Barrhaven South Future Neighbourhood Phase 3
Transportation Report

Prepared for:

Minto Communities Inc
200 - 180 Kent Street
Ottawa, Ontario, K1P 0B6

Prepared by:

CGH TRANSPORTATION

6 Plaza Court
Ottawa, ON K2H 7W1

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Table of Contents

1 Introduction 1
1.1 Barrhaven South PH3 Area Context 1
2 Planning and Development 2
2.1 City Projects 2
2.1.1 Cambrian Road Widening Environmental Assessment (EA) 2
2.1.2 Greenbank Road Realignment and Southwest Transitway Extension 3
2.1.3 Highway 416 at Barnsdale Road Interchange 3
2.1.4 Barnsdale Road Widening 3
2.1.5 Cambrian Road Intersection Improvements 3
2.1.6 Longfields Drive Widening (formerly Jockvale Road) 3
2.1.7 Borrisokane Road and Haiku Street Modifications 4
2.1.8 Haiku Street 4
2.2 Study Area Developments 4
3 Policy Review 5
3.1 City of Ottawa Policy 5
3.1.1 Official Plan (2022) 5
3.1.2 5 Big Moves (2019) 6
3.1.3 2025 Transportation Master Plan 6
3.1.4 15-Minute Neighbourhoods (2021) 7
3.1.5 Building Better and Smarter Suburbs (2015) 8
3.1.6 Barrhaven South Urban Expansion Area Community Design Plan (CDP) (2018) 8
3.2 City of Ottawa Design Guidance 8
3.2.1 Transportation Impact Assessment (TIA) Guidelines (2023) 8
3.2.2 Designing Neighbourhood Collector Streets (2019) 9
3.2.3 Local Residential Streets 30 km/h Design Toolbox (2021) 9
3.2.4 Traffic Calming Design Guidelines (2019) 9
3.2.5 Urban Design Guidelines for Greenfield Neighbourhoods (2007) 9
3.2.6 Protected Intersection Design Guide (2021) 9
4 Existing Conditions 10
4.1 Boundary Community 10
4.2 Vehicular Network 11
4.2.1 Road Classifications and Capacity 11
4.2.2 Road Capacity 15
4.2.3 Network Connectivity 16
4.2.4 Truck Routes - Within a Five-Kilometres Radius From The Centroid Of Barrhaven South PH3 16
4.2.5 Key Study Area Intersection 17
4.2.6 Collision History 20
4.3 Pedestrian and Cycling Facilities 22
4.3.1 Existing Pedestrian Network – Within a Five-Kilometre Radius from the Centroid of Barrhaven South PH3 22
4.3.2 Existing Cycling Network – Within a Five-Kilometre Radius from the Centroid of Barrhaven South PH3 23

4.3.3 Study Area Pedestrian Network – 15-Minute Neighbourhoods 24
4.3.4 Study Area Cycling Network – 15-Minute Neighbourhoods 25
4.3.5 Ultimate Pedestrian and Cycling Network 26
4.3.6 Network Connectivity to Adjacent Community 27
4.3.7 15-Minute Neighbourhood Desire Lines 28
4.4 Transit 30
4.4.1 Existing Transit Routes and Alignment 30
4.4.2 Existing Route Capacity and Frequencies 30
4.4.3 Transit Priority Measures 31
4.4.4 Transit Stations/Stops – 15-Minute Neighbourhoods 31
5 Community Concept Plan 32
5.1 New Roadways 34
5.2 New Intersections 34
5.3 Pedestrian & Cycling 34
5.4 Traffic Calming Design 34
5.5 Transit 34
6 Forecasting and Travel Demand 35
6.1 Mode Shares 35
6.2 Background Network Travel Demands 35
6.2.1 Transportation Network Plans 35
6.2.2 Background Growth 36
6.2.3 Other Developments 36
6.3 Development Generated Travel Demand 39
6.3.1 Trip Generation 39
6.3.2 Trip Distribution 41
6.3.3 Trip Assignment 41
7 Network Operational Analysis 43
7.1 Future Background Network Operations 43
7.1.1 2031 Future Background Conditions 43
7.1.2 2036 Future Background Conditions 1
7.2 Future Total Network Travel Demand 8
7.2.1 2031 Future Total Conditions 8
7.2.2 2036 Future Total Conditions 14
7.3 Kilbirnie Road Extension Sensitivity 21
7.3.1 2031 Future Total Conditions-Sensitivity 21
7.3.2 2036 Future Total Conditions-Sensitivity 24
7.4 Kilbirnie Road Extension Network Review 27
7.5 Network Road Capacity 28
8 Mobility Plan 28
8.1 Road Pattern and Connectivity 28
8.2 Active Mode Connectivity 29
8.3 Traffic Calming Design 29
8.4 Transportation Demand Management 29
8.5 Local Transit Service 30

8.6 Transit Priority 31
8.7 Multi-Modal Level of Service Review 31
8.7.1 Boundary Road Design 32
9 Implementation Strategy 32
9.1 Network Review and Identified Improvements 32
9.2 Improving Active Mode Network Connectivity 33
9.3 Improving Transit Network Connectivity 33
10 Conclusion 34

List of Figures

Figure 1: Area Context Plan 2
Figure 2: Area Developments 5
Figure 3: Suburban (Southwest) Transect 6
Figure 4: 15-Minute Neighbourhood 11
Figure 5: Area Road Classification - Within a Five-Kilometre Radius from the Centroid of Barrhaven South PH3. 13
Figure 6: Screenline 49 15
Figure 7: Area Road Truck Routes - Within a Five-Kilometres Radius from the Centroid of Barrhaven South PH3 17
Figure 8: Existing Traffic Counts 19
Figure 9: Study Area Collision Records, 2018-2022 21
Figure 10: Existing Pedestrian Facilities - Within a Five-Kilometre Radius from the Centroid of Barrhaven South PH3 23
Figure 11: Existing Cycling Facilities - Within a Five-Kilometre Radius from the Centroid of Barrhaven South PH3 24
Figure 12: Study Area Pedestrian Facilities – 15-Minute Neighbourhoods 25
Figure 13: Study Area Cycling Facilities – 15-Minute Neighbourhoods 26
Figure 14: Active Transportation - Planning 27
Figure 15: 15-Minute Neighbourhood – Map A1 & Map A1-1: Service, Amenity, Grocery Store, and Supermarket Locations 28
Figure 16: Elements of 15 Minute Neighbourhood 29
Figure 17: Study Area Transit Service 30
Figure 18: Existing Transit Stops – 15-Minute Neighbourhoods 31
Figure 19: Existing Transit Station – Within a Five-kilometre Radius from the Centroid of Barrhaven South PH3 32
Figure 20: Concept Land Use Plan 33
Figure 21: Conceptual Barrhaven South PH3 lands Transit Stop Locations 35
Figure 22: Background Volumes 37
Figure 23: Reassigned Background Volumes-2031 38
Figure 24: Reassigned Background Volumes-2036 39
Figure 25: New Site Generation Auto Volumes - 2031 42
Figure 26: New Site Generation Auto Volumes - 2036 43
Figure 27: 2031 Future Background Volumes 45
Figure 28: 2036 Future Background Volumes 2
Figure 29: 2031 Future Total Volumes 9
Figure 30: 2036 Future Total Volumes 15

Figure 31: 2031 Future Total Volumes-Sensitivity 22
Figure 32: 2036 Future Total Volumes-Sensitivity 25

Table of Tables

Table 1: Road Capacity Approximation 15
Table 2: Intersection Count Date 19
Table 3: Existing Intersection Operations 19
Table 4: Study Area Collision Summary, 2018-2022 21
Table 5: Summary of Collision Locations, 2018-2022 22
Table 6: TRANS Trip Generation Person Trip Rates – South Nepean 35
Table 7: Trip Generation Person Trip Rates 40
Table 8: Total Residential Person Trip Generation 40
Table 9: Trip Generation by Mode 40
Table 10: OD Survey Distribution 41
Table 11: 2031 Future Background Intersection Operations 46
Table 12: 2036 Future Background Intersection Operations 3
Table 13: 2031 Future Total Intersection Operations 10
Table 14: 2036 Future Total Intersection Operations 16
Table 15: 2031 Future Total Intersection Operations-Sensitivity 23
Table 16: 2036 Future Total Intersection Operations-Sensitivity 26
Table 17: Local Area Screenline Road Capacity – AM Peak 28
Table 18: Trip Generation by Transit Mode 30
Table 19: Forecasted Site-Generated Transit Ridership 30
Table 20: Boundary Street MMLOS Analysis 31

List of Appendices

Appendix A – Realigned Greenbank Road Preliminary Design
Appendix B – Interim and Ultimate Recommended Plan and Borrisokane Realignment Options
Appendix C – Longfields Drive Widening – Preliminary Design
Appendix D – Study Area Developments
Appendix E – TRANS Regional Model
Appendix F – Turning Movement Count Data
Appendix G – Synchro Intersection Worksheets – Existing Conditions
Appendix H – Collision Data
Appendix I – Signal Warrant Calculation Sheets
Appendix J – All-Way Stop-Controlled Warrants
Appendix K – Left Turn Warrants Calculation Sheets
Appendix L – Synchro and Sidra Worksheets – 2031 Future Background Horizon
Appendix M – Synchro and Sidra Worksheets – 2036 Future Background Horizon
Appendix N – Synchro and Sidra Worksheets – 2031 Future Total Horizon
Appendix O – Synchro and Sidra Worksheets – 2036 Future Total Horizon
Appendix P – Synchro Worksheets – 2031 Future Total Horizon – Sensitivity
Appendix Q – Synchro Worksheets – 2036 Future Total Horizon – Sensitivity
Appendix R – MMLOS Worksheets

1 Introduction

Minto Communities Inc. is seeking to develop lands in Barrhaven South in the City of Ottawa. The subject lands are identified within the S-1 Urban Expansion Area on the City's Official Plan Schedule C17, and the subject lands are known as Barrhaven South Future Neighbourhood Phase 3 (Barrhaven South PH3). The eastern portion of Barrhaven South PH3, which is southwest of the City of Ottawa's urban boundary, falls under Category 1, while the western portion of Barrhaven South PH3 is categorized as industrial and logistics lands, as indicated in the Official Plan. The Category 1 lands are identified for urban expansion through the Future Neighbourhood Overlay.

To remove the Future Neighbourhood Overlay, an Official Plan Amendment and a Concept Plan process have been proposed and confirmed by the City. The Concept Plan process will satisfy the Official Plan policies and meet the standard subdivision submission requirements, with the addition of a design concept evaluation for a land use concept for Barrhaven South PH3.

To support this Concept Plan process and Official Plan Amendment, the City of Ottawa has supplied a template Terms of Reference (ToR) for the transportation-related work. This report conforms to the structure of this ToR.

1.1 Barrhaven South PH3 Area Context

Barrhaven South PH3 encompasses 3882 Barnsdale Road, 3960 Greenbank Road, 4000 Barnsdale Road, 3933 Borrisokane Road, and stormwater maintenance ponds and are generally located north of Barnsdale Road and east of Borrisokane Road and south and west of the existing communities. These lands' current zonings are Mineral Aggregate Reserve Zone (MR1), Rural Countryside Zone (RU), and Agricultural Zone (AG2). It is expected that the eastern portion of Barrhaven South PH3 could support up to 1016 new residential homes, including park/open space, and the western portion of Barrhaven South PH3 will remain as industrial lands on the north side, and woodland and stormwater maintenance ponds on the south side. The anticipated build-out year would be 2031.

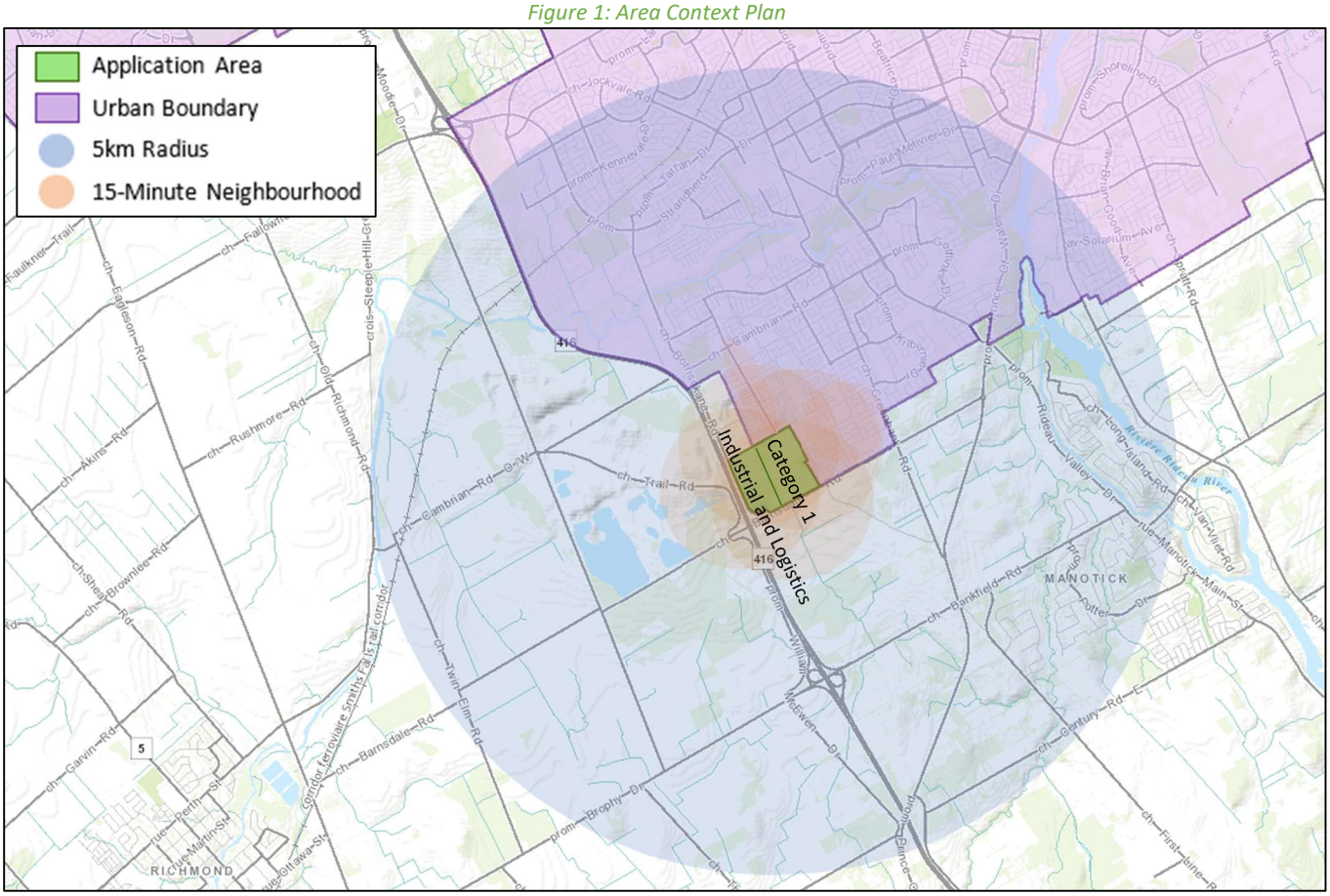
Situated southwest of the City of Ottawa's urban boundary, Barrhaven South PH3, which is part of the S-1 Urban Expansion Area, has been designated as Category 1 and has generally been placed under a Future Neighbourhood Overlay in the Official Plan. The western parcel along Borrisokane Road falls under the Industrial and Logistics urban expansion area and the eastern boundary of Barrhaven South PH3 falls under the Evolving Neighbourhood Overlay.

Barrhaven South PH3, which is part of the S-1 Urban Expansion Area, was originally identified as a rural transect policy area. These lands will undergo a reclassification and be brought within the suburban transect policy area through the Official Plan Amendment and Concept Plan process. Barrhaven South PH3 is required to have a minimum density of 36 units per net hectare and permit density increases through intensification and accessory dwelling units. The portion of the Lands that fall within the Evolving Neighbourhood Overlay is required to meet or exceed the target residential density range for intensification of 40 to 60 dwellings per net hectare. The industrial parcel will be rezoned and will be subject to future site plan applications to determine the ultimate use.

The suburban transect features low- to mid-density development, with low-rise residential being predominant in the vicinity of Barrhaven South PH3. Diverse dwelling unit sizes and a focus on active transportation connectivity are envisioned for neighbourhoods in close proximity to transit stations. Improved mobility and shortcuts to street transit stops are to be supported by neighbourhood corridors and connect to the surrounding community. These elements will support Barrhaven South PH3 in being developed as a 15-minute neighbourhood, while the ultimate goal will be subject to the gradual evolution of the surrounding community through City's strategic planning.

Figure 1 illustrates the study area context for both the urban boundary and Barrhaven South PH3, with a five-kilometre radius from the centroid of Barrhaven South PH3 and the 15-minute Neighbourhoods, defines as the greater of a 1.5-kilometre walking distance or a one-kilometre radius from the boundaries of Barrhaven South PH3.

Figure 1: Area Context Plan



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: October 22, 2024

Suburban transect policy statements regarding Hubs and high-rise features are not applicable to Barrhaven South PH3.

2 Planning and Development

2.1 City Projects

2.1.1 Cambrian Road Widening Environmental Assessment (EA)

The Cambrian Road Widening Environmental Assessment includes a four-lane cross-section along Cambrian Road from Longfields Drive to the future Realigned Greenbank Road. The cross-section will include sidewalks on both sides and local connections to adjacent eyebrow streets and signalized intersections. This EA has been approved by the Transportation Committee and City Council; however, the widening was not carried forward to the Needs-Based Road Network in the 2025 TMP.

2.1.2 Greenbank Road Realignment and Southwest Transitway Extension

The Realigned Greenbank Road includes the design of a new 4-lane arterial roadway with a two-lane separated median Bus Rapid Transit (BRT) and sidewalks and cycletracks on both sides of the road. The BRT will connect from Chapman Mills Drive to the new park-and-ride at Kilbirnie Drive. A park-and-ride facility is anticipated to be located at the southwest corner of the future intersection of the Kilbirnie Drive Extension and Realigned Greenbank Road, providing parking for approximately 400 vehicles at the terminus of the BRT line. Stations will be located at major intersections, including Darjeeling Avenue, Riverboat Heights, River Run Avenue, Cambrian Road, and Dundonald Drive. Local bus routes will also be able to enter and exit the Transitway corridor to service adjacent streets. The project also includes a new bridge over the Jock River. The Greenbank Road Realignment from Cambrian Road to Kilbirnie Drive and from Kilbirnie Drive to Barnsdale Road are identified in the 2025 TMP Priority Road Network as Phase 1 projects, expected to be implemented between 2029 and 2037. However, the Southwest Transitway is identified in the Priority Transit Network projects as a project anticipated to be implemented by 2046 through Development Charges. The design plan of the Greenbank Road Realignment and Southwest Transitway Extension, from Marketplace Avenue to Barnsdale Road, is included in Appendix A.

2.1.3 Highway 416 at Barnsdale Road Interchange

The environmental assessment study and preliminary design for an interchange at the intersection of Highway 416 and Barnsdale Road were completed in September 2023. The ultimate configuration consists of a partial cloverleaf interchange on the south side of Barnsdale Road and a four-lane bridge over Highway 416 with a multi-use pathway. The interim configurations will be subject to traffic demands, and it is expected that the free flow ramps on the north side of Barnsdale Road will not be constructed as part of this configuration and are considered a long-term improvement once warranted. The ramps on the north side of Barnsdale Road will result in the discontinuation of Borrisokane Road and Trail Road. Specific intersection configurations have not been explored as part of the EA and the provision of the ultimate bridge structure may not be provided during the interim configuration. The City of Ottawa included include a preferred solution for a Kilbirnie Drive extension to protect for future demands associated with Borrisokane Road becoming a cul-de-sac in the ultimate interchange configuration. On March 28, 2024, the Government of Ontario committed to constructing the Highway 416/Barnsdale Road interchange, including funding for the interchange planning and design over three years starting in 2025. It is expected that the interim conditions of the interchange will be completed by 2029. The interim and ultimate recommended plan and the Borrisokane realignment options are included in Appendix B.

2.1.4 Barnsdale Road Widening

The environmental assessment (EA) study for the Barnsdale Road Widening extends from Highway 416 in the west to Prince of Wales Drive in the east, and review the need for widening from 2-lanes to 4-lanes. The complete street design will outline the facilities and right of way requirements for the corridor. It is noted that the Transportation Master Plan only identifies the widening between Highway 417 and Realigned Greenbank Road to be within the 2025 TMP Needs Based Road Network.

2.1.5 Cambrian Road Intersection Improvements

The City is seeking improvements at the intersection of Borrisokane Road and Cambrian Road. The modification may involve converting the intersection into a single-lane roundabout. The construction is expected to be completed by the end of 2026; therefore, the improvements are assumed to be in place by the 2031 study horizon.

2.1.6 Longfields Drive Widening (formerly Jockvale Road)

The environmental assessment (EA) study for the Longfields Drive Widening was completed in 2008, and the preliminary design was completed in 2017. The modifications include widening the two-lane rural cross-section

to a four-lane divided urban cross-section with a median, multi-use pathways along the road, and conversion of the intersections of Longfields Drive at Blackleaf Drive and at Prince of Wales Drive to roundabout intersections with pedestrian crossovers on all approaches. The widening was advanced between the north side of the Jock River to Cambrian Road/Golflinks Drive as per the EA, and the roundabout intersection at Golflinks Drive/Stanhope Drive from the preliminary design has been constructed. Consistent with the preliminary design of a roundabout corridor, an additional roundabout intersection at Kilspindie Ridge/Crossgate Street has been constructed. However, the widening was not carried forward to the Needs-Based Road Network in the 2025 TMP. The 2025 TMP Priority Road Network includes Longfield Drive urbanization, including implementation of new pedestrian and cycling facilities on both sides of the road from Cambrian Road to Prince of Wales Drive as a Phase 1 project, expected to be implemented between 2029 and 2037. The preliminary design of the Longfields Drive Widening is included in Appendix C.

2.1.7 Borrisokane Road and Haiku Street Modifications

An auxiliary left-turn lane is currently being designed for the southbound movement at the intersection of Borrisokane Road and Haiku Street. The timeline for construction is unknown at this time, although it is anticipated within the study horizons.

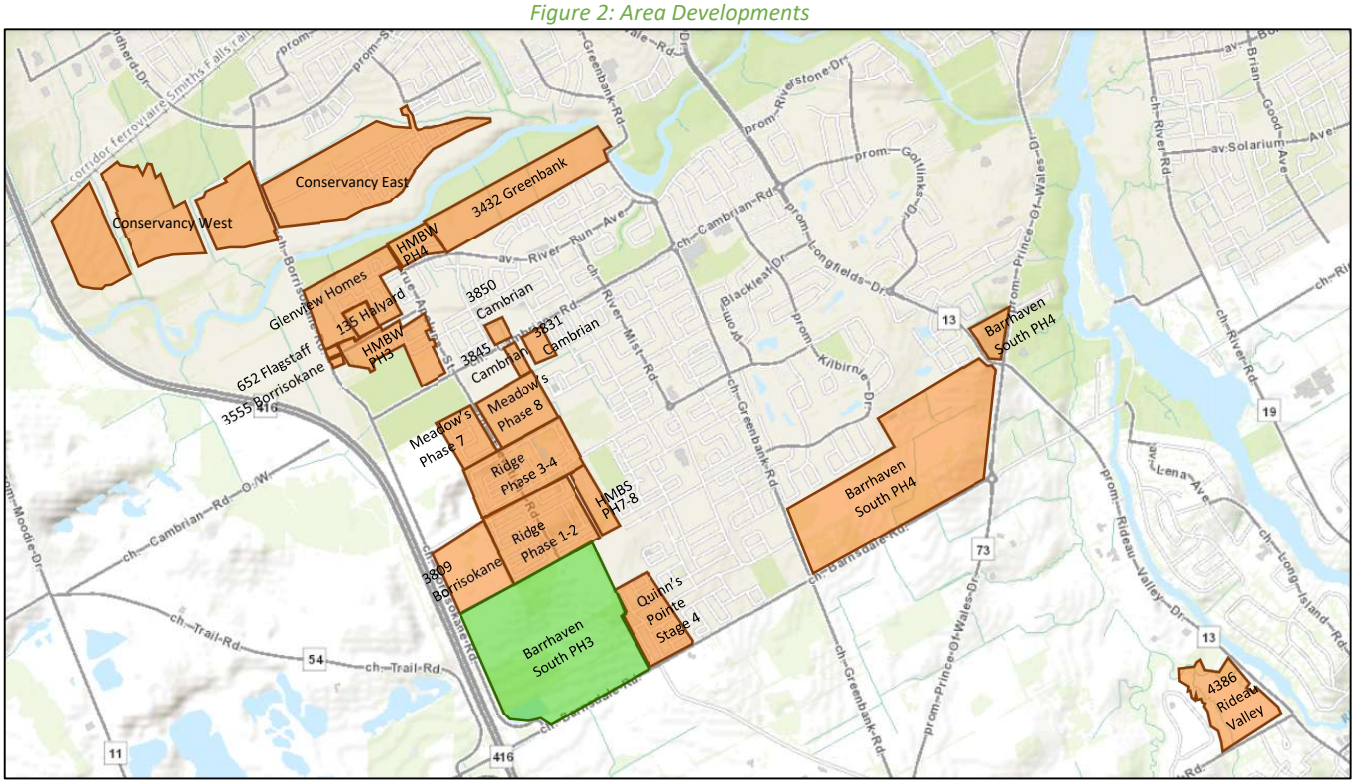
2.1.8 Haiku Street

Subject to the plan of subdivision conditions for Phases 1 and 2 for the Ridge Community, Haiku Street was connected to Borrisokane Road to facilitate access until the surrounding area is developed and connected with two of the planned collector roads of Elevation Road, Dundonald Drive or Kilbirnie Drive. Once the City closes Haiku Street, an active mode connection to Expansion Way/Travertine Way should be provided.

2.2 Study Area Developments

Figure 2 illustrates all the developments noted in the larger Barrhaven context, and the details of each development are included in Appendix D.

Figure 2: Area Developments



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: March 15, 2024

3 Policy Review

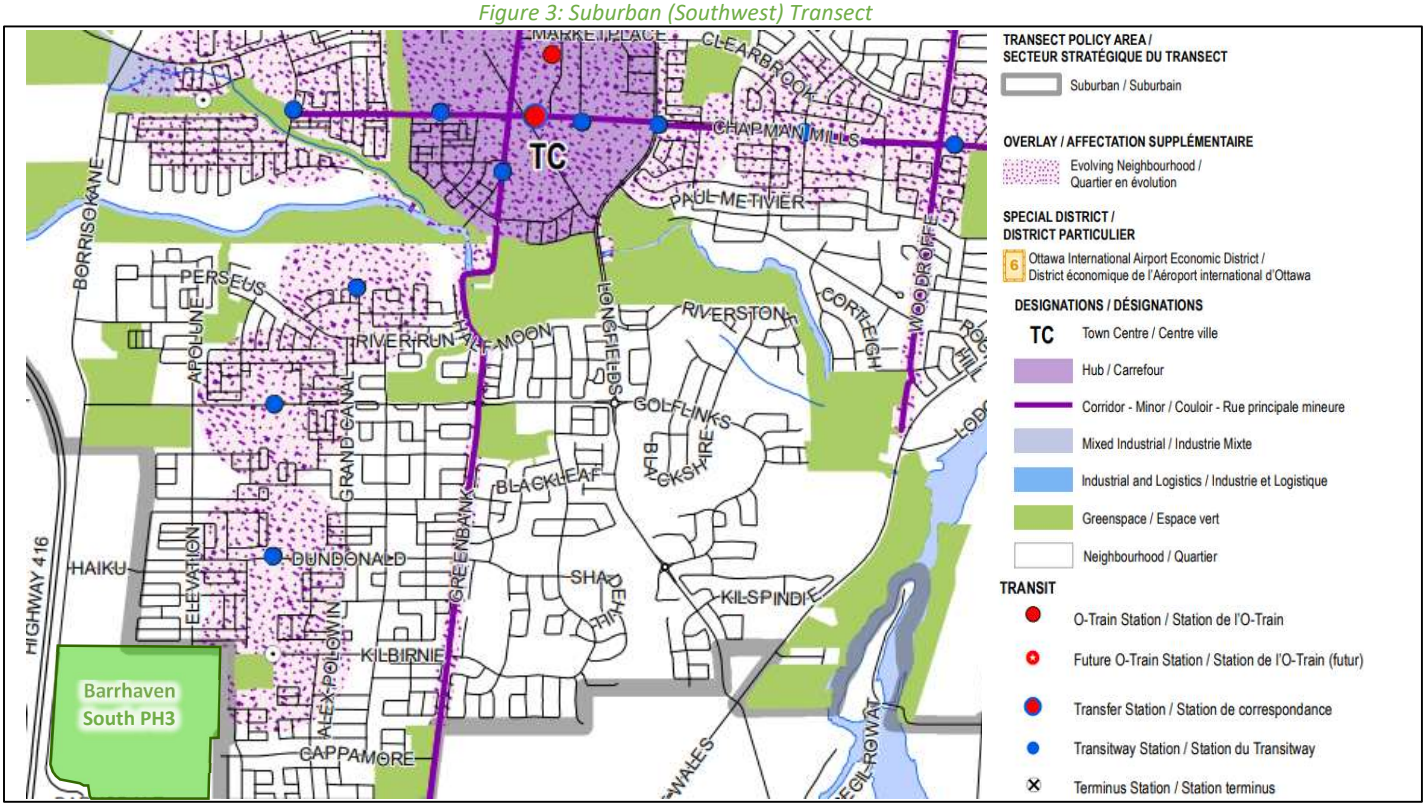
3.1 City of Ottawa Policy

3.1.1 Official Plan (2022)

The City of Ottawa Official Plan was approved by the Province of Ontario, outlining how the city will evolve and providing policies for the development. The OP lays the groundwork for the City of Ottawa's growth to the horizon year 2046, at which time the population is expected to exceed 1.4 million people.

The policies related to urban expansion lands, focus on ensuring adequate infrastructure to surpass the new Official Plan's target of achieving an overall sustainable mode share of 50% or higher across the City by 2046. This involves promoting active transportation modes such as walking and cycling, fostering multimodal travel, enhancing mobility options and street connectivity, advocating for 15-minute Neighbourhoods, emphasizing larger parks in the outer urban and suburban transect, designing parks that enhance quality of life and address climate change, and implementing stormwater management strategies to support sustainable development. These elements are discussed in Section 2.1 for the suburban transect. Figure 3 illustrates the suburban (Southwest) transect.

Figure 3: Suburban (Southwest) Transect



Source: City of Ottawa Official Plan (2022) - Schedule B6 Accessed: March 25, 2024

3.1.2 5 Big Moves (2019)

The 5 Big Moves sets a goal to make Ottawa the most liveable mid-sized city in North America. By promoting intensification over greenfield development, sustainable transportation such as walking and cycling, urban design, resiliency in services, climate change awareness and sustainability, and economic prosperity, the 5 Big Moves aims to assist the city in adapting to change.

