59.4	24.2	36.9	23.4	39.8	19.6	36.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.8	59.4	24.2	36.9	23.4	39.8	19.6	36.0
Queue Length 50th (m)	38.4	110.4	9.0	50.3	27.6	96.0	12.2	75.0
Queue Length 95th (m)	60.8	#143.1	17.9	69.7	44.0	#152.3	22.6	111.5
Internal Link Dist (m)		85.8		90.2		138.1		163.2
Turn Bay Length (m)	40.0		45.0		50.0		30.0	
Base Capacity (vph)	358	1043	188	870	377	630	286	603
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	0.55	0.91	0.39	0.61	0.56	0.76	0.35	0.65

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

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	0	736	609	4	0	3
Future Volume (Veh/h)	0	736	609	4	0	3
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	800	662	4	0	3
Pedestrians					7	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		114				
pX, platoon unblocked						
vC, conflicting volume	673				1071	340
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	673				1071	340
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	100				100	100
cM capacity (veh/h)	922				218	658

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	267	533	441	225	3
Volume Left	0	0	0	0	0
Volume Right	0	0	0	4	3
cSH	922	1700	1700	1700	658
Volume to Capacity	0.00	0.31	0.26	0.13	0.00
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.1
Control Delay (s)	0.0	0.0	0.0	0.0	10.5
Lane LOS					B
Approach Delay (s)	0.0		0.0		10.5
Approach LOS					B

Intersection Summary			
Average Delay		0.0	
Intersection Capacity Utilization		32.1%	ICU Level of Service A
Analysis Period (min)		15	

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	736	609	4	0	3
Future Volume (vph)	0	736	609	4	0	3
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999		0.865	
Flt Protected						
Satd. Flow (prot)	0	3260	3251	0	1514	0
Flt Permitted						
Satd. Flow (perm)	0	3260	3251	0	1514	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		114.2	50.1		180.5	
Travel Time (s)		8.2	3.6		13.0	
Confl. Peds. (#/hr)	7			7		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	33%	0%	0%
Adj. Flow (vph)	0	800	662	4	0	3
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	800	666	0	3	0
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	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	32.1%	ICU Level of Service A	
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	716	12	9	588	8	16
Future Volume (Veh/h)	716	12	9	588	8	16
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)	778	13	10	639	9	17
Pedestrians				1	12	
Lane Width (m)				3.6	3.6	
Walking Speed (m/s)				1.2	1.2	
Percent Blockage				0	1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	164					
pX, platoon unblocked						
vC, conflicting volume			803		1136	408
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			803		1136	408
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		95	97
cM capacity (veh/h)			821		194	591

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	519	272	223	426	26
Volume Left	0	0	10	0	9
Volume Right	0	13	0	0	17
cSH	1700	1700	821	1700	346
Volume to Capacity	0.31	0.16	0.01	0.25	0.08
Queue Length 95th (m)	0.0	0.0	0.3	0.0	1.9
Control Delay (s)	0.0	0.0	0.5	0.0	16.2
Lane LOS			A		C
Approach Delay (s)	0.0		0.2		16.2
Approach LOS					C

Intersection Summary				
Average Delay	0.4			
Intersection Capacity Utilization	34.9%	ICU Level of Service		A
Analysis Period (min)	15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	716	12	9	588	8	16
Future Volume (vph)	716	12	9	588	8	16
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt	0.998				0.912	
Flt Protected				0.999	0.983	
Satd. Flow (prot)	3254	0	0	3226	1569	0
Flt Permitted				0.999	0.983	
Satd. Flow (perm)	3254	0	0	3226	1569	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	50.1			206.3	147.1	
Travel Time (s)	3.6			14.9	10.6	
Confl. Peds. (#/hr)		12	12			1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	0%	3%	0%	0%
Adj. Flow (vph)	778	13	10	639	9	17
Shared Lane Traffic (%)						
Lane Group Flow (vph)	791	0	0	649	26	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	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	34.9%	ICU Level of Service	A
Analysis Period (min)	15		



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	8	696	17	33	584	12	23	9	53	8	8	24
Future Volume (Veh/h)	8	696	17	33	584	12	23	9	53	8	8	24
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	757	18	36	635	13	25	10	58	9	9	26
Pedestrians								12			3	
Lane Width (m)								3.6			3.6	
Walking Speed (m/s)								1.2			1.2	
Percent Blockage								1			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		371			302							
pX, platoon unblocked	0.99						0.99	0.99		0.99	0.99	0.99
vC, conflicting volume	651			787			1216	1519	400	1176	1522	327
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	626			787			1197	1503	400	1157	1506	299
tC, single (s)	4.1			4.2			7.6	6.5	7.0	7.5	6.5	7.1
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	3.4
p0 queue free %	99			96			78	91	90	93	92	96
cM capacity (veh/h)	953			807			114	113	591	121	113	660

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	388	396	354	330	93	44
Volume Left	9	0	36	0	25	9
Volume Right	0	18	0	13	58	26
cSH	953	1700	807	1700	229	228
Volume to Capacity	0.01	0.23	0.04	0.19	0.41	0.19
Queue Length 95th (m)	0.2	0.0	1.1	0.0	14.8	5.6
Control Delay (s)	0.3	0.0	1.5	0.0	31.0	24.5
Lane LOS	A		A		D	C
Approach Delay (s)	0.2		0.8		31.0	24.5
Approach LOS					D	C

Intersection Summary					
Average Delay	2.9				
Intersection Capacity Utilization	58.9%	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)	8	696	17	33	584	12	23	9	53	8	8	24
Future Volume (vph)	8	696	17	33	584	12	23	9	53	8	8	24
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.997			0.997			0.916			0.920	
Flt Protected		0.999			0.997			0.987			0.990	
Satd. Flow (prot)	0	3243	0	0	3223	0	0	1525	0	0	1488	0
Flt Permitted		0.999			0.997			0.987			0.990	
Satd. Flow (perm)	0	3243	0	0	3223	0	0	1525	0	0	1488	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		206.3			78.8			169.0			191.8	
Travel Time (s)		14.9			5.7			12.2			13.8	
Confl. Peds. (#/hr)	3		12	12		3						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	8%	4%	2%	25%	7%	0%	3%	0%	0%	12%
Adj. Flow (vph)	9	757	18	36	635	13	25	10	58	9	9	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	784	0	0	684	0	0	93	0	0	44	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary					
Area Type:	Other				
Control Type: Unsignalized					
Intersection Capacity Utilization 58.9%		ICU Level of Service B			
Analysis Period (min) 15					



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	24	725	605	12	13	27
Future Volume (Veh/h)	24	725	605	12	13	27
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)	26	788	658	13	14	29
Pedestrians		2			3	
Lane Width (m)		3.6			3.6	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			223			
pX, platoon unblocked	0.96				0.96	0.96
vC, conflicting volume	674				1114	340
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	579				1036	232
tC, single (s)	4.2				7.2	7.1
tC, 2 stage (s)						
tF (s)	2.3				3.7	3.4
p0 queue free %	97				92	96
cM capacity (veh/h)	924				183	711

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	289	525	439	232	43
Volume Left	26	0	0	0	14
Volume Right	0	0	0	13	29
cSH	924	1700	1700	1700	366
Volume to Capacity	0.03	0.31	0.26	0.14	0.12
Queue Length 95th (m)	0.7	0.0	0.0	0.0	3.2
Control Delay (s)	1.1	0.0	0.0	0.0	16.1
Lane LOS	A				C
Approach Delay (s)	0.4		0.0		16.1
Approach LOS					C

Intersection Summary				
Average Delay		0.7		
Intersection Capacity Utilization		51.3%	ICU Level of Service	A
Analysis Period (min)		15		



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	24	725	605	12	13	27
Future Volume (vph)	24	725	605	12	13	27
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.997		0.909	
Flt Protected		0.998			0.984	
Satd. Flow (prot)	0	3249	3236	0	1366	0
Flt Permitted		0.998			0.984	
Satd. Flow (perm)	0	3249	3236	0	1366	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		78.8	68.0		182.2	
Travel Time (s)		5.7	4.9		13.1	
Confl. Peds. (#/hr)	3			3		2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	2%	2%	25%	22%	11%
Adj. Flow (vph)	26	788	658	13	14	29
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	814	671	0	43	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		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	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	51.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	701	41	35	640	28	41
Future Volume (Veh/h)	701	41	35	640	28	41
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)	762	45	38	696	30	45
Pedestrians	1				11	
Lane Width (m)	3.6				3.6	
Walking Speed (m/s)	1.2				1.2	
Percent Blockage	0				1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				155		
pX, platoon unblocked					0.93	
vC, conflicting volume			818		1220	414
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			818		1084	414
tC, single (s)			4.2		6.9	7.0
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			95		83	92
cM capacity (veh/h)			786		181	576

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	508	299	270	464	75
Volume Left	0	0	38	0	30
Volume Right	0	45	0	0	45
cSH	1700	1700	786	1700	307
Volume to Capacity	0.30	0.18	0.05	0.27	0.24
Queue Length 95th (m)	0.0	0.0	1.2	0.0	7.5
Control Delay (s)	0.0	0.0	1.9	0.0	20.5
Lane LOS			A		C
Approach Delay (s)	0.0		0.7		20.5
Approach LOS					C

Intersection Summary				
Average Delay	1.3			
Intersection Capacity Utilization	57.2%	ICU Level of Service	B	
Analysis Period (min)	15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	701	41	35	640	28	41
Future Volume (vph)	701	41	35	640	28	41
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt	0.992				0.919	
Flt Protected				0.997	0.980	
Satd. Flow (prot)	3225	0	0	3217	1510	0
Flt Permitted				0.997	0.980	
Satd. Flow (perm)	3225	0	0	3217	1510	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	68.0			55.0	165.0	
Travel Time (s)	4.9			4.0	11.9	
Confl. Peds. (#/hr)		11	11		1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	7%	4%	3%	5%	4%
Adj. Flow (vph)	762	45	38	696	30	45
Shared Lane Traffic (%)						
Lane Group Flow (vph)	807	0	0	734	75	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	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	57.2%	ICU Level of Service B	
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	9	747	660	9	5	15
Future Volume (Veh/h)	9	747	660	9	5	15
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)	10	812	717	10	5	16
Pedestrians		1			8	
Lane Width (m)		3.6			3.6	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			100			
pX, platoon unblocked	0.92				0.92	0.92
vC, conflicting volume	735				1156	372
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	541				998	147
tC, single (s)	4.1				6.8	7.1
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.4
p0 queue free %	99				98	98
cM capacity (veh/h)	950				221	776

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	281	541	478	249	21
Volume Left	10	0	0	0	5
Volume Right	0	0	0	10	16
cSH	950	1700	1700	1700	485
Volume to Capacity	0.01	0.32	0.28	0.15	0.04
Queue Length 95th (m)	0.3	0.0	0.0	0.0	1.1
Control Delay (s)	0.4	0.0	0.0	0.0	12.8
Lane LOS	A				B
Approach Delay (s)	0.1		0.0		12.8
Approach LOS					B

Intersection Summary				
Average Delay		0.2		
Intersection Capacity Utilization		39.6%	ICU Level of Service	A
Analysis Period (min)		15		

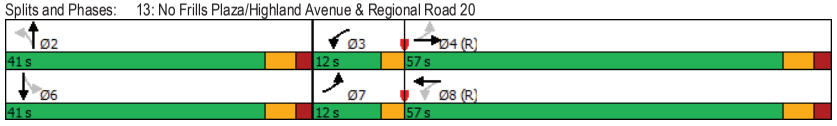
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	9	747	660	9	5	15
Future Volume (vph)	9	747	660	9	5	15
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.998		0.897	
Flt Protected		0.999			0.988	
Satd. Flow (prot)	0	3257	3254	0	1441	0
Flt Permitted		0.999			0.988	
Satd. Flow (perm)	0	3257	3254	0	1441	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		55.0	100.4		189.4	
Travel Time (s)		4.0	7.2		13.6	
Confl. Peds. (#/hr)	8			8		1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	0%	0%	10%
Adj. Flow (vph)	10	812	717	10	5	16
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	822	727	0	21	0
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	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

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

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	8.0		6.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.5	35.5		10.5	35.5		36.5	36.5		36.5	36.5	
Total Split (s)	12.0	57.0		12.0	57.0		41.0	41.0		41.0	41.0	
Total Split (%)	10.9%	51.8%		10.9%	51.8%		37.3%	37.3%		37.3%	37.3%	
Maximum Green (s)	9.0	50.5		9.0	50.5		34.5	34.5		34.5	34.5	
Yellow Time (s)	3.0	4.1		3.0	4.1		4.1	4.1		4.1	4.1	
All-Red Time (s)	0.0	2.4		0.0	2.4		2.4	2.4		2.4	2.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)	3.0	6.5		3.0	6.5		6.5	6.5			6.5	
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	
Recall Mode	None	C-Max		None	C-Max		Max	Max		Max	Max	
Walk Time (s)		11.0			11.0		11.0	11.0		11.0	11.0	
Flash Dont Walk (s)		18.0			18.0		19.0	19.0		19.0	19.0	
Pedestrian Calls (#/hr)		0			0		0	0		0	0	
Act Effct Green (s)	63.7	56.5		65.2	58.8		34.5	34.5			34.5	
Actuated g/C Ratio	0.58	0.51		0.59	0.53		0.31	0.31			0.31	
v/c Ratio	0.03	0.42		0.08	0.30		0.07	0.06			0.16	
Control Delay	9.1	18.3		9.5	15.4		27.3	13.5			22.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	9.1	18.3		9.5	15.4		27.3	13.5			22.9	
LOS	A	B		A	B		C	B			C	
Approach Delay		18.1			15.0			20.3			22.9	
Approach LOS		B			B			C			C	

Intersection Summary			
Area Type:	Other		
Cycle Length: 110			
Actuated Cycle Length: 110			
Offset: 6 (5%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.42			
Intersection Signal Delay: 17.2		Intersection LOS: B	
Intersection Capacity Utilization 63.8%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 13: No Frills Plaza/Highland Avenue & Regional Road 20



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	613	23	31	446	13	27	7	20	27	24	16
Future Volume (vph)	12	613	23	31	446	13	27	7	20	27	24	16
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	35.0		0.0	35.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		1.00	1.00		1.00	0.99			0.99	
Frt		0.995			0.996			0.890			0.968	
Flt Protected	0.950			0.950			0.950				0.980	
Satd. Flow (prot)	1662	3182	0	1662	3155	0	1662	1536	0	0	1591	0
Flt Permitted	0.462			0.327			0.710				0.893	
Satd. Flow (perm)	802	3182	0	569	3155	0	1240	1536	0	0	1446	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			3			22			15	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		100.4			342.8			50.5			193.9	
Travel Time (s)		7.2			24.7			3.6			14.0	
Confl. Peds. (#/hr)	9		8	8		9	2		6	6		2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	4%	0%	0%	5%	0%	0%	0%	0%	0%	0%	17%
Adj. Flow (vph)	13	666	25	34	485	14	29	8	22	29	26	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	13	691	0	34	499	0	29	30	0	0	72	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	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	613	23	31	446	13	27	7	20	27	24	16
Future Volume (vph)	12	613	23	31	446	13	27	7	20	27	24	16
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	6.5		3.0	6.5		6.5	6.5			6.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.89			0.97	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.98	
Satd. Flow (prot)	1656	3180		1660	3154		1659	1536			1587	
Flt Permitted	0.46	1.00		0.33	1.00		0.71	1.00			0.89	
Satd. Flow (perm)	805	3180		572	3154		1240	1536			1446	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	13	666	25	34	485	14	29	8	22	29	26	17
RTOR Reduction (vph)	0	2	0	0	1	0	0	15	0	0	10	0
Lane Group Flow (vph)	13	689	0	34	498	0	29	15	0	0	62	0
Confl. Peds. (#/hr)	9		8	8		9	2		6	6		2
Heavy Vehicles (%)	0%	4%	0%	0%	5%	0%	0%	0%	0%	0%	0%	17%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	57.8	55.3		61.2	57.0		34.5	34.5			34.5	
Effective Green, g (s)	57.8	55.3		61.2	57.0		34.5	34.5			34.5	
Actuated g/C Ratio	0.53	0.50		0.56	0.52		0.31	0.31			0.31	
Clearance Time (s)	3.0	6.5		3.0	6.5		6.5	6.5			6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	442	1598		359	1634		388	481			453	
v/s Ratio Prot	0.00	c0.22		c0.00	0.16			0.01				
v/s Ratio Perm	0.01			0.05			0.02				c0.04	
v/c Ratio	0.03	0.43		0.09	0.30		0.07	0.03			0.14	
Uniform Delay, d1	12.5	17.4		11.4	15.2		26.5	26.2			27.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.0	0.9		0.1	0.5		0.4	0.1			0.6	
Delay (s)	12.5	18.2		11.6	15.6		26.9	26.3			27.7	
Level of Service	B	B		B	B		C	C			C	
Approach Delay (s)		18.1			15.4			26.6			27.7	
Approach LOS		B			B			C			C	