Urban expansion lands are greenfield developments and limit the applicability of the framework overall. Barrhaven South PH3 will consider Move 2 – Mobility to be integrated into the concept plan development. Move 2 identifies the planning and design of streets, intersections, and street networks that are supportive of the community context and policy objectives, and that increase transit mode share and ridership by improving multi-modal connections to transitway stations. As a new community, Barrhaven South PH3 will also consider Move 4 – climate, energy and public health by creating walkable, 15-minute Neighbourhoods to help reduce car dependency, promote social and physical health, and support sustainable communities.

3.1.3 2025 Transportation Master Plan

The 2025 Transportation Master Plan focuses on key changes to Ottawa's mobility landscape since the development of the previous plan in 2013. These changes include a greater focus on the city's population growth, climate change, technology and new mobility, health, equity and safety and lastly affordability.

All TMP policies are relevant, with key policies related to urban expansion lands identified, including Mitigate the Effects of Extreme Heat on Transportation System Users (Policy 1-3), Continue the Transition to Clean Vehicle Technologies (1-6), Promote Healthy Communities Through Transportation Planning (2-2), Design Streets for All People, Including Equity-Deserving Groups (2-3), Adhere to Best Practices for Network Development (5-1), Encourage Sustainable Transportation Through Community Planning and Design (5-3), Incorporate Official Plan

"Transects" Into Transportation Planning (5-4), Address Accessibility Barriers and Advance Universal Design (6-1), Improve and Expand the Pedestrian Network (6-2), Make It Easier to Cross the Road (6-4), Invest in Neighbourhood "Shortcuts" (6-5), Improve the Quality, Security, and Vibrancy of the Pedestrian Environment (6-7), Provide Safe, Comfortable, Direct, and Connected Cycling Facilities and Routes (7-1), Plan for an Increase in E-Bikes, Cargo Bikes, E-Scooters, and Other Users (7-6), Expand the Catchment of Rapid Transit Through Improved Walking and Cycling Connections to Stations (8-5), Avoid Adding New Road or Highway Capacity That Competes With Rapid Transit (8-6), Implement "Complete Streets" to Create Streets for Everyone (9-1), Minimize Traffic Impacts in Neighbourhoods (9-7), and Reduce Operating Speeds Through Changes in Street Design (9-9)

The 2025 Transportation Master Plan also includes a Capital Infrastructure Plan identifying transportation investment to support the forecasted growth and strategic connectivity and livability targets for the City. It also identifies committed projects, and a subset of priority projects that are expected to be implemented by 2046 based on current affordability assumptions.

- Transit Network
  - Priority
    - Median bus rapid transit from Barrhaven Centre Station to Kilbirnie Station (Southwest Transitway)
    - Dedicated bus rapid transit from Longfields Drive to Greenbank Road (South Transitway)
  - Needs-Based
    - South Transitway from Limebank Station to Borrisokane Road, including dedicated bus rapid transit from Limebank Station to Nepean Woods Station, transitioning to median bus rapid transit in the Chapman Mills corridor
- Road Network
  - Committed
    - Realigned Greenbank Road and Widening between Chapman Mills Drive and Cambrian Road
  - Priority
    - Realigned Greenbank Road from Cambrian Road to Kilbirnie Drive, including a two-lane new road
    - Realigned Greenbank Road Extension from Kilbirnie Drive to Barnsdale Road, including a two-lane new road
    - Longfield Drive Urbanization from Cambrian Road to Prince of Wales Drive, including implementation of new pedestrian and cycling facilities on both sides of the road
    - Borrisokane Road Urbanization from Strandherd Drive to Cambrian Road, including implementation of new active transportation facilities on both sides of the road
  - Needs-Based
    - Barnsdale Road Widening from two to four lanes between Highway 416 and Realigned Greenbank Road Extension
    - Prince of Wales Drive Widening between Longfields Drive and Barnsdale Road from two to four lanes

3.1.4 15-Minute Neighbourhoods (2021)

At the core of the 15-minute neighbourhood concept is the goal of providing the opportunity to access daily and weekly needs within a 15-minute walk. It strives to provide a range of housing types, shops, services, local access to food, schools and daycare facilities, employment, greenspaces, parks and pathways. Healthy, walkable, 15-

minute neighbourhoods have various essential features, such as a mix of housing for different income levels and shaded, pedestrian-friendly pathways connecting residents to amenities without relying on cars. The neighbourhoods should offer safe spaces for children to play and for people to walk, cycle, or take transit to school. Human-scale urban design with vibrant public spaces, convenient transit access, and a public realm encouraging social connections is crucial. Public facilities like parks and pathway blocks help reduce travel time and filtration of active modes through the neighbourhood.

3.1.5 Building Better and Smarter Suburbs (2015)

The primary principles of the Building Better and Smarter Suburbs consist of efficiently planning land development and integrating transportation modes in a way that naturally supports one another, making each mode of transportation as convenient as possible. The strategy to achieve these goals involves planning new suburbs that not just as residential areas, but as complete and thriving communities. These communities will be designed to cater to people's everyday needs by providing schools, parks, community facilities, shops, services, and workspaces. Housing options will be diverse to accommodate a varied population. All streets and public spaces will prioritize safety and foster a sense of community. The design solutions will be practical, functional, and take long-term operational and maintenance requirements into account.

Barrhaven South PH3 will build upon the existing suburb and Barrhaven South, linking to the adjacent community and providing a public realm and street network that connects to the supporting services for everyday needs.

3.1.6 Barrhaven South Urban Expansion Area Community Design Plan (CDP) (2018)

The Barrhaven South Urban Expansion Area CDP, located east of Barrhaven South PH3, includes the street hierarchy plan, pedestrian plan, transit facilities plan, and cycling facilities plan. The street hierarchy plan includes a westward extension of Kilbirnie Drive to the urban boundary, which will provide a road connection to Barrhaven South PH3. The planned 24.0 metre cross section of Kilbirnie Drive was envisioned to support pedestrian and cycling facilities and potentially serve as a local transit route. Cappamore Drive, identified as a new collector road in the CDP, has recently been constructed. It is also designated as a potential local transit route and includes pedestrian and cycling facilities along the road, providing additional connections to Barrhaven South PH3. Additional pedestrian connections along local roads were envisioned from Lynn Coulter Street to the urban boundary and Barrhaven South PH3. Streetscape elements are encouraged within the available boulevard space, with traffic calming and narrowing aimed at reducing crossing distances along the collector and local roadways. Pathways linking neighbourhoods and providing connectivity to the park-and-ride facility are noted within the CDP.

3.2 City of Ottawa Design Guidance

3.2.1 Transportation Impact Assessment (TIA) Guidelines (2023)

The overall framework of the updated TIA Guidelines (2023) will be addressed through the City's template Terms of Reference. Relevant elements and technical standards outlined in the TIA Guidelines will be considered and applied throughout the transportation review of existing conditions and the evaluation of the concept plans developed for the subject lands.

The contents of this report are expected to satisfy the TIA requirements for Barrhaven South PH3 Official Plan Amendment. Once the Official Plan Amendment is approved, specific development application TIAs are expected to be required for the plan of subdivision and/or any individual site plans within Barrhaven South PH3.

3.2.2 Designing Neighbourhood Collector Streets (2019)

With complete streets in mind, the Designing Neighbourhood Collector Streets guideline illustrates the components needed to design and construct multimodal roadway facilities. At the core of this policy guidance is the intent to accommodate all users of all ages in a safe and predictable manner, support environmental sustainability, affordability and promote livable communities. This is achieved by connecting land uses with facilities that promote safe travel between areas for all residents.

Within the context of Barrhaven South PH3, collector roadway connections between local roadways and the arterial network will include dedicated facilities for walking, cycling and transit access. Another key component to be incorporated into the collector roadway design is the use of buffer zones to separate multimodal users and to facilitate maintenance, including space for snow management.

3.2.3 Local Residential Streets 30 km/h Design Toolbox (2021)

The Local Residential Streets 30 km/h Design toolbox includes numerous methods for calming vehicular speeds, both passive and physical, with the intent of making 30 km/h the comfortable operating speed on the local roadway network. This further supports Vision Zero and the Safer Roads Ottawa program by developing a roadway network at neighbourhood conception that provides the necessary friction to encourage a 30 km/h operating speed.

Within the context of Barrhaven South PH3, shorter block lengths and the separating modes of travel (pedestrian and cyclist from the motor vehicle network using greenspace) will facilitate achieving these targets. This includes providing gateway features at intersections and at midblock locations.

3.2.4 Traffic Calming Design Guidelines (2019)

Traffic calming concepts should be considered as part of the street designs, as well as on existing streets, to ensure proper operation. Unintended and inappropriate driver behaviour, such as speeding, can adversely affect a community's quality of life of and reduce walkability and cyclist travel. While usually an afterthought in new developments, incorporating traffic management measures during the land use development phase can prevent future operational issues such as speeding.

Once roadway network plans have been developed as part of the conceptual Barrhaven South PH3, further examination of opportunities to incorporate passive traffic calming principles will be considered, such as adding bump-outs to delineate parking areas and possible physical calming measures to prevent undesirable driver behaviour.

3.2.5 Urban Design Guidelines for Greenfield Neighbourhoods (2007)

The Urban Design Guidelines for Greenfield Neighbourhoods illustrate the City's expectations during the development review process for greenfield neighbourhoods within the Urban Area of the City of Ottawa. These guidelines are to create a comfortable pedestrian and cycling environment and to establish a system of parks and greenspaces that are plentiful, accessible and connected to each other.

Within the context of Barrhaven South PH3, shorter block lengths will enhance pedestrian access to transit stops and other neighborhood amenities and facilities. Pathways and sidewalks will create a walkable neighborhood that connects to key destinations, and new streets connecting to existing streets in adjacent developments will provide alternative route choices.

3.2.6 Protected Intersection Design Guide (2021)

The Protected Intersection Design Guideline provides a framework for developing designs for protected intersections within the City of Ottawa. This guide offers an overview of the guiding principles for designing

protected intersections and outlines the detailed design requirements and constraints to be considered. These include road classification, planned facilities for all modes of transportation, existing right-of-way width, hydro poles, stormwater infrastructure, grading, and turning movements for emergency vehicles or buses.

Additionally, the guide illustrates different corner radii and outlines the process for determining corner types, including the standard protected corner, one-stage protected corner, hybrid protected corner, dedicated corner, partial protected corner, and smart channel protected corner.

Moreover, functional design elements such as pedestrian refuges, transit stops, and bicycle turning radius, as well as detailed design elements such as hazard warnings at intersections, elevations, and drainage, are considered in the design of a protected intersection.

4 Existing Conditions

The study area for the existing conditions review was confirmed with the S-1 Transportation Working Group with the City. A five-kilometre study area, measured from the centroid of Barrhaven South PH3, will provide a high-level review of Barrhaven, with a more detailed focus on the local Barrhaven South area. The local study area is limited to south of the Jock River and is generally defined as either a one-kilometre radius from the boundary of Barrhaven South PH3 or 1.5-kilometre walking distance, whichever is greater based on the transportation network. The subsequent sections will provide additional details on the area assessed for the various mobility options.

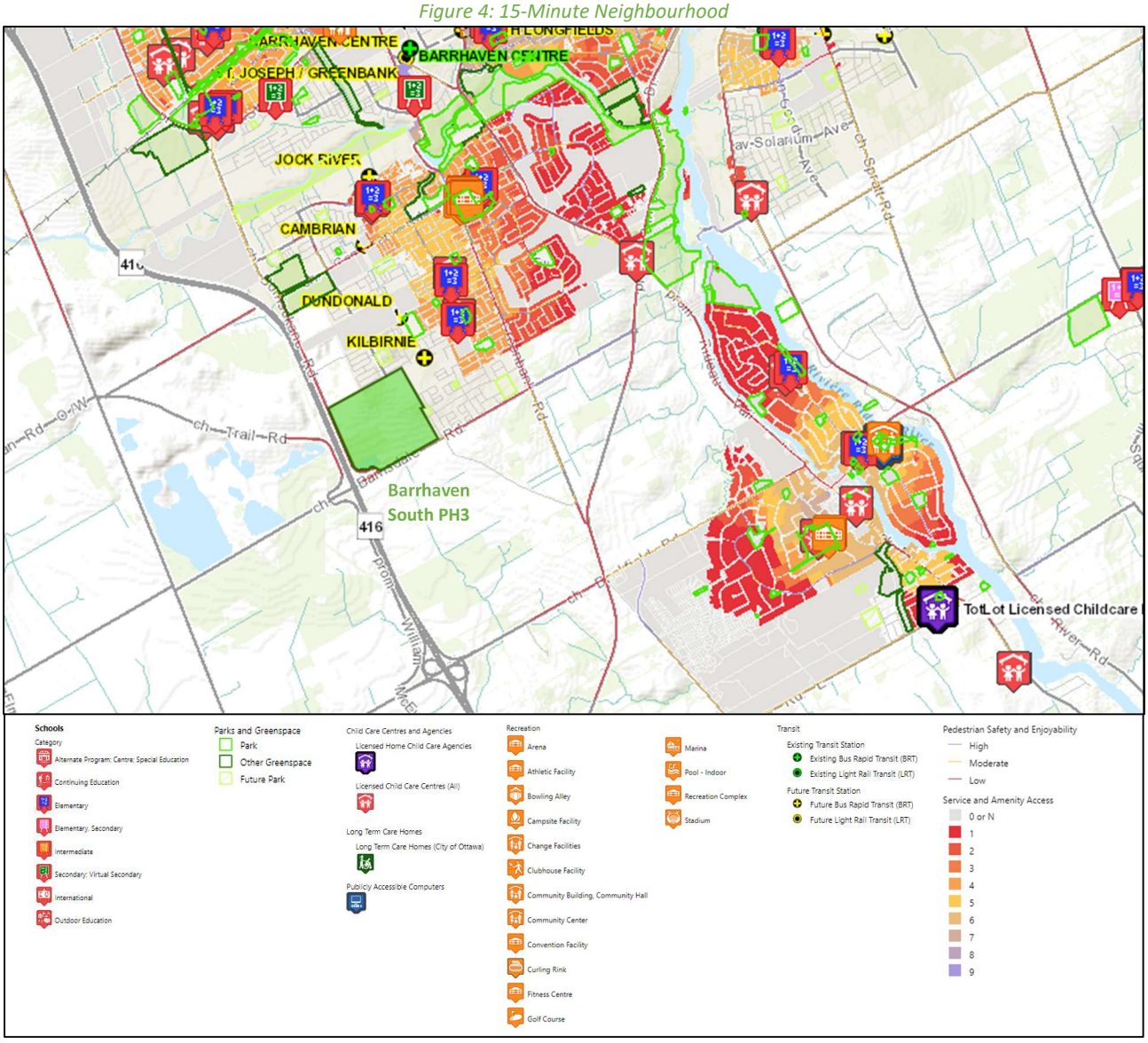
4.1 Boundary Community

Barrhaven South PH3 is bounded by Barnsdale Road, Borrisokane Road, and an existing community located to the east and north of Barrhaven South PH3. Barrhaven South PH3 is linked to Elevation Road, Cappamore Drive, Moyard Drive, and Barnsdale Road. Two elementary schools, each with childcare centers, are located to the northeast on River Mist Road, one approximately 650 metres linear distance away and the other approximately one-kilometre linear distance away.

As outlined in Section 3.2, developments north of Barrhaven South PH3 are predominantly residential dwellings delivered through the Ridge, Meadows, Half Moon Bay West, Kennedy and Conservancy communities. Additionally, commercial spaces are being planned or constructed along Borrisokane Road at Flagstaff Drive and surrounding the future intersection of Cambrian Road and Realigned Greenbank Road. East of Barrhaven South PH3, residential dwellings are currently under construction within the Quinn’s Pointe community, including a future school site. The Barrhaven South Future Neighbourhoods Phase 4 located east of Greenbank Road, is also expected to be developed into additional residential lands.

Figure 4 illustrates the area’s services and amenities within the context of a 15-minute Neighbourhood.

Figure 4: 15-Minute Neighbourhood



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: October 22, 2024

The success of 15-minute policies for Barrhaven South PH3 will rely on the evolution of the adjacent community and Barrhaven South as a whole. The application of the policies will be carried out through the concept plan development, which will be the focus of the ongoing study and submissions for Barrhaven South PH3.

4.2 Vehicular Network

4.2.1 Road Classifications and Capacity

4.2.1.1 Area Road Network - Within a Five-Kilometre Radius From The Centroid Of Barrhaven South PH3

Highway 416 is a provincial highway.

North of Jock River, Strandherd Drive, Borrisokane Road, Jockvale Road between Greenbank Road and Longfields Drive, Greenbank Road, Longfields Drive south of Strandherd Drive, and Prince of Wales Drive are classified as arterial roads. Jockvale Road north of Strandherd Drive, Longfields Drive north of Strandherd Drive, Chapman Mills Drive, Woodroffe Avenue south of Strandherd Drive, and Paul Metivier Drive are classified as major collector

roads. Maravista Drive, Weybridge Drive, Sherway Drive, Kennevale Drive, Tartan Drive, Exeter Road, Wessex Road, Highbury Park Drive, Berrigan Drive, Marketplace Avenue, Clearbrook Drive, Riocan Avenue, Beatrice Drive, Jockvale Road south of Strandherd Drive, Bren-Maur Road east of Geddes Way/Barcham Crescent, Temagami Drive between Paul Metivier Drive and Bren-Maur Road, Whitewater Street west of Grovemont Drive, Grovemont Drive, and Rocky Hill Drive between Grovemont Drive and Prince of Wales Drive are classified as collector roads, while other roads fall under the category of local roads.

In Barrhaven South, Borrisokane Road north of Cambrian Road, Greenbank Road, Longfields Drive, and Prince of Wales Drive continue as arterial roads. Cambrian Road and Barnsdale Road west of Prince of Wales Drive are arterial roads. Flagstaff Drive, Apolune Street, Perseus Avenue east of Apolune Street, River Run Avenue, River Mist Road north of Dundonald Drive, Riverstone Drive west of Pondhollow Way, Pondhollow Way, Golflinks Drive, Kilbirnie Drive, Blackleaf Drive, Dundonald Drive east of River Mist Road, Elevation Road, and Borrisokane Road south of Cambrian Road are collector roads, while other roads fall under the category of local roads.

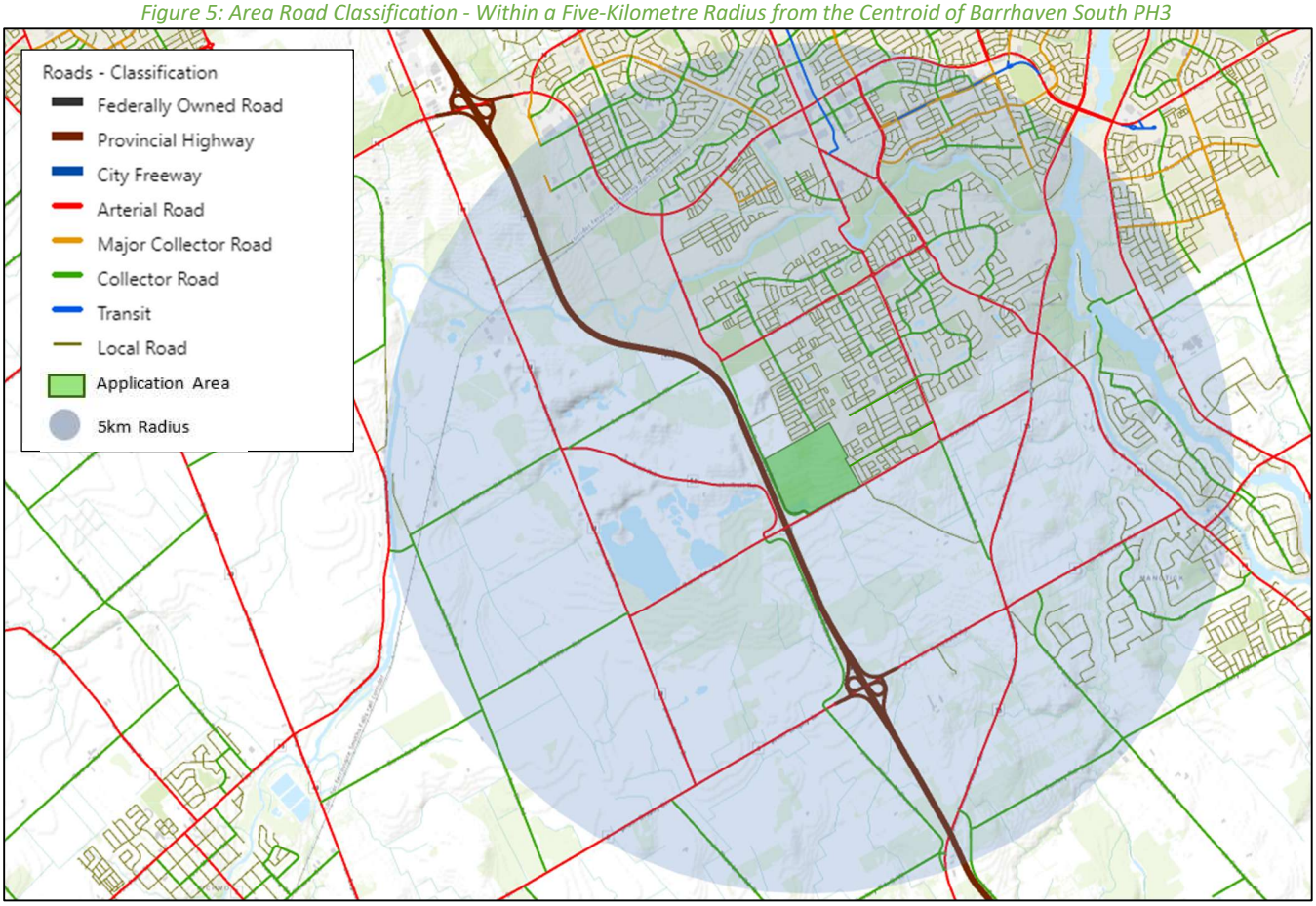
West of Highway 416, Barnsdale Road continues as an arterial road east of Moodie Drive. Moodie Drive, Trail Road, and Brophy Drive are also classified as arterial roads. Barnsdale Road west of Moodie Drive, Cambrian Road West, William McEwen Drive, and Century Road West are collector roads, while other roads fall under the category of local roads.

South of Barnsdale Road, Prince of Wales Drive continues as an arterial road. Bankfield Road is also classified as an arterial road. Greenbank Road south of Barnsdale Road and First Line Road are collector roads, while other roads fall under the category of local roads.

East of Prince of Wales Drive, Bankfield Road continue as an arterial road. Rideau Valley Drive, River Road, and Bridge Street are arterial roads. Nicolls Island Road, Mclean Crescent north of Bravar Drive, Bravar Drive between Mclean Crescent and Lena Avenue, Lena Avenue, Long Island Road, First Line Road, Potter Drive, Century Road East, and Second Line Road are collector roads, while other roads fall under the category of local roads.

Figure 5 illustrates the area road classification within a five-kilometre radius from the centroid of Barrhaven South PH3.

Figure 5: Area Road Classification - Within a Five-Kilometre Radius from the Centroid of Barrhaven South PH3



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: October 22, 2024

4.2.1.2 Study Area Key Roadways

The study area for the existing conditions review was confirmed with the S-1 Transportation Working Group with the City. The primary routes providing connectivity to Barrhaven South PH3 are summarized below:

Greenbank Road: Greenbank Road is a City of Ottawa arterial road with a two-lane cross-section north of Barnsdale Road and a collector road with a two-lane cross-section to the south. North of Kilbirnie Drive, a sidewalk and bike lane are present on the east side of the road, and a Multi-Use Pathway (MUP) is present on the west side of the road. South of Kilbirnie Drive, there is a paved shoulder on the west side of the road and a gravel shoulder on the east side, transitioning to gravel shoulders on both sides. The posted limit is 60 km/h north of Barnsdale Road, and it transitions to 80 km/h to the south for rural areas. The City protected right-of-way is 37.5 metres between Cambrian Road and Barnsdale Road, and the existing right-of-way is 24.0 metres south of Barnsdale Road.

Barnsdale Road: Barnsdale Road is a City of Ottawa arterial road east of Moodie Drive and a collector road west of Moodie Drive. Barnsdale Road has a two-lane cross-section, including gravel shoulders on both sides of the road. The posted limit is 40 km/h east of Rideau Valley Drive, 60 km/h between Rideau Valley Drive and Prince of Wales Drive, and 80 km/h west of Prince of Wales Drive. The City protected right-of-way is 40.0 metres between Prince of Wales Drive and Highway 416 and 30.0 metres west of Highway 416. The existing right-of-way east of Prince of Wales Drive is 20.0 metres.

Cambrian Road: Cambrian Road is a City of Ottawa arterial road with a two-lane rural cross-section west of Seeley's Bay Street and a two-lane urban cross-section to the east. A sidewalk is present on the north side of the road for approximately 180 metres west and 260 metres east of Apolune Street. East of Greenbank Road, an asphalt pathway is present on the north side and a sidewalk is present on the south side. Bike lanes are present on both sides of the road east of Greenbank Road. The posted speed limit is 50 km/h, and the City-protected right-of-way is 37.5 metres.

Borrisokane Road: Borrisokane Road is a City of Ottawa arterial road north of Cambrian Road and a collector road south of Cambrian Road. Borrisokane Road has a two-lane rural cross-section, including gravel shoulders on both sides of the road. The posted speed is 80 km/h. The City protected right-of-way is 37.5 metres north of Cambrian Road and 24.0 metres south of Cambrian Road.

Trail Road: Trail Road is a City of Ottawa arterial road with a two-lane cross-section, including gravel shoulders on both sides of the road within the study area. The unposted limit is assumed to be 80 km/h within the study area. The existing right-of-way is 20.0 metres within the study area.

William McEwen Drive: William McEwen Drive is a City of Ottawa collector road with a two-lane cross-section, including gravel shoulders on both sides of the road within the study area. The unposted limit is assumed to be 80 km/h within the study area. The existing right-of-way is 20.0 metres within the study area.

Elevation Road: Elevation Road is a City of Ottawa collector road with a two-lane urban cross-section. Multi-Use Pathways are anticipated to be on both sides of the road. The unposted limit is assumed to be 50 km/h based on the Highway Traffic Act, and the right-of-way is 24.0 metres.

Apolune Street: Apolune Street is a City of Ottawa collector road with a two-lane urban cross-section, including sidewalks on both sides. The unposted speed limit is assumed to be 50 km/h based on the Highway Traffic Act, and the right-of-way is 24.0 metres.

Kilbirnie Drive: Kilbirnie Drive is a City of Ottawa collector road with a two-lane urban cross-section, including sidewalks on both sides of the road. The unposted speed limit is assumed to be 50km/h based on the Highway Traffic Act, and the right-of-way is 22.0 metres.

Cappamore Drive: Cappamore Drive is a City of Ottawa collector road with a two-lane cross-section, including cycletracks and sidewalks on both sides of the road. The unposted speed limit is assumed to be 50 km/h based on the Highway Traffic Act. The right-of-way is 24.0 metres.

Moyard Drive: Moyard Drive is a City of Ottawa local road with a two-lane cross-section. The unposted speed limit is assumed to be 30 km/h based on the traffic calming design of new neighbourhoods, and the right-of-way is 18.0 metres.

Haiku Street: Haiku Street is a City of Ottawa local road with a two-lane cross-section. A sidewalk is present on the north side of Haiku Street east of Expansion Road. The unposted limit is assumed to be 50 km/h based on the Highway Traffic Act, and the existing right-of-way is 24.0 metres.

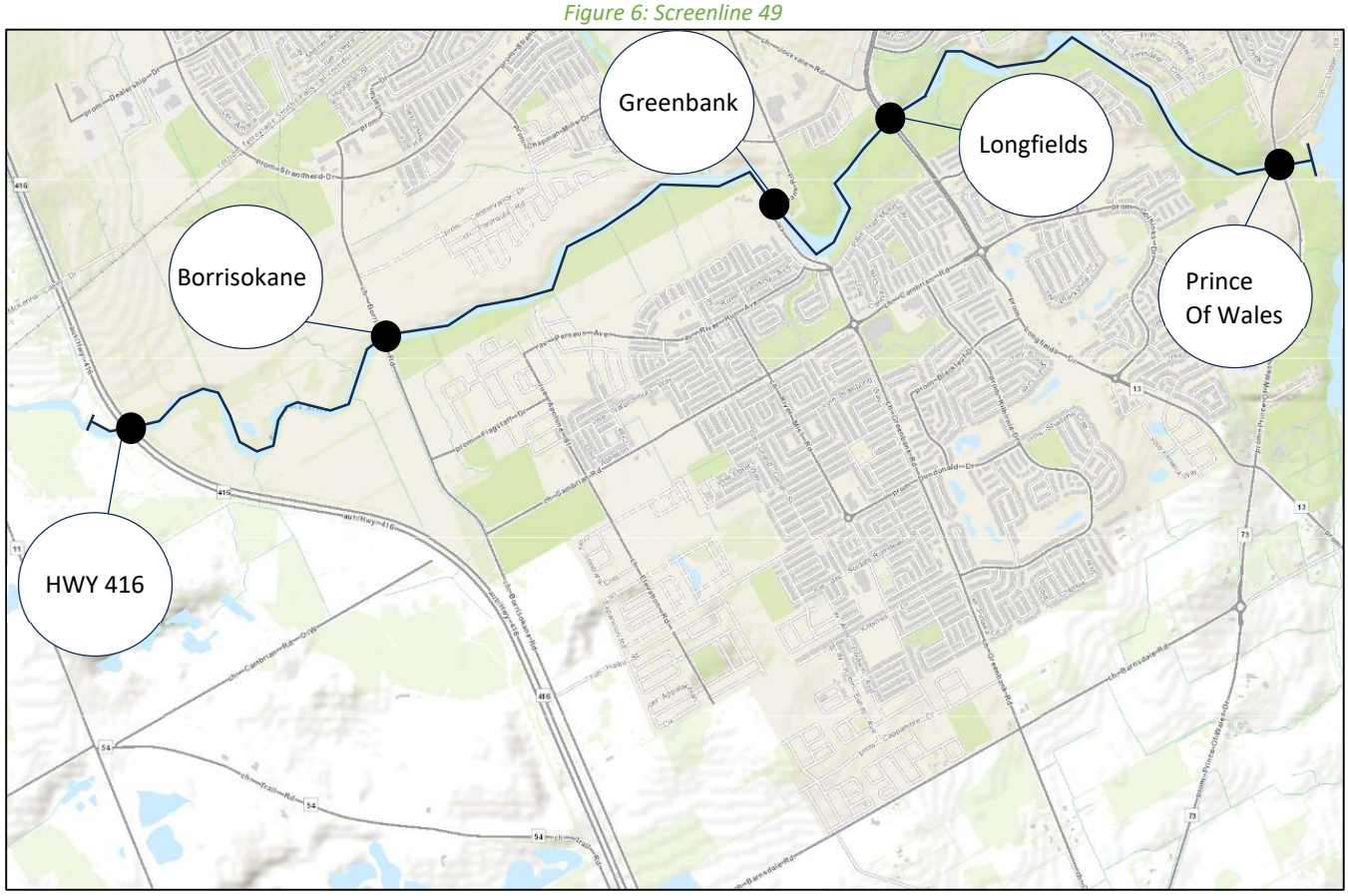
Dundonald Drive: Dundonald Drive is a City of Ottawa collector road with a two-lane urban cross-section including sidewalks on both sides east of the future Realigned Greenbank Road. On-street parking is permitted on both sides of the road. To the west of the future Realigned Greenbank Road, Dundonald Road is currently under construction and is anticipated to include multi-use pathways on both sides of the road. The unposted speed limit is assumed to be 40 km/h based on the traffic calming design of new neighborhoods, and the measured right-of-way is 24.0 metres.

4.2.2 Road Capacity

A high-level review of the key roadway lane capacities and utilizations was completed to assess the networks' ability to accommodate additional growth. The lane capacity estimates are assembled from a review of the TRANS Regional Model and Screenline 49, which extends along Jock River from Highway 416 to Prince of Wales Drive in an east-west direction. TRANS Regional Model is provided in Appendix E, and existing volumes are included in Appendix F. The screenline capacity has applied the City's peak period conversion factors, 0.84 for the morning peak and 0.92 afternoon peak period, to calculate the peak period volumes and percent utilization.

Screenline 49, extending from Highway 416 to Prince of Wales is illustrated in Figure 6. Table 1 summarizes the high-level capacity, existing volumes, and utilization of the roadway corridors.

Figure 6: Screenline 49



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: June 12, 2024

Table 1: Road Capacity Approximation

Roadway	Classification	Lane Capacity [cars/hour/lane]	Lanes per Direction	Capacity [cars/hour]	Existing Volumes	Percent Utilization
2022 TRANS Model	Highway 416	2200	2	4400	NB – 1601 SB – 520	NB – 36% SB – 12%
	Borrisokane	1000	1	1000	NB – 362 SB – 56	NB – 36% SB – 6%
	Greenbank	1000	1	1000	NB – 726 SB – 125	NB – 73% SB – 13%
	Longfields	1000	2	2000	NB – 826 SB – 241	NB – 41% SB – 12%

Roadway	Classification	Lane Capacity [cars/hour/lane]	Lanes per Direction	Capacity [cars/hour]	Existing Volumes	Percent Utilization
	Prince of Wales	1000	2	3000	NB – 1250 SB - 550	NB - 63% SB – 28%
	TOTAL	6200	8	10400	NB – 4765 SB – 1492	NB – 46% SB – 14%
2046 TRANS Model	Highway 416	2200	2	4400	NB – 2810 SB – 1018	NB – 64% SB – 23%
	Borrisokane	1000	1	1000	NB – 485 SB – 87	NB – 49% SB – 9%
	Re-Aligned Greenbank	1000	2	2000	NB – 723 SB – 249	NB – 36% SB – 12%
	Longfields	1000	2	2000	NB – 904 SB – 262	NB – 45% SB – 13%
	Prince of Wales	1000	2	2000	NB – 1497 SB – 1200	NB – 75% SB – 60%
	TOTAL	6200	9	11400	NB – 6419 SB – 2816	NB – 56% SB – 25%

Notes: Lane Capacity = single lane estimate
Percent Utilization = utilization range based on Volume for lane

Overall, the road network has residual capacity to accommodate continued growth in the area.

The 2022 model horizon highest capacity demand is along Greenbank Road at 74% and Prince of Wales Drive at 63%. At the 2046 model horizon, Prince of Wales Drive at 75% and Highway 416 at 64% are the highest demand roadways.

4.2.3 Network Connectivity

Within a five-kilometre radius from the centroid of Barrhaven South PH3, which covers Barrhaven South and a significant portion of the Barrhaven, key destinations include grocery stores, retail stores, schools, childcare centres, parks, long term care homes, bus rapid transit stops, libraries, and recreational facilities.

Connectivity to the adjacent community will be provided through future road connections to Elevation Road, Moyard Drive, and Cappamore Drive. The larger area is connected through Borrisokane Road and Barnsdale Road, which provide the connectivity from Barrhaven South PH3 boundary to the adjacent collector and arterial road network. These routes, such as Cambrian Road, Greenbank Road, Prince of Wales Drive, and Longfields Drive are the regional connections to the Barrhaven area.

4.2.4 Truck Routes - Within a Five-Kilometres Radius From The Centroid Of Barrhaven South PH3

Highway 416 is designated as a highway truck route.

North of Jock River, Strandherd Drive, Greenbank Road north of Jockvale Road, Jockvale Road between Greenbank Road and Longfields Drive, Longfields Drive south of Strandherd Drive, and Prince of Wales Drive are designated as full truck routes. In Barrhaven South, Longfields Drive and Prince of Wales Drive continue as full truck routes.

West of Highway 416, Moodie Drive, a section of Trail Road east of Moodie Drive, and Brophy Drive east of Moodie Drive are designated as full truck routes. Cambrian Road West and Brophy Drive west of Moodie Drive are designated as restricted loads truck routes. South of Barnsdale Road, Prince of Wales Drive continues as a full truck route, and Bankfield Road is also designated as a full truck route. East of Prince of Wales Drive, Bankfield Road continues as a full truck route. First Line Road, Rideau Valley Drive, Bridge Street, Manotick Main Street, and

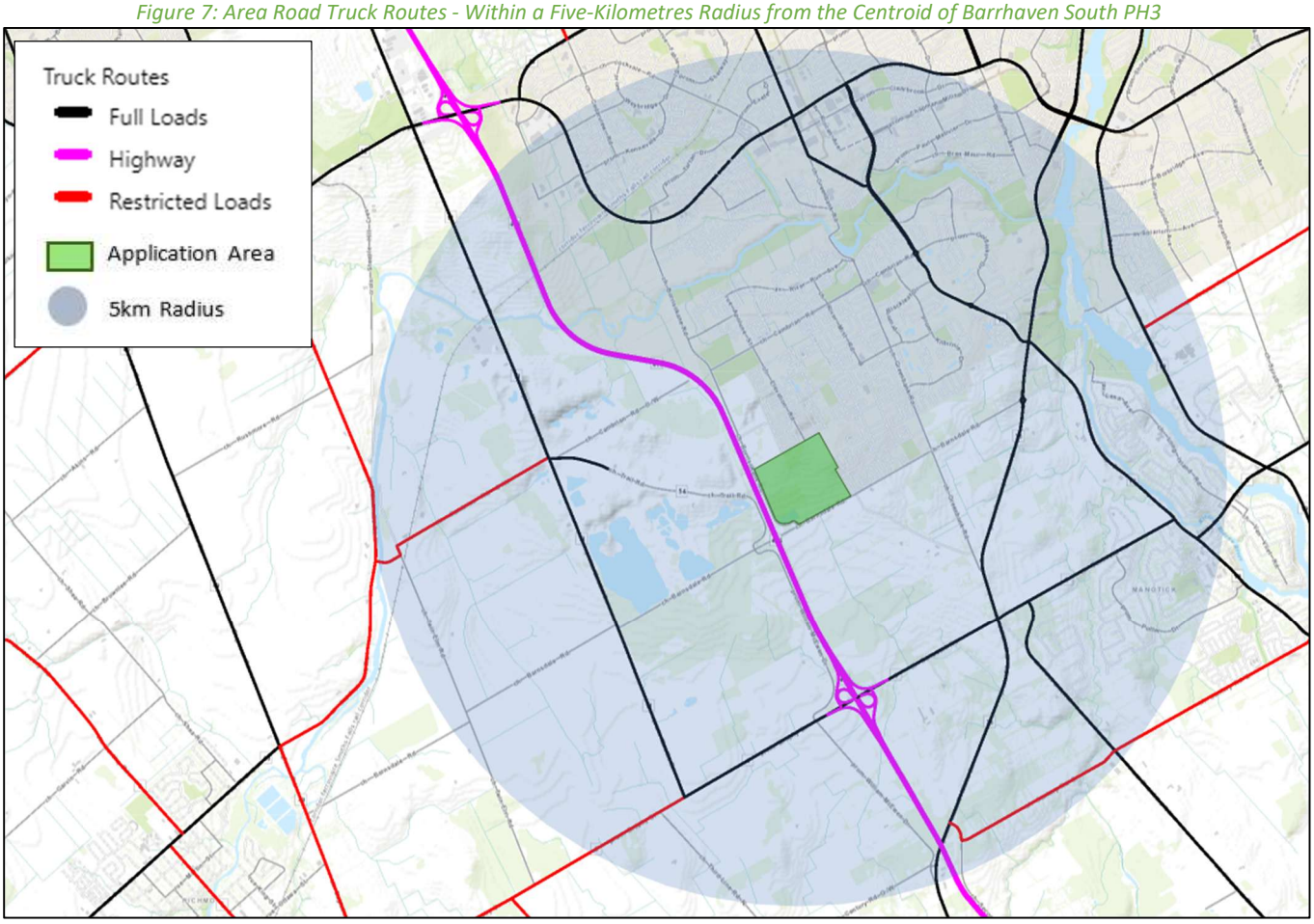
River Road are designated as full truck routes, and Century Road East and Rideau Road are designated as restricted loads truck routes.

The current truck route network does not provide any designated east-west routes through Barrhaven South, with a void between Strandherd Drive and Bankfield Road, and Longfields Drive and Prince of Wales Drive provide the only north-south route.

Given the classification of Greenbank Road as a truck route within Barrhaven, the addition of Realigned Greenbank Road to the truck network would provide additional truck route opportunities within Barrhaven South. The land uses along Borrisokane Road, the current routing of heavier vehicles needed for development in Barrhaven South and the future interchange at Barnsdale Road all indicate that Borrisokane Road should be investigated for a truck route designation. Similarly, Barnsdale Road may serve as the east-west connection for Barrhaven South and link Prince of Wales Drive to Highway 416.

Figure 7 illustrates the truck routes within a five-kilometre radius from the centroid of Barrhaven South PH3.

Figure 7: Area Road Truck Routes - Within a Five-Kilometres Radius from the Centroid of Barrhaven South PH3



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: October 22, 2024

4.2.5 Key Study Area Intersection

The study area's key intersections were confirmed with the S-1 Transportation Working Group, similar to the study area discussions. The key intersections within the study area are summarized below:

Borrisokane Road at Cambrian Road	The intersection of Borrisokane Road at Cambrian Road is an unsignalized T-intersection with stop control on the minor approach of Cambrian Road. The northbound approach consists of a shared through/right-turn lane, and the southbound approach consists of a shared left-turn/through lane. The westbound approach consists of a shared left-turn/right-turn lane. No turn restrictions were noted.
Apolune Street /Elevation Road at Cambrian Road	The intersection of Apolune Street/Elevation Road at Cambrian Road is currently an unsignalized intersection with stop control on the minor approach of Apolune Street/Elevation Road. All approaches consist of an auxiliary left-turn lane and a shared through/right-turn lane. No turn restrictions are noted.
Greenbank Road at Cambrian Road	The intersection of Greenbank Road at Cambrian Road is a four-legged roundabout intersection with pedestrian crossovers on all approaches. All approaches consist of a shared all-movements lane. No turn restrictions were noted.
Borrisokane Road at Barnsdale Road	The intersection of Borrisokane Road at Barnsdale Road is an unsignalized T-intersection with stop control on the minor approach of Borrisokane Road. The southbound approach consists of a shared left-turn/right-turn lane. The eastbound approach consists of a shared left-turn/through lane, and the westbound approach consists of a shared through/right-turn lane. No turn restrictions were noted.
Greenbank Road at Barnsdale Road	The intersection of Greenbank Road at Barnsdale Road is an unsignalized intersection with all-way stop control. All approaches consist of a shared all-movements lane. No turn restrictions were noted.
Prince of Wales Drive at Barnsdale Road	The intersection of Prince of Wales Drive at Barnsdale Road is a four-legged roundabout intersection with pedestrian crossovers on all approaches. All approaches consist of a shared all-movements lane. No turn restrictions were noted.
Borrisokane Road at Haiku Street	The intersection of Borrisokane Road at Haiku Street is an unsignalized T-intersection with stop control on the minor approach of Haiku Street. The northbound approach consists of a shared through/right-turn lane, and the southbound approach consists of a shared left-turn/through lane. The westbound approach consists of a shared left-turn/right-turn lane. No turn restrictions were noted.
Barnsdale Road at Trail Road/William McEwen Drive	The intersection of Barnsdale Road at Trail Road/William McEwen Drive is an unsignalized intersection with stop control on the minor approaches of Trail Road/William McEwen Drive. Each approach consists of a shared all-movement lane. No turn restrictions were noted.

4.2.5.1 Key Intersection Operations

Existing turning movement counts were acquired from the City of Ottawa and Ontario Traffic Inc. for the existing study area key intersections. Table 2 summarizes the intersection count dates and sources.

Table 2: Intersection Count Date

Intersection	Count Date	Source
Borrisokane Road at Cambrian Road	Wednesday, April 20, 2022	City of Ottawa
Cambrian Road at Elevation Road/ Apolune Road	Wednesday March 23, 2022	City of Ottawa
Greenbank Road at Cambrian Road	Tuesday, April 26, 2022	City of Ottawa
Borrisokane Road at Barnsdale Road	Wednesday, Mar 20, 2024	Ontario Traffic Inc.
Greenbank Road at Barnsdale Road	Wednesday, Mar 20, 2024	Ontario Traffic Inc.
Prince of Wales Drive at Barnsdale Road	Wednesday, Mar 20, 2024	Ontario Traffic Inc.
Borrisokane Road at Haiku Street	Tuesday, April 23, 2024	Ontario Traffic Inc
Barnsdale Road at Trail Road/William McEwen Drive	Monday, July 26, 2021	City of Ottawa

Figure 8 illustrates the existing traffic counts and Table 3 summarizes the existing intersection operations. Synchro 11 has been used to model the unsignalized intersections and Sidra 9 to model the study area roundabout. HCM 2010 methodology was used for unsignalized intersection and roundabout operations. Detailed turning movement count data is included in Appendix F and the Sidra and Synchro worksheets are provided in Appendix G.

Figure 8: Existing Traffic Counts

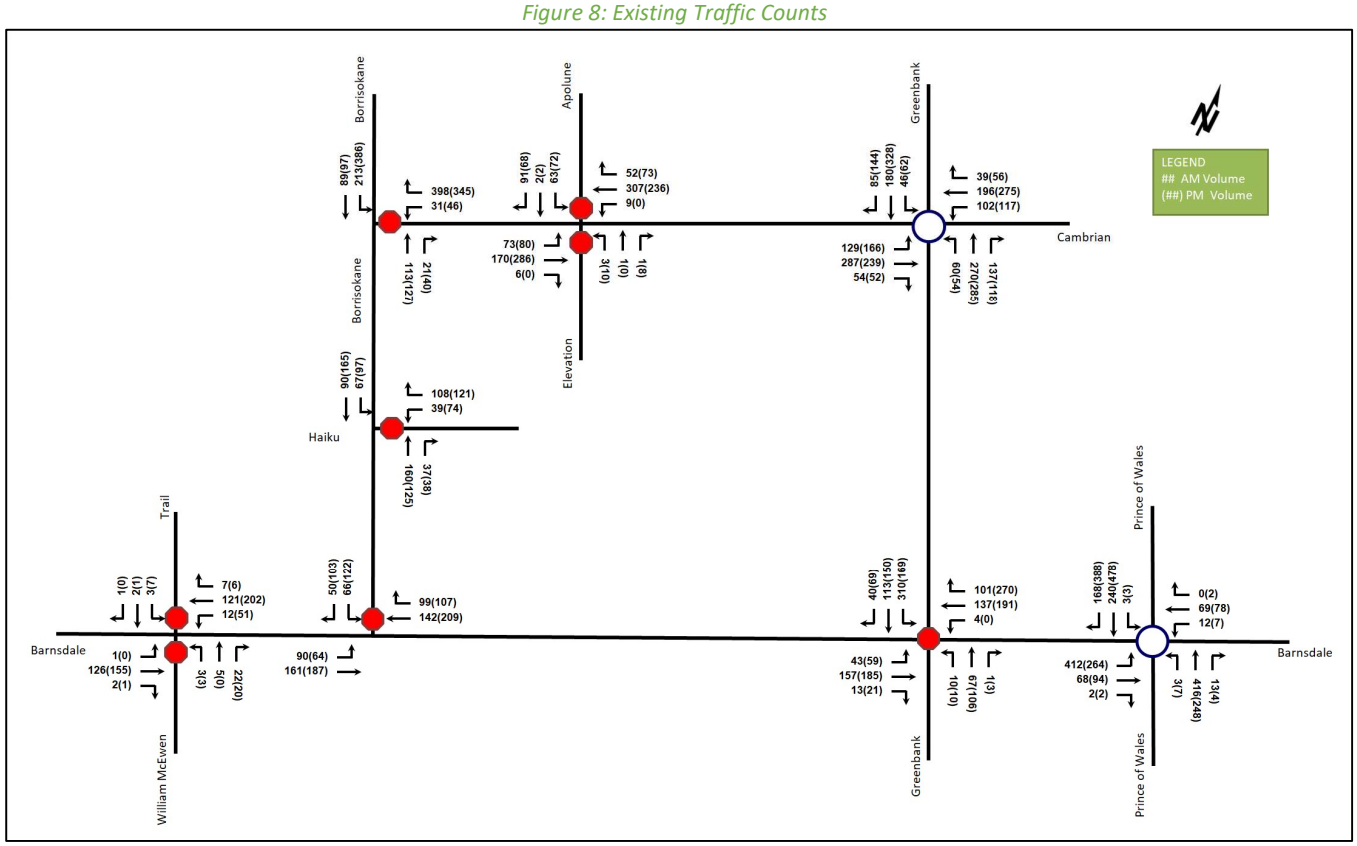


Table 3: Existing Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Borrisokane Road at Cambrian Road *Unsignalized*	WBL/R	C	0.61	16.3	31.5	D	0.78	31.1	54.8
	NBL/R	A	0.18	8.2	4.5	A	0.31	8.8	10.5
	SBL/T	A	-	0.0	-	A	-	0.0	-
	Overall	**B**	**-**	**10.1**	**-**	**B**	**-**	**15.0**	**-**

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Cambrian Road at Elevation Road/ Apolune Road *Unsignalized*	EBL	A	0.07	8.5	1.5	A	0.07	8.2	1.5
	EBT/R	-	-	-	-	-	-	-	-
	WBL	A	0.01	7.6	0.0	A	-	0.0	0.0
	WBT/R	-	-	-	-	-	-	-	-
	NBL	C	0.02	24.5	0.8	C	0.05	21.2	0.8
	NBT/R	B	0.01	13.2	0.0	B	0.01	10.0	0.0
	SBL	C	0.23	20.7	6.8	C	0.29	22.8	8.3
	SBT/R	B	0.16	11.8	4.5	B	0.11	10.7	3.0
	Overall	**A**	**-**	**4.1**	**-**	**A**	**-**	**4.0**	**-**
Greenbank Road at Cambrian Road *Roundabout*	EB	C	0.70	18.2	58.1	D	0.82	30.3	71.7
	WB	C	0.61	17.1	32.7	D	0.79	27.3	64.7
	NB	D	0.79	26.6	68.8	D	0.78	25.2	63.5
	SB	B	0.48	11.7	20.6	E	0.88	35.4	106.6
	Overall	**C**	**0.79**	**19.2**	**68.8**	**D**	**0.88**	**29.8**	**106.6**
Prince of Wales Drive at Barnsdale Road *Roundabout*	EB	B	0.64	14.7	50.3	C	0.65	18.7	36.1
	WB	B	0.21	11.6	4.9	A	0.16	7.7	3.9
	NB	C	0.76	24.7	58.2	A	0.39	9.9	13.1
	SB	A	0.46	8.6	18.6	D	0.96	33.5	342.6
	Overall	**C**	**0.76**	**15.8**	**58.2**	**C**	**0.96**	**24.8**	**48.1**
Greenbank Road at Barnsdale Road *Unsignalized*	EB	B	0.43	14.3	15.8	C	0.61	21.4	30.0
	WB	B	0.45	14.2	18.0	E	0.93	49.9	88.5
	NB	B	0.17	11.2	4.5	B	0.30	14.9	9.8
	SB	D	0.83	31.4	66.8	E	0.86	39.3	66.8
	Overall	**C**	**-**	**22.0**	**-**	**E**	**-**	**37.1**	**-**
Borrisokane Road at Barnsdale Road Un*signalized*	EBL/T	A	0.08	8.0	1.5	A	0.06	8.2	1.5
	WBT/R	-	-	-	-	-	-	-	-
	SBL/R	B	0.24	13.7	6.8	C	0.49	18.5	19.5
	Overall	**A**	**-**	**3.8**	**-**	**A**	**-**	**5.9**	**-**
Barnsdale Road at Trail Road/William McEwen Drive *Unsignalized*	EBL	A	0.00	7.5	0.0	A	-	0.0	0.0
	WB	A	0.01	8.1	0.0	A	0.05	8.2	1.5
	NB	B	0.05	10.3	0.8	A	0.03	9.9	0.8
	SB	B	0.01	11.7	0.0	B	0.02	14.6	0.8
	Overall	**A**	**-**	**1.6**	**-**	**A**	**-**	**1.7**	**-**
Borrisokane Road at Haiku Street *Unsignalized*	WBL/R	B	0.23	11.5	6.8	B	0.34	13.6	11.3
	NBT/R	-	-	-	-	-	-	-	-
	SBL/T	A	0.06	8.0	1.5	A	0.08	7.9	2.3
	Overall	**A**	**-**	**4.4**	**-**	**A**	**-**	**5.5**	**-**

Notes:
Saturation flow rate of 1800 veh/h/lane
Queue is measured in metres
Peak Hour Factor = 0.90
Delay = average vehicle delay in seconds
m = metered queue
# = volume for the 95th %ile cycle exceeds capacity

During both the AM and PM peak hours, the study area intersections operate well. No capacity issues are noted.

4.2.6 Collision History

The collision study area includes the Borrisokane Road from Cambrian Road to Barnsdale Road and Barnsdale Road from Trail Road to Greenbank Road. Collisions on Highway 416 are excluded from this review.

Collision data have been acquired from the City of Ottawa open data website (data.ottawa.ca) for five years for the surrounding study area road network. Table 4 summarizes the collision types and conditions in the study area,

Figure 9 illustrates the study area collision records, and Table 5 summarizes the total collisions for each of these locations. Collision data are included in Appendix H.

Table 4: Study Area Collision Summary, 2018-2022

		Number	%
Total Collisions		**31**	**100%**
Classification	**Fatality**	0	0%
	Non-Fatal Injury	12	39%
	Property Damage Only	19	61%
Initial Impact Type	**Approaching**	2	6%
	Angle	9	29%
	Rear end	7	23%
	Sideswipe	3	10%
	Turning Movement	3	10%
	SMV Other	7	23%
Road Surface Condition	**Dry**	20	65%
	Wet	6	19%
	Loose Snow	2	6%
	Slush	1	3%
	Ice	1	3%
	Loose sand or gravel	1	3%
Pedestrian Involved		0	0%
Cyclists Involved		0	0%

Figure 9: Study Area Collision Records, 2018-2022

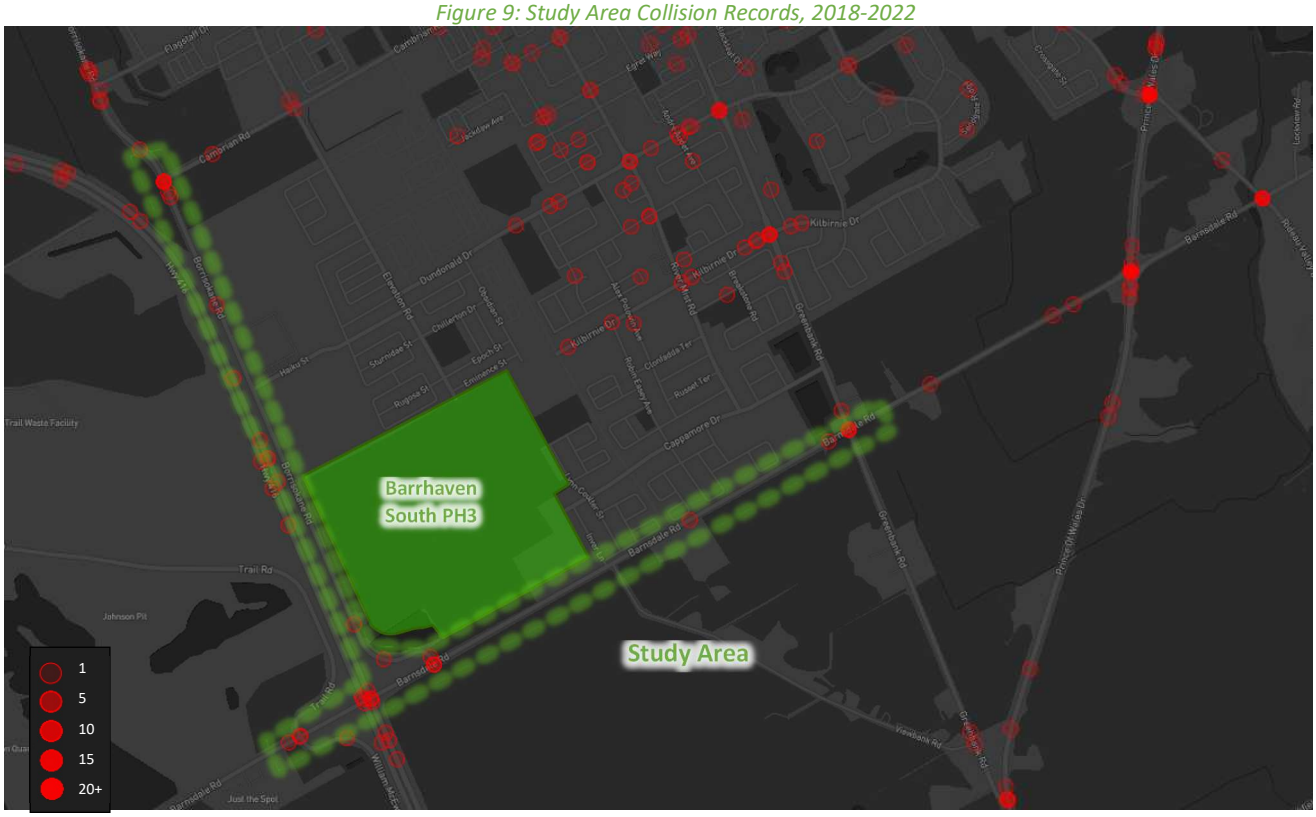


Table 5: Summary of Collision Locations, 2018-2022

	Number	%
Intersections / Segments	**31**	**100%**
Borrisokane Rd @ Cambrian Rd	9	29%
Barnsdale Rd @ Greenbank Rd	6	19%
Barnsdale Rd E @ Borrisokane Rd (Previous called Cedarview Rd E)	4	13%
Barnsdale Rd W @ Trail Rd (Previous called Cedarview Rd W)	4	13%
Borrisokane Rd btwn Cambrian Rd & Haiku St	3	10%
Borrisokane Rd btwn Barnsdale Rd & Cambrian Rd	3	10%
Barnsdale Rd btwn Greenbank Rd & Viewbank Rd	2	6%

Within the study area, there are a total of 31 collisions during the 2018-2022 time period, with 19 involving property damage only and the remaining twelve having non-fatal injuries. No collisions involving pedestrians or cyclists were noted within the study area.

The intersection of Borrisokane Road at Cambrian Road experienced slightly more collisions than other locations, with a total of nine collisions during the 2018-2022 time period. The collisions are generally evenly distributed across specific categories, e.g. dry or wet, day or dusk/night, rear end collision, but are mixed between categories resulting in a variety of overlapping characteristics. The City's intersection improvement for this intersection will need to review the collisions to ensure adequate sightlines, pavement surface, illumination and turn lane space are provided to improve conditions in the future. No further collision review is required as part of this study.

4.3 Pedestrian and Cycling Facilities

The concept of 15-minute Neighbourhoods is based on the ability of a community to walk 15 minutes to meet their general daily needs. According to the Official Plan and the Transportation Master Plan – Part 1, the 15-minute walking distance is equivalent to a radius of 900 metres or 1,500-metre along pedestrian facilities and informed the transportation review for the active mode study area. The review is proposed to encompass the pedestrian and cycling networks within a one-kilometre distance from the boundary of Barrhaven South PH3. This scope was confirmed with the S-1 Transportation Working Group, with the amendment to review the 1.5-kilometre walking distance and use the greater of the two distances. The high-level network review will be consistent with the draft Terms of Reference and review the five-kilometre radius from the centroid of Barrhaven South PH3.

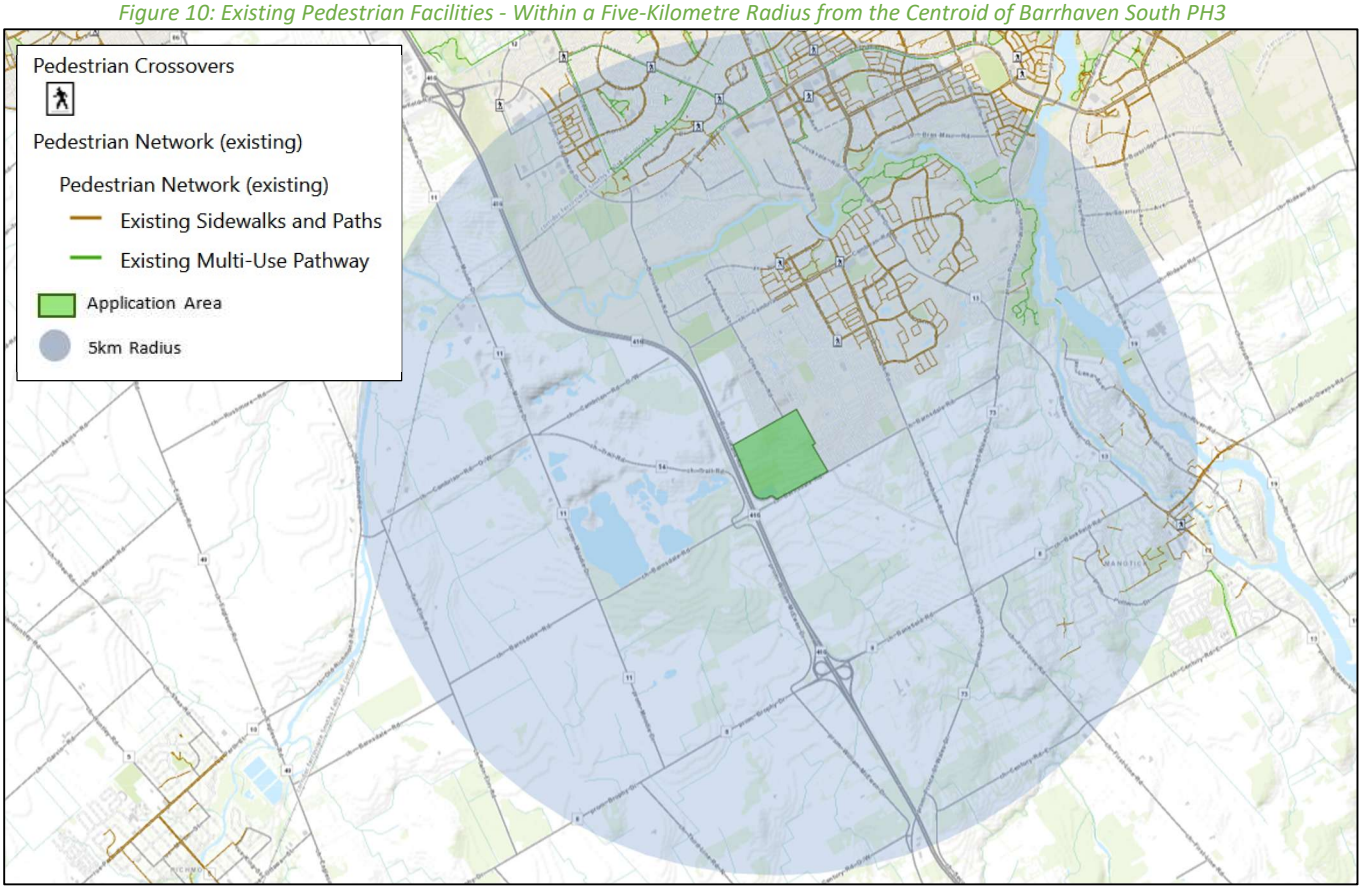
4.3.1 Existing Pedestrian Network – Within a Five-Kilometre Radius from the Centroid of Barrhaven South PH3

Existing pedestrian facilities in Barrhaven are predominantly focused along road corridors, with limited off-road connections.