Intersection Summary				
HCM 2000 Control Delay	17.9	HCM 2000 Level of Service	B	
HCM 2000 Volume to Capacity ratio	0.31			
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	16.0	
Intersection Capacity Utilization	63.8%	ICU Level of Service	B	
Analysis Period (min)	15			

c Critical Lane Group

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	13	691	34	499	29	30	72
v/c Ratio	0.03	0.42	0.08	0.30	0.07	0.06	0.16
Control Delay	9.1	18.3	9.5	15.4	27.3	13.5	22.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.1	18.3	9.5	15.4	27.3	13.5	22.9
Queue Length 50th (m)	1.1	52.2	2.9	28.5	4.6	1.3	9.2
Queue Length 95th (m)	3.7	69.6	7.1	47.4	11.8	8.3	20.6
Internal Link Dist (m)		76.4		318.8		26.5	169.9
Turn Bay Length (m)	35.0		35.0				
Base Capacity (vph)	547	1636	430	1687	388	496	463
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.42	0.08	0.30	0.07	0.06	0.16

Intersection Summary

Intersection: 4: Brookfield Avenue & Regional Road 20

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	TR	LT	TR	LTR	LTR
Maximum Queue (m)	11.4	6.2	13.2	7.3	21.8	10.3
Average Queue (m)	0.5	0.3	1.6	0.3	8.2	3.2
95th Queue (m)	4.7	2.8	7.6	3.0	17.1	10.1
Link Distance (m)	287.9	287.9	96.2	96.2	217.0	184.0
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 5: Regional Road 20 & Mouland Avenue

Movement	EB	EB	WB	SB
Directions Served	LT	T	TR	LR
Maximum Queue (m)	36.1	37.0	1.2	10.7
Average Queue (m)	4.9	8.2	0.0	2.9
95th Queue (m)	20.0	28.0	0.8	9.8
Link Distance (m)	96.2	96.2	89.1	177.3
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Dorchester Road & Regional Road 20

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (m)	47.4	97.1	97.0	52.2	71.9	88.0	57.4	151.8	37.4	121.0
Average Queue (m)	39.9	79.0	83.6	16.9	40.4	52.0	39.0	73.0	22.6	57.8
95th Queue (m)	59.5	102.0	103.4	36.7	66.2	76.9	65.8	129.1	43.0	98.6
Link Distance (m)		89.1	89.1		97.0	97.0		148.1		173.2
Upstream Blk Time (%)		6	9			0		1		
Queuing Penalty (veh)		25	38			0		0		
Storage Bay Dist (m)	40.0			45.0			50.0		30.0	
Storage Blk Time (%)	5	31		0	6		1	17	3	30
Queuing Penalty (veh)	17	57		0	4		7	33	11	27

Intersection: 1: Montrose Road (RR98) & Regional Road 20

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	TR	L	T	R
Maximum Queue (m)	62.4	115.6	120.2	42.4	61.6	64.6	26.3	52.4	194.3	50.9	54.3	40.2
Average Queue (m)	53.5	69.4	76.5	19.6	35.6	38.6	2.6	15.4	103.3	24.2	28.0	18.1
95th Queue (m)	71.2	112.2	109.2	40.0	56.8	59.3	14.5	46.9	174.1	43.3	48.0	34.0
Link Distance (m)		237.7	237.7		237.4	237.4	237.4		325.2		309.7	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	55.0			35.0				45.0		80.0		70.0
Storage Blk Time (%)	15	2		0	13			0	40			
Queuing Penalty (veh)	41	6		1	10			0	21			

Intersection: 2: Niagara Falls Inn Driveway/Belmont Avenue & Regional Road 20

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	LTR
Maximum Queue (m)	12.1	104.2	109.1	13.0	29.8	39.6	12.1	8.9	28.3
Average Queue (m)	2.7	53.9	53.6	3.5	14.5	19.0	1.3	1.0	7.5
95th Queue (m)	9.2	93.4	97.6	11.4	26.9	34.0	7.2	5.4	20.4
Link Distance (m)	237.4	237.4	237.4	212.9	212.9	212.9	59.8	59.8	199.2
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (m)									
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 3: Royal Manor Drive & Regional Road 20

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	TR	LT	TR	LTR	LTR
Maximum Queue (m)	59.9	61.7	64.9	78.9	8.8	16.3
Average Queue (m)	33.1	33.9	17.7	41.8	1.1	4.6
95th Queue (m)	54.1	55.5	45.8	67.3	5.8	12.6
Link Distance (m)	212.9	212.9	287.9	287.9	46.0	82.4
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 10: Regional Road 20 & Byng Avenue

Movement	EB	EB	WB	SB
Directions Served	LT	T	TR	LR
Maximum Queue (m)	15.9	5.0	5.9	19.8
Average Queue (m)	3.3	0.2	0.2	8.0
95th Queue (m)	11.8	2.6	2.5	17.0
Link Distance (m)	63.3	63.3	48.2	170.0
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 11: Franklin Avenue & Regional Road 20

Movement	EB	WB	WB	NB
Directions Served	TR	LT	T	LR
Maximum Queue (m)	2.6	31.0	12.6	29.8
Average Queue (m)	0.1	6.9	0.4	10.7
95th Queue (m)	1.6	21.6	5.3	20.7
Link Distance (m)	48.2	41.1	41.1	152.5
Upstream Blk Time (%)		0		
Queuing Penalty (veh)		0		
Storage Bay Dist (m)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 12: Regional Road 20 & Glenholme Avenue

Movement	EB	EB	SB
Directions Served	LT	T	LR
Maximum Queue (m)	10.3	5.4	17.8
Average Queue (m)	0.6	0.2	5.2
95th Queue (m)	4.4	2.8	14.2
Link Distance (m)	41.1	41.1	175.6
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 7: Regional Road 20 & Depew Avenue

Movement	SB
Directions Served	LR
Maximum Queue (m)	6.9
Average Queue (m)	0.6
95th Queue (m)	4.0
Link Distance (m)	166.6
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (m)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: Corwin Avenue & Regional Road 20

Movement	EB	EB	WB	WB	NB
Directions Served	T	TR	LT	T	LR
Maximum Queue (m)	3.0	3.2	11.8	3.0	10.3
Average Queue (m)	0.1	0.1	0.8	0.1	4.8
95th Queue (m)	1.5	1.6	5.7	2.1	12.0
Link Distance (m)	31.3	31.3	191.0	191.0	135.0
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (m)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 9: Calton Avenue/Prince Edward Avenue & Regional Road 20

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	TR	LT	TR	LTR	LTR
Maximum Queue (m)	15.7	3.2	28.5	5.9	25.5	17.3
Average Queue (m)	1.5	0.1	6.3	0.2	11.0	7.4
95th Queue (m)	8.3	1.6	19.9	3.4	19.9	15.9
Link Distance (m)	191.0	191.0	63.3	63.3	156.9	179.7
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (m)						
Storage Blk Time (%)						
Queuing Penalty (veh)						



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	274	753	77	196	818	176	108	322	176	270	409	467
Future Volume (vph)	274	753	77	196	818	176	108	322	176	270	409	467
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	55.0		0.0	35.0		0.0	45.0		0.0	80.0		70.0
Storage Lanes	1		0	1		1	1		0	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		1.00		0.96	0.98	0.99				0.95
Frt		0.986				0.850		0.947				0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1554	3120	0	1511	3137	1417	1583	1598	0	1599	1683	1390
Flt Permitted	0.097			0.140			0.392			0.095		
Satd. Flow (perm)	159	3120	0	222	3137	1366	642	1598	0	160	1683	1322
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8				167		20				349
Link Speed (k/h)		60			50			50			50	
Link Distance (m)		251.8			265.0			342.9			323.7	
Travel Time (s)		15.1			19.1			24.7			23.3	
Confl. Peds. (#/hr)	17		10	10		17	27		14	14		27
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	7%	4%	11%	10%	6%	5%	5%	4%	0%	4%	4%	7%
Adj. Flow (vph)	298	818	84	213	889	191	117	350	191	293	445	508
Shared Lane Traffic (%)												
Lane Group Flow (vph)	298	902	0	213	889	191	117	541	0	293	445	508
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	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2		1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0		2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6		2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	0.0
Detector 1 Queue (s)	0.0	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	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	

Intersection: 13: No Frills Plaza/Highland Avenue & Regional Road 20

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	LTR
Maximum Queue (m)	38.2	76.8	77.4	20.4	53.2	44.1	18.6	18.1	29.2
Average Queue (m)	4.5	44.2	49.5	5.7	28.8	18.2	5.5	5.3	11.6
95th Queue (m)	20.3	67.5	73.6	15.1	44.7	35.9	14.8	14.2	24.6
Link Distance (m)		80.2	80.2		332.3	332.3	36.4	36.4	180.0
Upstream Blk Time (%)		0	0						
Queuing Penalty (veh)		0	1						
Storage Bay Dist (m)	35.0			35.0					
Storage Blk Time (%)		15			5				
Queuing Penalty (veh)		2			1				

Network Summary

Network wide Queuing Penalty: 304

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	298	902	213	889	191	117	541	293	445	508
v/c Ratio	1.09	0.91	0.93	1.00	0.38	0.41	1.14	1.06	0.70	0.71
Control Delay	116.0	57.2	73.1	79.4	10.0	26.8	127.0	107.9	42.8	16.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	116.0	57.2	73.1	79.4	10.0	26.8	127.0	107.9	42.8	16.7
Queue Length 50th (m)	~78.0	126.6	38.7	~132.7	4.9	18.1	~172.8	~74.1	105.1	37.3
Queue Length 95th (m)	#138.9	#165.6	#89.3	#179.4	25.1	30.5	#246.2	#133.8	146.5	83.9
Internal Link Dist (m)		227.8		241.0			318.9		299.7	
Turn Bay Length (m)	55.0		35.0			45.0		80.0		70.0
Base Capacity (vph)	274	996	230	885	505	284	475	276	634	715
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.09	0.91	0.93	1.00	0.38	0.41	1.14	1.06	0.70	0.71

Intersection Summary

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

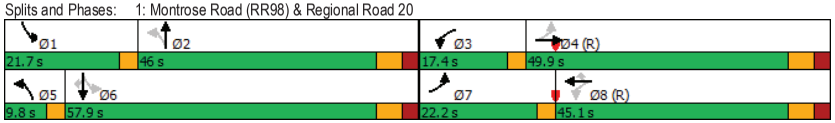
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		6
Detector Phase	7	4		3	8	8	5	2		1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0	10.0	3.0	8.0		6.0	8.0	8.0
Minimum Split (s)	10.5	35.0		10.5	35.0	35.0	9.5	36.0		10.5	36.0	36.0
Total Split (s)	22.2	49.9		17.4	45.1	45.1	9.8	46.0		21.7	57.9	57.9
Total Split (%)	16.4%	37.0%		12.9%	33.4%	33.4%	7.3%	34.1%		16.1%	42.9%	42.9%
Maximum Green (s)	19.2	42.9		14.4	38.1	38.1	6.8	39.0		18.7	50.9	50.9
Yellow Time (s)	3.0	4.1		3.0	4.1	4.1	3.0	4.1		3.0	4.1	4.1
All-Red Time (s)	0.0	2.9		0.0	2.9	2.9	0.0	2.9		0.0	2.9	2.9
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)	3.0	7.0		3.0	7.0	7.0	3.0	7.0		3.0	7.0	7.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag		Lead	Lag	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	3.0
Recall Mode	None	C-Max		None	C-Max	C-Max	None	Max		None	Max	Max
Walk Time (s)		10.0			10.0	10.0		11.0			11.0	11.0
Flash Dont Walk (s)		18.0			18.0	18.0		18.0			18.0	18.0
Pedestrian Calls (#/hr)		0			0	0		0			0	0
Act Effct Green (s)	64.3	42.9		56.5	38.1	38.1	49.8	39.0		64.7	50.9	50.9
Actuated g/C Ratio	0.48	0.32		0.42	0.28	0.28	0.37	0.29		0.48	0.38	0.38
v/c Ratio	1.09	0.91		0.93	1.00	0.38	0.41	1.14		1.06	0.70	0.71
Control Delay	116.0	57.2		73.1	79.4	10.0	26.8	127.0		107.9	42.8	16.7
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0
Total Delay	116.0	57.2		73.1	79.4	10.0	26.8	127.0		107.9	42.8	16.7
LOS	F	E		E	E	B	C	F		F	D	B
Approach Delay		71.8			68.1			109.2			47.5	
Approach LOS		E			E			F			D	

Intersection Summary

Area Type: Other
Cycle Length: 135
Actuated Cycle Length: 135
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle: 105
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.14
Intersection Signal Delay: 69.4 Intersection LOS: E
Intersection Capacity Utilization 106.2% ICU Level of Service G
Analysis Period (min) 15

Splits and Phases: 1: Montrose Road (RR98) & Regional Road 20



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	1267	40	83	1308	29	64	1	84	28	4	16
Future Volume (vph)	17	1267	40	83	1308	29	64	1	84	28	4	16
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00		1.00				0.99			1.00	
Frt		0.995			0.997			0.852			0.955	
Flt Protected	0.950			0.950			0.950				0.971	
Satd. Flow (prot)	1662	3125	0	1662	3160	0	1330	1472	0	0	1287	0
Flt Permitted	0.099			0.088			0.724				0.814	
Satd. Flow (perm)	173	3125	0	154	3160	0	1014	1472	0	0	1078	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			3			91			17	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		265.0			231.8			75.5			218.5	
Travel Time (s)		19.1			16.7			5.4			15.7	
Confl. Peds. (#/hr)			5	5					1	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	6%	0%	0%	5%	0%	25%	0%	0%	33%	0%	20%
Adj. Flow (vph)	18	1377	43	90	1422	32	70	1	91	30	4	17
Shared Lane Traffic (%)												
Lane Group Flow (vph)	18	1420	0	90	1454	0	70	92	0	0	51	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)		7.2			7.2			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	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	274	753	77	196	818	176	108	322	176	270	409	467
Future Volume (vph)	274	753	77	196	818	176	108	322	176	270	409	467
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	7.0		3.0	7.0	7.0	3.0	7.0		3.0	7.0	7.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.96	1.00	0.99		1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.99	1.00		1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1554	3120		1511	3137	1366	1573	1598		1599	1683	1322
Flt Permitted	0.10	1.00		0.14	1.00	1.00	0.39	1.00		0.10	1.00	1.00
Satd. Flow (perm)	159	3120		223	3137	1366	650	1598		160	1683	1322
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	298	818	84	213	889	191	117	350	191	293	445	508
RTOR Reduction (vph)	0	5	0	0	0	120	0	14	0	0	0	217
Lane Group Flow (vph)	298	897	0	213	889	71	117	527	0	293	445	291
Confl. Peds. (#/hr)	17		10	10		17	27		14	14		27
Heavy Vehicles (%)	7%	4%	11%	10%	6%	5%	5%	4%	0%	4%	4%	7%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA		pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2			6		6
Actuated Green, G (s)	60.3	42.9		52.5	38.1	38.1	45.8	39.0		60.7	50.9	50.9
Effective Green, g (s)	60.3	42.9		52.5	38.1	38.1	45.8	39.0		60.7	50.9	50.9
Actuated g/C Ratio	0.45	0.32		0.39	0.28	0.28	0.34	0.29		0.45	0.38	0.38
Clearance Time (s)	3.0	7.0		3.0	7.0	7.0	3.0	7.0		3.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	269	991		224	885	385	267	461		271	634	498
v/s Ratio Prot	c0.16	0.29		0.10	0.28		0.02	0.33		c0.15	0.26	
v/s Ratio Perm	c0.34			0.27		0.05	0.13			c0.34		0.22
v/c Ratio	1.11	0.90		0.95	1.00	0.18	0.44	1.14		1.08	0.70	0.58
Uniform Delay, d1	41.7	44.1		32.2	48.5	36.7	32.5	48.0		42.3	35.6	33.6
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	86.9	13.2		46.3	31.4	1.1	1.2	87.2		78.0	6.4	4.9
Delay (s)	128.6	57.3		78.5	79.8	37.7	33.7	135.2		120.3	42.0	38.5
Level of Service	F	E		E	E	D	C	F		F	D	D
Approach Delay (s)		75.0			73.4			117.2			59.0	
Approach LOS		E			E			F			E	

Intersection Summary			
HCM 2000 Control Delay	76.3	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.14		
Actuated Cycle Length (s)	135.0	Sum of lost time (s)	20.0
Intersection Capacity Utilization	106.2%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Queues 2041 Alternative 4 - Four Lane

2: Niagara Falls Inn Driveway/Belmont Avenue & Regional Road 20

PM Peak Hour

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	18	1420	90	1454	70	92	51
v/c Ratio	0.09	0.85	0.48	0.80	0.26	0.20	0.17
Control Delay	8.3	28.5	22.7	16.9	35.0	7.8	24.3
Queue Delay	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Total Delay	8.3	28.5	22.7	17.0	35.0	7.8	24.3
Queue Length 50th (m)	1.4	143.0	4.5	47.0	12.5	0.2	5.8
Queue Length 95th (m)	4.0	179.8	m8.5	175.6	25.6	12.8	16.1
Internal Link Dist (m)		241.0		207.8		51.5	194.5
Turn Bay Length (m)							
Base Capacity (vph)	196	1674	190	1809	270	458	299
Starvation Cap Reductn	0	0	0	17	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.85	0.47	0.81	0.26	0.20	0.17

Intersection Summary

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

Lanes, Volumes, Timings 2041 Alternative 4 - Four Lane

2: Niagara Falls Inn Driveway/Belmont Avenue & Regional Road 20

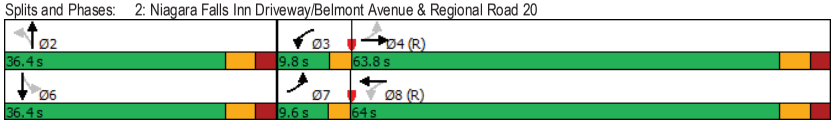
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	7	4		3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	8.0		6.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	9.5	39.9		9.5	39.9		36.1	36.1		36.1	36.1	
Total Split (s)	9.6	63.8		9.8	64.0		36.4	36.4		36.4	36.4	
Total Split (%)	8.7%	58.0%		8.9%	58.2%		33.1%	33.1%		33.1%	33.1%	
Maximum Green (s)	6.6	56.9		6.8	57.1		29.3	29.3		29.3	29.3	
Yellow Time (s)	3.0	4.1		3.0	4.1		4.1	4.1		4.1	4.1	
All-Red Time (s)	0.0	2.8		0.0	2.8		3.0	3.0		3.0	3.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)	3.0	6.9		3.0	6.9		7.1	7.1			7.1	
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	
Recall Mode	None	C-Max		None	C-Max		Max	Max		Max	Max	
Walk Time (s)		12.0			12.0		11.0	11.0		11.0	11.0	
Flash Dont Walk (s)		21.0			21.0		18.0	18.0		18.0	18.0	
Pedestrian Calls (#/hr)		0			0		0	0		0	0	
Act Effct Green (s)	67.7	58.9		69.6	62.9		29.3	29.3			29.3	
Actuated g/C Ratio	0.62	0.54		0.63	0.57		0.27	0.27			0.27	
v/c Ratio	0.09	0.85		0.48	0.80		0.26	0.20			0.17	
Control Delay	8.3	28.5		22.7	16.9		35.0	7.8			24.3	
Queue Delay	0.0	0.0		0.0	0.1		0.0	0.0			0.0	
Total Delay	8.3	28.5		22.7	17.0		35.0	7.8			24.3	
LOS	A	C		C	B		C	A			C	
Approach Delay		28.3			17.3			19.6			24.3	
Approach LOS		C			B			B			C	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 16 (15%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.85
Intersection Signal Delay: 22.5 Intersection LOS: C
Intersection Capacity Utilization 84.4% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 2: Niagara Falls Inn Driveway/Belmont Avenue & Regional Road 20



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	1387	0	1	1323	19	1	0	5	16	0	37
Future Volume (vph)	44	1387	0	1	1323	19	1	0	5	16	0	37
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor					1.00							
Frt					0.998			0.887			0.905	
Flt Protected		0.998						0.992			0.985	
Satd. Flow (prot)	0	3123	0	0	3161	0	0	1540	0	0	1448	0
Flt Permitted		0.771			0.954			0.977			0.932	
Satd. Flow (perm)	0	2413	0	0	3016	0	0	1517	0	0	1370	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					2			35			40	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		231.8			321.7			58.1			98.8	
Travel Time (s)		16.7			23.2			4.2			7.1	
Confl. Peds. (#/hr)	2		11	11		2						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	14%	6%	0%	0%	5%	0%	0%	0%	0%	0%	0%	11%
Adj. Flow (vph)	48	1508	0	1	1438	21	1	0	5	17	0	40
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1556	0	0	1460	0	0	6	0	0	57	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	17	1267	40	83	1308	29	64	1	84	28	4	16
Future Volume (vph)	17	1267	40	83	1308	29	64	1	84	28	4	16
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	6.9		3.0	6.9		7.1	7.1			7.1	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	1.00	1.00		1.00	1.00		1.00	0.85			0.95	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.97	
Satd. Flow (prot)	1662	3126		1662	3160		1330	1471			1287	
Flt Permitted	0.10	1.00		0.09	1.00		0.72	1.00			0.81	
Satd. Flow (perm)	174	3126		153	3160		1013	1471			1078	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	18	1377	43	90	1422	32	70	1	91	30	4	17
RTOR Reduction (vph)	0	2	0	0	1	0	0	67	0	0	12	0
Lane Group Flow (vph)	18	1418	0	90	1453	0	70	25	0	0	39	0
Confl. Peds. (#/hr)			5	5					1	1		
Heavy Vehicles (%)	0%	6%	0%	0%	5%	0%	25%	0%	0%	33%	0%	20%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	60.9	58.3		66.5	61.1		29.3	29.3			29.3	
Effective Green, g (s)	60.9	58.3		66.5	61.1		29.3	29.3			29.3	
Actuated g/C Ratio	0.55	0.53		0.60	0.56		0.27	0.27			0.27	
Clearance Time (s)	3.0	6.9		3.0	6.9		7.1	7.1			7.1	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	131	1656		166	1755		269	391			287	
v/s Ratio Prot	0.00	0.45		c0.03	c0.46			0.02				
v/s Ratio Perm	0.07			0.30			c0.07				0.04	
v/c Ratio	0.14	0.86		0.54	0.83		0.26	0.06			0.13	
Uniform Delay, d1	14.5	22.2		15.7	20.1		31.8	30.1			30.7	
Progression Factor	1.00	1.00		1.86	0.70		1.00	1.00			1.00	
Incremental Delay, d2	0.5	5.9		2.4	3.2		2.3	0.3			1.0	
Delay (s)	14.9	28.2		31.7	17.2		34.1	30.4			31.7	
Level of Service	B	C		C	B		C	C			C	
Approach Delay (s)		28.0			18.1			32.0			31.7	
Approach LOS		C			B			C			C	

Intersection Summary					
HCM 2000 Control Delay	23.5	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.65				
Actuated Cycle Length (s)	110.0	Sum of lost time (s)		17.0	
Intersection Capacity Utilization	84.4%	ICU Level of Service		E	
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	1556	1460	6	57
v/c Ratio	1.03	0.77	0.01	0.15
Control Delay	49.0	18.5	0.0	15.3
Queue Delay	0.0	0.1	0.0	0.0
Total Delay	49.0	18.5	0.0	15.3
Queue Length 50th (m)	~102.6	97.7	0.0	2.9
Queue Length 95th (m)	#237.2	m75.5	0.0	13.4
Internal Link Dist (m)	207.8	297.7	34.1	74.8
Turn Bay Length (m)				
Base Capacity (vph)	1513	1892	412	378
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	21	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	1.03	0.78	0.01	0.15

Intersection Summary

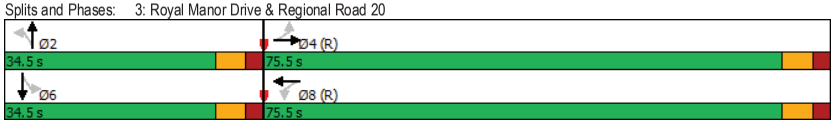
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	24.5	24.5		24.5	24.5		34.5	34.5		34.5	34.5	
Total Split (s)	75.5	75.5		75.5	75.5		34.5	34.5		34.5	34.5	
Total Split (%)	68.6%	68.6%		68.6%	68.6%		31.4%	31.4%		31.4%	31.4%	
Maximum Green (s)	69.0	69.0		69.0	69.0		28.0	28.0		28.0	28.0	
Yellow Time (s)	4.1	4.1		4.1	4.1		4.1	4.1		4.1	4.1	
All-Red Time (s)	2.4	2.4		2.4	2.4		2.4	2.4		2.4	2.4	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.5			6.5			6.5			6.5	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		Max	Max		Max	Max	
Walk Time (s)	7.0	7.0		7.0	7.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		18.0	18.0		18.0	18.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		69.0			69.0			28.0			28.0	
Actuated g/C Ratio		0.63			0.63			0.25			0.25	
v/c Ratio		1.03			0.77			0.01			0.15	
Control Delay		49.0			18.5			0.0			15.3	
Queue Delay		0.0			0.1			0.0			0.0	
Total Delay		49.0			18.5			0.0			15.3	
LOS		D			B			A			B	
Approach Delay		49.0			18.5						15.3	
Approach LOS		D			B						B	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.03
Intersection Signal Delay: 33.9 Intersection LOS: C
Intersection Capacity Utilization 93.7% ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 3: Royal Manor Drive & Regional Road 20



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	1182	53	13	1227	8	13	1	27	1	3	24
Future Volume (vph)	11	1182	53	13	1227	8	13	1	27	1	3	24
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.994			0.999			0.911			0.883	
Flt Protected					0.999			0.984			0.998	
Satd. Flow (prot)	0	3244	0	0	3223	0	0	1569	0	0	1542	0
Flt Permitted					0.999			0.984			0.998	
Satd. Flow (perm)	0	3244	0	0	3223	0	0	1569	0	0	1542	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		321.7			111.0			229.0			196.7	
Travel Time (s)		23.2			8.0			16.5			14.2	
Confl. Peds. (#/hr)	5		12	12		5	2		2	2		2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	0%	0%	3%	0%	0%	0%	0%	0%	0%	0%
Adj. Flow (vph)	12	1285	58	14	1334	9	14	1	29	1	3	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1355	0	0	1357	0	0	44	0	0	30	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			15.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	63.4%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	1387	0	1	1323	19	1	0	5	16	0	37
Future Volume (vph)	44	1387	0	1	1323	19	1	0	5	16	0	37
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)		6.5			6.5			6.5			6.5	
Lane Util. Factor		0.95			0.95			1.00			1.00	
Frpb, ped/bikes		1.00			1.00			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		1.00			1.00			0.89			0.91	
Flt Protected		1.00			1.00			0.99			0.99	
Satd. Flow (prot)		3125			3161			1540			1449	
Flt Permitted		0.77			0.95			0.98			0.93	
Satd. Flow (perm)		2413			3017			1517			1370	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	48	1508	0	1	1438	21	1	0	5	17	0	40
RTOR Reduction (vph)	0	0	0	0	1	0	0	4	0	0	30	0
Lane Group Flow (vph)	0	1556	0	0	1459	0	0	2	0	0	27	0
Confl. Peds. (#/hr)	2		11	11		2						
Heavy Vehicles (%)	14%	6%	0%	0%	5%	0%	0%	0%	0%	0%	0%	11%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		69.0			69.0			28.0			28.0	
Effective Green, g (s)		69.0			69.0			28.0			28.0	
Actuated g/C Ratio		0.63			0.63			0.25			0.25	
Clearance Time (s)		6.5			6.5			6.5			6.5	
Vehicle Extension (s)		3.0			3.0			3.0			3.0	
Lane Grp Cap (vph)		1513			1892			386			348	
v/s Ratio Prot												
v/s Ratio Perm		c0.64			0.48			0.00			c0.02	
v/c Ratio		1.03			0.77			0.00			0.08	
Uniform Delay, d1		20.5			14.8			30.6			31.2	
Progression Factor		1.09			1.19			1.00			1.00	
Incremental Delay, d2		26.0			0.3			0.0			0.4	
Delay (s)		48.2			17.9			30.6			31.6	
Level of Service		D			B			C			C	
Approach Delay (s)		48.2			17.9			30.6			31.6	
Approach LOS		D			B			C			C	

Intersection Summary					
HCM 2000 Control Delay	33.5	HCM 2000 Level of Service	C		
HCM 2000 Volume to Capacity ratio	0.75				
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	13.0		
Intersection Capacity Utilization	93.7%	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)	16	1182	1164	4	3	5
Future Volume (vph)	16	1182	1164	4	3	5
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt					0.916	
Flt Protected		0.999			0.982	
Satd. Flow (prot)	0	3289	3228	0	1574	0
Flt Permitted		0.999			0.982	
Satd. Flow (perm)	0	3289	3228	0	1574	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		111.0	109.8		191.2	
Travel Time (s)		8.0	7.9		13.8	
Confl. Peds. (#/hr)	5			5		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	1%	3%	0%	0%	0%
Adj. Flow (vph)	17	1285	1265	4	3	5
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1302	1269	0	8	0
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	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	1182	53	13	1227	8	13	1	27	1	3	24
Future Volume (Veh/h)	11	1182	53	13	1227	8	13	1	27	1	3	24
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	1285	58	14	1334	9	14	1	29	1	3	26
Pedestrians		2			2			12			5	
Lane Width (m)		3.6			3.6			3.6			3.6	
Walking Speed (m/s)		1.2			1.2			1.2			1.2	
Percent Blockage		0			0			1			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		322			221							
pX, platoon unblocked	0.73			0.67			0.80	0.80	0.67	0.80	0.80	0.73
vC, conflicting volume	1348			1355			2074	2726	686	2070	2750	678
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	752			543			359	1171	0	352	1202	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			98			97	99	96	100	98	97
cM capacity (veh/h)	634			687			418	148	722	426	142	797

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	654	700	681	676	44	30
Volume Left	12	0	14	0	14	1
Volume Right	0	58	0	9	29	26
cSH	634	1700	687	1700	547	534
Volume to Capacity	0.02	0.41	0.02	0.40	0.08	0.06
Queue Length 95th (m)	0.5	0.0	0.5	0.0	2.1	1.4
Control Delay (s)	0.5	0.0	0.6	0.0	12.2	12.1
Lane LOS	A		A		B	B
Approach Delay (s)	0.3		0.3		12.2	12.1
Approach LOS					B	B