Key roads with sidewalks or pathways include Strandherd Drive east of Borrisokane Road, Cambrian Road east of Cambrian Road Woods, Greenbank Road north of Kilbirnie Drive, and Longfields Drive north of Cambrian Road. MUPs are provided along Jockvale Road, a portion of Strandherd Drive, and Woodroffe Avenue.

Figure 10 illustrates the pedestrian facilities within a five-kilometre radius from the centroid of Barrhaven South PH3. It is noted that the City has not yet formalized a number of new community sidewalks and pathways in the figure below. These have not been updated given the expansive context of the study area shown and the general regional pedestrian connectivity is sufficiently illustrated.

Figure 10: Existing Pedestrian Facilities - Within a Five-Kilometre Radius from the Centroid of Barrhaven South PH3



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: October 22, 2024

The existing pedestrian network within a five-kilometre radius from the centroid of Barrhaven South PH3 presents gaps in the network connectivity from Barrhaven South to north of Jock River. Currently, there are no pedestrian connections along Borrisokane Road. To address this gap, it is recommended that the City explore opportunities to implement pathways or sidewalks along the roadway. The Realigned Greenbank Road corridor could also provide much needed connectivity for Barrhaven South, should the sidewalks be constructed as an interim measure.

South of Barnsdale Road, Greenbank Road, Prince of Wales Drive, and Rideau Valley Road are corridors with missing connections to Manotick. To address these gaps, it is recommended that the City explore opportunities to implement pathways or sidewalks along these roadway segments.

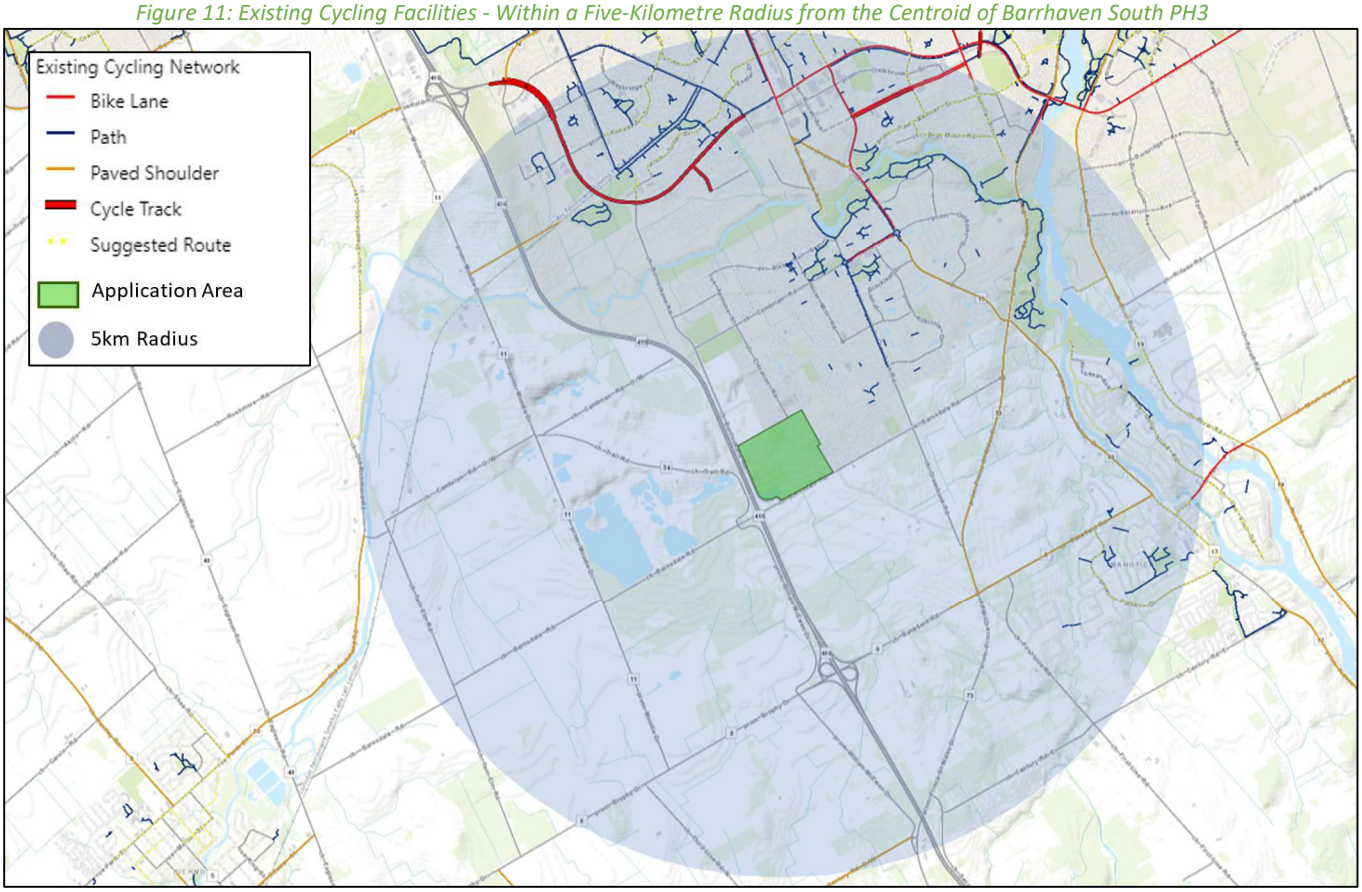
4.3.2 Existing Cycling Network – Within a Five-Kilometre Radius from the Centroid of Barrhaven South PH3

Existing cycling facilities in Barrhaven South are predominantly provided through rural paved shoulders, off-road pathway networks and links, with sections of bike lanes appearing along major roadways to the north and east.

Within a five-kilometre radius from the centroid of Barrhaven South PH3, cycle tracks are present along Strandherd Drive west of Jockvale Road and along Chapman Mills Drive between Longfields Drive and Beatrice Drive. Bike lanes are present on Strandherd Drive east of Greenbank Road, Greenbank Road north of Marketplace Avenue, Greenbank Road between Cambrian Road and Kilbirnie Drive, Longfields Drive between Strandherd Drive and Cambrian Road, Chapman Mills Drive between Beatrice Drive and Woodroffe Avenue, and Cambrian Road between Greenbank Road and Longfields Drive.

Figure 11 illustrates the cycling facilities within a five-kilometre radius from the centroid of Barrhaven South PH3. It is noted that the City has not yet formalized a number of new community pathways, existing cycle tracks, and existing bike lanes. These have not been updated due to the expansive context of the study area shown and the general regional cycling connectivity is sufficiently illustrated.

Figure 11: Existing Cycling Facilities - Within a Five-Kilometre Radius from the Centroid of Barrhaven South PH3



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: October 22, 2024

The existing cycling network within a five-kilometre radius from the centroid of Barrhaven South PH3 presents a number of gaps in the network connectivity from Barrhaven South to north of Jock River. Currently, there are no cycling connections along Borrisokane Road, Barnsdale Road, Cambrian Road west of Greenbank Road, Greenbank Road between Cappamore Drive and Kilbirnie Drive and connectivity between Strandherd Drive and the Cross-Town Bikeway terminating at the end of Cedarview Road.

South of Barnsdale Road, Manotick Main Street south is a corridor with a missing connection to Manotick.

Similar to the pedestrian network, the Realigned Greenbank Road corridor could also supply much needed connectivity for Barrhaven South, should the cycle tracks be constructed as an interim measure.

4.3.3 Study Area Pedestrian Network – 15-Minute Neighbourhoods

The local pedestrian network consists of new sidewalks in the community north and east of Barrhaven South PH3, with pathways linking through parks and open spaces. These sidewalks and pathways extend to the adjacent collector and arterial road network.

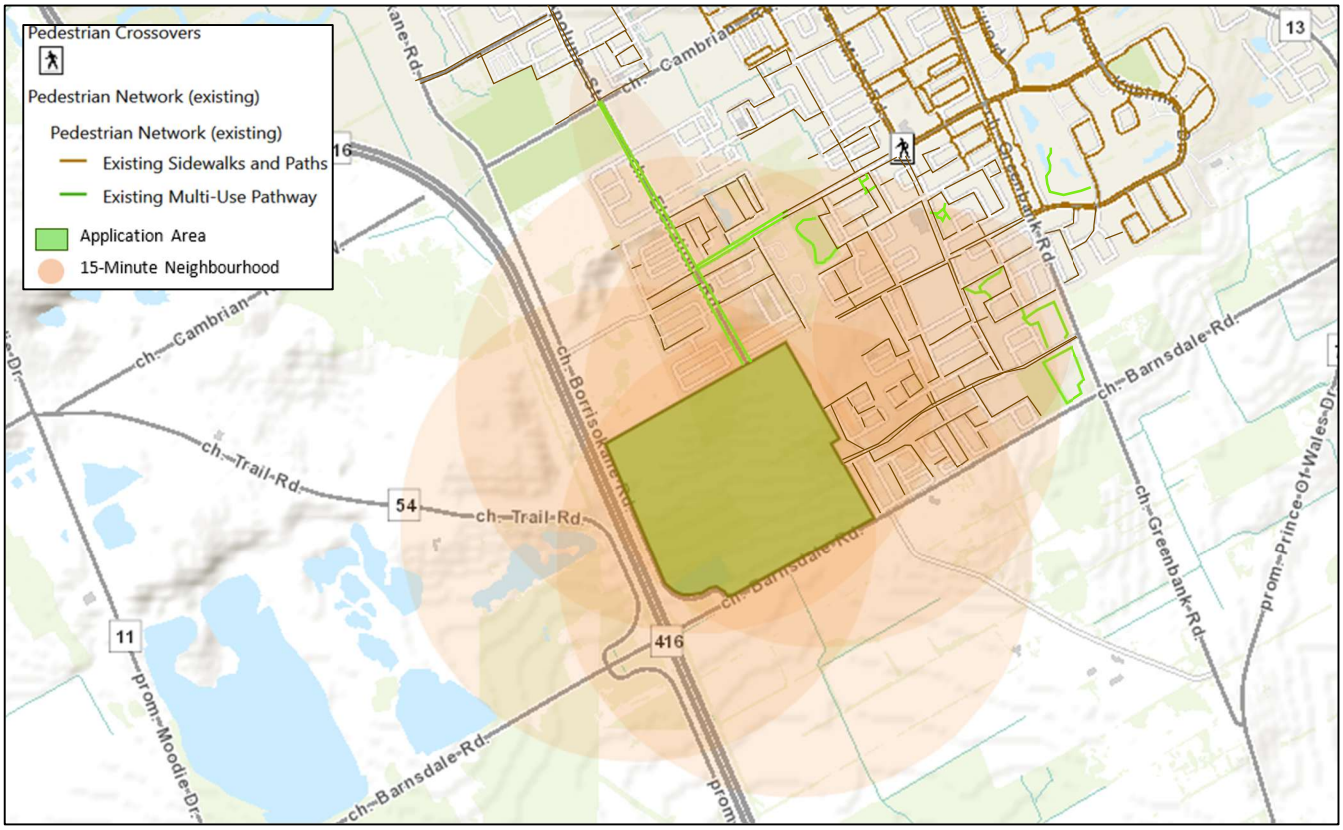
Pedestrian facilities providing local connectivity include MUPs on Elevation Road and Dundonald Drive west of Realignment Greenbank Road, sidewalks on Cappamore Drive, Kilbirnie Drive, Obsidian Street, Dundonald Drive

east of Realignment Greenbank Road, River Mist Road, Cambrian Road east of Cambrian Road Woods Park for approximately 450 metres, and Apolune Street. Sidewalks are also present on one side of local roads within the eastern and northern communities. In general, the sidewalk and pathway network within the various subdivisions provide the connectivity for Barrhaven South in the absence of the arterial road network facilities. These local and collector road facilities offer full connections from Barrhaven South PH3 to the east and north areas and to key destinations within the adjacent community, including elementary schools and parks.

The pedestrian volumes were included in the study area intersection counts, and are included in Appendix F.

Figure 12 illustrates the existing pedestrian within the 15-minute Neighbourhoods. New community sidewalks and MUPs have been included in the figure despite not yet being formalized within the City's pedestrian network in geoOttawa. The area's pedestrian network is developing and is expected to expand north of Barrhaven South PH3.

Figure 12: Study Area Pedestrian Facilities – 15-Minute Neighbourhoods



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: October 22, 2024

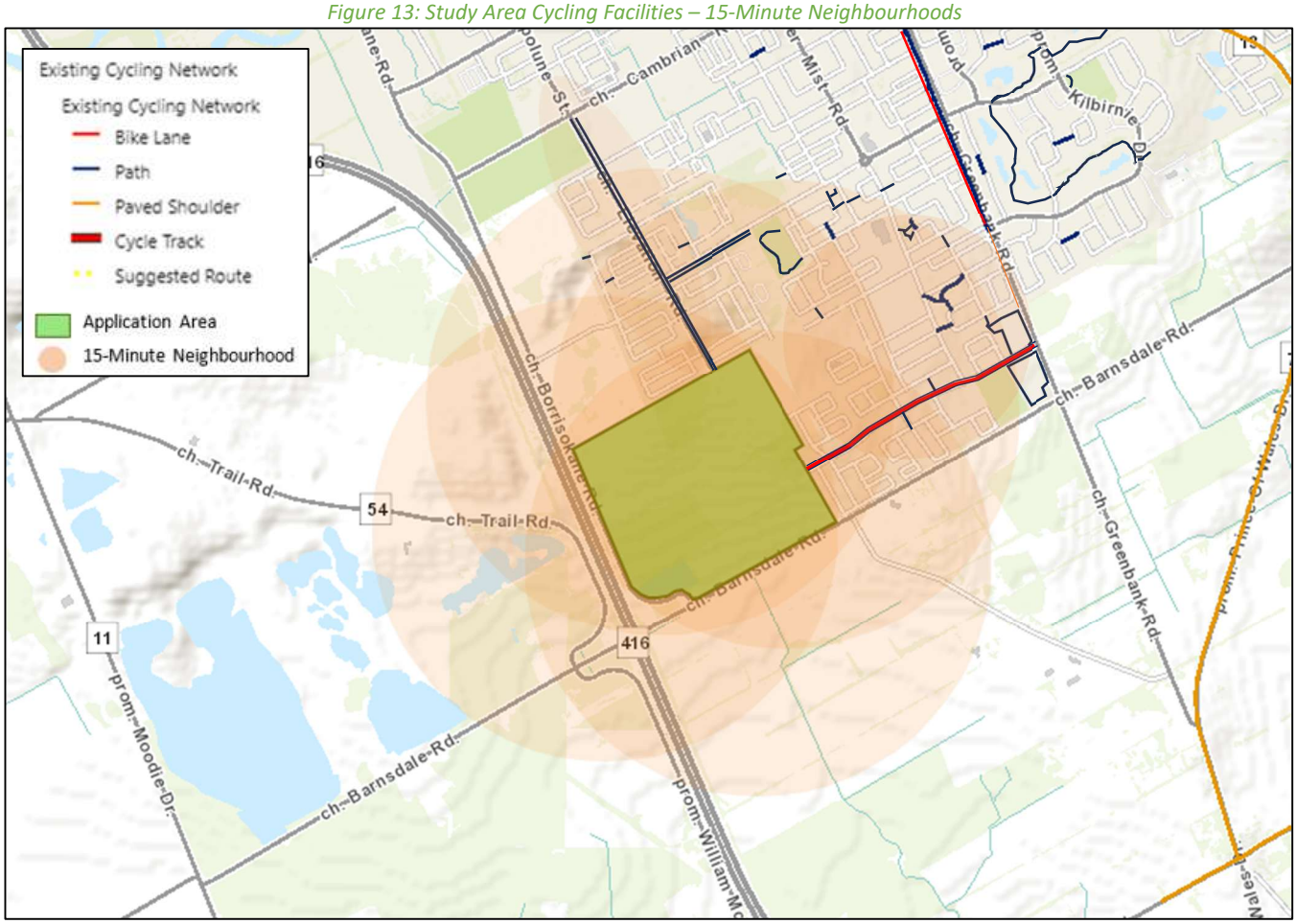
4.3.4 Study Area Cycling Network – 15-Minute Neighbourhoods

Within 15-minute Neighbourhoods, cycletracks are present on both sides of Cappamore Drive and MUPs are provided on both sides of Elevation Road and Dundonald Drive west of Realignment Greenbank Road. Just beyond the 15-minute Neighbourhoods, a bike lane is present on the east side of Greenbank Road north of Kilbirnie Drive, while a MUP is provided on the west side. The MUP transitions to a paved shoulder on the west side and a gravel shoulder on the east side from Kilbirnie Drive to around 350 metres south of Kilbirnie Drive and then to gravel shoulders on both sides further south. Gravel shoulders are also provided along Barnsdale Road and Borrisokane Road. No cycling facilities are currently available for travelling south.

The cyclist volumes were included in the study area intersection counts, and are included in Appendix F.

Figure 13 illustrates the cycling facilities within the 15-minute Neighbourhoods. New community cycling pathways are currently under construction to the north and east of Barrhaven South PH3. Despite not yet formalized within the City's cycling network in geoOttawa at this time, they have been included in the figure below.

Figure 13: Study Area Cycling Facilities – 15-Minute Neighbourhoods



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: October 22, 2024

4.3.5 Ultimate Pedestrian and Cycling Network

The ultimate pedestrian and cycling network have been outlined in the 2023 Transportation Maser Plan. Within a five-kilometre radius from the centroid of Barrhaven South PH3, the Smiths Falls rail corridor, Strandherd Drive, Greenbank Road, and Realigned Greenbank Road are designated as Cross-Town Bikeways. However, a lack of connectivity has been noted from McKenna Casey Drive, Strandherd Drive and the terminus of the Cross-Town Bikeway at Cedarview Road. Cycling projects are listed for Manotick Main Street / Bridge Street, Strandherd Drive Eastbound, and Longfields Drive and Berrigan Drive. For the rural area network, major pathways are identified along a portion of Jock River from Moodie Drive and Borrisokane Road, and McKenna Casey Drive. Additionally, paved shoulders are proposed on Prince of Wales Drive south of Longfields Drive, Rideau Valley Drive north of Barnsdale Road, and Barnsdale Road west of Prince of Wales Drive. The addition of paved shoulders along Prince of Wales Drive south of Bankfield Road and Barnsdale Road west of Prince of Wales Drive is expected to meet the minimum need for cycling links from Barrhaven South PH3 to the rural area.

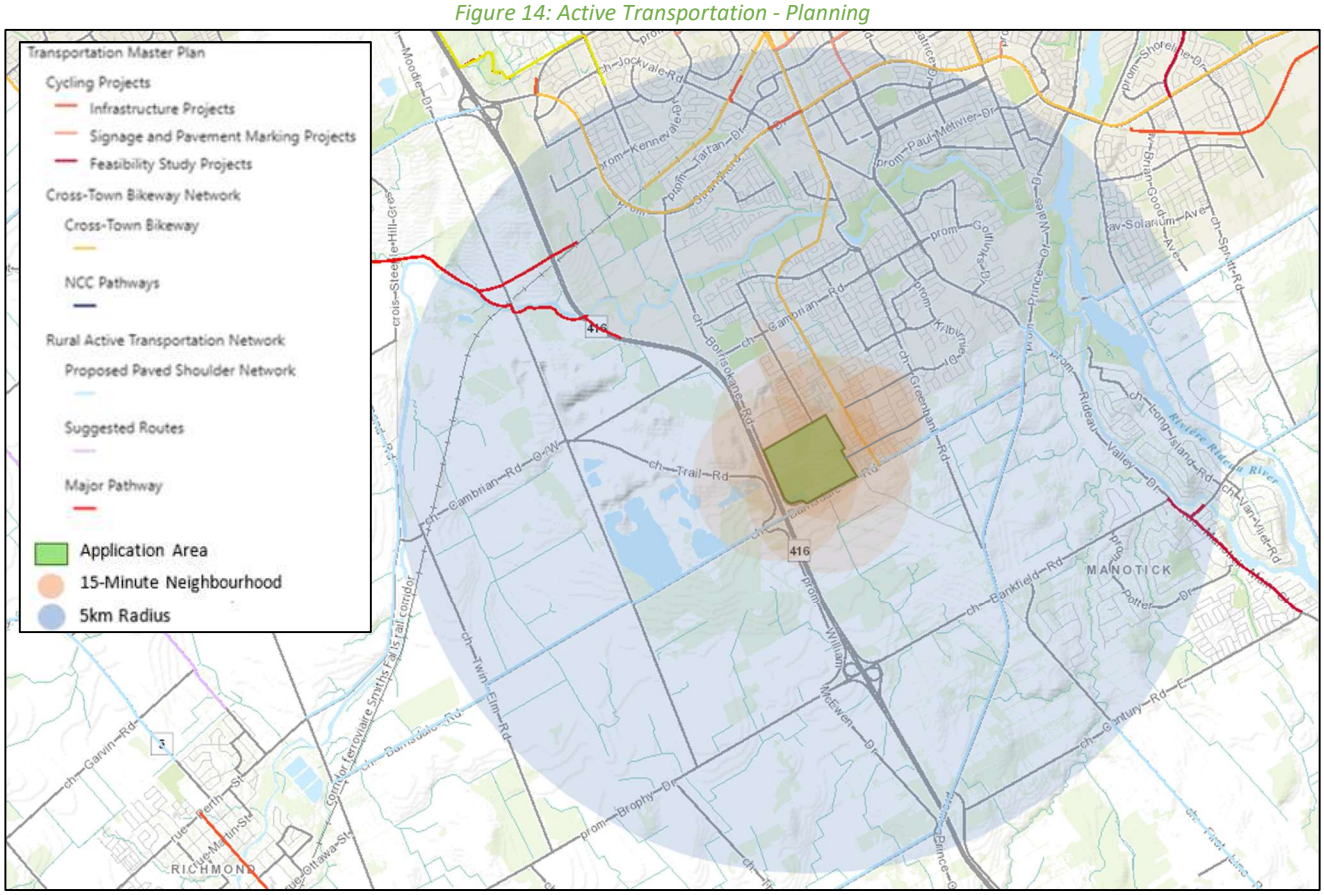
Timing for projects currently identified to be in the Phase 1 are Realigned Greenbank Road from Cambrian Road to Barnsdale Road, and Borrisokane Road from Strandherd Drive to Cambrian Road. The remaining projects are either undefined or included in Phase 2.

Within the 2023 Transportation Master Plan, no pedestrian or cycling projects are identified beyond the new Realigned Greenbank Road, urbanized Borrisokane Road north of Cambrian Road and paved shoulders along Barnsdale Road. None of the other identified missing links are specifically addressed and expected to remain unless included in other improvement programs.

Pedestrian and cycling facilities are anticipated to be provided along Cambrian Road in the future, which will address missing cycling links along Cambrian Road west of Greenbank Road.

Figure 14 illustrates the active transportation planning outlined in the 2023 Transportation Master Plan.

Figure 14: Active Transportation - Planning



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: October 22, 2024

4.3.6 Network Connectivity to Adjacent Community

The connectivity to the adjacent community will be provided through future neighbourhood road connections to Elevation Road, Kilbirnie Drive and Cappamore Drive. The roadway sidewalks will provide connectivity from Barrhaven South PH3 boundary to destinations within the eastern and northeastern communities.

The key destinations within the adjacent community include one elementary school with a licensed childcare center, five parks, and the upcoming Cappamore Park.

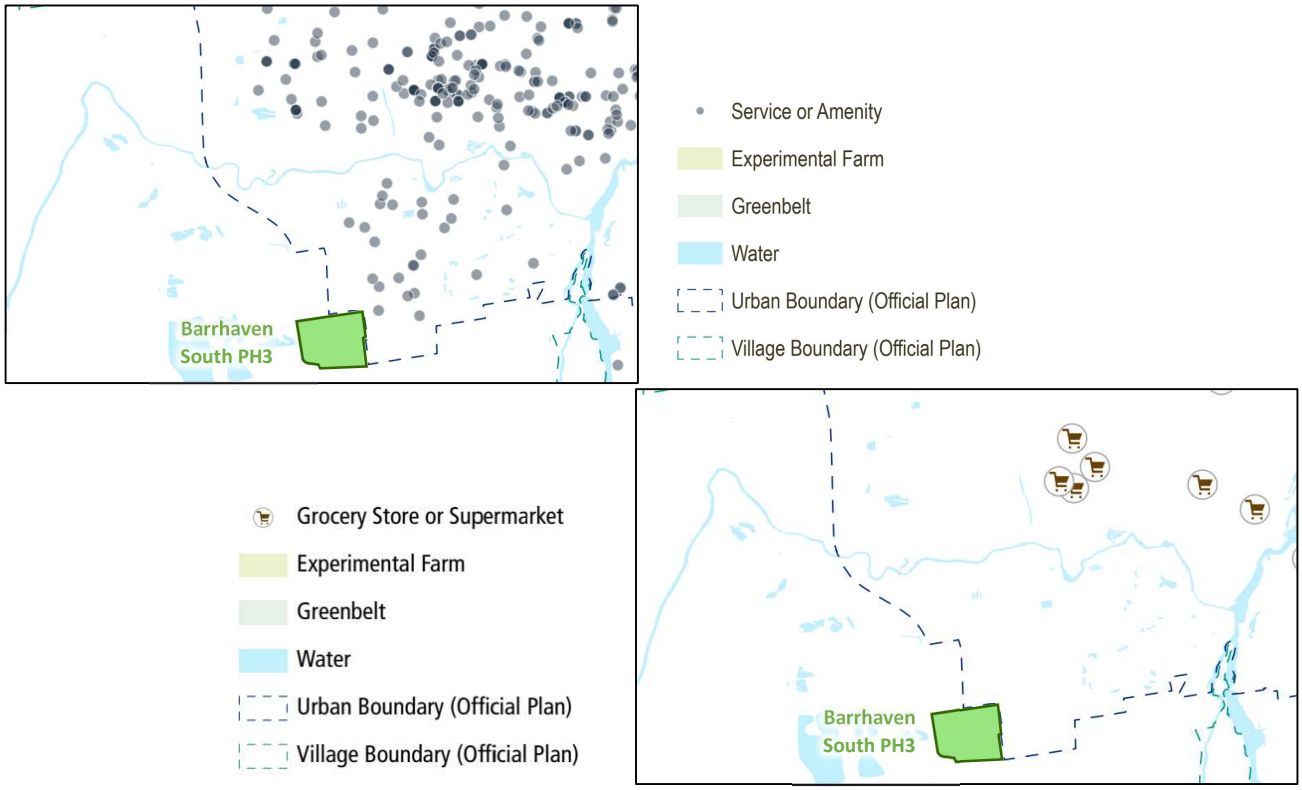
4.3.7 15-Minute Neighbourhood Desire Lines

Within 15-minute Neighbourhoods, there are one elementary school with a licensed childcare center and five parks. The forthcoming Cappamore Park, situated at 725 Cappamore Drive, is currently under construction.

At present, there is no existing retail or commercial development located within the 15-minute Neighbourhoods, although a planned commercial block is located at the northwest corner of Kilbirnie Drive at Realigned Greenbank Road intersection. Beyond 15-minute Neighbourhoods, existing retail is located at the northwest corner of Kilbirnie Drive at Greenbank Road intersection, and additional commercial spaces are planned at the intersection of Borrisokane Road at Flagstaff Drive. Two grocery stores, a drug store and an undeveloped retail block are also anticipated to be located at the Cambrian Road and future Realigned Greenbank Road intersection. Two future elementary schools are anticipated to be located within the Quinn's Pointe community, located at 735 Cappamore Drive and 110 Robin Easey Avenue. The desire line to existing schools and parks will be provided through the connections noted in Section 5.3.6.

Figure 15 illustrates the service, amenity, grocery store, and supermarket locations. It is noted that the City's maps shown below do not include newer amenities or those currently under approval.