Intersection Summary				
Average Delay	0.6			
Intersection Capacity Utilization	63.4%	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)	214	796	277	169	917	173	313	542	134	158	439	141
Future Volume (vph)	214	796	277	169	917	173	313	542	134	158	439	141
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	40.0		0.0	45.0		0.0	50.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99			1.00		1.00	1.00			1.00	
Frt		0.961			0.976			0.970			0.964	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1568	2967	0	1630	3027	0	1630	1638	0	1539	1631	0
Flt Permitted	0.118			0.119			0.095			0.101		
Satd. Flow (perm)	195	2967	0	204	3027	0	163	1638	0	164	1631	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		46			20			13			16	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		109.8			114.2			162.1			187.2	
Travel Time (s)		7.9			8.2			11.7			13.5	
Confl. Peds. (#/hr)	5		15	15		5	5		8	8		5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	7%	4%	2%	7%	5%	2%	3%	4%	8%	3%	3%
Adj. Flow (vph)	233	865	301	184	997	188	340	589	146	172	477	153
Shared Lane Traffic (%)												
Lane Group Flow (vph)	233	1166	0	184	1185	0	340	735	0	172	630	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	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	16	1182	1164	4	3	5
Future Volume (Veh/h)	16	1182	1164	4	3	5
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)	17	1285	1265	4	3	5
Pedestrians					5	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			110			
pX, platoon unblocked	0.72				0.72	0.72
vC, conflicting volume	1274				1948	640
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	592				1533	0
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				96	99
cM capacity (veh/h)	709				76	779

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	445	857	843	426	8
Volume Left	17	0	0	0	3
Volume Right	0	0	0	4	5
cSH	709	1700	1700	1700	175
Volume to Capacity	0.02	0.50	0.50	0.25	0.05
Queue Length 95th (m)	0.6	0.0	0.0	0.0	1.1
Control Delay (s)	0.7	0.0	0.0	0.0	26.6
Lane LOS	A				D
Approach Delay (s)	0.2		0.0		26.6
Approach LOS					D

Intersection Summary			
Average Delay	0.2		
Intersection Capacity Utilization	57.7%	ICU Level of Service	B
Analysis Period (min)	15		

Queues
6: Dorchester Road & Regional Road 20

2041 Alternative 4 - Four Lane
PM Peak Hour

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	233	1166	184	1185	340	735	172	630
v/c Ratio	1.29	1.23	1.03	1.27	1.58	1.16	1.02	1.06
Control Delay	181.5	151.6	100.8	162.1	306.4	121.2	99.6	87.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	181.5	151.6	100.8	162.1	306.4	121.2	99.6	87.8
Queue Length 50th (m)	~53.5	~170.5	~27.6	~177.2	~94.1	~196.1	~24.7	~154.3
Queue Length 95th (m)	m#57.0	m#168.1	#74.2	#221.0	#153.1	#271.0	#70.7	#225.8
Internal Link Dist (m)		85.8		90.2		138.1		163.2
Turn Bay Length (m)	40.0		45.0		50.0		30.0	
Base Capacity (vph)	180	948	179	935	215	633	169	595
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	1.29	1.23	1.03	1.27	1.58	1.16	1.02	1.06

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.

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

Lanes, Volumes, Timings
6: Dorchester Road & Regional Road 20

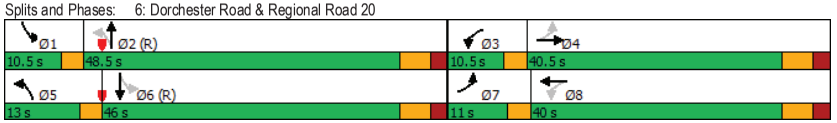
2041 Alternative 4 - Four Lane
PM Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0		3.0	8.0		6.0	8.0	
Minimum Split (s)	10.5	36.5		10.5	36.5		9.5	40.5		10.5	40.5	
Total Split (s)	11.0	40.5		10.5	40.0		13.0	48.5		10.5	46.0	
Total Split (%)	10.0%	36.8%		9.5%	36.4%		11.8%	44.1%		9.5%	41.8%	
Maximum Green (s)	8.0	34.0		7.5	33.5		10.0	42.0		7.5	39.5	
Yellow Time (s)	3.0	4.1		3.0	4.1		3.0	4.1		3.0	4.1	
All-Red Time (s)	0.0	2.4		0.0	2.4		0.0	2.4		0.0	2.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	3.0	6.5		3.0	6.5		3.0	6.5		3.0	6.5	
Lead/Lag	Lead	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	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Walk Time (s)		12.0			12.0			15.0			15.0	
Flash Dont Walk (s)		13.0			13.0			19.0			19.0	
Pedestrian Calls (#/hr)		0			0			0			0	
Act Effct Green (s)	45.5	34.0		44.5	33.5		55.5	42.0		50.5	39.5	
Actuated g/C Ratio	0.41	0.31		0.40	0.30		0.50	0.38		0.46	0.36	
v/c Ratio	1.29	1.23		1.03	1.27		1.58	1.16		1.02	1.06	
Control Delay	181.5	151.6		100.8	162.1		306.4	121.2		99.6	87.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	181.5	151.6		100.8	162.1		306.4	121.2		99.6	87.8	
LOS	F	F		F	F		F	F		F	F	
Approach Delay		156.6			153.9			179.8			90.3	
Approach LOS		F			F			F			F	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 60 (55%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.58
Intersection Signal Delay: 149.7 Intersection LOS: F
Intersection Capacity Utilization 117.3% ICU Level of Service H
Analysis Period (min) 15

Splits and Phases: 6: Dorchester Road & Regional Road 20



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	13	1037	1219	15	1	4
Future Volume (vph)	13	1037	1219	15	1	4
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.998		0.892	
Flt Protected		0.999			0.990	
Satd. Flow (prot)	0	3257	3242	0	1545	0
Flt Permitted		0.999			0.990	
Satd. Flow (perm)	0	3257	3242	0	1545	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		114.2	50.1		180.5	
Travel Time (s)		8.2	3.6		13.0	
Confl. Peds. (#/hr)	7			7		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	33%	0%	0%
Adj. Flow (vph)	14	1127	1325	16	1	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1141	1341	0	5	0
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	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	51.1%	ICU Level of Service A	
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	214	796	277	169	917	173	313	542	134	158	439	141
Future Volume (vph)	214	796	277	169	917	173	313	542	134	158	439	141
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	6.5		3.0	6.5		3.0	6.5		3.0	6.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	
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	0.96		1.00	0.98		1.00	0.97		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1568	2968		1630	3028		1630	1639		1539	1630	
Flt Permitted	0.12	1.00		0.12	1.00		0.10	1.00		0.10	1.00	
Satd. Flow (perm)	194	2968		205	3028		163	1639		164	1630	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	233	865	301	184	997	188	340	589	146	172	477	153
RTOR Reduction (vph)	0	32	0	0	14	0	0	8	0	0	10	0
Lane Group Flow (vph)	233	1134	0	184	1171	0	340	727	0	172	620	0
Confl. Peds. (#/hr)	5		15	15		5	5		8	8		5
Heavy Vehicles (%)	6%	7%	4%	2%	7%	5%	2%	3%	4%	8%	3%	3%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	42.0	34.0		41.0	33.5		52.0	42.0		47.0	39.5	
Effective Green, g (s)	42.0	34.0		41.0	33.5		52.0	42.0		47.0	39.5	
Actuated g/C Ratio	0.38	0.31		0.37	0.30		0.47	0.38		0.43	0.36	
Clearance Time (s)	3.0	6.5		3.0	6.5		3.0	6.5		3.0	6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	174	917		173	922		210	625		163	585	
v/s Ratio Prot	c0.10	0.38		0.07	0.39		c0.15	0.44		0.07	0.38	
v/s Ratio Perm	c0.41			0.32			c0.62			0.38		
v/c Ratio	1.34	1.24		1.06	1.27		1.62	1.16		1.06	1.06	
Uniform Delay, d1	29.4	38.0		30.4	38.2		30.1	34.0		26.5	35.2	
Progression Factor	1.83	1.47		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	167.4	110.5		86.3	130.1		299.4	90.1		85.9	53.9	
Delay (s)	221.2	166.5		116.7	168.4		329.5	124.1		112.4	89.2	
Level of Service	F	F		F	F		F	F		F	F	
Approach Delay (s)		175.6			161.4			189.1			94.2	
Approach LOS		F			F			F			F	

Intersection Summary					
HCM 2000 Control Delay	160.5	HCM 2000 Level of Service	F		
HCM 2000 Volume to Capacity ratio	1.54				
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	19.0		
Intersection Capacity Utilization	117.3%	ICU Level of Service	H		
Analysis Period (min)	15				

c Critical Lane Group

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1077	17	24	1231	5	24
Future Volume (vph)	1077	17	24	1231	5	24
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt	0.998				0.887	
Flt Protected				0.999	0.992	
Satd. Flow (prot)	3254	0	0	3227	1540	0
Flt Permitted				0.999	0.992	
Satd. Flow (perm)	3254	0	0	3227	1540	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	50.1			206.3	147.1	
Travel Time (s)	3.6			14.9	10.6	
Confl. Peds. (#/hr)		12	12			1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	0%	0%	3%	0%	0%
Adj. Flow (vph)	1171	18	26	1338	5	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1189	0	0	1364	31	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	1.11	1.11	1.11	1.11	1.11	1.11
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	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	13	1037	1219	15	1	4
Future Volume (Veh/h)	13	1037	1219	15	1	4
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)	14	1127	1325	16	1	4
Pedestrians					7	
Lane Width (m)					3.6	
Walking Speed (m/s)					1.2	
Percent Blockage					1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)		114				
pX, platoon unblocked					0.72	
vC, conflicting volume	1348				1932	678
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1348				1507	678
tC, single (s)	4.1				6.8	6.9
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				99	99
cM capacity (veh/h)	514				79	397

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	390	751	883	458	5
Volume Left	14	0	0	0	1
Volume Right	0	0	0	16	4
cSH	514	1700	1700	1700	220
Volume to Capacity	0.03	0.44	0.52	0.27	0.02
Queue Length 95th (m)	0.7	0.0	0.0	0.0	0.6
Control Delay (s)	0.8	0.0	0.0	0.0	21.8
Lane LOS	A				C
Approach Delay (s)	0.3		0.0		21.8
Approach LOS					C

Intersection Summary				
Average Delay		0.2		
Intersection Capacity Utilization		51.1%	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)	23	1051	16	20	1211	12	15	0	48	13	5	35
Future Volume (vph)	23	1051	16	20	1211	12	15	0	48	13	5	35
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.998			0.999			0.897			0.910	
Flt Protected		0.999			0.999			0.988			0.988	
Satd. Flow (prot)	0	3249	0	0	3245	0	0	1492	0	0	1457	0
Flt Permitted		0.999			0.999			0.988			0.988	
Satd. Flow (perm)	0	3249	0	0	3245	0	0	1492	0	0	1457	0
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		206.3			78.8			169.0			191.8	
Travel Time (s)		14.9			5.7			12.2			13.8	
Confl. Peds. (#/hr)	3		12	12		3						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	8%	4%	2%	25%	7%	0%	3%	0%	0%	12%
Adj. Flow (vph)	25	1142	17	22	1316	13	16	0	52	14	5	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1184	0	0	1351	0	0	68	0	0	57	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			0.0			0.0	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		4.8			4.8			4.8			4.8	
Two way Left Turn Lane												
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	64.3%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	1077	17	24	1231	5	24
Future Volume (Veh/h)	1077	17	24	1231	5	24
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)	1171	18	26	1338	5	26
Pedestrians				1	12	
Lane Width (m)				3.6	3.6	
Walking Speed (m/s)				1.2	1.2	
Percent Blockage				0	1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)	164					
pX, platoon unblocked			0.73		0.73	0.73
vC, conflicting volume			1201		1913	608
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			523		1503	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		94	97
cM capacity (veh/h)			758		79	784

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	781	408	472	892	31
Volume Left	0	0	26	0	5
Volume Right	0	18	0	0	26
cSH	1700	1700	758	1700	322
Volume to Capacity	0.46	0.24	0.03	0.52	0.10
Queue Length 95th (m)	0.0	0.0	0.9	0.0	2.5
Control Delay (s)	0.0	0.0	1.0	0.0	17.3
Lane LOS			A		C
Approach Delay (s)	0.0		0.3		17.3
Approach LOS					C

Intersection Summary				
Average Delay	0.4			
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)	52	1038	1184	8	5	56
Future Volume (vph)	52	1038	1184	8	5	56
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.999		0.875	
Flt Protected		0.998			0.996	
Satd. Flow (prot)	0	3247	3251	0	1364	0
Flt Permitted		0.998			0.996	
Satd. Flow (perm)	0	3247	3251	0	1364	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		78.8	68.0		182.2	
Travel Time (s)		5.7	4.9		13.1	
Confl. Peds. (#/hr)	3			3		2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	2%	2%	25%	22%	11%
Adj. Flow (vph)	57	1128	1287	9	5	61
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1185	1296	0	66	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(m)		0.0	0.0		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	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	83.4%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	23	1051	16	20	1211	12	15	0	48	13	5	35
Future Volume (Veh/h)	23	1051	16	20	1211	12	15	0	48	13	5	35
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	25	1142	17	22	1316	13	16	0	52	14	5	38
Pedestrians								12			3	
Lane Width (m)								3.6			3.6	
Walking Speed (m/s)								1.2			1.2	
Percent Blockage								1			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)		371			302							
pX, platoon unblocked	0.74			0.77			0.85	0.85	0.77	0.85	0.85	0.74
vC, conflicting volume	1332			1171			1955	2588	592	2042	2590	668
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	744			634			577	1320	0	680	1322	0
tC, single (s)	4.1			4.2			7.6	6.5	7.0	7.5	6.5	7.1
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	3.4
p0 queue free %	96			97			94	100	94	95	96	95
cM capacity (veh/h)	644			713			284	124	827	255	124	776

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	596	588	680	671	68	57
Volume Left	25	0	22	0	16	14
Volume Right	0	17	0	13	52	38
cSH	644	1700	713	1700	571	395
Volume to Capacity	0.04	0.35	0.03	0.39	0.12	0.14
Queue Length 95th (m)	1.0	0.0	0.8	0.0	3.2	4.0
Control Delay (s)	1.1	0.0	0.8	0.0	12.2	15.6
Lane LOS	A		A		B	C
Approach Delay (s)	0.5		0.4		12.2	15.6
Approach LOS					B	C

Intersection Summary				
Average Delay	1.1			
Intersection Capacity Utilization	64.3%	ICU Level of Service	C	
Analysis Period (min)	15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	994	77	25	1150	32	73
Future Volume (vph)	994	77	25	1150	32	73
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt	0.989				0.906	
Flt Protected				0.999	0.985	
Satd. Flow (prot)	3213	0	0	3224	1497	0
Flt Permitted				0.999	0.985	
Satd. Flow (perm)	3213	0	0	3224	1497	0
Link Speed (k/h)	50			50	50	
Link Distance (m)	68.0			55.0	165.0	
Travel Time (s)	4.9			4.0	11.9	
Confl. Peds. (#/hr)		11	11		1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	2%	7%	4%	3%	5%	4%
Adj. Flow (vph)	1080	84	27	1250	35	79
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1164	0	0	1277	114	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	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)		15	25		25	15
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	67.4%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	52	1038	1184	8	5	56
Future Volume (Veh/h)	52	1038	1184	8	5	56
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)	57	1128	1287	9	5	61
Pedestrians		2			3	
Lane Width (m)		3.6			3.6	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			0	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			223			
pX, platoon unblocked	0.73				0.73	0.73
vC, conflicting volume	1299				1972	653
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	661				1587	0
tC, single (s)	4.2				7.2	7.1
tC, 2 stage (s)						
tF (s)	2.3				3.7	3.4
p0 queue free %	91				91	92
cM capacity (veh/h)	650				54	765