Figure 15: 15-Minute Neighbourhood – Map A1 & Map A1-1: Service, Amenity, Grocery Store, and Supermarket Locations

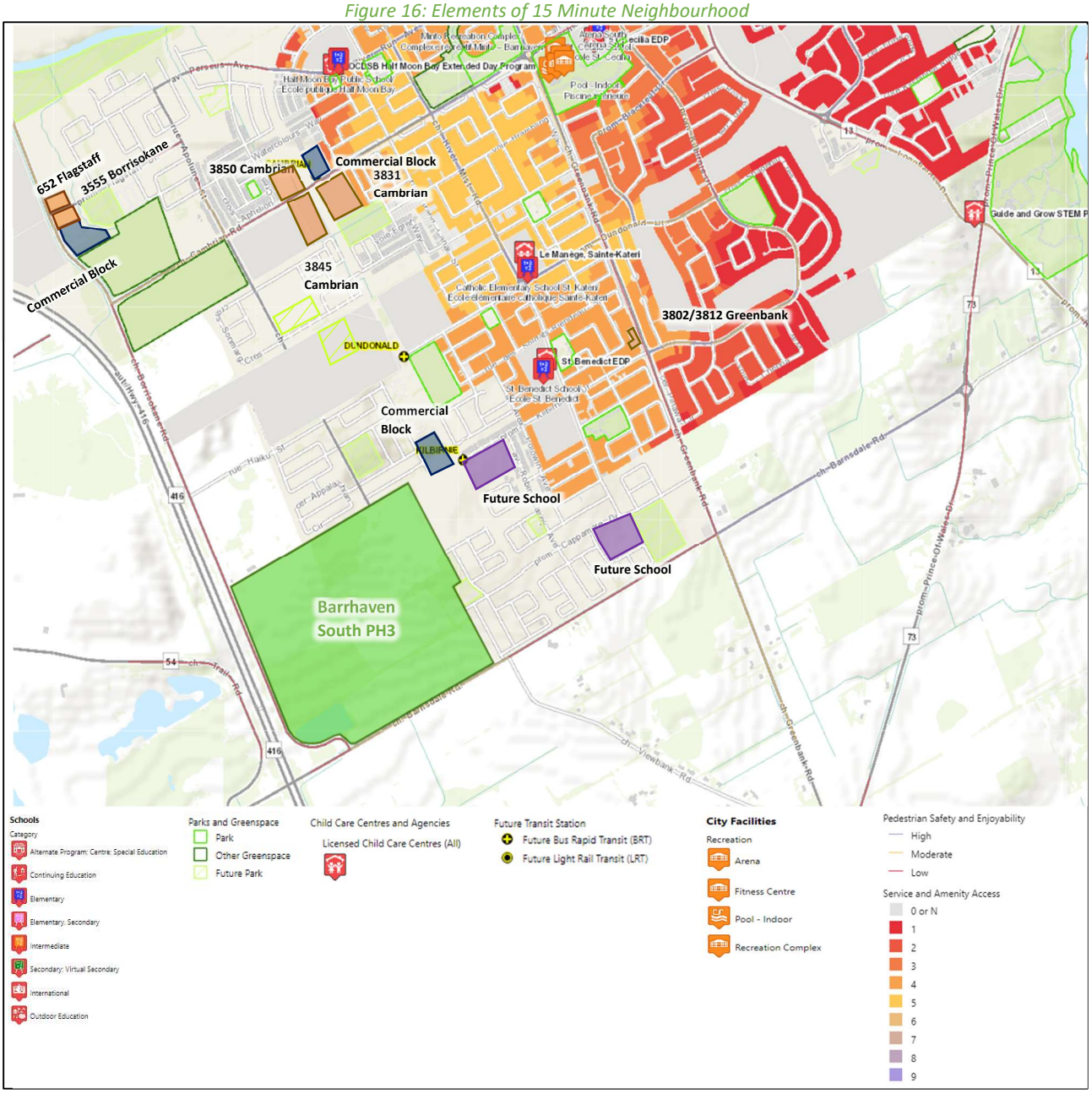


Source: https://engage.ottawa.ca/the-new-official-plan/news_feed/15-minute-neighbourhoods Accessed: February 1, 2024

Using the access to services and amenities framework from the 15-Minute Neighbourhood Baseline Report (2021), the existing communities to the east and northeast of Barrhaven South PH3 are used as an approximate gauge of the 15-minute nature of the expansion lands. The existing service and amenity access does not fully capture the newly built houses and is assumed to maintain a grade of two or one with available scores.

Figure 16 illustrates the elements within 15-minute Neighbourhoods and the locations of the existing retail, future retail/grocery stores, future car wash, future commercial blocks, future parks, future schools, and future rapid transit stations.

Figure 16: Elements of 15 Minute Neighbourhood



Source: http://maps.ottawa.ca/geoOttawa/ Accessed: October 22, 2024

Since there are no access scores available around Barrhaven South PH3 boundary, the access scores are anticipated to range between one and three, based on the existing scores of the nearest available lands, and are expected to decrease toward Barnsdale Road and Borrisokane Road. The future commercial block at the northwest corner of the Kilbirnie Drive at Realigned Greenbank Road intersection and the future bus rapid transit at Kilbirnie Drive would likely increase the score to be between two and four in the fullness of time.

4.4 Transit

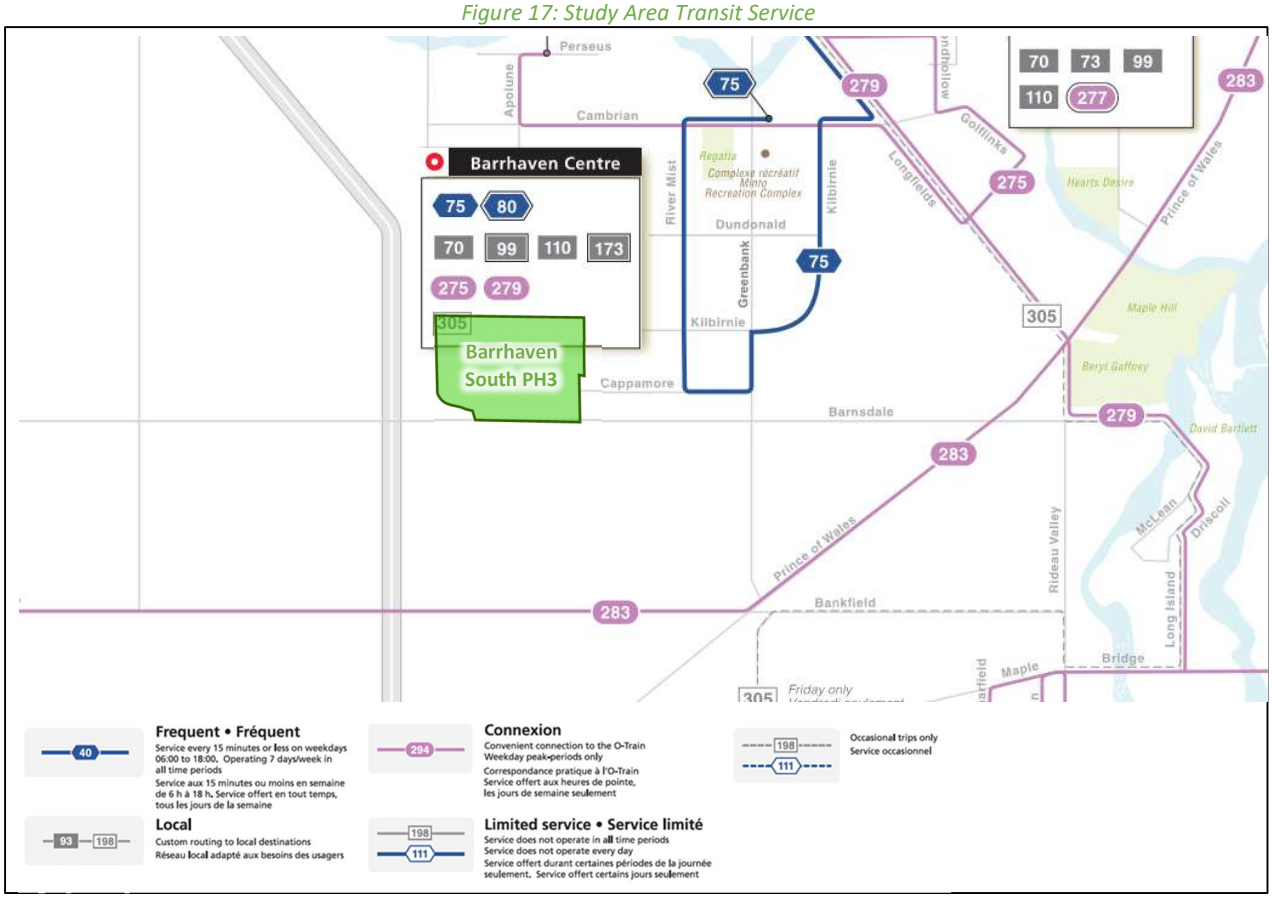
It is noted that the Transit Service and Fare Policy Manual standard requires a 400-meter (five-minute) walk from home, school, and work locations for urban residents during the peak-period route network, and an 800-meter walk from the home location for the all-day network. Given that 15-Minute Neighbourhoods encompasses distances of 400 and 800 metres, the transit network will be reviewed within the context of the local stops within the 15-Minute Neighbourhood and within 1,900 meters from the property's centroid whichever is greater, and the wider network connectivity within a five-kilometre radius which will cover the Southwest Transitway.

4.4.1 Existing Transit Routes and Alignment

Figure 17 illustrates the existing transit system map in proximity to Barrhaven South PH3. All transit information is based on the service levels as of October 7, 2025, and is included for general information purposes and context to the surrounding area.

Route #75 currently travels along Kilbirnie Drive, Greenbank Road, Cappamore Drive, River Mist Road, and Cambrian Road. It is noted that routes #671, #675, and #683, which are high school routes, travel along Kilbirnie Drive, River Mist Road, and Cambrian Road.

Figure 17: Study Area Transit Service



Source: www.octranspo.com Accessed: October 18, 2024

4.4.2 Existing Route Capacity and Frequencies

The frequency of these routes within proximity of Barrhaven South PH3 based on October 7, 2025 service levels are:

- Route #75 – 15-minute service in the peak period/direction and 30-minute service all-day

- Route #671 – high school route, only service in the peak hour/direction
- Route #675 – high school route, only service in the peak hour/direction
- Route #683 – high school route, only service in the peak hour/direction

OC Transpo has confirmed that each bus will have a passenger capacity of 45 during peak periods, based on a standard 40-foot bus equivalent, for all routes.

4.4.3 Transit Priority Measures

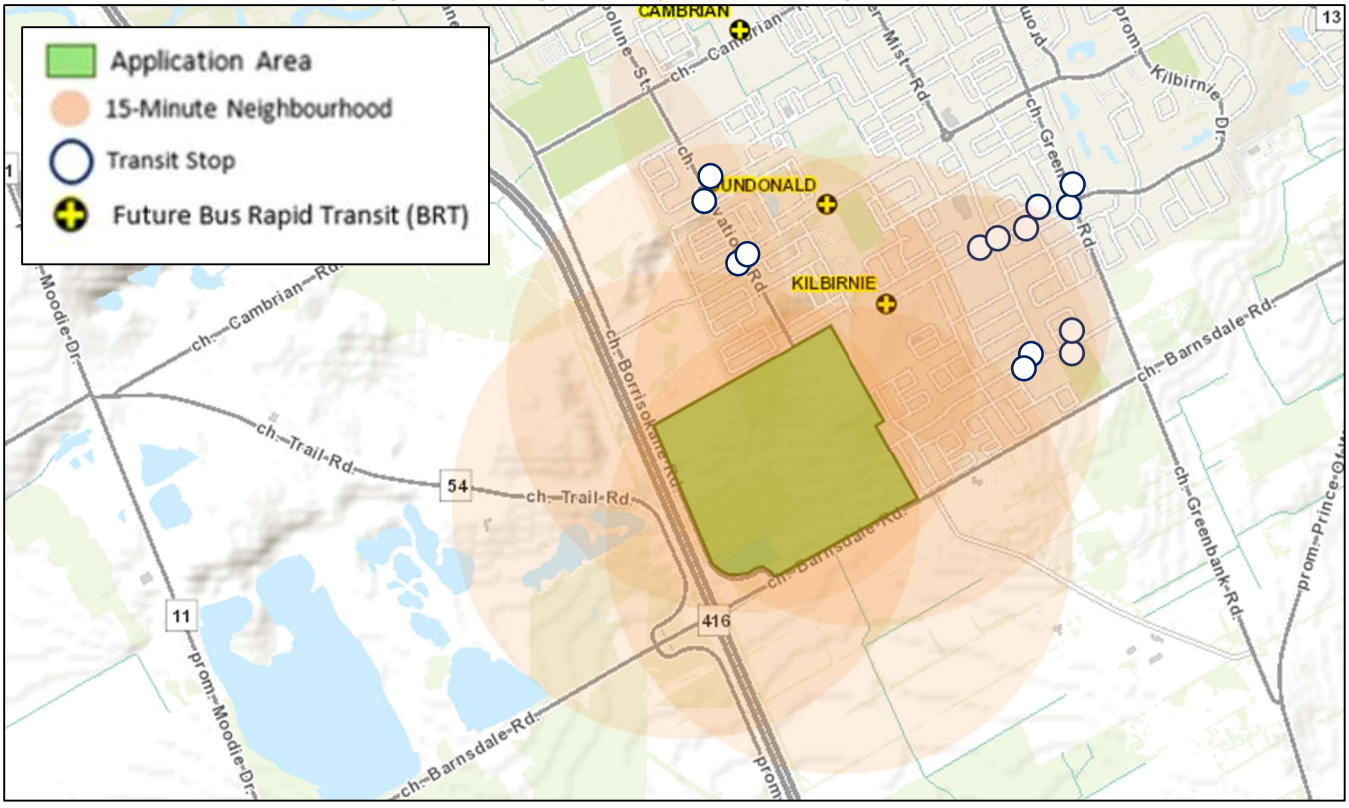
TMP Transit Network – Ultimate Map D3 for the Transit identifies the Southwest Transitway extension along the future Realigned Greenbank Road. No other transit priority measures are noted for Barrhaven South. Given the local routes and proximity of the Transitway, no localized transit priority measures are anticipated.

4.4.4 Transit Stations/Stops – 15-Minute Neighbourhoods

At present, there are no operational transit stations within the 15-minute Neighbourhoods, and the area is currently served by local transit routes. The existing transit stops within a 15-minute walking distance of Barrhaven South PH3 are located along Kilbirnie Drive, east of the Realigned Greenbank Road corridor. The closest stop is for Route #75 at River Mist Road and Kilbirnie Drive. Four transit stops have been constructed on Cappamore Drive, and three more are planned along Elevation Road, with transit routes expected to serve all these stops. Ultimately, the future Dundonald BRT station and Kilbirnie park-and-ride will be located within 15-minute Neighbourhoods.

Figure 18 illustrates the existing transit stops within 15-minute Neighbourhoods.

Figure 18: Existing Transit Stops – 15-Minute Neighbourhoods

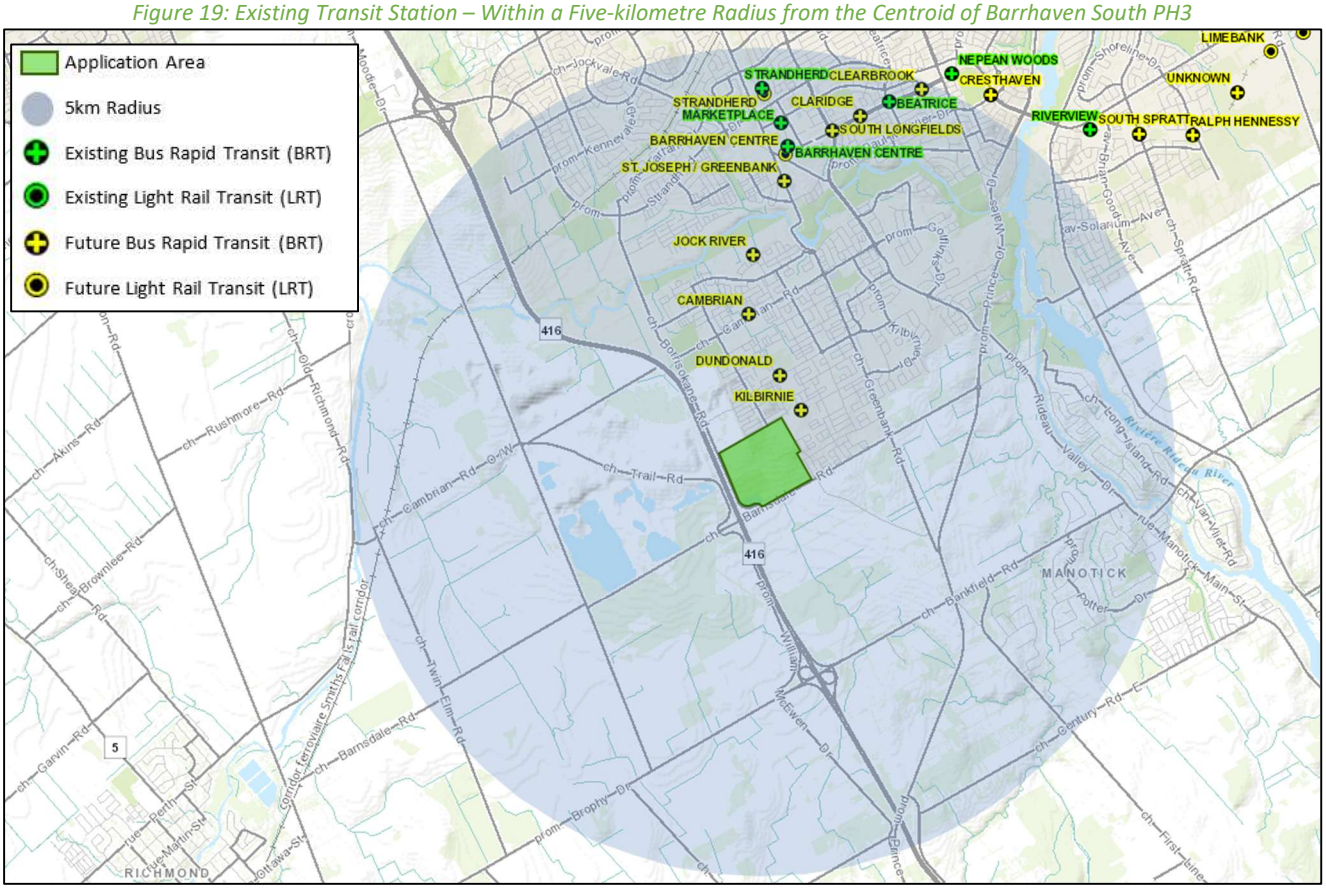


Source: http://www.octranspo.com/ Accessed: October 22, 2024

4.4.4.1 Transit Stations – Within a Five-kilometre Radius From The Centroid Of Barrhaven South PH3

At present, the existing Chapman Mills Transitway station at Beatrice, the Southwest Transitway stations at Strandherd, Marketplace, and Barrhaven Centre, are within a five-kilometre radius from the centroid of Barrhaven South PH3. Additionally, the future Southwest Transitway extension stations at Clearbrook, South Longfields, St. Joseph/Greenbank, Jock River, River Run Avenue, Cambrian, Dundonald, and Kilbirnie, and the future Barrhaven Light Rail Transit at Strandherd and Barrhaven Centre are also expected to fall within a five-kilometre radius from the centroid of Barrhaven South PH3. Figure 19 illustrates the existing and future transit stations within a five-kilometre radius from the centroid of Barrhaven South PH3.

Figure 19: Existing Transit Station – Within a Five-kilometre Radius from the Centroid of Barrhaven South PH3



Source: http://maps.ottawa.ca/geoOttawa/Accessed: October 22, 2024

5 Community Concept Plan

The Barrhaven South PH3 lands are expected to support over 1,000 residential units, mixed between townhomes and single detached homes, and include park/open space. Extension of Elevation Road, Kilbirnie Drive, Cappamore Drive, Moyard Drive will connect these Barrhaven South PH3 lands to the existing communities to the north and east, enhancing permeability between the communities. The extension of Kilbirnie Drive has also been reserved for an ultimate link to Borrisokane Road to support the ultimate Barnsdale Interchange configuration and facilitate truck traffic between Borrisokane Road and Realigned Greenbank Road. The park, retained woodlots, and stormwater pond form open space for the community. Figure 20 illustrates the conceptual land use plan.

Unit Type	Phase 6	Phase 7	Phase 8	Total	
Single - 36'	146	27	87	**260**	25.59%
Single - 43'	104	15	35	**154**	15.16%
Executive Towns	130	118	90	**338**	33.27%
Avenue Towns	118	90	56	**264**	25.98%
Total	**498**	**250**	**268**	**1016**	100.00%
Parkland Required	= Total Units / 600 units per ha			1.69 ha	4.18 ac
Parkland Dedicated	= Parkland Provided on plan			1.92 ha	4.74 ac



Title:

Concept 54 - Rev 13

Project:

S-1 - Barrhaven Urban Expansion

Legend

- Site Boundary
- Phase Line
- Singles
- Executive Towns
- Avenue Towns (Back to Backs)
- Rear Lane Towns
- Condos
- SWM Pond
- Parkland
- Open Space
- Industrial
- Woodlot

*Notes:
- All roads are 18m ROW unless indicated on the plan.
- All singles and executive towns are 27m in depth
- All avenues are 27.5m in depth
- The unit count for Metro Town Condos is estimated at a rate of 70 units per 1.00 ha.
- Stage 5 unit count is not included in the park dedication.

No.	Description	Date	By
13	Woodlot Easement/SWMP Easement	2.10.2026	E.H
12	Phasing Limits/Easements	1.30.2026	E.H

Revisions

minto

Drawn By: G.T
Checked By: C.S

Minto Communities Inc
180 Kent Street,
Ottawa, ON
K1P 0B6

North

Scale: **NTS**

5.1 New Roadways

The extension of Elevation Road is proposed to connect with the extension of Kilbirnie Drive, Moyard Drive, and Cappamore Drive. The extension of Elevation Road and Cappamore Drive are proposed as 24.0-meter-wide, and Kilbirnie Drive is proposed as 26.0-metre-wide and on-street parking is anticipated on one side of the road only. These roads will have a posted speed limit of 40 km/h. All the new local roadways are 18.0-metre-wide, with on-street parking provided along one side of the road, and the proposed speed limit of 30 km/h.

The new roadways will need to be coordinated with utility placements, soil conditions, street trees and set back requirements for subsurface elements. These subsurface requirements may limit the ability to provide the full compliment of City standards on various roadways, and a trade-off review of those elements will be required.

5.2 New Intersections

The new intersections of Elevation Road at Kilbirnie Drive, Moyard Drive, Cappamore Drive and the intersection of Kilbirnie Drive at Borrisokane Road are proposed as stop controlled on the minor approach. The internal intersection control measures will be subject to operational requirements of the transit or active mode networks, not per volume requirements of the local and collector roadways. Corner sight triangles meet the anticipated update to the Official Plan Schedule C16.

5.3 Pedestrian & Cycling

All the new local roads will include a sidewalk on one side, the extension of Elevation Road will transition from the multi-use pathways to the north to sidewalk and cycletracks, the extension of both Kilbirnie Drive and Cappamore Drive will include sidewalks and cycletracks. Walkway blocks are provided throughout the community.

5.4 Traffic Calming Design

Traffic calming measures at the internal intersections and on the internal roadways, including bulb-outs to narrow approaches to intersections (e.g. reduced crossing distance), and street parking, speed humps, and midblock narrowing to reduce vehicle speeds. Traffic calming elements for connections to the existing roadways will be coordinated with the adjacent existing roadway during the detailed design phase.

5.5 Transit

The transit stops are planned to be located at the intersections of Elevation Road at Kilbirnie Drive and Elevation Road at Cappamore Drive. It is understood that Kilbirnie Road is the anticipated transit route for the area, and the Cappamore stops have been provided to future route planning flexibility. Locations of the stops will be confirmed with Transit Services during the plan of subdivision application, once the lotting and local road network is finalized. Figure 21 illustrates the conceptual Barrhaven South PH3 lands transit stop locations.

Figure 21: Conceptual Barrhaven South PH3 lands Transit Stop Locations



6 Forecasting and Travel Demand

6.1 Mode Shares

Examining the mode shares recommended in the TRANS Trip Generation Manual (2020) for the South Nepean district, derived from the most recent National Capital Region Origin-Destination survey (OD Survey), the existing average district mode shares by land use have been summarized in Table 6.

Table 6: TRANS Trip Generation Person Trip Rates – South Nepean

Travel Mode	South Nepean				
	Single Detached		Multi-Unit (Low-Rise)		Employment Generator
	AM	PM	AM	PM	AM and PM
Auto Driver	51%	53%	49%	49%	80%
Auto Passenger	14%	19%	13%	13%	10%
Transit	25%	18%	26%	24%	5%
Cycling	1%	1%	2%	2%	1%
Walking	9%	9%	9%	12%	4%
Total	**100%**	**100%**	**100%**	**100%**	**100%**

6.2 Background Network Travel Demands

6.2.1 Transportation Network Plans

The transportation network plans were discussed in Section 2. At the 2031 build-out horizon, it is expected that the interim Barnsdale interchange, the roundabout at Borrisokane Road and Cambrian Road, and the Borrisokane

Road and Haiku Street modifications are expected to be implemented. At the 2036 plus five-year horizon, Realigned Greenbank Road is expected to be implemented. These are the road network conditions that will be considered at the study horizons.

Based on these changes, the existing volumes are expected to change their travel patterns to use the interchange. A 5% shift of the existing volumes to/from the north along Greenbank Road, a 5% shift to/from the north along Prince of Wales Drive, a 5% shift to/from the north along Longfield Drive, and a 10% shift to/from the north along Borrisokane Road have been assigned to the Barnsdale interchange. It is also assumed that 10% of the existing volumes from the rural area west of Highway 416 from Eagleson Road will shift to the Barnsdale interchange.

Once Realigned Greenbank Road has been completed, the remaining 95% shift of the existing volumes to/from the north along Greenbank Road is expected to shift to the new corridor. In addition, based on the review of the TRANS Regional Model, a 30% shift of existing volumes to/from the north along Borrisokane Road have also been assigned to the Realigned Greenbank Road.

6.2.2 Background Growth

Given that all background developments within Barrhaven South have been included in this TIA and would account for the majority of growth in the area, the growths along study area roadways are assumed to be captured within the background development; therefore, no annual growth rate will be applied on study area roadways.

6.2.3 Other Developments

The study area developments were discussed in Section 2.2 and will be considered in the analysis. The developments at Glenview Homes (3387 Borrisokane Road), Mattamy's Half Moon Bay West Phase 4, Meadow's Phase 7-8 (3640 Greenbank Road), Mattamy's Half Moon Bay South Phase 7/8, Minto's Quinn's Pointe Stages 4 (3882 Barnsdale Road and 3960 Greenbank Road), and Caivan's The Ridge Phase 3-4 (3717 Borrisokane Road) trip generation are noted to be updated to the TRANS 2020 methodology.

Given that the interim conditions of the Barnsdale Road interchange are assumed to be completed by 2029, it is anticipated that trips from the background developments will need to be reassigned to this new facility. A total of 30% of the trips assigned to the north from the background developments have been re-assigned to the Barnsdale Road interchange. Due to the closure of Haiku Street, 50% of trips from Caivan's The Ridge Phase 1-2 (3809 Borrisokane Road) have been re-assigned to the Apolune Street /Elevation Road at Cambrian Road intersection, and the resulting trip reduction of previously assigned trips has been reflected in the network. It is noted that 50% of the trips generated by Barrhaven South Phase 4 have been considered at the 2031 build-out horizon and 100% at the 2036 plus five-year horizon. The Barnsdale interchange has been accounted for in the trip distribution of Barrhaven South Phase 4 and 3809 Borrisokane Road development.

Given that Realigned Greenbank Road is assumed to be completed between 2029 and 2037, it is anticipated that trips from the background developments will need to be reassigned to this new facility in the 2036 horizon. Trips from background developments that were previously assigned to the Barnsdale Road interchange are expected to use the Realigned Greenbank Road to access the interchange. Therefore, 70% of the previously assigned trips are reassigned to use Realigned Greenbank and the remining 30% are assumed to continue using Borrisokane Road to access the interchange.

Trips from background developments that will have direct access to the Realigned Greenbank Road in their ultimate conditions have either been reduced from the network (Mattamy's Half Moon Bay West Phase 4, Mattamy's Half Moon Bay West Phase 3, and Glenview Homes), or reassigned to use Realigned Greenbank Road (3845 Cambrian Road, 3850 Cambrian Road, 3831 Cambrian Road).

Regarding the other background developments within the study area, trips originally assigned to the existing Greenbank Road have been reassigned to the Realigned Greenbank Road, and 30% of the trips originally assigned to Borrisokane Road have been reassigned to the Realigned Greenbank Road.

Figure 22 illustrates the background volumes and Figure 23 and Figure 24 illustrated the re-assignment of the background volumes in the 2031 and 2036 horizons.