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	433	752	858	438	66
Volume Left	57	0	0	0	5
Volume Right	0	0	0	9	61
cSH	650	1700	1700	1700	381
Volume to Capacity	0.09	0.44	0.50	0.26	0.17
Queue Length 95th (m)	2.3	0.0	0.0	0.0	4.9
Control Delay (s)	2.5	0.0	0.0	0.0	16.4
Lane LOS	A				C
Approach Delay (s)	0.9		0.0		16.4
Approach LOS					C

Intersection Summary				
Average Delay		0.9		
Intersection Capacity Utilization		83.4%	ICU Level of Service	E
Analysis Period (min)		15		

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	55	1037	1156	41	13	27
Future Volume (vph)	55	1037	1156	41	13	27
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750
Lane Util. Factor	0.95	0.95	0.95	0.95	1.00	1.00
Ped Bike Factor						
Frt			0.995		0.909	
Flt Protected		0.997			0.984	
Satd. Flow (prot)	0	3253	3246	0	1466	0
Flt Permitted		0.997			0.984	
Satd. Flow (perm)	0	3253	3246	0	1466	0
Link Speed (k/h)		50	50		50	
Link Distance (m)		55.0	100.4		189.4	
Travel Time (s)		4.0	7.2		13.6	
Confl. Peds. (#/hr)	8			8		1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	2%	2%	0%	0%	10%
Adj. Flow (vph)	60	1127	1257	45	14	29
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1187	1302	0	43	0
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	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25			15	25	15
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization	82.7%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	994	77	25	1150	32	73
Future Volume (Veh/h)	994	77	25	1150	32	73
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)	1080	84	27	1250	35	79
Pedestrians	1				11	
Lane Width (m)	3.6				3.6	
Walking Speed (m/s)	1.2				1.2	
Percent Blockage	0				1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (m)				155		
pX, platoon unblocked					0.72	
vC, conflicting volume			1175		1813	593
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			1175		1341	593
tC, single (s)			4.2		6.9	7.0
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			95		63	82
cM capacity (veh/h)			574		94	440

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1
Volume Total	720	444	444	833	114
Volume Left	0	0	27	0	35
Volume Right	0	84	0	0	79
cSH	1700	1700	574	1700	207
Volume to Capacity	0.42	0.26	0.05	0.49	0.55
Queue Length 95th (m)	0.0	0.0	1.2	0.0	23.5
Control Delay (s)	0.0	0.0	1.4	0.0	41.8
Lane LOS			A		E
Approach Delay (s)	0.0		0.5		41.8
Approach LOS					E

Intersection Summary				
Average Delay	2.1			
Intersection Capacity Utilization	67.4%	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)	24	896	43	89	1138	20	104	21	71	49	53	36
Future Volume (vph)	24	896	43	89	1138	20	104	21	71	49	53	36
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	35.0		0.0	35.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	1		0	1		0	1		0	0		0
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00	1.00		1.00	0.99			0.99	
Frt		0.993			0.997			0.884			0.965	
Flt Protected	0.950			0.950			0.950				0.983	
Satd. Flow (prot)	1662	3175	0	1662	3158	0	1662	1525	0	0	1584	0
Flt Permitted	0.145			0.188			0.645				0.858	
Satd. Flow (perm)	253	3175	0	328	3158	0	1127	1525	0	0	1380	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			2			77			16	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		100.4			342.8			50.5			193.9	
Travel Time (s)		7.2			24.7			3.6			14.0	
Confl. Peds. (#/hr)	9		8	8		9	2		6	6		2
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	0%	4%	0%	0%	5%	0%	0%	0%	0%	0%	0%	17%
Adj. Flow (vph)	26	974	47	97	1237	22	113	23	77	53	58	39
Shared Lane Traffic (%)												
Lane Group Flow (vph)	26	1021	0	97	1259	0	113	100	0	0	150	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	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	55	1037	1156	41	13	27
Future Volume (Veh/h)	55	1037	1156	41	13	27
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)	60	1127	1257	45	14	29
Pedestrians		1			8	
Lane Width (m)		3.6			3.6	
Walking Speed (m/s)		1.2			1.2	
Percent Blockage		0			1	
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (m)			100			
pX, platoon unblocked	0.71				0.71	0.71
vC, conflicting volume	1310				1971	660
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	604				1541	0
tC, single (s)	4.1				6.8	7.1
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.4
p0 queue free %	91				80	96
cM capacity (veh/h)	689				69	741

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1
Volume Total	436	751	838	464	43
Volume Left	60	0	0	0	14
Volume Right	0	0	0	45	29
cSH	689	1700	1700	1700	178
Volume to Capacity	0.09	0.44	0.49	0.27	0.24
Queue Length 95th (m)	2.3	0.0	0.0	0.0	7.3
Control Delay (s)	2.5	0.0	0.0	0.0	31.6
Lane LOS	A				D
Approach Delay (s)	0.9		0.0		31.6
Approach LOS					D

Intersection Summary				
Average Delay	1.0			
Intersection Capacity Utilization	82.7%	ICU Level of Service	E	
Analysis Period (min)	15			

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBT
Lane Group Flow (vph)	26	1021	97	1259	113	100	150
v/c Ratio	0.11	0.63	0.33	0.72	0.36	0.21	0.38
Control Delay	8.5	21.7	10.8	22.2	36.0	11.4	31.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.5	21.7	10.8	22.2	36.0	11.4	31.9
Queue Length 50th (m)	2.0	84.6	7.8	114.0	20.5	3.8	24.3
Queue Length 95th (m)	5.3	108.0	14.4	145.8	37.8	17.1	43.8
Internal Link Dist (m)		76.4		318.8		26.5	169.9
Turn Bay Length (m)	35.0		35.0				
Base Capacity (vph)	251	1619	305	1745	312	478	394
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.63	0.32	0.72	0.36	0.21	0.38

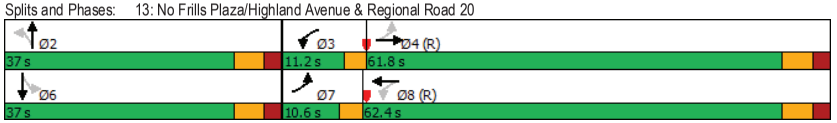
Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		3	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	6.0	8.0		6.0	8.0		8.0	8.0		8.0	8.0	
Minimum Split (s)	10.5	35.5		10.5	35.5		36.5	36.5		36.5	36.5	
Total Split (s)	10.6	61.8		11.2	62.4		37.0	37.0		37.0	37.0	
Total Split (%)	9.6%	56.2%		10.2%	56.7%		33.6%	33.6%		33.6%	33.6%	
Maximum Green (s)	7.6	55.3		8.2	55.9		30.5	30.5		30.5	30.5	
Yellow Time (s)	3.0	4.1		3.0	4.1		4.1	4.1		4.1	4.1	
All-Red Time (s)	0.0	2.4		0.0	2.4		2.4	2.4		2.4	2.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Lost Time (s)	3.0	6.5		3.0	6.5		6.5	6.5			6.5	
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	
Recall Mode	None	C-Max		None	C-Max		Max	Max		Max	Max	
Walk Time (s)		11.0			11.0		11.0	11.0		11.0	11.0	
Flash Dont Walk (s)		18.0			18.0		19.0	19.0		19.0	19.0	
Pedestrian Calls (#/hr)		0			0		0	0		0	0	
Act Effct Green (s)	65.8	56.0		69.1	60.8		30.5	30.5			30.5	
Actuated g/C Ratio	0.60	0.51		0.63	0.55		0.28	0.28			0.28	
v/c Ratio	0.11	0.63		0.33	0.72		0.36	0.21			0.38	
Control Delay	8.5	21.7		10.8	22.2		36.0	11.4			31.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0			0.0	
Total Delay	8.5	21.7		10.8	22.2		36.0	11.4			31.9	
LOS	A	C		B	C		D	B			C	
Approach Delay		21.4			21.3			24.5			31.9	
Approach LOS		C			C			C			C	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 6 (5%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.72
Intersection Signal Delay: 22.2 Intersection LOS: C
Intersection Capacity Utilization 79.0% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 13: No Frills Plaza/Highland Avenue & Regional Road 20



Intersection: 1: Montrose Road (RR98) & Regional Road 20

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	T	R	L	TR	L	T	R
Maximum Queue (m)	62.4	253.8	252.2	42.5	153.8	154.8	28.1	52.4	341.0	87.4	325.8	77.5
Average Queue (m)	53.9	236.5	239.5	37.0	90.4	86.6	4.2	36.1	324.1	72.0	233.8	69.4
95th Queue (m)	76.7	277.7	270.9	52.2	140.0	134.5	19.3	68.1	371.7	106.8	400.8	96.1
Link Distance (m)		237.7	237.7		237.4	237.4	237.4		325.2		309.7	
Upstream Blk Time (%)		53	63						80		18	
Queuing Penalty (veh)		0	0						0		0	
Storage Bay Dist (m)	55.0			35.0				45.0		80.0		70.0
Storage Blk Time (%)	30	20		29	37			0	73	10	15	11
Queuing Penalty (veh)	114	55		118	72			2	79	89	114	75

Intersection: 2: Niagara Falls Inn Driveway/Belmont Avenue & Regional Road 20

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	LTR
Maximum Queue (m)	44.7	157.5	162.2	25.8	50.0	45.8	41.7	26.9	29.2
Average Queue (m)	4.6	76.5	79.6	12.4	26.9	29.4	16.0	12.0	10.8
95th Queue (m)	33.8	150.6	152.3	22.2	41.9	43.5	34.0	23.6	23.2
Link Distance (m)	237.4	237.4	237.4	212.9	212.9	212.9	59.8	59.8	199.2
Upstream Blk Time (%)							0		
Queuing Penalty (veh)							0		
Storage Bay Dist (m)									
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 3: Royal Manor Drive & Regional Road 20

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	TR	LT	TR	LTR	LTR
Maximum Queue (m)	214.0	214.1	125.0	145.6	8.8	25.9
Average Queue (m)	121.4	124.0	71.5	97.8	1.2	7.8
95th Queue (m)	234.1	233.1	112.3	131.4	6.0	19.4
Link Distance (m)	212.9	212.9	287.9	287.9	46.0	82.4
Upstream Blk Time (%)	2	2				
Queuing Penalty (veh)	13	12				
Storage Bay Dist (m)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	896	43	89	1138	20	104	21	71	49	53	36
Future Volume (vph)	24	896	43	89	1138	20	104	21	71	49	53	36
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	6.5		3.0	6.5		6.5	6.5			6.5	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00			1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.88			0.96	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00			0.98	
Satd. Flow (prot)	1662	3176		1662	3159		1660	1526			1580	
Flt Permitted	0.15	1.00		0.19	1.00		0.64	1.00			0.86	
Satd. Flow (perm)	254	3176		329	3159		1127	1526			1379	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	26	974	47	97	1237	22	113	23	77	53	58	39
RTOR Reduction (vph)	0	3	0	0	1	0	0	56	0	0	12	0
Lane Group Flow (vph)	26	1018	0	97	1258	0	113	44	0	0	138	0
Confl. Peds. (#/hr)	9		8	8		9	2		6	6		2
Heavy Vehicles (%)	0%	4%	0%	0%	5%	0%	0%	0%	0%	0%	0%	17%
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	59.9	56.0		66.5	59.6		30.5	30.5			30.5	
Effective Green, g (s)	59.9	56.0		66.5	59.6		30.5	30.5			30.5	
Actuated g/C Ratio	0.54	0.51		0.60	0.54		0.28	0.28			0.28	
Clearance Time (s)	3.0	6.5		3.0	6.5		6.5	6.5			6.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0			3.0	
Lane Grp Cap (vph)	188	1616		289	1711		312	423			382	
v/s Ratio Prot	0.00	0.32		c0.02	c0.40			0.03				
v/s Ratio Perm	0.07			0.18			0.10				c0.10	
v/c Ratio	0.14	0.63		0.34	0.74		0.36	0.10			0.36	
Uniform Delay, d1	13.4	19.5		11.3	19.2		31.9	29.6			31.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00			1.00	
Incremental Delay, d2	0.3	1.9		0.7	2.9		3.2	0.5			2.7	
Delay (s)	13.7	21.4		12.0	22.0		35.2	30.1			34.6	
Level of Service	B	C		B	C		D	C			C	
Approach Delay (s)		21.2			21.3			32.8			34.6	
Approach LOS		C			C			C			C	

Intersection Summary					
HCM 2000 Control Delay	22.9	HCM 2000 Level of Service		C	
HCM 2000 Volume to Capacity ratio	0.60				
Actuated Cycle Length (s)	110.0	Sum of lost time (s)		16.0	
Intersection Capacity Utilization	79.0%	ICU Level of Service		D	
Analysis Period (min)	15				

c Critical Lane Group

Intersection: 7: Regional Road 20 & Depew Avenue

Movement	EB	EB	WB	WB	SB
Directions Served	LT	T	T	TR	LR
Maximum Queue (m)	35.5	32.5	44.0	45.8	28.3
Average Queue (m)	5.2	1.6	36.2	36.6	10.4
95th Queue (m)	21.9	12.8	40.2	41.7	27.9
Link Distance (m)	97.0	97.0	31.3	31.3	166.6
Upstream Blk Time (%)			53	56	
Queuing Penalty (veh)			325	349	
Storage Bay Dist (m)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 8: Corwin Avenue & Regional Road 20

Movement	EB	EB	WB	WB	NB
Directions Served	T	TR	LT	T	LR
Maximum Queue (m)	9.3	5.5	203.9	202.4	55.5
Average Queue (m)	0.4	0.3	181.8	182.9	19.1
95th Queue (m)	3.8	3.6	236.2	236.1	57.0
Link Distance (m)	31.3	31.3	191.0	191.0	135.0
Upstream Blk Time (%)			33	37	
Queuing Penalty (veh)			206	231	
Storage Bay Dist (m)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 9: Calton Avenue/Prince Edward Avenue & Regional Road 20

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	TR	LT	TR	LTR	LTR
Maximum Queue (m)	39.9	23.6	76.3	77.4	152.7	177.2
Average Queue (m)	6.7	1.6	54.5	54.3	84.7	98.5
95th Queue (m)	25.1	13.5	94.6	98.2	190.4	214.4
Link Distance (m)	191.0	191.0	63.3	63.3	156.9	179.7
Upstream Blk Time (%)			27	31	35	28
Queuing Penalty (veh)			170	195	0	0
Storage Bay Dist (m)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 4: Brookfield Avenue & Regional Road 20

Movement	EB	EB	WB	WB	NB	SB
Directions Served	LT	TR	LT	TR	LTR	LTR
Maximum Queue (m)	273.3	275.6	28.7	33.8	134.1	25.7
Average Queue (m)	123.1	125.5	4.7	3.1	53.4	7.6
95th Queue (m)	304.4	309.0	19.0	17.0	145.3	18.8
Link Distance (m)	287.9	287.9	96.2	96.2	217.0	184.0
Upstream Blk Time (%)	2	2			3	
Queuing Penalty (veh)	11	15			0	
Storage Bay Dist (m)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Intersection: 5: Regional Road 20 & Mouland Avenue

Movement	EB	EB	SB
Directions Served	LT	T	LR
Maximum Queue (m)	105.3	112.1	40.7
Average Queue (m)	90.1	93.6	12.3
95th Queue (m)	128.2	132.9	41.5
Link Distance (m)	96.2	96.2	177.3
Upstream Blk Time (%)	36	36	
Queuing Penalty (veh)	220	221	
Storage Bay Dist (m)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 6: Dorchester Road & Regional Road 20

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	L	TR
Maximum Queue (m)	47.5	101.9	108.7	52.4	109.4	109.9	57.4	164.4	37.4	189.8
Average Queue (m)	46.5	93.7	95.6	43.8	100.2	100.6	55.1	154.2	31.0	178.4
95th Queue (m)	53.0	98.9	105.2	65.1	104.9	106.3	67.7	159.5	47.0	197.7
Link Distance (m)		89.1	89.1		97.0	97.0		148.1		173.2
Upstream Blk Time (%)		60	44		52	54		70		69
Queuing Penalty (veh)		359	262		318	328		0		0
Storage Bay Dist (m)	40.0			45.0			50.0		30.0	
Storage Blk Time (%)	78	28		27	57		47	35	16	61
Queuing Penalty (veh)	311	60		122	97		319	108	94	97

Intersection: 10: Regional Road 20 & Byng Avenue

Movement	EB	EB	WB	WB	SB
Directions Served	LT	T	T	TR	LR
Maximum Queue (m)	29.8	29.9	61.6	59.2	142.5
Average Queue (m)	8.6	1.4	35.7	36.8	69.8
95th Queue (m)	23.7	11.6	74.0	73.7	173.7
Link Distance (m)	63.3	63.3	48.2	48.2	170.0
Upstream Blk Time (%)			22	26	18
Queuing Penalty (veh)			132	154	0
Storage Bay Dist (m)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 11: Franklin Avenue & Regional Road 20

Movement	EB	EB	WB	WB	NB
Directions Served	T	TR	LT	T	LR
Maximum Queue (m)	12.6	5.4	52.5	53.5	140.0
Average Queue (m)	0.4	0.2	29.7	29.8	53.5
95th Queue (m)	4.6	2.6	60.4	64.0	142.6
Link Distance (m)	48.2	48.2	41.1	41.1	152.5
Upstream Blk Time (%)			18	21	12
Queuing Penalty (veh)			107	125	0
Storage Bay Dist (m)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 12: Regional Road 20 & Glenholme Avenue

Movement	EB	EB	WB	WB	SB
Directions Served	LT	T	T	TR	LR
Maximum Queue (m)	33.6	25.3	76.1	73.1	44.5
Average Queue (m)	9.8	2.1	37.8	36.5	13.1
95th Queue (m)	25.5	13.6	98.9	97.7	36.6
Link Distance (m)	41.1	41.1	80.2	80.2	175.6
Upstream Blk Time (%)	0	0	7	7	
Queuing Penalty (veh)	0	0	43	45	
Storage Bay Dist (m)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 13: No Frills Plaza/Highland Avenue & Regional Road 20

Movement	EB	EB	EB	WB	WB	WB	NB	NB	SB
Directions Served	L	T	TR	L	T	TR	L	TR	LTR
Maximum Queue (m)	32.0	79.2	81.6	42.4	168.7	163.0	38.6	30.9	50.5
Average Queue (m)	6.9	51.1	56.4	19.0	96.2	89.1	19.2	12.6	25.2
95th Queue (m)	24.6	75.4	79.4	44.2	217.1	204.0	35.4	24.4	44.4
Link Distance (m)		80.2	80.2		332.3	332.3	36.4	36.4	180.0
Upstream Blk Time (%)		0	1		1	0	2	0	
Queuing Penalty (veh)		1	4		0	0	0	0	
Storage Bay Dist (m)	35.0			35.0					
Storage Blk Time (%)		17		0	31				
Queuing Penalty (veh)		4		0	27				

Network Summary

Network wide Queuing Penalty: 5803

Appendix E

2041 Sensitivity Traffic Operations

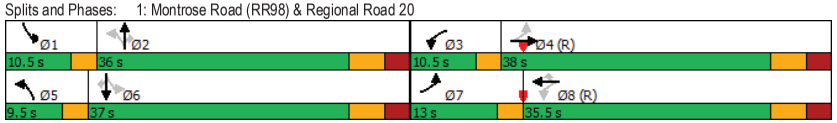
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	346	551	37	80	351	105	53	334	128	129	185	197
Future Volume (vph)	346	551	37	80	351	105	53	334	128	129	185	197
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	55.0		0.0	35.0		0.0	45.0		0.0	80.0		70.0
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	0.99	1.00		0.99		0.97	0.98		0.97	0.99		0.96
Frt		0.991				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1554	3148	0	1511	3137	1417	1583	1683	1488	1599	1683	1390
Flt Permitted	0.450			0.358			0.632			0.345		
Satd. Flow (perm)	729	3148	0	566	3137	1376	1032	1683	1450	577	1683	1337
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8				115			139			214
Link Speed (k/h)		60			50			50			50	
Link Distance (m)		251.8			265.0			342.9			323.7	
Travel Time (s)		15.1			19.1			24.7			23.3	
Confl. Peds. (#/hr)	17		10	10		17	27		14	14		27
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	7%	4%	11%	10%	6%	5%	5%	4%	0%	4%	4%	7%
Adj. Flow (vph)	376	599	40	87	382	114	58	363	139	140	201	214
Shared Lane Traffic (%)												
Lane Group Flow (vph)	376	639	0	87	382	114	58	363	139	140	201	214
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					Yes							
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		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	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		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	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	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	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		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Detector Phase	7	4		3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0	10.0	3.0	8.0	8.0	6.0	8.0	8.0
Minimum Split (s)	10.5	35.0		10.5	35.0	35.0	9.5	36.0	36.0	10.5	36.0	36.0
Total Split (s)	13.0	38.0		10.5	35.5	35.5	9.5	36.0	36.0	10.5	37.0	37.0
Total Split (%)	13.7%	40.0%		11.1%	37.4%	37.4%	10.0%	37.9%	37.9%	11.1%	38.9%	38.9%
Maximum Green (s)	10.0	31.0		7.5	28.5	28.5	6.5	29.0	29.0	7.5	30.0	30.0
Yellow Time (s)	3.0	4.1		3.0	4.1	4.1	3.0	4.1	4.1	3.0	4.1	4.1
All-Red Time (s)	0.0	2.9		0.0	2.9	2.9	0.0	2.9	2.9	0.0	2.9	2.9
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.0		3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	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	3.0	3.0
Recall Mode	None	C-Max		None	C-Max	C-Max	None	Max	Max	None	Max	Max
Walk Time (s)		10.0			10.0	10.0		11.0	11.0		11.0	11.0
Flash Dont Walk (s)		18.0			18.0	18.0		18.0	18.0		18.0	18.0
Pedestrian Calls (#/hr)		0			0	0		0	0		0	0
Act Effct Green (s)	45.1	33.1		39.7	28.5	28.5	39.4	29.1	29.1	41.9	31.9	31.9
Actuated g/C Ratio	0.47	0.35		0.42	0.30	0.30	0.41	0.31	0.31	0.44	0.34	0.34
v/c Ratio	0.87	0.58		0.28	0.41	0.23	0.12	0.70	0.26	0.42	0.36	0.36
Control Delay	41.8	28.2		16.5	28.1	6.1	15.4	37.9	5.7	19.6	27.0	5.4
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.8	28.2		16.5	28.1	6.1	15.4	37.9	5.7	19.6	27.0	5.4
LOS	D	C		B	C	A	B	D	A	B	C	A
Approach Delay		33.3			22.1			27.6			16.8	
Approach LOS		C			C			C			B	
Queue Length 50th (m)	47.9	53.6		8.9	30.7	0.0	6.1	61.8	0.0	15.5	30.0	0.0
Queue Length 95th (m)	#97.5	72.7		17.7	44.3	12.2	13.4	94.8	13.3	27.8	50.1	16.1
Internal Link Dist (m)		227.8			241.0			318.9			299.7	
Turn Bay Length (m)	55.0			35.0			45.0			80.0		70.0
Base Capacity (vph)	433	1102		312	941	493	467	515	540	334	565	590
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.87	0.58		0.28	0.41	0.23	0.12	0.70	0.26	0.42	0.36	0.36

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 95			
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.87			
Intersection Signal Delay: 26.3		Intersection LOS: C	

Intersection Capacity Utilization 94.4% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Montrose Road (RR98) & Regional Road 20



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	346	551	37	80	351	105	53	334	128	129	185	197
Future Volume (vph)	346	551	37	80	351	105	53	334	128	129	185	197
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	7.0		3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1548	3147		1508	3137	1376	1564	1683	1450	1595	1683	1337
Flt Permitted	0.45	1.00		0.36	1.00	1.00	0.63	1.00	1.00	0.34	1.00	1.00
Satd. Flow (perm)	733	3147		568	3137	1376	1040	1683	1450	579	1683	1337
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	376	599	40	87	382	114	58	363	139	140	201	214
RTOR Reduction (vph)	0	5	0	0	0	81	0	0	96	0	0	142
Lane Group Flow (vph)	376	634	0	87	382	33	58	363	43	140	201	72
Confl. Peds. (#/hr)	17		10	10		17	27		14	14		27
Heavy Vehicles (%)	7%	4%	11%	10%	6%	5%	5%	4%	0%	4%	4%	7%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Actuated Green, G (s)	40.9	31.9		33.9	27.9	27.9	34.9	29.7	29.7	39.3	31.9	31.9
Effective Green, g (s)	40.9	31.9		33.9	27.9	27.9	34.9	29.7	29.7	39.3	31.9	31.9
Actuated g/C Ratio	0.43	0.34		0.36	0.29	0.29	0.37	0.31	0.31	0.41	0.34	0.34
Clearance Time (s)	3.0	7.0		3.0	7.0	7.0	3.0	7.0	7.0	3.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	401	1056		262	921	404	410	526	453	318	565	448
v/s Ratio Prot	c0.10	0.20		0.02	0.12		0.01	c0.22		c0.03	0.12	
v/s Ratio Perm	c0.30			0.10		0.02	0.04		0.03	0.15		0.05
v/c Ratio	0.94	0.60		0.33	0.41	0.08	0.14	0.69	0.10	0.44	0.36	0.16
Uniform Delay, d1	23.7	26.2		20.9	27.0	24.3	19.7	28.6	23.1	18.7	23.8	22.1
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	29.3	2.5		0.7	1.4	0.4	0.2	7.2	0.4	1.0	1.7	0.8
Delay (s)	53.0	28.8		21.7	28.4	24.7	19.9	35.9	23.6	19.7	25.5	22.9
Level of Service	D	C		C	C	C	B	D	C	B	C	C
Approach Delay (s)		37.8			26.6			31.2			23.1	
Approach LOS		D			C			C			C	

Intersection Summary				
HCM 2000 Control Delay	31.0	HCM 2000 Level of Service	C	
HCM 2000 Volume to Capacity ratio	0.82			
Actuated Cycle Length (s)	95.0	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	94.4%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group

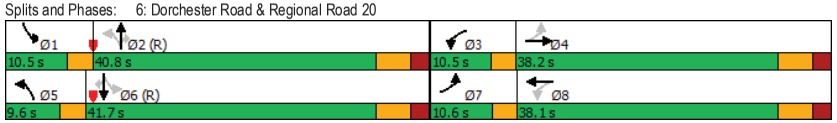
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	181	643	229	68	363	125	193	357	84	92	302	59
Future Volume (vph)	181	643	229	68	363	125	193	357	84	92	302	59
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	40.0		0.0	45.0		0.0	50.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	0.99		1.00	0.99		1.00		0.98	1.00		0.98
Frt		0.961			0.962				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1568	2969	0	1630	2981	0	1630	1699	1430	1539	1699	1444
Flt Permitted	0.340			0.132			0.432			0.388		
Satd. Flow (perm)	559	2969	0	225	2981	0	739	1699	1403	627	1699	1421
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		52			50				104			104
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		109.8			114.2			162.1			187.2	
Travel Time (s)		7.9			8.2			11.7			13.5	
Confl. Peds. (#/hr)	5		15	15		5	5		8	8		5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	7%	4%	2%	7%	5%	2%	3%	4%	8%	3%	3%
Adj. Flow (vph)	197	699	249	74	395	136	210	388	91	100	328	64
Shared Lane Traffic (%)												
Lane Group Flow (vph)	197	948	0	74	531	0	210	388	91	100	328	64
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		Yes			Yes							
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	0.0
Detector 1 Queue (s)	0.0	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	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		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	7	4		3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0		3.0	8.0	8.0	6.0	8.0	8.0
Minimum Split (s)	10.5	36.5		10.5	36.5		9.5	40.5	40.5	10.5	40.5	40.5
Total Split (s)	10.6	38.2		10.5	38.1		9.6	40.8	40.8	10.5	41.7	41.7
Total Split (%)	10.6%	38.2%		10.5%	38.1%		9.6%	40.8%	40.8%	10.5%	41.7%	41.7%
Maximum Green (s)	7.6	31.7		7.5	31.6		6.6	34.3	34.3	7.5	35.2	35.2
Yellow Time (s)	3.0	4.1		3.0	4.1		3.0	4.1	4.1	3.0	4.1	4.1
All-Red Time (s)	0.0	2.4		0.0	2.4		0.0	2.4	2.4	0.0	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.5		3.0	6.5		3.0	6.5	6.5	3.0	6.5	6.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	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	3.0
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		12.0			12.0			15.0	15.0		15.0	15.0
Flash Dont Walk (s)		13.0			13.0			19.0	19.0		19.0	19.0
Pedestrian Calls (#/hr)		0			0			0	0		0	0
Act Effct Green (s)	41.5	31.9		40.3	29.6		47.1	38.4	38.4	47.6	36.8	36.8
Actuated g/C Ratio	0.42	0.32		0.40	0.30		0.47	0.38	0.38	0.48	0.37	0.37
v/c Ratio	0.64	0.96		0.39	0.58		0.51	0.60	0.15	0.27	0.52	0.11
Control Delay	29.1	54.0		21.8	29.3		21.3	31.1	4.3	16.3	29.1	1.8
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.1	54.0		21.8	29.3		21.3	31.1	4.3	16.3	29.1	1.8
LOS	C	D		C	C		C	C	A	B	C	A
Approach Delay		49.7			28.4			24.6			23.0	
Approach LOS		D			C			C			C	
Queue Length 50th (m)	24.3	95.3		8.3	42.3		24.5	66.7	0.0	10.9	53.2	0.0
Queue Length 95th (m)	40.2	#140.0		16.8	59.3		40.2	100.5	8.8	20.6	81.4	3.3
Internal Link Dist (m)		85.8			90.2			138.1			163.2	
Turn Bay Length (m)	40.0			45.0			50.0			30.0		
Base Capacity (vph)	308	983		197	976		409	651	602	368	626	589
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.64	0.96		0.38	0.54		0.51	0.60	0.15	0.27	0.52	0.11

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.96			
Intersection Signal Delay: 34.9		Intersection LOS: C	

Intersection Capacity Utilization 90.1% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Dorchester Road & Regional Road 20



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	181	643	229	68	363	125	193	357	84	92	302	59
Future Volume (vph)	181	643	229	68	363	125	193	357	84	92	302	59
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	6.5		3.0	6.5		3.0	6.5	6.5	3.0	6.5	6.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.96		1.00	0.96		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1566	2968		1629	2980		1628	1699	1403	1537	1699	1421
Flt Permitted	0.34	1.00		0.13	1.00		0.43	1.00	1.00	0.39	1.00	1.00
Satd. Flow (perm)	561	2968		227	2980		741	1699	1403	628	1699	1421
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	197	699	249	74	395	136	210	388	91	100	328	64
RTOR Reduction (vph)	0	35	0	0	35	0	0	0	57	0	0	41
Lane Group Flow (vph)	197	913	0	74	496	0	210	388	34	100	328	23
Confl. Peds. (#/hr)	5		15	15		5	5		8	8		5
Heavy Vehicles (%)	6%	7%	4%	2%	7%	5%	2%	3%	4%	8%	3%	3%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	39.5	31.9		36.1	30.2		44.1	37.2	37.2	42.3	36.3	36.3
Effective Green, g (s)	39.5	31.9		36.1	30.2		44.1	37.2	37.2	42.3	36.3	36.3
Actuated g/C Ratio	0.40	0.32		0.36	0.30		0.44	0.37	0.37	0.42	0.36	0.36
Clearance Time (s)	3.0	6.5		3.0	6.5		3.0	6.5	6.5	3.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	297	946		164	899		387	632	521	320	616	515
v/s Ratio Prot	c0.05	c0.31		0.03	0.17		c0.04	c0.23		0.02	0.19	
v/s Ratio Perm	0.21			0.14			0.20		0.02	0.11		0.02
v/c Ratio	0.66	0.96		0.45	0.55		0.54	0.61	0.06	0.31	0.53	0.05
Uniform Delay, d1	22.3	33.5		23.2	29.2		19.5	25.6	20.2	18.4	25.1	20.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	5.5	21.0		2.0	0.7		1.6	4.4	0.2	0.6	3.3	0.2
Delay (s)	27.8	54.5		25.2	30.0		21.0	30.0	20.4	18.9	28.4	20.8
Level of Service	C	D		C	C		C	C	C	B	C	C
Approach Delay (s)		49.9			29.4			26.0			25.5	
Approach LOS		D			C			C			C	