Figure 22: Background Volumes

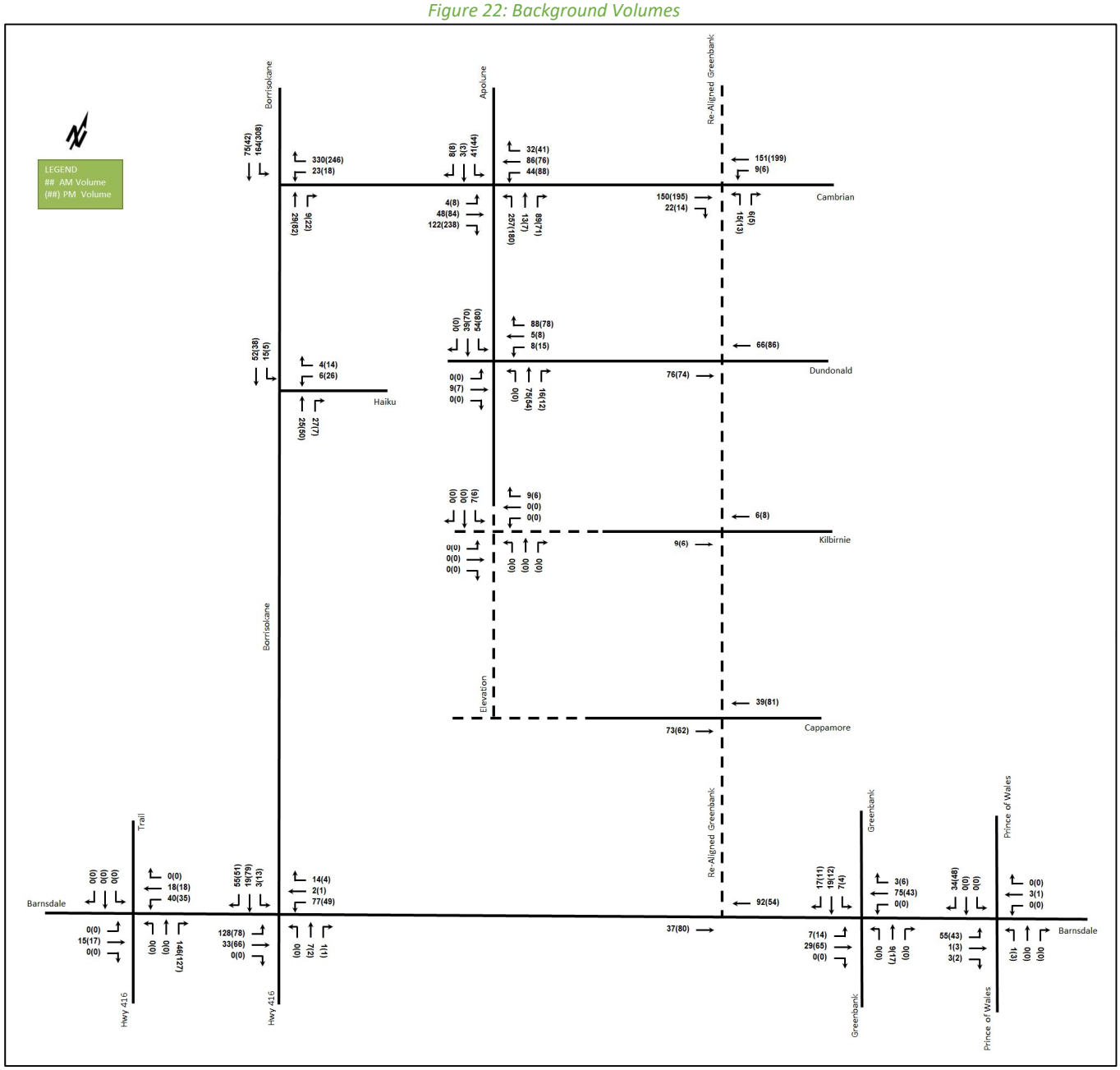


Figure 23: Reassigned Background Volumes-2031

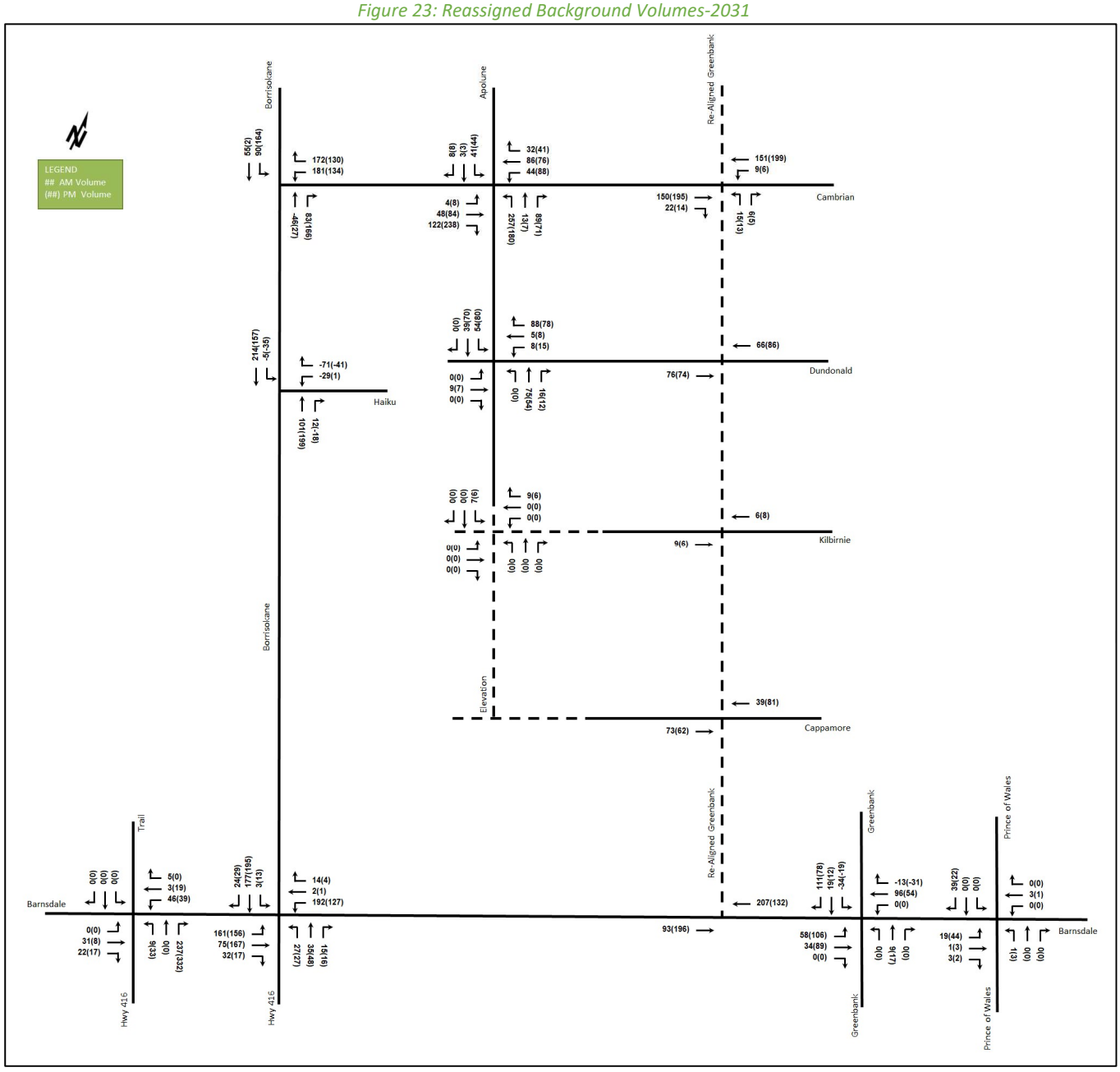
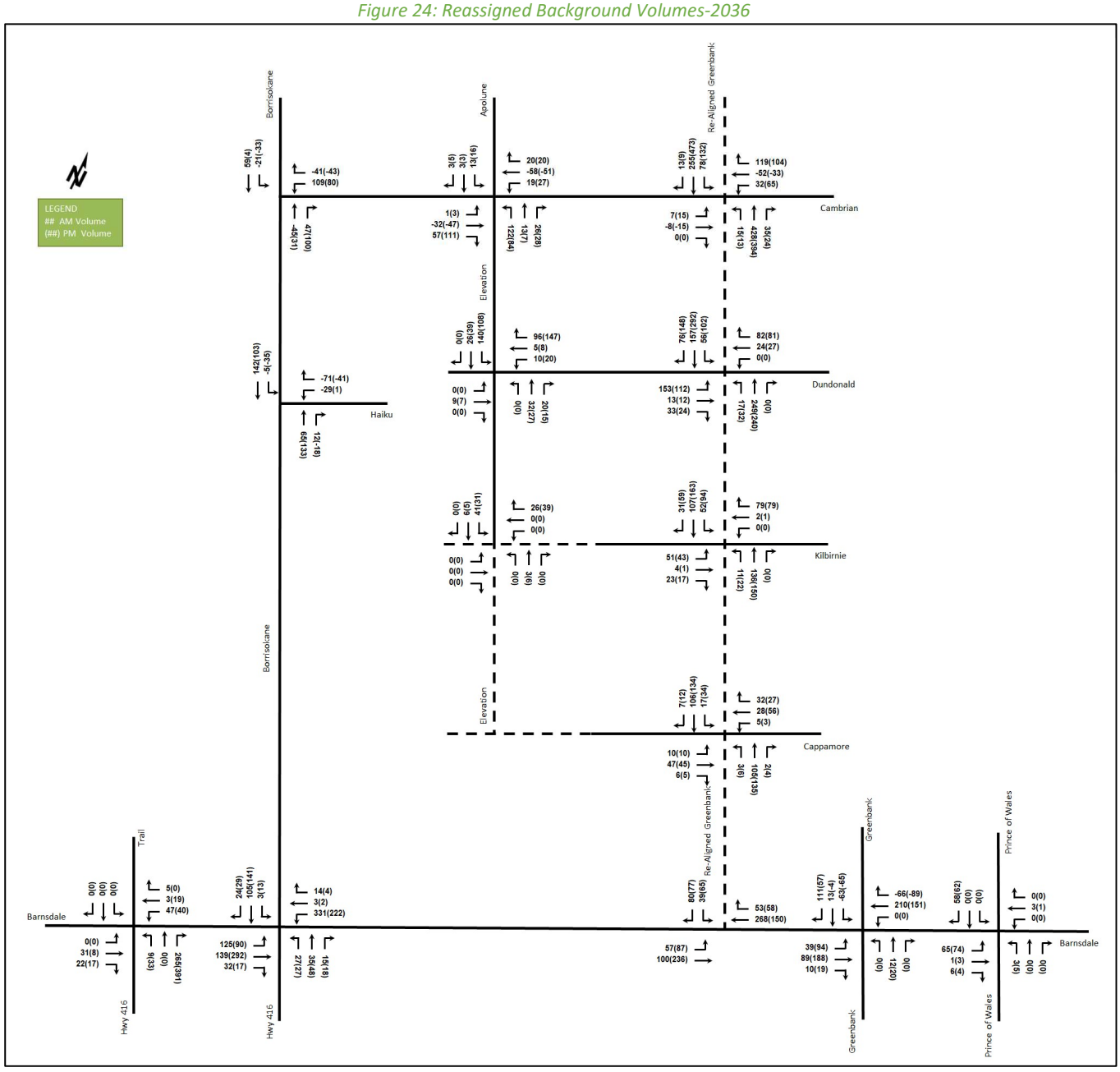


Figure 24: Reassigned Background Volumes-2036



6.3 Development Generated Travel Demand

6.3.1 Trip Generation

This study has been prepared using the person trip rates for the residential dwellings using the TRANS Trip Generation Manual (2020) and the vehicle trip rates and derived person trip rates for the industrial components from the ITE Trip Generation Manual 10th Edition (2017) using the City-prescribed conversion factor of 1.28. For the purpose of trip generation, a high-level assumption of 15% lot coverage has been applied to the industrial component. Table 7summarizes the person trip rates for the proposed residential land uses for each peak period and the person trip rates for the non-residential land uses by peak hour.

Table 7: Trip Generation Person Trip Rates

Land Use	Land Use Code	Peak Period	Vehicle Trip Rate	Person Trip Rates
Single-Detached	210 (TRANS)	AM	-	2.05
		PM	-	2.48
Multi-Unit (Low-Rise)	220 (TRANS)	AM	-	1.35
		PM	-	1.58
Land Use	**Land Use Code**	**Peak Hour**	**Vehicle Trip Rate**	**Person Trip Rates**
Industrial Park	130 (ITE)	AM	0.34	0.44
		PM	0.34	0.44

Using the above person trip rates, the total person trip generation has been estimated. Table 8 summarizes the total person trip generation for the residential land uses and for the non-residential land uses.

Table 8: Total Residential Person Trip Generation

Land Use	Units	AM Peak Period			PM Peak Period		
		In	Out	Total	In	Out	Total
Single-Detached	414	255	594	849	637	390	1027
Multi-Unit (Low-Rise)	602	244	569	813	533	418	951
Land Use	**GFA (sq. ft)**	**AM Peak Hour**			**PM Peak Hour**		
		In	**Out**	**Total**	**In**	**Out**	**Total**
Industrial Park	264,954	95	22	117	26	91	117

Using the above mode share targets and the person trip rates, the person trips by mode have been projected. Trip generation by peak hour has been forecasted using the prescribed peak period conversion factors presented in the TRANS Trip Generation Manual (2020) for the residential component. Table 9 summarizes the residential trip generation by mode and peak hour.

Table 9: Trip Generation by Mode

Travel Mode		AM Peak Hour				PM Peak Hour			
		Mode Share	In	Out	Total	Mode Share	In	Out	Total
Single-Detached	Auto Driver	51%	62	146	208	53%	148	91	239
	Auto Passenger	14%	17	40	57	19%	53	33	86
	Transit	25%	35	82	117	18%	54	33	87
	Cycling	1%	2	4	5	1%	3	2	5
	Walking	9%	13	31	44	9%	30	18	48
	Total	**100%**	**129**	**303**	**431**	**100%**	**288**	**177**	**465**
Multi-Unit (Low-Rise)	Auto Driver	49%	57	134	191	49%	115	90	205
	Auto Passenger	13%	15	36	51	13%	31	24	55
	Transit	26%	35	81	116	24%	60	47	107
	Cycling	2%	3	6	9	2%	5	4	9
	Walking	10%	14	33	47	12%	33	26	59
	Total	**100%**	**124**	**290**	**414**	**100%**	**244**	**191**	**435**
Industrial Park	Auto Driver	80%	76	18	94	80%	21	73	94
	Auto Passenger	10%	10	2	12	10%	3	9	12
	Transit	5%	5	1	6	5%	1	5	6
	Cycling	1%	1	0	1	1%	0	1	1
	Walking	4%	4	1	5	4%	1	4	5
	Total	**100%**	**96**	**22**	**118**	**100%**	**26**	**92**	**118**

Travel Mode		AM Peak Hour				PM Peak Hour			
		Mode Share	In	Out	Total	Mode Share	In	Out	Total
Total	Auto Driver	-	195	298	493	-	284	254	538
	Auto Passenger	-	42	78	120	-	87	66	153
	Transit	-	75	164	239	-	115	85	200
	Cycling	-	6	10	15	-	8	7	15
	Walking	-	31	65	96	-	64	48	112
	Total	-	**349**	**615**	**963**	-	**558**	**460**	**1018**

As shown above, a total of 493 AM and 538 PM new peak hour two-way vehicle trips are projected as a result of the proposed development.

6.3.2 Trip Distribution

To understand the travel for the subject development, the OD Survey has been reviewed to determine the travel patterns for the South Nepean district. Table 10 below summarizes the expected distribution of trips from the Barrhaven South PH3 lands.

Table 10: OD Survey Distribution

To/From	Residential % of Trips	Via 2031 Horizon	Via 2036 Horizon	Via (Industrial Component)
North	80%	45% Hwy 416 (N), 10% Borrisokane Rd (N), 5% Cambrian Rd (E), 10% Greenbank Rd (N), 10% Longfield Drive (N)	45% Hwy 416 (N), 5% Borrisokane Rd (N), 20% Re-aligned Greenbank Rd (N) 10% Longfield Drive (N)	10% Borrisokane Rd (N), 70% Hwy 416 (N)
South	5%	5% Hwy 416 (S)	5% Hwy 416 (S)	5% Hwy 416 (S)
East	10%	10% Prince of Wales Dr (N)	10% Prince of Wales Dr (N)	5% Prince of Wales Dr (N), 5% Barnsdale Rd (E)
West	5%	5% Hwy 416 (N)	5% Hwy 416 (N)	5% Barnsdale Rd (W)
Total	**100%**	**100%**	**100%**	**100%**

6.3.3 Trip Assignment

Using the distribution outlined in Section 6.3.2, turning movement splits, and access to major transportation infrastructure, the trips generated by the site have been assigned to the study area road network. The assignment has also been based on the Section 7.3 Network Concept review and screenline capacities. Figure 25 and Figure 26 illustrate the new site-generated volumes at each of the study horizons.

Figure 25: New Site Generation Auto Volumes - 2031

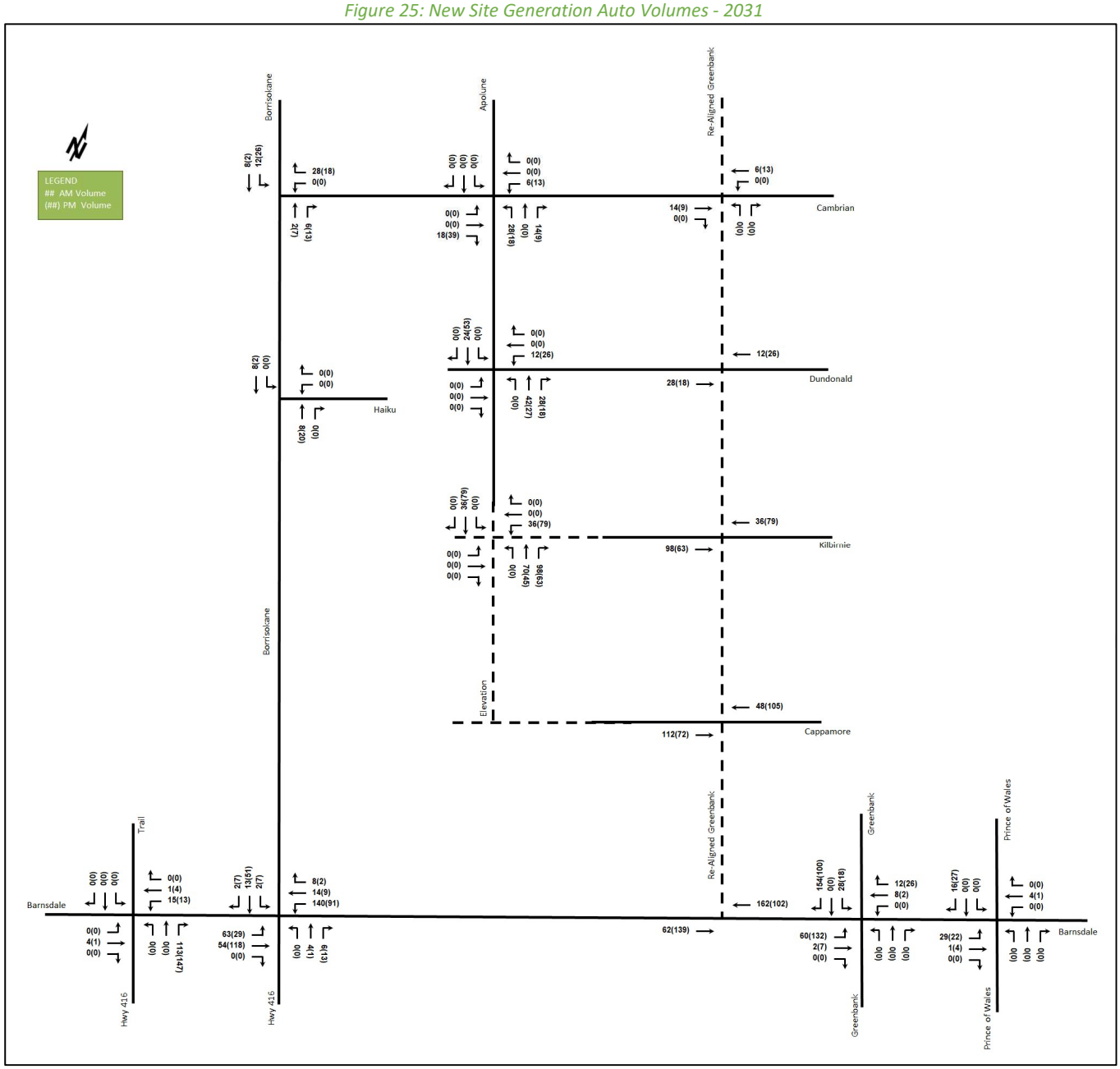
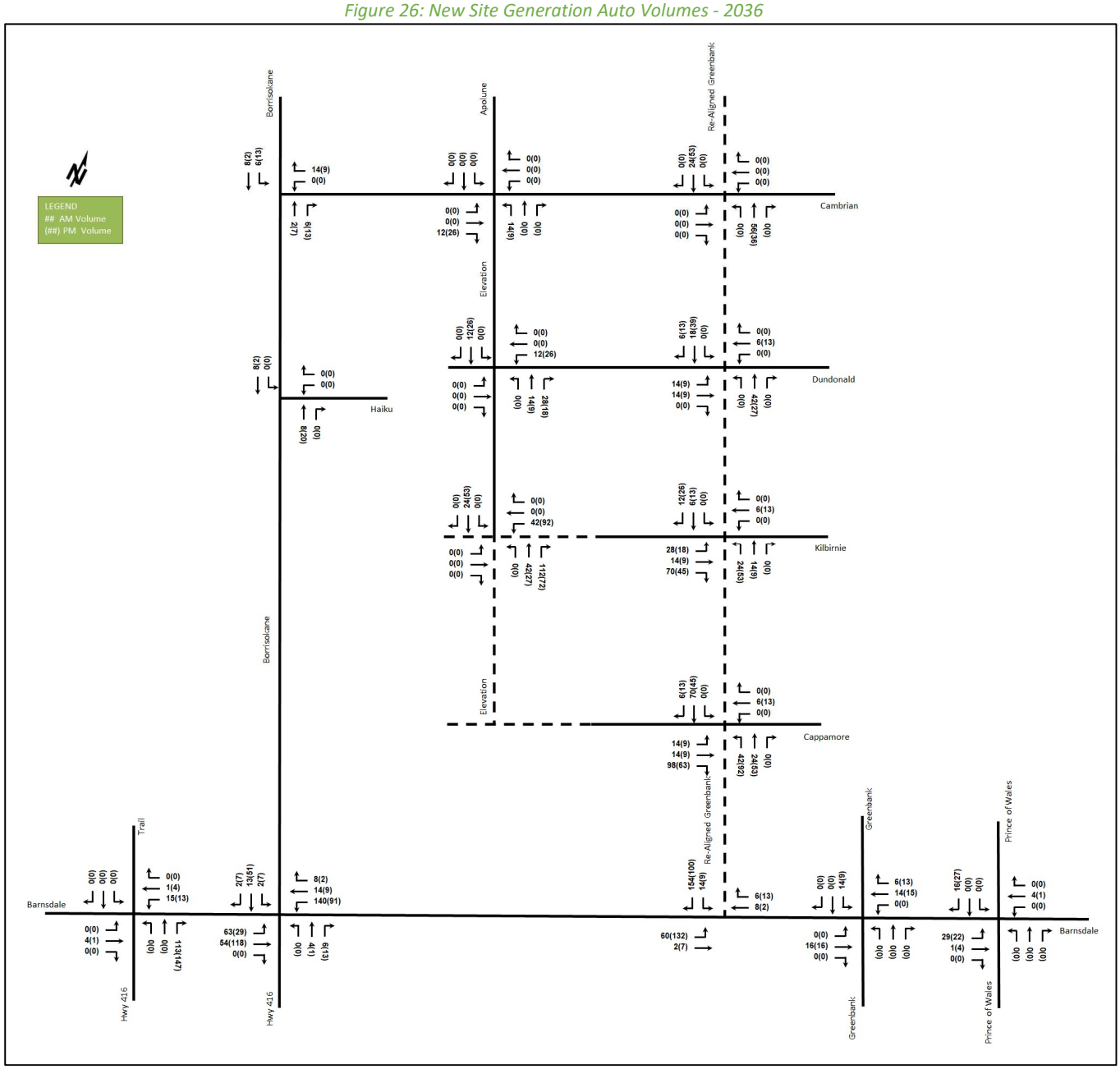


Figure 26: New Site Generation Auto Volumes - 2036



7 Network Operational Analysis

7.1 Future Background Network Operations

7.1.1 2031 Future Background Conditions

7.1.1.1 Warrant Analysis

Signal warrant analysis of Justification 7 was performed for the study area intersections for 2031 future background conditions. The intersections of Barnsdale Road at Borrisokane Road/Highway 416 and Barnsdale Road at Greenbank Road met the signal warrant. The signalized conditions will be reviewed for this horizon and cycle lengths of 75 seconds for the AM peak hour and 90 seconds during the PM peak hour were assumed for the intersections of Barnsdale Road at Borrisokane Road/Highway 416 and 75 seconds during both peak hours was

assumed for the intersection of Barnsdale Road at Greenbank Road. The signal warrant calculation sheets are provided in Appendix I.

The intersection of Barnsdale Road at Trail Road/Highway 416 met the all-way stop-controlled warrants in 2031 future background conditions and will be reviewed at this horizon. The all-way stop-controlled warrants are provided in Appendix J.

The left turn warrant analysis were performed for the intersection of Barnsdale Road at Borrisokane Road/Highway 416 and the eastbound, westbound, and southbound lanes met the warrants during both peak hours. Therefore, the implementation of these lanes will be reviewed during this horizon, including the storage lengths calculated based on TIA guidelines and TAC using future total volumes.

The left turn warrants were performed for the intersection of Barnsdale Road at Trail Road/Highway 416 for the 2031 future background conditions, and the westbound left turn met the warrant during peak hours. The westbound left turn lane will be reviewed as part of the interim conditions and the storage lengths assessed based on TIA guidelines and TAC using future total volumes.

The left turn warrants for the intersection of Barnsdale Road at Greenbank Road noted that eastbound and southbound left-turn lanes met the warrants during both peak hours, and the westbound left turn lane met the warrants during the PM peak hour. These lanes have been reviewed as part of this horizon and the storage lengths assessed in the analysis have been calculated based on TIA guidelines and TAC using future total volumes. The left turn warrants are provided in Appendix K.

According to TAC, a right-turn auxiliary lane is suggested at signalized locations when the volume of right-turning traffic is 10% to 20% of the total approaching volume. At the intersection of Barnsdale Road at Borrisokane Road/Highway 416, the westbound, northbound, and southbound right turn volumes exceed 20% of the total approaching volume and the eastbound right turn volume exceeds 10% of the total approaching volume. The operational need of the right-turn lanes will be reviewed as part of the analysis at this horizon.

At the Barnsdale Road at Trail Road/Highway 416 intersection, the northbound right turn volumes exceed 20% of the total approaching volume, therefore will be reviewed in the analysis.

At the intersection of Barnsdale Road at Greenbank Road, the westbound and southbound right turn volumes each exceed 20% of the total approaching volume. The operational need of the right-turn lanes will be reviewed as part of the analysis at this horizon.

At the intersection of Cambrian Road at Elevation Road/ Apolune Road, the eastbound, westbound, northbound, and southbound right turn volumes exceed 20% of the total approaching volume. The operational need of the right-turn lanes will be reviewed as part of the analysis at this horizon.

7.1.1.2 Intersection Operations

The interim conditions for the interchange at Barnsdale Road and the roundabout for the Cambrian Road at Borrisokane Road intersection have been assumed to be completed by 2031.

Figure 27 illustrates the 2031 future background intersection volumes and Table 11 summarizes the intersection operations. Volumes have been balanced along the study area roadways. The level of service for signalized intersections is based on volume to capacity ratio (v/c) calculations for individual lane movements and MMLOS Guidelines weighted v/c methodology for the overall intersection, as per direction from Transportation Engineering Services, and average delay for unsignalized intersections. Sidra 9 has been used to model the study

area roundabout and HCM 2010 methodology was used for the operations. The synchro and Sidra worksheets for the 2031 future background horizon are provided in Appendix L.

Figure 27: 2031 Future Background Volumes

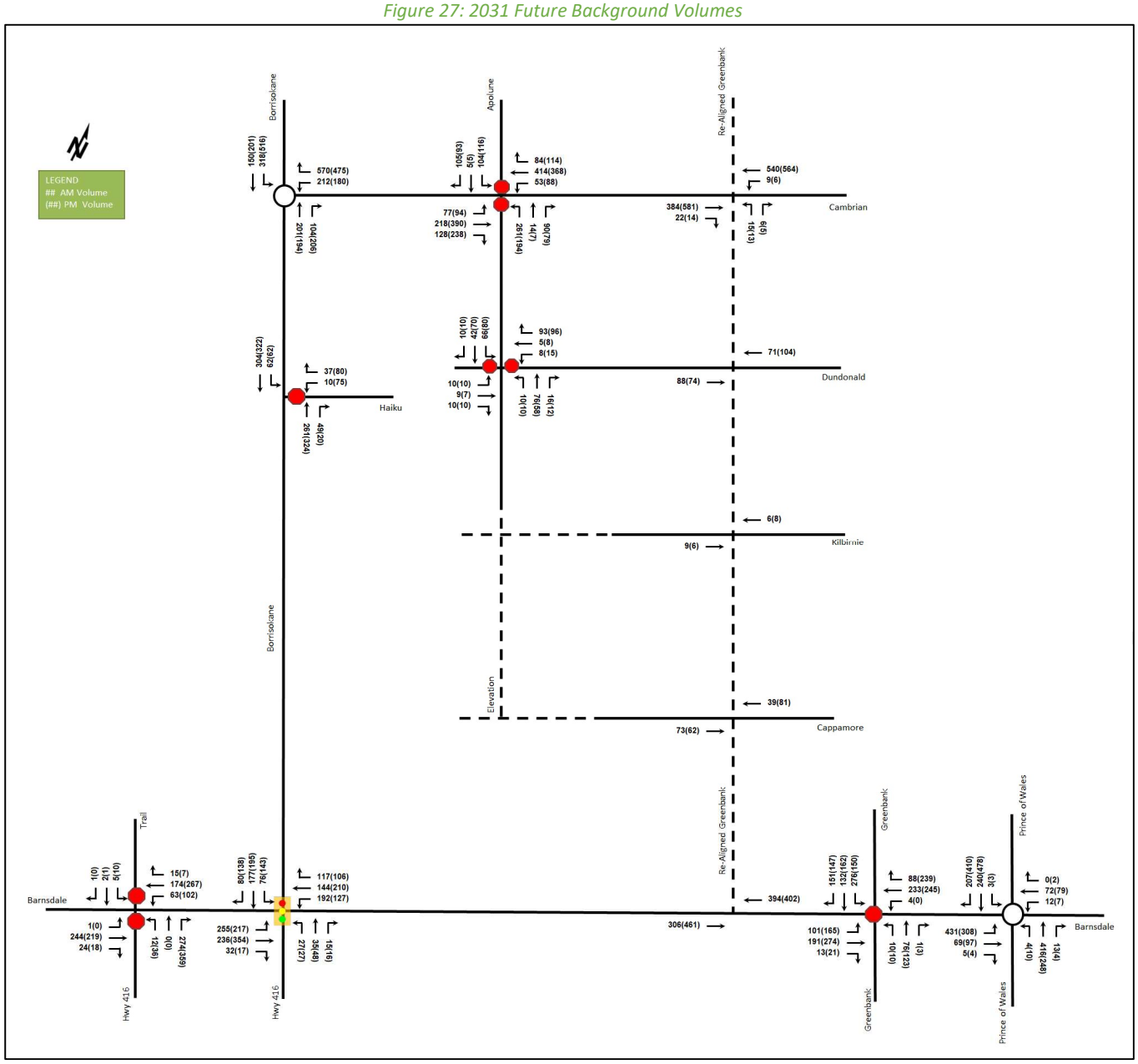


Table 11: 2031 Future Background Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Cambrian Road at Borrisokane Road *Roundabout*	WBL/R	C	0.91	17.8	137.7	B	0.74	10.3	54.6
	NBL/R	A	0.41	8.9	13.9	B	0.64	12.9	29.4
	SBL/T	B	0.57	12.3	28.1	B	0.79	14.2	69.8
	Overall	**B**	**0.91**	**14.4**	-	**B**	**0.79**	**12.5**	-
Cambrian Road at Elevation Road/ Apolune Road *Unsignalized*	EBL	A	0.08	8.9	1.5	A	0.09	8.9	2.3
	EBT/R	-	-	-	-	-	-	-	-
	WBL	A	0.04	8.1	0.8	A	0.09	9.2	2.3
	WBT/R	-	-	-	-	-	-	-	-
	NBL	**F**	**2.31**	**677.9**	**171.0**	**F**	**2.99**	**1030.2**	**148.5**
	NBT/R	B	0.19	13.0	5.3	C	0.20	15.3	5.3
	SBL	**F**	**0.69**	**69.7**	**30.0**	**F**	**1.30**	**282.2**	**63.8**
	SBT/R	B	0.22	14.1	6.0	C	0.22	15.5	6.0
	Overall	**C**	**-**	**121.2**	-	**C**	**-**	**132.8**	-
	Mitigation Measure: Signalized								
	EBL	A	0.42	22.7	17.4	A	0.29	13.1	16.0
	EBT/R	B	0.63	18.5	49.4	D	0.86	28.1	**#127.0**
	WBL	A	0.17	14.3	10.3	A	0.36	15.7	17.1
	WBT/R	C	0.79	27.3	**#91.5**	A	0.58	14.2	64.6
	NBL	D	0.87	47.2	**#62.1**	D	0.85	55.5	**#56.1**
	NBT/R	A	0.15	4.2	7.8	A	0.17	6.2	9.0
	SBL	A	0.22	12.1	15.3	A	0.32	20.3	23.3
	SBT/R	A	0.18	3.7	7.5	A	0.20	6.0	9.5
	Overall	**D**	**0.82**	**23.8**	-	**D**	**0.86**	**23.1**	-
Barnsdale Road at Prince of Wales Drive *Roundabout*	EB	C	0.67	15.8	58.5	C	0.73	23.3	50.5
	WB	B	0.22	12.1	5.2	A	0.17	8.2	4.1
	NB	D	0.78	26.7	60.8	B	0.42	10.9	15.1
	SB	A	0.50	9.4	22.0	E	0.99	38.9	427.1
	Overall	**C**	**0.78**	**16.8**	-	**D**	**0.99**	**28.9**	-
	Mitigation Measure: with SBR								
	EB	C	0.67	15.8	58.5	C	0.73	23.3	50.8
	WB	B	0.22	12.1	5.2	A	0.17	8.2	4.1
	NB	D	0.78	26.7	60.8	B	0.42	10.9	15.1
	SBL/T	A	0.43	9.8	16.7	C	0.86	22.8	169.2
	SBR	A	0.43	7.8	16.7	C	0.86	18.5	169.2
	Overall	**C**	**0.78**	**16.3**	-	**C**	**0.86**	**19.2**	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Barnsdale Road at Greenbank Road *Unsignalized*	EB	C	0.60	20.0	28.5	**F**	**1.05**	**82.0**	**104.3**
	WB	C	0.61	19.7	30.0	**F**	**1.05**	**81.6**	**108.8**
	NB	B	0.19	12.7	5.3	C	0.38	18.9	12.0
	SB	**F**	**0.96**	**54.5**	**99.0**	**F**	**1.02**	**69.7**	**94.5**
	Overall	**D**	-	**34.5**	-	**F**	-	**72.6**	-
	Mitigation Measure: with EBL and SBL								
	EBL	B	0.22	12.8	6.0	C	0.40	16.9	13.5
	EBT/R	B	0.41	14.8	15.0	C	0.65	24.4	33.8
	WB	C	0.62	21.0	32.3	**F**	**1.01**	**73.1**	**103.5**
	NB	B	0.20	13.0	5.3	C	0.36	17.7	12.0
	SBL	C	0.56	19.3	25.5	C	0.36	16.3	12.0
	SBT/R	C	0.51	16.0	21.8	D	0.68	25.6	36.8
	Overall	**C**	-	**17.3**	-	**E**	-	**37.8**	-
	Mitigation Measure: Signalized with EBL and SBL								
	EBL	A	0.37	16.6	16.6	A	0.56	16.9	20.5
	EBT/R	A	0.31	14.6	29.9	A	0.33	10.8	34.8
	WB	C	0.77	35.4	63.6	D	0.87	37.4	**#100.0**
	NB	A	0.12	14.8	16.3	A	0.27	21.2	27.9
	SBL	A	0.52	21.0	53.7	A	0.38	24.0	32.6
	SBT/R	A	0.38	12.3	37.3	A	0.57	21.9	53.7
	Overall	**B**	**0.61**	**20.0**	-	**C**	**0.72**	**24.2**	-
	Mitigation Measure: Signalized with EBL and SBL and WBR								
	EBL	A	0.32	16.5	17.2	A	0.40	14.2	22.6
	EBT/R	A	0.33	15.8	30.9	A	0.38	13.4	38.7
	WBL/T	B	0.65	34.0	49.8	B	0.67	34.3	50.3
	WBR	A	0.21	2.8	4.4	A	0.47	6.7	15.2
	NB	A	0.12	13.6	15.8	A	0.23	17.5	26.1
	SBL	A	0.50	19.2	52.1	A	0.32	19.5	30.3
	SBT/R	A	0.37	11.2	35.9	A	0.49	17.2	49.6
	Overall	**A**	**0.53**	**17.9**	-	**A**	**0.53**	**17.5**	-
Barnsdale Road at Borrisokane Road/Highway 416 *Signalized*	EB	D	0.81	25.7	**#117.6**	E	0.94	45.7	**#161.5**
	WB	B	0.70	17.9	76.6	B	0.70	22.1	87.9
	NB	A	0.23	20.2	16.8	A	0.19	19.7	20.5
	SB	D	0.86	48.1	**#82.5**	E	0.97	64.4	**#139.0**
	Overall	**D**	**0.83**	**28.3**	-	**E**	**0.95**	**43.3**	-
	Mitigation Measure: with SBL								
	EB	C	0.75	20.9	**#127.5**	C	0.79	24.0	**#148.8**
	WB	B	0.65	15.7	85.6	A	0.59	14.4	76.2
	NB	A	0.28	23.6	18.2	A	0.33	26.2	22.8
	SBL	A	0.30	27.9	20.0	A	0.45	31.9	35.9
	SBT/R	C	0.71	36.1	53.5	D	0.81	42.7	74.2
	Overall	**C**	**0.74**	**22.5**	-	**C**	**0.80**	**26.1**	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
	Mitigation Measure: with EBL, WBL, and SBL								
	EBL	A	0.49	12.7	29.9	A	0.40	11.3	31.4
	EBT/R	A	0.46	18.5	44.4	A	0.47	20.4	76.7
	WBL	A	0.39	11.5	22.6	A	0.25	10.9	19.1
	WBT/R	A	0.46	16.5	39.4	A	0.50	22.7	68.1
	NB	A	0.23	16.9	14.2	A	0.30	24.0	21.4
	SBL	A	0.27	20.7	15.8	A	0.43	29.4	34.0
	SBT/R	B	0.63	24.8	40.5	C	0.78	37.6	70.0
	Overall	**A**	**0.53**	**17.3**	**-**	**A**	**0.58**	**23.5**	**-**
Barnsdale Road Trail Road/ Highway 416 ***Unsignalized***	EB	A	0.00	7.6	0.0	A	-	0.0	0.0
	WB	A	0.06	8.6	1.5	A	0.09	8.6	2.3
	NB	B	0.42	14.2	15.8	C	0.63	20.0	33.0
	SB	C	0.04	23.9	0.8	E	0.12	49.4	3.0
	Overall	**A**	**-**	**5.9**	**-**	**A**	**-**	**9.1**	**-**
	Mitigation Measure: with WBL and NBR								
	EB	A	0.00	7.6	0.0	A	-	0.0	0.0
	WBL	A	0.06	8.6	1.5	A	0.09	8.6	2.3
	WBT/R	-	-	-	-	-	-	-	-
	NBL/T	C	0.04	16.3	0.8	C	0.14	21.1	3.8
	NBR	B	0.39	13.3	13.5	B	0.49	14.5	20.3
	SB	C	0.04	23.8	0.8	E	0.12	48.8	3.0
	Overall	**A**	**-**	**5.6**	**-**	**A**	**-**	**7.2**	**-**
	Mitigation Measure: All-way stop controlled								
	EB	B	0.39	11.7	14.3	B	0.44	14.9	16.5
	WB	B	0.43	13.7	15.8	C	0.70	24.0	41.3
	NB	B	0.47	14.3	18.8	C	0.71	24.4	43.5
	SB	B	0.02	11.0	0.8	B	0.03	12.3	0.8
	Overall	**B**	**-**	**13.2**	**-**	**C**	**-**	**21.9**	**-**
	Mitigation Measure: All-way stop controlled with WBL and NBR								
	EB	B	0.44	13.5	16.5	C	0.47	16.6	18.8
	WBL	B	0.13	11.0	3.0	B	0.22	12.7	6.0
	WBT/R	B	0.33	12.2	10.5	C	0.52	16.9	22.5
	NBL/T	B	0.03	10.7	0.8	B	0.08	11.6	2.3
	NBR	B	0.49	15.0	19.5	C	0.68	22.9	38.3
	SB	B	0.02	11.7	0.8	B	0.03	12.8	0.8
	Overall	**B**	**-**	**13.4**	**-**	**C**	**-**	**18.3**	**-**
Haiku Street at Borrisokane Road ***Unsignalized***	WBL/R	B	0.08	11.4	2.3	C	0.34	16.8	11.3
	NBT/R	-	-	-	-	-	-	-	-
	SBL/T	A	0.05	8.2	1.5	A	0.05	8.3	1.5
	Overall	**A**	**-**	**1.4**	**-**	**A**	**-**	**3.5**	**-**

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Dundonald Drive at Elevation Road *Unsignalized*	EB	B	0.04	10.7	0.8	B	0.04	11.0	0.8
	WB	A	0.12	9.5	3.0	A	0.14	9.8	3.8
	NB	A	0.01	7.3	0.0	A	0.01	7.4	0.0
	SB	A	0.04	7.5	0.8	A	0.05	7.5	1.5
	Overall	**A**	-	**5.3**	-	**A**	-	**5.5**	-

Notes: Saturation flow rate of 1800 veh/h/lane; Queue is measured in metres; Peak Hour Factor = 1.00; Delay = average vehicle delay in seconds; m = metered queue; # = volume for the 95th %ile cycle exceeds capacity

The intersection of Cambrian Road at Elevation Road/Apolune Road, the northbound and southbound left-turn movements are expected to be over capacity as a two-way stop-control. Signalization would be required to address these constraints and operate acceptably. If signalized, the queuing will need to be monitored for the westbound through and northbound left during the AM peak, and for the eastbound through and northbound left during the PM peak.

Barnsdale Road at Prince of Wales Drive is expected to be approaching capacity on the southbound approach with an extended queue during the PM peak. The implementation of a southbound right-turn lane would alleviate the capacity constraints and queuing concerns. Extended queues are noted on the southbound approach during the PM peak.

The Barnsdale Road at Greenbank Road intersection is expected to be over capacity on the southbound approach during the AM peak, and over capacity in the eastbound, westbound and southbound approaches during the PM peak. To alleviate the operational constraints, the intersection will require signalization with eastbound and southbound left-turn lanes. Queueing concerns may remain on the westbound approach and an additional westbound right-turn lane would be required to address this concern.

The new signalized interchange intersection at Barnsdale Road at Borrisokane Road/Highway 416 is expected to have queueing concerns during both peak hours. The inclusion of the southbound left-turn will alleviate the capacity constraints, although queueing concerns may remain on the eastbound approach. Given the intersection is intended to be operational as constructed for the foreseeable future, it is recommended the warranted eastbound and westbound left-turn lanes also be implemented as part of the initial construction. The addition of a southbound right turn-lane is not required operationally, although it should be considered as part of the design/construction of the initial intersection.

While the intersection of Barnsdale Road at Trail Road/Highway 416 is expected to operate acceptably with shared all movement approaches and as a two-way stop-control, the turn lane warrants have been met and it is recommended to be implement as part of the initial construction of the interchange. The implementation would limit additional improvements being required in the future. The all-way stop-control is not required operationally and can be implemented as required for operations. This was identified as a 2031 future background condition.

The remaining intersections are expected to operate acceptably in the 2031 future background conditions.

7.1.1.3 Recommended Improvements

Based on the operational analysis provided, the following network improvements are indicated for consideration by the 2031 future background horizon:

- Cambrian Road at Elevation Road/Apolune Road:
  - Signalization

- Barnsdale Road at Prince of Wales Drive:
    - A 55-metre auxiliary southbound right turn lane
- Barnsdale Road at Greenbank Road:
    - Signalization
    - A 40-metre auxiliary eastbound left turn lane
    - A 15-metre auxiliary westbound right turn lane
    - A 65-metre auxiliary southbound left turn lane
- Barnsdale Road at Borrisokane Road/Highway 416:
    - Signalization
    - A 60-metre auxiliary eastbound left turn lane
    - A 45-metre auxiliary westbound left turn lane
    - A 40-metre auxiliary southbound left turn lane
    - A 15-metre auxiliary southbound right turn lane
- Barnsdale Road at Trail Road/Highway 416:
    - A 25-metre westbound left turn lane
    - A 40-metre northbound right turn lane

7.1.2 2036 Future Background Conditions

7.1.2.1 Warrant Analysis

Signal warrant analysis of Justification 7 was performed for the study area intersections for 2036 future background conditions and no new signal warrants were met and remain the same as the 2031 future background conditions. The signal warrant calculation sheets are provided in Appendix I.

No additional all-way stop warrants were met and will remain the same as the 2031 future background conditions. The all-way stop-controlled warrants are provided in Appendix J.

No additional left turn warrants were identified for the 2036 future background conditions. The storage lengths have been adjusted for the 2036 future background volumes, based on TIA guidelines and TAC. The left turn warrants are provided in Appendix K.

No additional right-turn lanes have been noted for the 2036 future background conditions.

7.1.2.2 Intersection Operations

Similar to the 2031 future background conditions, the interim Barnsdale Road interchange and roundabout intersection for Cambrian Road at Borrisokane Road have been assumed to be completed. Additionally, Realigned Greenbank Road is assumed to be completed for the 2036 horizon and will be considered in the analysis. As Re-aligned Greenbank Road will change the travel patterns in the area, the mitigation measures recommended at the 2031 future background conditions will be reassessed to determine whether they are still required.

Figure 28 illustrates the 2036 future background intersection volumes and Table 12 summarizes the intersection operations. Volumes have been balanced along the study area roadways. The level of service for signalized intersections is based on volume to capacity ratio (v/c) calculations for individual lane movements and MMLOS Guidelines weighted v/c methodology for the overall intersection, per direction from Transportation Engineering Services, and average delay for unsignalized intersections. Sidra 9 has been used to model the study area roundabout and HCM 2010 methodology was used for the operations. The synchro and Sidra worksheets for the 2036 future background horizon are provided in Appendix M.

Figure 28: 2036 Future Background Volumes

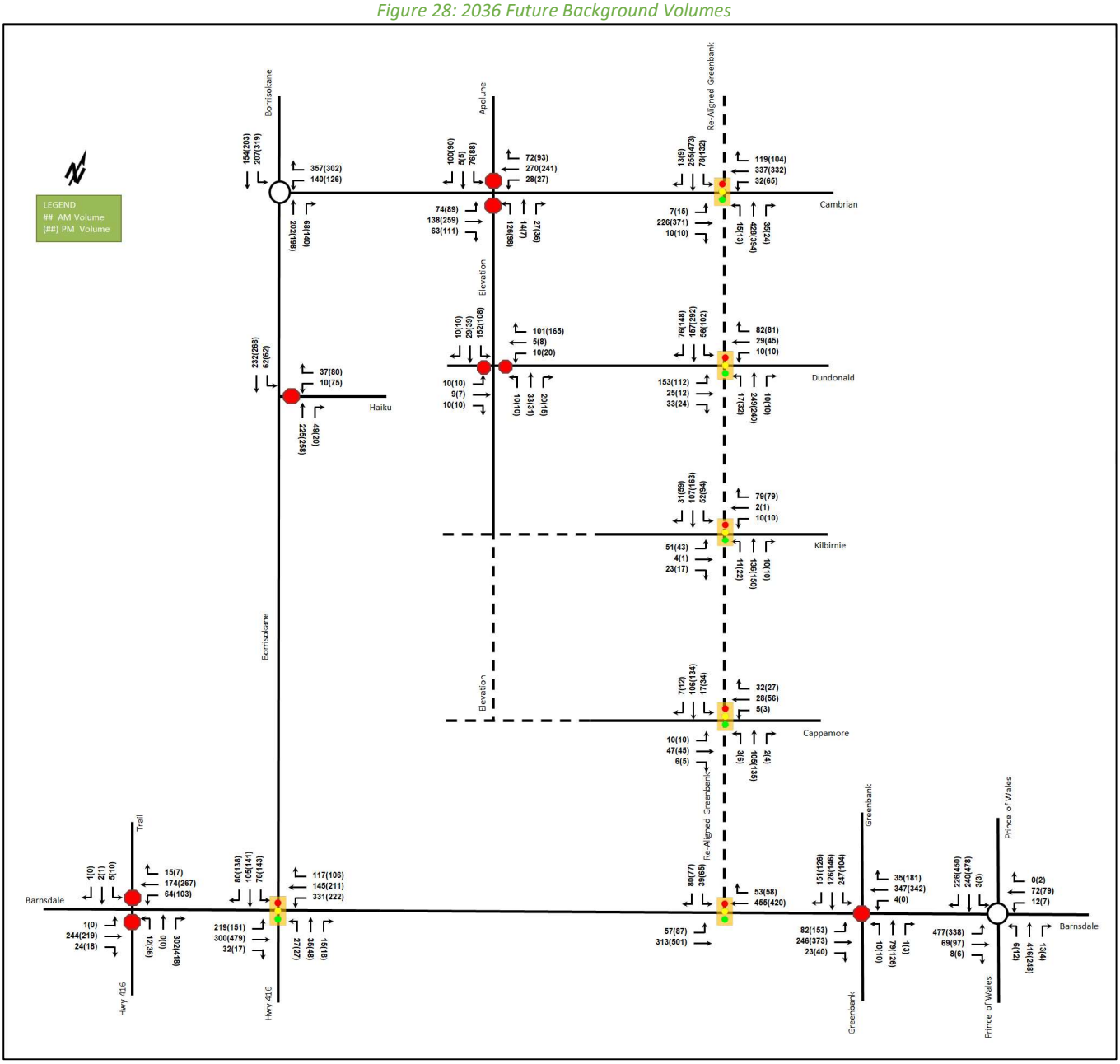


Table 12: 2036 Future Background Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Cambrian Road at Borrisokane Road *Roundabout*	WBL/R	A	0.58	8.8	28.0	A	0.48	8.0	18.7
	NBL/R	A	0.32	7.7	10.1	A	0.43	8.6	15.0
	SBL/T	B	0.41	10.2	15.0	B	0.54	10.2	24.3
	Overall	**A**	**0.58**	**9.0**	**-**	**A**	**0.54**	**9.0**	**-**
Cambrian Road at Elevation Road/ Apolune Road *Unsignalized*	EBL	A	0.06	8.3	1.5	A	0.08	8.3	1.5
	EBT/R	-	-	-	-	-	-	-	-
	WBL	A	0.02	7.7	0.8	A	0.02	8.1	0.8
	WBT/R	-	-	-	-	-	-	-	-
	NBL	E	0.60	44.6	25.5	**F**	**0.59**	**54.5**	**24.0**
	NBT/R	B	0.07	12.1	1.5	B	0.08	12.0	1.5
	SBL	C	0.25	20.9	7.5	D	0.38	29.7	12.8
	SBT/R	B	0.16	11.6	4.5	B	0.15	11.8	3.8
	Overall	**A**	**-**	**9.8**	**-**	**A**	**-**	**9.2**	**-**
	Mitigation Measure: Signalized								
	EBL	A	0.14	10.7	12.5	A	0.16	9.3	13.4
	EBT/R	A	0.24	8.4	23.5	A	0.41	9.5	45.1
	WBL	A	0.04	4.0	3.3	A	0.05	3.3	2.9
	WBT/R	A	0.35	8.0	71.7	A	0.33	6.5	71.1
	NBL	B	0.61	28.8	15.3	A	0.54	27.5	12.9
	NBT/R	A	0.09	5.8	3.5	A	0.11	5.4	3.6
	SBL	A	0.22	14.8	11.2	A	0.29	17.8	14.0
	SBT/R	A	0.23	4.7	7.1	A	0.23	5.6	7.6
	Overall	**A**	**0.42**	**10.9**	**-**	**A**	**0.44**	**10.2**	**-**
Realigned Greenbank Road at Cambrian Road *Signalized*	EBL	A	0.03	22.9	3.7	A	0.07	24.5	6.1
	EBT	A	0.28	32.3	24.0	A	0.45	35.0	38.2
	EBR	A	0.02	0.1	0.0	A	0.02	0.1	0.0
	WBL	A	0.12	27.2	10.3	A	0.31	32.8	18.6
	WBT	A	0.42	34.8	34.9	A	0.40	34.1	34.4
	WBR	A	0.27	5.3	10.7	A	0.29	31.8	25.6
	NBL	A	0.03	18.3	6.5	A	0.03	21.2	5.1
	NBT	A	0.25	15.2	44.2	A	0.26	19.5	34.3
	NBR	A	0.04	1.1	1.6	A	0.03	0.8	0.0
	SBL	A	0.35	53.0	15.7	A	0.51	55.3	23.8
	SBT/R	A	0.13	11.6	25.3	A	0.24	12.6	45.5
	Overall	**A**	**0.33**	**22.3**	**-**	**A**	**0.37**	**26.5**	**-**

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Barnsdale Road at Prince of Wales Drive *Roundabout*	EB	C	0.74	18.7	80.4	D	0.78	25.8	61.6
	WB	B	0.24	13.0	5.5	A	0.17	8.6	4.2
	NB	D	0.83	32.2	68.1	B	0.44	11.6	16.3
	SB	A	0.53	9.8	23.8	E	1.03	49.3	520.1
	Overall	**C**	**0.83**	**19.5**	-	E	1.03	35.4	-
	Mitigation Measure: with SBR								
	EB	C	0.74	18.7	80.5	D	0.79	27.4	63.6
	WB	B	0.24	13.0	5.5	A	0.17	8.6	4.2
	NB	D	0.83	32.2	68.1	B	0.44	11.6	16.3
	SBL/T	A	0.45	10.1	18.0	C	0.91	27.4	244.0
	SBR	A	0.45	7.6	18.0	C	0.91	22.4	244.0
	Overall	**C**	**0.83**	**19.0**	-	**C**	**0.91**	**22.7**	-
Barnsdale Road at Greenbank Road *Unsignalized*	EB	D	0.72	27.0	42.8	**F**	**1.20**	**129.8**	**154.5**
	WB	D	0.76	29.9	50.3	**F**	**1.11**	**87.1**	**115.5**
	NB	B	0.21	13.9	6.0	C	0.39	18.5	12.0
	SB	**F**	**0.98**	**61.0**	**100.5**	E	0.86	38.9	56.3
	Overall	**E**	-	**40.1**	-	**F**	-	**84.9**	-
	Mitigation Measure: with EBL and SBL								
	EBL	B	0.18	12.5	5.3	C	0.36	15.9	12.0
	EBT/R	C	0.55	18.7	24.8	E	0.90	44.4	68.3
	WB	D	0.77	30.6	51.0	**F**	**1.11**	**104.8**	**133.5**
	NB	B	0.22	14.0	6.0	C	0.38	18.4	12.0
	SBL	C	0.54	19.2	23.3	B	0.26	15.0	7.5
	SBT/R	C	0.53	17.4	23.3	C	0.63	22.9	29.3
	Overall	**C**	-	**21.2**	-	**F**	-	**53.6**	-
	Mitigation Measure: Signalized with EBL and SBL								
	EBL	A	0.27	12.2	12.0	A	0.53	14.6	16.5
	EBT/R	A	0.36	12.5	33.6	A	0.47	10.7	44.3
	WB	C	0.78	33.0	72.4	D	0.82	28.8	89.2
	NB	A	0.15	17.7	18.9	A	0.30	23.7	31.0
	SBL	A	0.54	24.6	52.8	A	0.28	24.4	25.2
	SBT/R	A	0.43	15.1	41.6	A	0.54	22.8	51.0
	Overall	**B**	**0.64**	**21.4**	-	**B**	**0.69**	**21.0**	-
Barnsdale Road at Realigned Greenbank Road *Signalized*	EBL	A	0.33	28.6	16.5	A	0.36	25.5	20.8
	EBT	A	0.51	29.9	62.7	C	0.74	34.7	99.8
	WBT	C	0.74	38.1	97.7	B	0.62	30.0	79.5
	WBR	A	0.10	5.2	6.5	A	0.09	4.2	6.1
	SBL	A	0.04	16.5	11.4	A	0.08	12.8	8.7
	SBR	A	0.10	8.2	7.6	A	0.10	2.8	2.4
	Overall	**B**	**0.64**	**30.0**	-	**B**	**0.66**	**27.7**	-
Barnsdale Road at Borrisokane Road/Highway 416 *Signalized*	EB	C	0.76	19.6	**#115.0**	D	0.88	33.5	**#165.7**
	WB	E	0.92	36.9	**#161.5**	E	0.97	52.5	**#153.8**
	NB	A	0.29	28.7	21.3	A	0.22	21.8	21.9
	SB	D	0.86	57.6	**#77.5**	E	0.97	66.4	**#125.5**
	Overall	**D**	**0.90**	**33.7**	-	**E**	**0.97**	**47.0**	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
	Mitigation Measure: SBL								
	EB	C	0.72	16.5	**#121.9**	C	0.74	17.3	121.2
	WB	D	0.87	28.4	**#161.8**	C	0.80	22.5	**#135.2**
	NB	A	0.36	31.3	21.2	A	0.43	33.2	26.1
	SBL	A	0.34	35.2	22.8	A	0.56	40.6	39.7
	SBT/R	B	0.65	37.0	41.8	D	0.81	46.5	**#70.9**
	Overall	**D**	**0.82**	**25.5**	-	**C**	**0.80**	**26.6**	-
	Mitigation Measure: with EBL, WBL, and SBL								
	EBL	A	0.37	8.8	22.5	A	0.26	8.3	17.9
	EBT/R	A	0.54	22.1	62.7	A	0.57	18.5	90.6
	WBL	A	0.57	10.7	34.8	A	0.50	12.7	25.9
	WBT/R	A	0.39	13.8	37.8	A	0.37	13.4	48.4
	NB	A	0.29	22.8	16.9	A	0.40	30.7	24.9
	SBL	A	0.34	28.3	19.0	A	0.54	38.4	38.4
	SBT/R	A	0.56	24.9	32.6	C	0.79	42.4	62.2
	Overall	**A**	**0.56**	**16.8**	-	**B**	**0.62**	**22.1**	-
Barnsdale Road at Trail Road/ Highway 416 ***Unsignalized***	EB	A	0.00	7.6	0.0	A	-	0.0	0.0
	WB	A	0.06	8.6	1.5	A	0.09	8.6	2.3
	NB	B	0.46	14.8	18.8	C	0.71	23.2	44.3
	SB	D	0.04	25.8	0.8	**F**	**0.15**	**62.0**	**3.8**
	Overall	**A**	-	**6.4**	-	**B**	-	**11.2**	-
	Mitigation Measure: with WBL and NBR								
	EB	A	0.00	7.6	0.0	A	-	0.0	0.0
	WBL	A	0.06	8.6	1.5	A	0.09	8.6	2.3
	WBT/R	-	-	-	-	-	-	-	-
	NBL/T	C	0.04	16.3	0.8	C	0.14	21.2	3.8
	NBR	B	0.43	13.8	15.8	C	0.57	16.2	27.0
	SB	D	0.04	25.6	0.8	**F**	**0.15**	**62.0**	**3.8**
	Overall	**A**	-	**6.1**	-	**A**	-	**8.5**	-
	Mitigation Measure: All-way stop controlled								
	EB	B	0.40	12.0	14.3	C	0.46	16.0	18.0
	WB	B	0.44	14.0	16.5	D	0.73	27.3	46.5
	NB	C	0.52	15.4	22.5	D	0.83	34.1	63.0
	SB	B	0.02	11.1	0.8	B	0.03	12.6	0.8
	Overall	**B**	-	**13.9**	-	**D**	-	**27.5**	-
	Mitigation Measure: All-way stop controlled with WBL and NBR								
	EB	B	0.45	13.9	17.3	C	0.49	17.6	20.3
	WBL	B	0.13	11.2	3.0	B	0.23	13.2	6.8
	WBT/R	B	0.34	12.4	11.3	C	0.54	18.1	24.0
	NBL/T	B	0.03	10.7	0.8	B	0.08	11.7	2.3
	NBR	C	0.54	16.4	24.0	D	0.79	31.6	56.3
	SB	B	0.02	11.8	0.8	B	0.03	13.1	0.8
	Overall	**B**	-	**14.2**	-	**C**	-	**22.5**	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Dundonald Drive at Realigned Greenbank Road *Signalized*	EBL	B	0.64	51.5	38.8	A	0.54	46.8	33.2
	EBT/R	A	0.17	17.7	11.5	A	0.12	15.4	9.3
	WBL	A	0.04	29.4	5.1	A	0.04	31.2	5.1
	WBT/R	A	0.30	12.6	15.8	A	0.37	16.8	19.2
	NBL	A	0.02	13.4	8.5	A	0.05	7.8	8.3
	NBT/R	A	0.12	10.4	33.7	A	0.11	6.6	20.1
	SBL	A	0.08	16.2	17.0	A	0.14	4.5	6.9
	SBT/R	A	0.11	10.8	21.7	A	0.20	2.7	3.9
	Overall	**A**	**0.31**	**18.9**	-	**A**	**0.27**	**10.6**	-
Kilbirnie Drive at Realigned Greenbank Road *Signalized*	EBL	A	0.25	51.2	11.3	A	0.21	51.0	10.1
	EBT/R	A	0.07	9.5	4.6	A	0.05	9.2	3.6
	WBL	A	0.05	34.1	4.9	A	0.05	34.0	4.9
	WBT/R	A	0.29	9.9	9.8	A	0.28	9.7	9.7
	NBL	A	0.01	9.2	3.2	A	0.03	11.3	5.0
	NBT	A	0.06	6.9	10.2	A	0.07	8.8	10.6
	NBR	A	0.01	0.1	0.0	A	0.01	0.0	0.0
	SBL	A	0.07	16.5	19.1	A	0.12	9.1	13.0
	SBT	A	0.05	14.1	16.8	A	0.07	8.0	10.2
	SBR	A	0.03	3.0	1.5	A	0.06	0.2	0.0
	Overall	**A**	**0.22**	**14.6**	-	**A**	**0.19**	**11.1**	-
Cappamore Drive at Realigned Greenbank Road *Signalized*	EBL	A	0.07	42.1	6.3	A	0.07	40.9	5.7
	EBT/R	A	0.25	41.9	18.6	A	0.23	40.1	16.3
	WBL	A	0.03	39.0	3.9	A	0.02	37.7	2.8
	WBT/R	A	0.28	25.8	15.4	A	0.37	33.9	22.3
	NBL	A	0.00	2.3	0.7	A	0.01	2.7	1.7
	NBT/R	A	0.04	1.7	5.7	A	0.05	2.0	9.1
	SBL	A	0.02	2.7	2.3	A	0.04	2.1	1.9
	SBT/R	A	0.04	2.1	4.3	A	0.06	1.5	2.5
	Overall	**A**	**0.12**	**13.2**	-	**A**	**0.17**	**12.6**	-
Haiku Street at Borrisokane Road *Unsignalized*	WBL/R	B	0.07	10.9	1.5	B	0.29	14.7	9.0
	NBT/R	-	-	-	-	-	-	-	-
	SBL/T	A	0.05	8.1	1.5	A	0.05	8.1	1.5
	Overall	**A**	**-**	**1.6**	-	**A**	**-**	**3.6**	-
Dundonald Drive at Elevation Road *Unsignalized*	EB	B	0.05	11.8	1.5	B	0.05	11.4	0.8
	WB	A	0.13	9.6	3.0	A	0.21	9.9	6.0
	NB	A	0.01	7.3	0.0	A	0.01	7.3	0.0
	SB	A	0.10	7.6	2.3	A	0.07	7.5	1.5
	Overall	**A**	**-**	**6.7**	-	**A**	**-**	**7.1**	-

Notes:
Saturation flow rate of 1800 veh/h/lane
Queue is measured in metres
Peak Hour Factor = 1.00
Delay = average vehicle delay in seconds
m = metered queue
# = volume for the 95th %ile cycle exceeds capacity

The intersection of Cambrian Road at Elevation Road/Apolune Road, the northbound left-turn movements is expected to have high delays due to the two-way stop-control. Should the northbound left delay need to be addressed, the intersection will require signalization to operate acceptably. This was identified as a 2031 future background condition.