Intersection Summary					
HCM 2000 Control Delay	35.9	HCM 2000 Level of Service	D		
HCM 2000 Volume to Capacity ratio	0.77				
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	19.0		
Intersection Capacity Utilization	90.1%	ICU Level of Service	E		
Analysis Period (min)	15				

c Critical Lane Group

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	6:57	6:57	6:57	6:57	6:57	6:57	6:57
End Time	8:12	8:12	8:12	8:12	8:12	8:12	8:12
Total Time (min)	75	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	4968	4880	5087	4922	4883	4883	4949
Vehs Exited	4986	4917	5085	4922	4903	4880	4976
Starting Vehs	174	176	151	157	189	148	175
Ending Vehs	156	139	153	157	169	151	148
Travel Distance (km)	4638	4534	4703	4638	4455	4511	4480
Travel Time (hr)	174.2	168.3	175.5	168.5	162.2	164.7	166.8
Total Delay (hr)	76.4	72.9	76.8	71.1	68.3	69.6	72.4
Total Stops	6535	6356	6643	6298	6140	6239	6328
Fuel Used (l)	453.2	440.8	458.4	446.7	430.8	435.7	438.1

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	6:57	6:57	6:57	6:57
End Time	8:12	8:12	8:12	8:12
Total Time (min)	75	75	75	75
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	5019	4931	5076	4958
Vehs Exited	5049	4956	5067	4971
Starting Vehs	180	185	185	166
Ending Vehs	150	160	194	145
Travel Distance (km)	4628	4643	4723	4595
Travel Time (hr)	171.5	173.6	175.2	170.0
Total Delay (hr)	74.2	76.2	75.8	73.4
Total Stops	6394	6570	6629	6411
Fuel Used (l)	449.1	452.5	457.2	446.2

Interval #0 Information Seeding

Start Time	6:57
End Time	7:12
Total Time (min)	15

Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

Start Time	7:12
End Time	8:12
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	4968	4880	5087	4922	4883	4883	4949
Vehs Exited	4986	4917	5085	4922	4903	4880	4976
Starting Vehs	174	176	151	157	189	148	175
Ending Vehs	156	139	153	157	169	151	148
Travel Distance (km)	4638	4534	4703	4638	4455	4511	4480
Travel Time (hr)	174.2	168.3	175.5	168.5	162.2	164.7	166.8
Total Delay (hr)	76.4	72.9	76.8	71.1	68.3	69.6	72.4
Total Stops	6535	6356	6643	6298	6140	6239	6328
Fuel Used (l)	453.2	440.8	458.4	446.7	430.8	435.7	438.1

Interval #1 Information Recording

Start Time	7:12
End Time	8:12
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	5019	4931	5076	4958
Vehs Exited	5049	4956	5067	4971
Starting Vehs	180	185	185	166
Ending Vehs	150	160	194	145
Travel Distance (km)	4628	4643	4723	4595
Travel Time (hr)	171.5	173.6	175.2	170.0
Total Delay (hr)	74.2	76.2	75.8	73.4
Total Stops	6394	6570	6629	6411
Fuel Used (l)	449.1	452.5	457.2	446.2

Intersection: 1: Montrose Road (RR98) & Regional Road 20

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	R	L	T	R
Maximum Queue (m)	62.3	118.5	98.2	42.4	84.0	82.1	52.3	125.2	28.5	47.9	68.3	56.9
Average Queue (m)	48.8	50.9	42.2	20.1	42.6	50.0	18.1	68.4	12.4	23.3	32.4	17.9
95th Queue (m)	71.6	97.5	76.0	42.4	73.5	79.3	48.8	111.6	23.0	41.5	57.9	36.3
Link Distance (m)		237.7	237.7		237.4	237.4		328.9	328.9		309.7	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (m)	55.0			35.0			45.0			80.0		70.0
Storage Blk Time (%)	8	1		2	18		0	25			0	0
Queuing Penalty (veh)	22	5		3	14		0	14			1	0

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	6:57	6:57	6:57	6:57	6:57	6:57	6:57
End Time	8:12	8:12	8:12	8:12	8:12	8:12	8:12
Total Time (min)	75	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	4857	5142	4918	5064	4922	5086	5038
Vehs Exited	4862	5146	4913	5071	4931	5059	5016
Starting Vehs	165	172	158	176	173	161	159
Ending Vehs	160	168	163	169	164	188	181
Travel Distance (km)	4473	4738	4471	4697	4549	4613	4591
Travel Time (hr)	163.0	176.6	163.9	173.8	168.0	169.8	167.6
Total Delay (hr)	69.1	77.3	69.9	75.2	72.5	72.8	70.9
Total Stops	6061	6574	6161	6493	6345	6417	6307
Fuel Used (l)	430.8	461.1	434.3	455.6	441.8	446.2	445.2

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	6:57	6:57	6:57	6:57
End Time	8:12	8:12	8:12	8:12
Total Time (min)	75	75	75	75
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	4966	5001	5008	4997
Vehs Exited	4984	4984	5012	4996
Starting Vehs	179	173	173	157
Ending Vehs	161	190	169	161
Travel Distance (km)	4632	4648	4715	4613
Travel Time (hr)	171.3	170.2	178.6	170.3
Total Delay (hr)	73.9	72.7	79.7	73.4
Total Stops	6418	6354	6653	6375
Fuel Used (l)	448.4	452.5	463.3	447.9

Interval #0 Information Seeding

Start Time	6:57
End Time	7:12
Total Time (min)	15

Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

Start Time	7:12
End Time	8:12
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	4857	5142	4918	5064	4922	5086	5038
Vehs Exited	4862	5146	4913	5071	4931	5059	5016
Starting Vehs	165	172	158	176	173	161	159
Ending Vehs	160	168	163	169	164	188	181
Travel Distance (km)	4473	4738	4471	4697	4549	4613	4591
Travel Time (hr)	163.0	176.6	163.9	173.8	168.0	169.8	167.6
Total Delay (hr)	69.1	77.3	69.9	75.2	72.5	72.8	70.9
Total Stops	6061	6574	6161	6493	6345	6417	6307
Fuel Used (l)	430.8	461.1	434.3	455.6	441.8	446.2	445.2

Interval #1 Information Recording

Start Time	7:12
End Time	8:12
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	4966	5001	5008	4997
Vehs Exited	4984	4984	5012	4996
Starting Vehs	179	173	173	157
Ending Vehs	161	190	169	161
Travel Distance (km)	4632	4648	4715	4613
Travel Time (hr)	171.3	170.2	178.6	170.3
Total Delay (hr)	73.9	72.7	79.7	73.4
Total Stops	6418	6354	6653	6375
Fuel Used (l)	448.4	452.5	463.3	447.9

Intersection: 6: Dorchester Road & Regional Road 20

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	R	L	T	R
Maximum Queue (m)	47.4	90.4	96.2	48.1	74.2	82.4	57.4	117.6	30.6	37.4	102.6	22.7
Average Queue (m)	38.0	73.1	79.2	15.0	40.1	47.0	34.3	53.9	9.6	19.1	48.5	7.5
95th Queue (m)	60.3	96.7	98.6	35.8	64.2	72.3	60.8	97.3	22.0	39.0	84.6	17.4
Link Distance (m)		85.3	85.3		93.3	93.3		148.1	148.1		173.0	173.0
Upstream Blk Time (%)		4	7			0		0				
Queuing Penalty (veh)		16	30			0		0				
Storage Bay Dist (m)	40.0			45.0			50.0			30.0		
Storage Blk Time (%)	3	28		0	7		1	9		1	22	
Queuing Penalty (veh)	10	50		0	4		4	18		4	20	

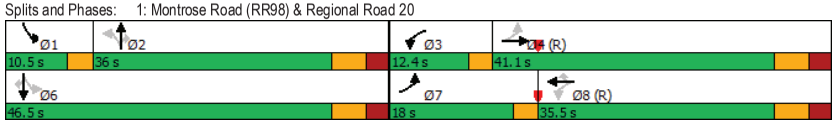
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	274	753	77	196	818	176	108	322	176	270	409	467
Future Volume (vph)	274	753	77	196	818	176	108	322	176	270	409	467
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	55.0		0.0	35.0		0.0	45.0		0.0	80.0		70.0
Storage Lanes	1		0	1		1	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor	1.00	1.00		1.00		0.97	0.99		0.97	0.99		0.96
Frt		0.986				0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1554	3122	0	1511	3137	1417	1583	1683	1488	1599	1683	1390
Flt Permitted	0.127			0.194			0.464			0.325		
Satd. Flow (perm)	207	3122	0	307	3137	1374	762	1683	1449	543	1683	1335
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12				191			191			332
Link Speed (k/h)		60			50			50			50	
Link Distance (m)		251.8			265.0			342.9			323.7	
Travel Time (s)		15.1			19.1			24.7			23.3	
Confl. Peds. (#/hr)	17		10	10		17	27		14	14		27
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	7%	4%	11%	10%	6%	5%	5%	4%	0%	4%	4%	7%
Adj. Flow (vph)	298	818	84	213	889	191	117	350	191	293	445	508
Shared Lane Traffic (%)												
Lane Group Flow (vph)	298	902	0	213	889	191	117	350	191	293	445	508
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					Yes							
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	0.0		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	0.0	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	Cl+Ex		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	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	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	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		pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8			2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Detector Phase	7	4		3	8	8	2	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0	10.0	8.0	8.0	8.0	6.0	8.0	8.0
Minimum Split (s)	10.5	35.0		10.5	35.0	35.0	36.0	36.0	36.0	10.5	36.0	36.0
Total Split (s)	18.0	41.1		12.4	35.5	35.5	36.0	36.0	36.0	10.5	46.5	46.5
Total Split (%)	18.0%	41.1%		12.4%	35.5%	35.5%	36.0%	36.0%	36.0%	10.5%	46.5%	46.5%
Maximum Green (s)	15.0	34.1		9.4	28.5	28.5	29.0	29.0	29.0	7.5	39.5	39.5
Yellow Time (s)	3.0	4.1		3.0	4.1	4.1	4.1	4.1	4.1	3.0	4.1	4.1
All-Red Time (s)	0.0	2.9		0.0	2.9	2.9	2.9	2.9	2.9	0.0	2.9	2.9
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	7.0		3.0	7.0	7.0	7.0	7.0	7.0	3.0	7.0	7.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lag	Lag	Lag	Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		None	C-Max	C-Max	Max	Max	Max	None	Max	Max
Walk Time (s)		10.0			10.0	10.0	11.0	11.0	11.0		11.0	11.0
Flash Dont Walk (s)		18.0			18.0	18.0	18.0	18.0	18.0		18.0	18.0
Pedestrian Calls (#/hr)		0			0	0	0	0	0		0	0
Act Effct Green (s)	50.5	34.1		41.9	28.5	28.5	29.0	29.0	29.0	43.5	39.5	39.5
Actuated g/C Ratio	0.50	0.34		0.42	0.28	0.28	0.29	0.29	0.29	0.44	0.40	0.40
v/c Ratio	0.97	0.84		0.88	0.99	0.36	0.53	0.72	0.34	0.93	0.67	0.70
Control Delay	71.5	38.7		54.1	65.4	6.3	40.2	41.4	5.9	61.2	30.9	14.1
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	71.5	38.7		54.1	65.4	6.3	40.2	41.4	5.9	61.2	30.9	14.1
LOS	E	D		D	E	A	D	D	A	E	C	B
Approach Delay		46.8			54.8			30.9			31.2	
Approach LOS		D			D			C			C	
Queue Length 50th (m)	44.6	87.6		24.0	95.0	0.0	20.0	63.9	0.0	40.3	73.3	27.2
Queue Length 95th (m)	#99.0	#115.0		#64.0	#138.8	16.2	39.8	97.5	16.1	#90.1	109.4	68.9
Internal Link Dist (m)		227.8			241.0			318.9			299.7	
Turn Bay Length (m)	55.0			35.0			45.0			80.0		70.0
Base Capacity (vph)	306	1072		241	894	528	220	488	555	315	664	728
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.97	0.84		0.88	0.99	0.36	0.53	0.72	0.34	0.93	0.67	0.70

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.99			
Intersection Signal Delay: 42.4		Intersection LOS: D	

Intersection Capacity Utilization 99.8% ICU Level of Service F
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Montrose Road (RR98) & Regional Road 20



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	274	753	77	196	818	176	108	322	176	270	409	467
Future Volume (vph)	274	753	77	196	818	176	108	322	176	270	409	467
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	7.0		3.0	7.0	7.0	7.0	7.0	7.0	3.0	7.0	7.0
Lane Util. Factor	1.00	0.95		1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	1.00		1.00	1.00	0.97	1.00	1.00	0.97	1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00		1.00	1.00	1.00	0.99	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.99		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1553	3122		1510	3137	1374	1560	1683	1449	1595	1683	1335
Flt Permitted	0.13	1.00		0.19	1.00	1.00	0.46	1.00	1.00	0.32	1.00	1.00
Satd. Flow (perm)	208	3122		308	3137	1374	762	1683	1449	546	1683	1335
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	298	818	84	213	889	191	117	350	191	293	445	508
RTOR Reduction (vph)	0	8	0	0	0	137	0	0	136	0	0	201
Lane Group Flow (vph)	298	894	0	213	889	54	117	350	55	293	445	307
Confl. Peds. (#/hr)	17		10	10		17	27		14	14		27
Heavy Vehicles (%)	7%	4%	11%	10%	6%	5%	5%	4%	0%	4%	4%	7%
Turn Type	pm+pt	NA		pm+pt	NA	Perm	Perm	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8			2		1	6	
Permitted Phases	4			8		8	2		2	6		6
Actuated Green, G (s)	46.5	34.1		37.9	28.5	28.5	29.0	29.0	29.0	39.5	39.5	39.5
Effective Green, g (s)	46.5	34.1		37.9	28.5	28.5	29.0	29.0	29.0	39.5	39.5	39.5
Actuated g/C Ratio	0.46	0.34		0.38	0.28	0.28	0.29	0.29	0.29	0.40	0.40	0.40
Clearance Time (s)	3.0	7.0		3.0	7.0	7.0	7.0	7.0	7.0	3.0	7.0	7.0
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	298	1064		229	894	391	220	488	420	294	664	527
v/s Ratio Prot	c0.15	0.29		0.09	0.28			0.21		c0.07	0.26	
v/s Ratio Perm	c0.32			0.26		0.04	0.15		0.04	c0.32		0.23
v/c Ratio	1.00	0.84		0.93	0.99	0.14	0.53	0.72	0.13	1.00	0.67	0.58
Uniform Delay, d1	28.0	30.4		24.5	35.7	26.6	29.8	31.8	26.2	29.8	24.9	23.8
Progression Factor	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	52.1	8.0		40.6	28.8	0.7	8.9	8.8	0.6	51.2	5.3	4.7
Delay (s)	80.1	38.4		65.1	64.5	27.4	38.7	40.6	26.9	81.0	30.2	28.4
Level of Service	F	D		E	E	C	D	D	C	F	C	C
Approach Delay (s)		48.8			59.1			36.3			41.4	
Approach LOS		D			E			D			D	

Intersection Summary				
HCM 2000 Control Delay	47.9	HCM 2000 Level of Service	D	
HCM 2000 Volume to Capacity ratio	1.06			
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	20.0	
Intersection Capacity Utilization	99.8%	ICU Level of Service	F	
Analysis Period (min)	15			

c Critical Lane Group

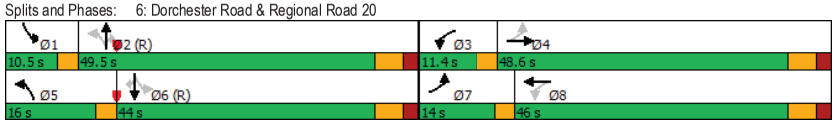
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	214	796	277	169	917	173	313	542	134	158	439	141
Future Volume (vph)	214	796	277	169	917	173	313	542	134	158	439	141
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Storage Length (m)	40.0		0.0	45.0		0.0	50.0		0.0	30.0		0.0
Storage Lanes	1		0	1		0	1		1	1		1
Taper Length (m)	7.5			7.5			7.5			7.5		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		0.99			0.99		1.00		0.98	1.00		0.98
Frt		0.961			0.976				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1568	2965	0	1630	3027	0	1630	1699	1430	1539	1699	1444
Flt Permitted	0.095			0.101			0.173			0.142		
Satd. Flow (perm)	157	2965	0	173	3027	0	296	1699	1401	230	1699	1419
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		44			19				127			153
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		109.8			114.2			162.1			187.2	
Travel Time (s)		7.9			8.2			11.7			13.5	
Confl. Peds. (#/hr)	5		15	15		5	5		8	8		5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	6%	7%	4%	2%	7%	5%	2%	3%	4%	8%	3%	3%
Adj. Flow (vph)	233	865	301	184	997	188	340	589	146	172	477	153
Shared Lane Traffic (%)												
Lane Group Flow (vph)	233	1166	0	184	1185	0	340	589	146	172	477	153
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		Yes			Yes							
Headway Factor	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Turning Speed (k/h)	25		15	25		15	25		15	25		15
Number of Detectors	1	2		1	2		1	2	1	1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0	2.0	2.0	10.0	2.0
Trailing Detector (m)	0.0	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	0.0
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6	2.0	2.0	0.6	2.0
Detector 1 Type	Cl+Ex	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	0.0
Detector 1 Queue (s)	0.0	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	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		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Detector Phase	7	4		3	8		5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	6.0	10.0		6.0	10.0		3.0	8.0	8.0	6.0	8.0	8.0
Minimum Split (s)	10.5	36.5		10.5	36.5		9.5	40.5	40.5	10.5	40.5	40.5
Total Split (s)	14.0	48.6		11.4	46.0		16.0	49.5	49.5	10.5	44.0	44.0
Total Split (%)	11.7%	40.5%		9.5%	38.3%		13.3%	41.3%	41.3%	8.8%	36.7%	36.7%
Maximum Green (s)	11.0	42.1		8.4	39.5		13.0	43.0	43.0	7.5	37.5	37.5
Yellow Time (s)	3.0	4.1		3.0	4.1		3.0	4.1	4.1	3.0	4.1	4.1
All-Red Time (s)	0.0	2.4		0.0	2.4		0.0	2.4	2.4	0.0	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	3.0	6.5		3.0	6.5		3.0	6.5	6.5	3.0	6.5	6.5
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	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	3.0
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	C-Max
Walk Time (s)		12.0			12.0			15.0	15.0		15.0	15.0
Flash Dont Walk (s)		13.0			13.0			19.0	19.0		19.0	19.0
Pedestrian Calls (#/hr)		0			0			0	0		0	0
Act Effct Green (s)	56.6	42.1		51.4	39.5		57.0	43.0	43.0	48.5	37.5	37.5
Actuated g/C Ratio	0.47	0.35		0.43	0.33		0.48	0.36	0.36	0.40	0.31	0.31
v/c Ratio	1.15	1.09		1.05	1.17		1.19	0.97	0.25	0.99	0.90	0.28
Control Delay	137.3	92.1		108.2	125.3		139.8	68.1	7.4	91.5	61.1	6.1
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	137.3	92.1		108.2	125.3		139.8	68.1	7.4	91.5	61.1	6.1
LOS	F	F		F	F		F	E	A	F	E	A
Approach Delay		99.6			123.0			82.5			57.1	
Approach LOS		F			F			F			E	
Queue Length 50th (m)	~52.1	~167.8		~33.0	~183.7		~73.4	142.3	3.1	24.6	112.8	0.0
Queue Length 95th (m)	#105.1	#212.3		#80.8	#228.2		#133.7	#218.0	17.6	#69.3	#176.2	15.4
Internal Link Dist (m)		85.8			90.2			138.1			163.2	
Turn Bay Length (m)	40.0			45.0			50.0			30.0		
Base Capacity (vph)	203	1068		176	1009		285	608	583	174	530	548
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	1.15	1.09		1.05	1.17		1.19	0.97	0.25	0.99	0.90	0.28

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.19			
Intersection Signal Delay: 95.2		Intersection LOS: F	

Intersection Capacity Utilization 111.1% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 6: Dorchester Road & Regional Road 20



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	214	796	277	169	917	173	313	542	134	158	439	141
Future Volume (vph)	214	796	277	169	917	173	313	542	134	158	439	141
Ideal Flow (vphpl)	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750	1750
Total Lost time (s)	3.0	6.5		3.0	6.5		3.0	6.5	6.5	3.0	6.5	6.5
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00	1.00	1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00	0.98	1.00	1.00	0.98
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.96		1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1568	2966		1630	3027		1630	1699	1401	1539	1699	1419
Flt Permitted	0.10	1.00		0.10	1.00		0.17	1.00	1.00	0.14	1.00	1.00
Satd. Flow (perm)	157	2966		174	3027		296	1699	1401	230	1699	1419
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	233	865	301	184	997	188	340	589	146	172	477	153
RTOR Reduction (vph)	0	29	0	0	13	0	0	0	81	0	0	105
Lane Group Flow (vph)	233	1137	0	184	1172	0	340	589	65	172	477	48
Confl. Peds. (#/hr)	5		15	15		5	5		8	8		5
Heavy Vehicles (%)	6%	7%	4%	2%	7%	5%	2%	3%	4%	8%	3%	3%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8			2		2	6		6
Actuated Green, G (s)	53.1	42.1		47.9	39.5		53.5	43.0	43.0	45.0	37.5	37.5
Effective Green, g (s)	53.1	42.1		47.9	39.5		53.5	43.0	43.0	45.0	37.5	37.5
Actuated g/C Ratio	0.44	0.35		0.40	0.33		0.45	0.36	0.36	0.38	0.31	0.31
Clearance Time (s)	3.0	6.5		3.0	6.5		3.0	6.5	6.5	3.0	6.5	6.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	198	1040		171	996		276	608	502	168	530	443
v/s Ratio Prot	c0.11	0.38		0.08	0.39		c0.13	0.35		0.06	0.28	
v/s Ratio Perm	c0.41			0.35			c0.41		0.05	0.32		0.03
v/c Ratio	1.18	1.09		1.08	1.18		1.23	0.97	0.13	1.02	0.90	0.11
Uniform Delay, d1	33.8	39.0		29.5	40.2		27.4	37.8	25.9	33.8	39.5	29.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	119.7	57.1		90.5	90.2		131.8	29.6	0.5	75.8	20.9	0.5
Delay (s)	153.5	96.0		120.0	130.5		159.1	67.4	26.4	109.6	60.3	29.8
Level of Service	F	F		F	F		F	E	C	F	E	C
Approach Delay (s)		105.6			129.1			90.9			65.1	
Approach LOS		F			F			F			E	

Intersection Summary					
HCM 2000 Control Delay	102.1	HCM 2000 Level of Service	F		
HCM 2000 Volume to Capacity ratio	1.26				
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	19.0		
Intersection Capacity Utilization	111.1%	ICU Level of Service	H		
Analysis Period (min)	15				

c Critical Lane Group

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	4:57	4:57	4:57	4:57	4:57	4:57	4:57
End Time	6:12	6:12	6:12	6:12	6:12	6:12	6:12
Total Time (min)	75	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	4004	4144	4002	4002	3988	4107	4201
Vehs Exited	3955	4031	3948	3993	3970	3977	4109
Starting Vehs	134	161	130	151	123	149	160
Ending Vehs	183	274	184	160	141	279	252
Travel Distance (km)	3636	3733	3686	3672	3625	3699	3813
Travel Time (hr)	178.8	210.7	166.9	154.7	160.9	187.2	195.6
Total Delay (hr)	103.5	133.5	90.9	78.9	85.7	110.8	116.9
Total Stops	4785	5130	4334	4182	4090	4637	4783
Fuel Used (l)	364.8	399.5	356.5	347.0	349.1	375.7	390.1

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	4:57	4:57	4:57	4:57
End Time	6:12	6:12	6:12	6:12
Total Time (min)	75	75	75	75
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	3984	4006	4089	4052
Vehs Exited	3959	3957	3987	3988
Starting Vehs	130	146	136	142
Ending Vehs	155	195	238	205
Travel Distance (km)	3652	3660	3700	3688
Travel Time (hr)	146.9	161.3	196.2	175.9
Total Delay (hr)	71.4	85.6	119.7	99.7
Total Stops	3936	4054	4502	4443
Fuel Used (l)	340.7	353.6	383.4	366.0

Interval #0 Information Seeding

Start Time	4:57
End Time	5:12
Total Time (min)	15

Volumes adjusted by Growth Factors.

No data recorded this interval.

Interval #1 Information Recording

Start Time	5:12
End Time	6:12
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	4004	4144	4002	4002	3988	4107	4201
Vehs Exited	3955	4031	3948	3993	3970	3977	4109
Starting Vehs	134	161	130	151	123	149	160
Ending Vehs	183	274	184	160	141	279	252
Travel Distance (km)	3636	3733	3686	3672	3625	3699	3813
Travel Time (hr)	178.8	210.7	166.9	154.7	160.9	187.2	195.6
Total Delay (hr)	103.5	133.5	90.9	78.9	85.7	110.8	116.9
Total Stops	4785	5130	4334	4182	4090	4637	4783
Fuel Used (l)	364.8	399.5	356.5	347.0	349.1	375.7	390.1

Interval #1 Information Recording

Start Time	5:12
End Time	6:12
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	3984	4006	4089	4052
Vehs Exited	3959	3957	3987	3988
Starting Vehs	130	146	136	142
Ending Vehs	155	195	238	205
Travel Distance (km)	3652	3660	3700	3688
Travel Time (hr)	146.9	161.3	196.2	175.9
Total Delay (hr)	71.4	85.6	119.7	99.7
Total Stops	3936	4054	4502	4443
Fuel Used (l)	340.7	353.6	383.4	366.0

Intersection: 1: Montrose Road (RR98) & Regional Road 20

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	R	L	T	R
Maximum Queue (m)	62.4	188.4	163.6	42.4	382.2	374.2	64.0	172.0	43.5	193.6	187.4	153.7
Average Queue (m)	56.7	97.0	81.0	37.1	236.1	238.0	28.8	99.9	18.8	120.8	91.3	75.4
95th Queue (m)	73.5	168.0	144.1	52.2	447.5	441.5	54.5	168.4	35.0	203.7	151.5	143.8
Link Distance (m)		237.7	237.7		841.9	841.9	328.9	328.9	328.9	309.7	309.7	309.7
Upstream Blk Time (%)		0									0	
Queuing Penalty (veh)		0									0	
Storage Bay Dist (m)	55.0			35.0								
Storage Blk Time (%)	29	10		27	51							
Queuing Penalty (veh)	108	27		109	101							

Summary of All Intervals

Run Number	1	2	3	4	5	6	7
Start Time	4:57	4:57	4:57	4:57	4:57	4:57	4:57
End Time	6:12	6:12	6:12	6:12	6:12	6:12	6:12
Total Time (min)	75	75	75	75	75	75	75
Time Recorded (min)	60	60	60	60	60	60	60
# of Intervals	2	2	2	2	2	2	2
# of Recorded Intervals	1	1	1	1	1	1	1
Vehs Entered	6392	6547	6235	6413	6142	6160	6246
Vehs Exited	6047	6320	5886	6117	5905	5918	5942
Starting Vehs	473	477	424	398	448	488	482
Ending Vehs	818	704	773	694	685	730	786
Travel Distance (km)	5963	6238	5875	6084	5893	5934	5890
Travel Time (hr)	1259.7	1059.1	1106.8	1083.7	1242.2	1334.7	1342.4
Total Delay (hr)	1134.0	927.7	982.9	955.5	1117.8	1209.6	1218.0
Total Stops	17747	16678	14679	15711	15381	16271	15878
Fuel Used (l)	1442.1	1294.0	1303.4	1302.1	1419.5	1502.7	1500.3

Summary of All Intervals

Run Number	8	9	10	Avg
Start Time	4:57	4:57	4:57	4:57
End Time	6:12	6:12	6:12	6:12
Total Time (min)	75	75	75	75
Time Recorded (min)	60	60	60	60
# of Intervals	2	2	2	2
# of Recorded Intervals	1	1	1	1
Vehs Entered	6190	6187	6498	6294
Vehs Exited	5921	5870	6120	6006
Starting Vehs	489	464	474	451
Ending Vehs	758	781	852	755
Travel Distance (km)	5901	5821	5960	5956
Travel Time (hr)	1274.1	1295.6	1166.4	1216.5
Total Delay (hr)	1149.0	1173.0	1040.3	1090.8
Total Stops	16126	16015	17323	16177
Fuel Used (l)	1450.9	1468.1	1351.5	1403.5

Interval #0 Information Seeding

Start Time	4:57
End Time	5:12
Total Time (min)	15

Volumes adjusted by Growth Factors.
No data recorded this interval.

Interval #1 Information Recording

Start Time	5:12
End Time	6:12
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	1	2	3	4	5	6	7
Vehs Entered	6392	6547	6235	6413	6142	6160	6246
Vehs Exited	6047	6320	5886	6117	5905	5918	5942
Starting Vehs	473	477	424	398	448	488	482
Ending Vehs	818	704	773	694	685	730	786
Travel Distance (km)	5963	6238	5875	6084	5893	5934	5890
Travel Time (hr)	1259.7	1059.1	1106.8	1083.7	1242.2	1334.7	1342.4
Total Delay (hr)	1134.0	927.7	982.9	955.5	1117.8	1209.6	1218.0
Total Stops	17747	16678	14679	15711	15381	16271	15878
Fuel Used (l)	1442.1	1294.0	1303.4	1302.1	1419.5	1502.7	1500.3

Interval #1 Information Recording

Start Time	5:12
End Time	6:12
Total Time (min)	60

Volumes adjusted by Growth Factors.

Run Number	8	9	10	Avg
Vehs Entered	6190	6187	6498	6294
Vehs Exited	5921	5870	6120	6006
Starting Vehs	489	464	474	451
Ending Vehs	758	781	852	755
Travel Distance (km)	5901	5821	5960	5956
Travel Time (hr)	1274.1	1295.6	1166.4	1216.5
Total Delay (hr)	1149.0	1173.0	1040.3	1090.8
Total Stops	16126	16015	17323	16177
Fuel Used (l)	1450.9	1468.1	1351.5	1403.5

Intersection: 6: Dorchester Road & Regional Road 20

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	TR	L	T	TR	L	T	R	L	T	R
Maximum Queue (m)	47.4	92.0	97.6	52.5	106.5	111.6	156.4	157.8	154.6	85.3	143.5	41.7
Average Queue (m)	37.4	76.8	88.6	47.9	96.9	98.7	148.6	149.0	118.5	38.3	79.0	15.8
95th Queue (m)	62.3	107.5	92.8	65.5	102.2	109.1	156.1	160.3	196.3	74.1	127.1	31.4
Link Distance (m)		85.2	85.2		93.5	93.5	144.3	144.3	144.3	173.0	173.0	173.0
Upstream Blk Time (%)		23	64		52	43	64	69	18		0	
Queuing Penalty (veh)		136	379		317	261	0	0	0		0	
Storage Bay Dist (m)	40.0			45.0								
Storage Blk Time (%)	8	34		54	42							
Queuing Penalty (veh)	31	73		247	70							