Barnsdale Road at Prince of Wales Drive is expected to be over capacity on the southbound approach with an extended queue during the PM peak. The implementation of a southbound right-turn lane would alleviate the

capacity constraints and queuing concerns. Extended queues are noted on the southbound approach during the PM peak. This was identified as a 2031 future background condition.

The Barnsdale Road at Greenbank Road intersection is expected to be over capacity on the southbound approach during the AM peak, and over capacity in the eastbound and westbound approaches during the PM peak. To alleviate the operational constraints, the intersection will require signalization with eastbound and southbound left-turn lanes. This was identified as a 2031 future background condition. The travel pattern changes once Re-Aligned Greenbank Road has been completed will remove the need for the westbound right-turn lane noted in the 2031 future background conditions.

The signalized interchange intersection at Barnsdale Road at Borrisokane Road/Highway 416 is expected to have queueing concerns during both peaks. The inclusion of the southbound left-turn will alleviate the capacity constraints, although queueing concerns may remain on the eastbound and westbound approaches during the AM peak and on the westbound and southbound approaches during the PM peak. Given the intersection is intended to be operational as constructed for the foreseeable future, it is recommended the warranted eastbound and westbound left-turn lanes also be implemented as part of the initial construction. The addition of a southbound right turn-lane is not required operationally, although it should be considered as part of the design/construction of the initial intersection. This was identified as a 2031 future background condition.

For the Barnsdale Road at Trail Road/Highway 416, the southbound approach is expected to have high delays due to the two-way stop control. The implementation of the all-way stop-control would address the operational constraints for the southbound approach. The auxiliary turn lanes remain the same as identified in the 2031 future background conditions.

The remaining intersections are expected to operate acceptably in the 2036 future background conditions.

7.1.2.3 Recommended Improvements

Based on the operational analysis provided, the following network improvements are indicated for consideration by the 2036 future background horizon:

- Cambrian Road at Elevation Road/Apolune Road:
  - Signalization
- Barnsdale Road at Prince of Wales Drive:
  - A 55-metre auxiliary southbound right turn lane
- Barnsdale Road at Greenbank Road:
  - Signalization
  - A 40-metre auxiliary eastbound left turn lane
  - A 60-metre auxiliary southbound left turn lane
- Barnsdale Road at Borrisokane Road/Highway 416:
  - Signalization
  - A 55-metre auxiliary eastbound left turn lane
  - An 80-metre auxiliary westbound left turn lane
  - A 40-metre auxiliary southbound left turn lane
  - A 15-metre auxiliary southbound right turn lane
- Barnsdale Road at Trail Road/Highway 416:
  - All-way stop-control (optional)
  - A 25-metre westbound left turn lane
  - A 60-metre northbound right turn lane

7.2 Future Total Network Travel Demand

7.2.1 2031 Future Total Conditions

7.2.1.1 Warrant Analysis

Signal warrant analysis of Justification 7 was performed for the study area intersections for 2031 future total conditions. The intersection of Cambrian Road at Elevation Road/Apolune Road met the signal warrant; however, the operational analysis for the 2031 future background conditions indicates that signalization is required to address the future background constraints. The signal warrant calculation sheets are provided in Appendix I.

No additional all-way stop warrants were met and will remain the same as the 2031 future background conditions. The all-way stop-controlled warrants are provided in Appendix J.

No additional left turn warrants were identified for the 2031 future total conditions. The storage lengths have been adjusted for the 2031 future total volumes, based on TIA guidelines and TAC. The left turn warrants are provided in Appendix K.

No additional right-turn lanes have been noted for the 2031 future total conditions.

7.2.1.2 Intersection Operations

As noted in the 2031 future background conditions, the interim conditions for the interchange at Barnsdale Road and the roundabout for the Cambrian Road at Borrisokane Road intersection have been assumed to be completed by 2031.

Figure 29 illustrates the 2031 future total intersection volumes and Table 13Table 12 summarizes the intersection operations. Volumes have been balanced along the study area roadways. The level of service for signalized intersections is based on volume to capacity ratio (v/c) calculations for individual lane movements and MMLOS Guidelines weighted v/c methodology for the overall intersection, per direction from Transportation Engineering Services, and average delay for unsignalized intersections. Sidra 9 has been used to model the study area roundabout and HCM 2010 methodology was used for the operations. The synchro and Sidra worksheets for the 2031 future total horizon are provided in Appendix N.

Figure 29: 2031 Future Total Volumes

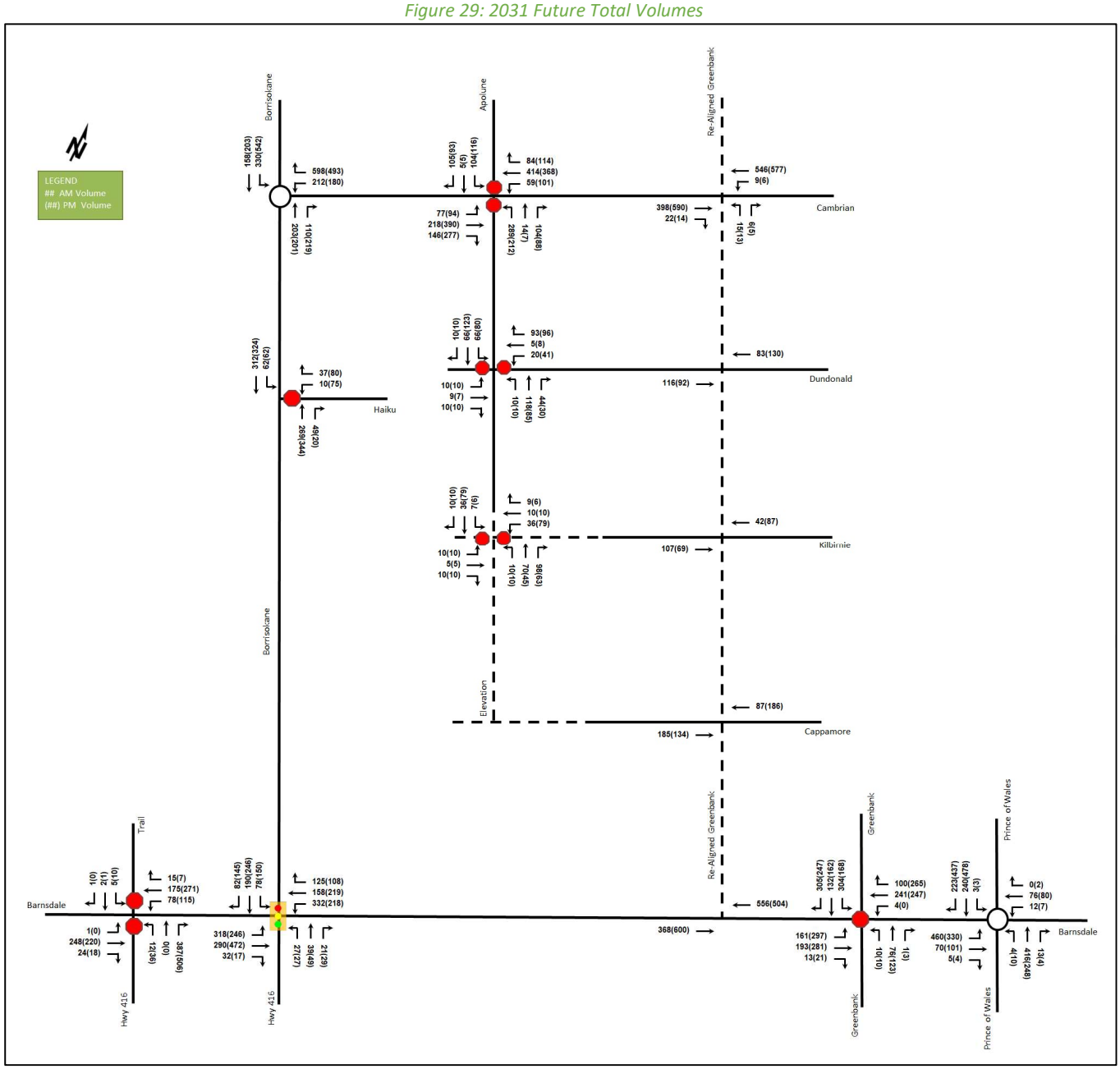


Table 13: 2031 Future Total Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Cambrian Road at Borrisokane Road *Roundabout*	WBL/R	C	0.94	22.2	177.1	B	0.76	10.9	61.3
	NBL/R	A	0.43	9.2	14.9	B	0.69	14.1	34.3
	SBL/T	B	0.60	12.6	31.1	C	0.82	15.1	81.6
	Overall	**C**	**0.94**	**16.7**	-	**B**	**0.82**	**13.3**	-
Cambrian Road at Elevation Road/ Apolune Road *Unsignalized*	EBL	A	0.08	8.9	1.5	A	0.09	8.9	2.3
	EBT/R	-	-	-	-	-	-	-	-
	WBL	A	0.05	8.2	1.5	A	0.11	9.4	3.0
	WBT/R	-	-	-	-	-	-	-	-
	NBL	**F**	**2.68**	**842.4**	**200.3**	**F**	**3.59**	**1312.1**	**169.5**
	NBT/R	B	0.21	13.2	6.0	C	0.22	15.8	6.0
	SBL	**F**	**0.74**	**82.1**	**33.0**	**F**	**1.47**	**359.0**	**69.8**
	SBT/R	B	0.22	14.1	6.0	C	0.23	16.1	6.8
	Overall	**C**	-	**158.3**	-	**C**	-	**174.2**	-
	Mitigation Measure: Signalized								
	EBL	A	0.41	26.3	21.0	A	0.27	13.0	16.8
	EBT/R	B	0.64	22.6	66.4	D	0.87	29.4	**#150.4**
	WBL	A	0.19	18.3	14.0	A	0.40	17.5	21.8
	WBT/R	C	0.76	28.8	**#110.3**	A	0.54	14.1	69.0
	NBL	E	0.91	51.9	**#78.0**	E	0.93	73.8	**#69.4**
	NBT/R	A	0.16	3.9	8.6	A	0.18	6.4	10.3
	SBL	A	0.21	12.8	16.7	A	0.32	23.6	26.4
	SBT/R	A	0.17	3.5	7.7	A	0.20	6.3	10.2
	Overall	**D**	**0.82**	**26.5**	-	**D**	**0.88**	**26.3**	-
Barnsdale Road at Prince of Wales Drive *Roundabout*	EB	C	0.71	17.4	71.1	D	0.77	25.7	59.8
	WB	B	0.24	12.8	5.7	A	0.17	8.5	4.2
	NB	D	0.81	29.9	64.7	B	0.43	11.4	16.0
	SB	A	0.52	9.8	23.6	E	1.02	45.5	497.3
	Overall	**C**	**0.81**	**18.4**	-	**D**	**1.02**	**33.3**	-
	Mitigation Measure: with SBR								
	EB	C	0.71	17.4	71.2	D	0.78	26.5	60.9
	WB	B	0.24	12.8	5.7	A	0.17	8.5	4.2
	NB	D	0.81	29.9	64.7	B	0.43	11.4	16.0
	SBL/T	B	0.45	10.1	17.9	D	0.90	25.7	216.6
	SBR	A	0.45	7.6	17.9	C	0.90	21.0	216.6
	Overall	**C**	**0.81**	**17.8**	-	**C**	**0.90**	**21.6**	-
Barnsdale Road at Greenbank Road *Unsignalized*	EB	D	0.81	29.8	43.5	**F**	**1.47**	**197.5**	**188.3**
	WB	C	0.75	25.0	35.3	**F**	**1.28**	**103.4**	**114.0**
	NB	B	0.22	14.3	5.3	C	0.45	21.8	12.0
	SB	**F**	**1.32**	**186.6**	**242.3**	**F**	**1.37**	**153.1**	**159.8**
	Overall	**F**	-	**103.3**	-	**F**	-	**143.9**	-
	Mitigation Measure: with EBL and SBL								
	EBL	C	0.38	16.1	12.8	D	0.76	33.9	42.8
	EBT/R	C	0.44	16.5	16.5	D	0.72	28.8	38.3
	WB	D	0.71	27.1	42.8	**F**	**1.15**	**125.4**	**144.0**
	NB	B	0.21	14.2	6.0	C	0.40	20.1	12.8
	SBL	C	0.65	24.1	34.5	C	0.43	18.4	15.0
	SBT/R	D	0.82	33.9	61.5	**F**	**0.93**	**51.5**	**72.8**
	Overall	**C**	-	**25.1**	-	**F**	-	**60.2**	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
	Mitigation Measure: Signalized with EBL and SBL								
	EBL	A	0.51	18.6	24.3	D	0.83	35.9	#65.1
	EBT/R	A	0.27	13.4	29.4	A	0.31	9.3	33.2
	WB	D	0.82	40.8	#77.8	E	0.95	51.8	#118.4
	NB	A	0.14	16.0	16.8	A	0.33	24.6	29.6
	SBL	B	0.64	26.2	62.1	A	0.50	29.4	38.1
	SBT/R	B	0.61	15.0	57.2	D	0.82	34.7	#87.0
	Overall	**B**	**0.69**	**23.2**	-	**D**	**0.88**	**34.3**	-
	Mitigation Measure: Signalized with EBL and SBL and WBR								
	EBL	A	0.50	20.7	26.4	B	0.67	20.3	41.1
	EBT/R	A	0.30	15.7	32.0	A	0.37	13.0	39.7
	WBL/T	B	0.70	37.5	52.5	B	0.70	37.3	52.8
	WBR	A	0.24	3.8	6.4	A	0.51	7.3	16.6
	NB	A	0.13	13.6	15.5	A	0.24	18.4	26.1
	SBL	A	0.57	21.2	57.5	A	0.37	21.2	33.9
	SBT/R	A	0.56	11.8	50.9	B	0.65	20.3	65.6
	Overall	**A**	**0.60**	**18.8**	-	**B**	**0.67**	**19.4**	-
Barnsdale Road at Borrisokane Road/Highway 416 ***Signalized***	EB	E	0.97	48.7	#221.3	F	1.08	85.6	#284.6
	WB	E	1.00	56.0	#217.0	E	0.97	57.4	#206.8
	NB	A	0.29	35.8	29.4	A	0.24	29.2	31.6
	SB	E	0.97	86.4	#139.3	F	1.14	123.8	#227.5
	Overall	**E**	**0.99**	**58.5**	-	**F**	**1.11**	**85.3**	-
	Mitigation Measure: with SBL								
	EB	E	0.97	46.6	#180.5	E	0.99	49.0	#198.3
	WB	E	0.99	52.2	#176.0	D	0.88	32.1	#144.0
	NB	A	0.38	30.2	23.7	A	0.50	33.4	29.1
	SBL	A	0.30	32.9	23.4	A	0.51	37.3	41.3
	SBT/R	D	0.80	49.7	#73.5	E	0.98	75.4	#119.5
	Overall	**E**	**0.93**	**47.6**	-	**E**	**0.99**	**47.8**	-
	Mitigation Measure: with EBL, WBL, and SBL								
	EBL	A	0.55	12.5	36.9	A	0.47	12.6	32.7
	EBT/R	A	0.58	25.6	65.2	C	0.71	29.9	108.7
	WBL	A	0.60	13.1	38.7	A	0.55	15.7	29.0
	WBT/R	A	0.49	19.2	48.1	A	0.51	23.5	66.9
	NB	A	0.29	20.6	18.0	A	0.35	24.3	25.1
	SBL	A	0.29	25.7	19.3	A	0.44	31.0	37.9
	SBT/R	C	0.71	33.6	53.2	D	0.87	48.5	#102.5
	Overall	**B**	**0.63**	**20.7**	-	**C**	**0.73**	**28.5**	-
	Mitigation Measure: with EBL, WBL, and SBL and SBR								
	EBL	A	0.50	8.9	30.5	A	0.40	10.9	34.5
	EBT/R	A	0.47	19.9	67.0	A	0.56	20.1	97.8
	WBL	A	0.54	10.5	36.7	A	0.47	13.4	25.4
	WBT/R	A	0.41	16.4	47.2	A	0.39	16.0	60.3
	NB	A	0.32	23.3	18.5	A	0.42	29.8	26.3
	SBL	A	0.30	28.4	19.4	B	0.62	44.1	40.8
	SBT	A	0.60	35.6	40.6	C	0.73	47.1	61.4
	SBR	A	0.21	1.7	1.5	A	0.39	10.6	16.6
	Overall	**A**	**0.53**	**16.9**	-	**A**	**0.58**	**22.6**	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Barnsdale Road/ Trail Road/ Highway 416 *Unsignalized*	EB	A	0.00	7.6	0.0	A	-	0.0	0.0
	WB	A	0.07	8.7	1.5	A	0.11	8.7	3.0
	NB	C	0.59	17.7	29.3	D	0.84	33.0	69.0
	SB	D	0.06	34.7	1.5	**F**	**0.23**	**103.6**	**6.0**
	Overall	**A**	-	**8.4**	-	**B**	-	**16.9**	-
	Mitigation Measure: with WBL and NBR								
	EB	A	0.00	7.6	0.0	A	-	0.0	0.0
	WBL	A	0.07	8.7	1.5	A	0.11	8.7	3.0
	WBT/R	-	-	-	-	-	-	-	-
	NBL/T	C	0.04	17.1	0.8	C	0.15	22.3	3.8
	NBR	C	0.55	16.2	25.5	C	0.69	20.1	42.0
	SB	D	0.06	34.5	1.5	**F**	**0.23**	**101.0**	**6.0**
	Overall	**A**	-	**7.8**	-	**B**	-	**11.0**	-
	Mitigation Measure: All-way stop controlled								
	EB	B	0.44	13.2	16.5	C	0.50	17.7	19.5
	WB	C	0.49	15.9	20.3	D	0.81	34.4	55.5
	NB	C	0.68	21.2	39.0	**F**	**1.01**	**72.1**	**113.3**
	SB	B	0.02	11.5	0.8	B	0.03	13.2	0.8
	Overall	**C**	-	**17.3**	-	**E**	-	**48.1**	-
	Mitigation Measure: All-way stop controlled with WBL and NBR								
	EB	C	0.49	15.4	19.5	C	0.53	19.7	22.5
	WBL	B	0.17	12.1	4.5	B	0.27	14.5	8.3
	WBT/R	B	0.36	13.4	12.0	C	0.59	20.9	27.8
	NBL/T	B	0.03	10.8	0.8	B	0.08	11.9	2.3
	NBR	C	0.70	23.3	42.0	**F**	**0.98**	**65.8**	**102.8**
	SB	B	0.02	12.3	0.8	B	0.03	13.7	0.8
	Overall	**C**	-	**17.9**	-	**E**	-	**38.9**	-
	Mitigation Measure: Signalized with WBL and NBR								
	EB	A	0.32	7.8	37.6	A	0.27	8.6	42.0
	WBL	A	0.17	3.6	4.7	A	0.23	5.3	15.1
	WBT/R	A	0.22	3.0	8.5	A	0.30	4.7	29.9
	NBL/T	A	0.09	23.8	4.7	A	0.25	31.8	10.3
	NBR	C	0.75	12.9	21.2	D	0.82	14.6	25.9
	SB	A	0.05	21.2	3.5	A	0.08	25.9	4.5
	Overall	**A**	**0.57**	**8.9**	-	**B**	**0.64**	**10.8**	-
Haiku Street at Borrisokane Road *Unsignalized*	WBL/R	B	0.08	11.5	2.3	C	0.35	17.3	11.3
	NBT/R	-	-	-	-	-	-	-	-
	SBL/T	A	0.05	8.2	1.5	A	0.06	8.4	1.5
	Overall	**A**	-	**1.4**	-	**A**	-	**3.5**	-
Dundonald Drive at Elevation Road *Unsignalized*	EB	B	0.05	11.4	1.5	B	0.05	11.8	1.5
	WB	B	0.15	10.3	3.8	B	0.20	11.1	5.3
	NB	A	0.01	7.4	0.0	A	0.01	7.5	0.0
	SB	A	0.05	7.7	0.8	A	0.05	7.6	1.5
	Overall	**A**	-	**4.6**	-	**A**	-	**5.1**	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Kilbirnie Drive at Elevation Road ***Unsignalized***	EB	A	0.03	9.6	0.8	A	0.03	9.7	0.8
	WB	B	0.07	10.2	1.5	B	0.13	10.5	3.0
	NB	A	0.01	7.3	0.0	A	0.01	7.4	0.0
	SB	A	0.01	7.6	0.0	A	0.0	7.4	0.0
	Overall	**A**	**-**	**3.0**	**-**	**A**	**-**	**4.1**	**-**

Notes: Saturation flow rate of 1800 veh/h/lane; Queue is measured in metres; Peak Hour Factor = 1.00; Delay = average vehicle delay in seconds; m = metered queue; # = volume for the 95th %ile cycle exceeds capacity

The intersection of Cambrian Road at Elevation Road/Apolune Road, the northbound and southbound left-turn movements are expected to be over capacity as a two-way stop-control during both peak hours. Signalization would be required to address these constraints and operate acceptably. If signalized, the queuing will need to be monitored for the westbound through and northbound left during the AM peak, and for the eastbound through and northbound left during the PM peak. This was identified as a 2031 future background condition.

Barnsdale Road at Prince of Wales Drive is expected to be approaching capacity on the southbound approach with an extended queue during the PM peak. The implementation of a southbound right-turn lane would alleviate the capacity constraints and queuing concerns. Extended queues are noted on the southbound approach during the PM peak. This was identified as a 2031 future background condition.

The Barnsdale Road at Greenbank Road intersection is expected to be over capacity on the southbound approach during the AM peak, and over capacity in the eastbound, westbound and southbound approaches during the PM peak. To alleviate the operational constraints, the intersection will require signalization with eastbound and southbound left-turn lanes. Queueing concerns may remain on the westbound approach during the AM peak, and on the eastbound left, westbound, and southbound through approaches during the PM peak hour and an additional westbound right-turn lane would be required to address this concern. This was identified as a 2031 future background condition.

The new signalized interchange intersection at Barnsdale Road at Borrisokane Road/Highway 416 is expected to have queueing concerns during both peak hours and the eastbound and southbound approaches are expected to be over capacity during the PM peak. The inclusion of the southbound left-turn will alleviate the capacity constraints, although queueing concerns may remain on the eastbound, westbound, and southbound approaches. Given the intersection is intended to be operational as constructed for the foreseeable future, it is recommended the warranted eastbound and westbound left-turn lanes also be implemented as part of the initial construction. The addition of a southbound right turn-lane should be considered as part of the design/construction of the initial intersection. This was identified as a 2031 future background condition.

For the Barnsdale Road at Trail Road/Highway 416, the southbound approach is expected to have high delays due to the two-way stop control. Given the low volumes along Trail Road, it is recommended that the warranted auxiliary lanes be provided and the southbound approach remain with the high delay. Should the southbound delay need to be addressed, the resulting mitigation would require signalization of the intersection to ensure the northbound approach maintain acceptable operations. The turn lanes and all-way stop-control mitigation measures were identified as a 2031 future background condition and the signalization noted in the 2031 future total conditions. If the signalization is considered, it should be implemented during the initial construction of the interchange.

The remaining intersections are expected to operate acceptably in the 2031 future total conditions.

7.2.1.3 Recommended Improvements

Based on the operational analysis provided, the following network improvements are indicated for consideration by the 2031 future total horizon:

- Cambrian Road at Elevation Road/Apolune Road:
  - Signalization
- Barnsdale Road at Prince of Wales Drive:
  - A 55-metre auxiliary southbound right turn lane
- Barnsdale Road at Greenbank Road:
  - Signalization
  - A 70-metre auxiliary eastbound left turn lane
  - A 20-metre auxiliary westbound right turn lane
  - A 75-metre auxiliary southbound left turn lane
- Barnsdale Road at Borrisokane Road/Highway 416:
  - Signalization
  - A 75-metre auxiliary eastbound left turn lane
  - An 80-metre auxiliary westbound left turn lane
  - A 40-metre auxiliary southbound left turn lane
  - A 20-metre auxiliary southbound right turn lane
- Barnsdale Road at Trail Road/Highway 416:
  - Signalization (optional)
  - A 30-metre westbound left turn lane
  - A 30-metre northbound right turn lane

7.2.2 2036 Future Total Conditions

7.2.2.1 Warrant Analysis

Signal warrant analysis of Justification 7 was performed for the study area intersections for 2036 future total conditions and no new signal warrants were met and remain the same as the 2036 future background conditions. The signal warrant calculation sheets are provided in Appendix I.

No additional all-way stop warrants were met and will remain the same as the 2036 future background conditions. The all-way stop-controlled warrants are provided in Appendix J.

No additional left turn warrants were identified for the 2036 future total conditions. The storage lengths have been adjusted for the 2036 future background volumes, based on TIA guidelines and TAC. The left turn warrants are provided in Appendix K.

No additional right-turn lanes have been noted for the 2036 future total conditions.

7.2.2.2 Intersection Operations

As noted in the 2036 future background conditions, the interim Barnsdale Road interchange and roundabout intersection for Cambrian Road at Borrisokane Road have been assumed to be completed. Additionally, Realigned Greenbank Road is assumed to be completed for the 2036 horizon and will be considered in the analysis.

Figure 30 illustrates the 2036 future total intersection volumes and Table 14Table 12 summarizes the intersection operations. Volumes have been balanced along the study area roadways. The level of service for signalized intersections is based on volume to capacity ratio (v/c) calculations for individual lane movements and MMLOS Guidelines weighted v/c methodology for the overall intersection, per direction from Transportation Engineering

Services, and average delay for unsignalized intersections. Sidra 9 has been used to model the study area roundabout and HCM 2010 methodology was used for the operations. The synchro and Sidra worksheets for the 2036 future total horizon are provided in Appendix O.

Figure 30: 2036 Future Total Volumes

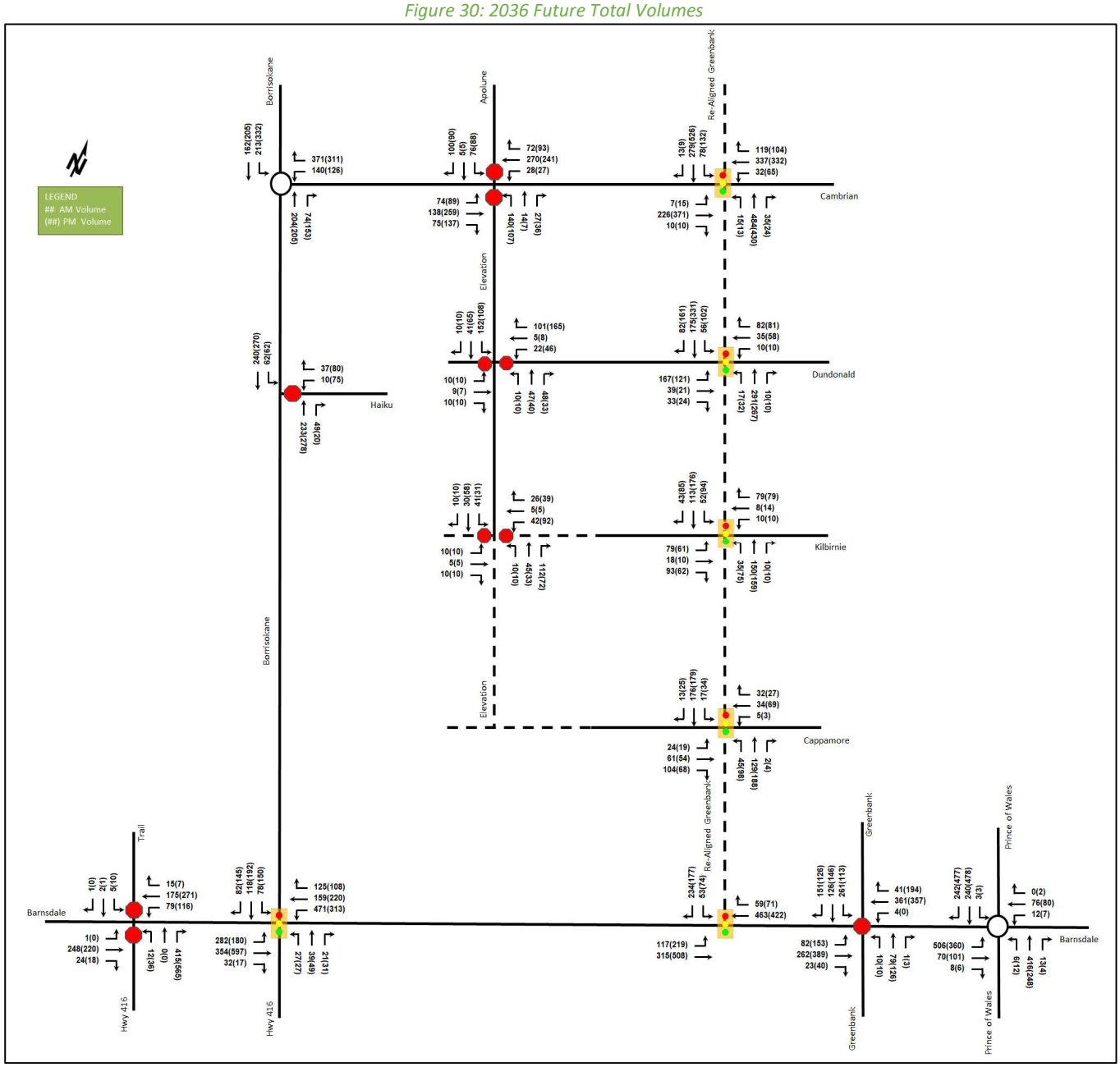


Table 14: 2036 Future Total Intersection Operations

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Cambrian Road at Borrisokane Road *Roundabout*	WBL/R	A	0.60	9.0	30.2	A	0.50	8.1	19.5
	NBL/R	A	0.33	7.8	10.6	A	0.47	9.0	17.2
	SBL/T	B	0.42	10.2	16.0	B	0.56	10.2	25.7
	Overall	**A**	**0.60**	**9.1**	**-**	**A**	**0.56**	**9.2**	**-**
Cambrian Road at Elevation Road/ Apolune Road *Unsignalized*	EBL	A	0.06	8.3	1.5	A	0.08	8.3	1.5
	EBT/R	-	-	-	-	-	-	-	-
	WBL	A	0.02	7.7	0.8	A	0.02	8.2	0.8
	WBT/R	-	-	-	-	-	-	-	-
	NBL	**F**	**0.67**	**52.0**	**31.5**	**F**	**0.67**	**63.2**	**28.5**
	NBT/R	B	0.08	12.1	1.5	B	0.08	12.1	2.3
	SBL	C	0.25	21.1	7.5	D	0.39	30.4	12.8
	SBT/R	B	0.16	11.6	4.5	B	0.15	11.8	3.8
	Overall	**B**	**-**	**11.2**		**B**	**-**	**10.2**	**-**
	Mitigation Measure: Signalized								
	EBL	A	0.15	11.1	12.7	A	0.16	9.8	13.9
	EBT/R	A	0.26	8.6	24.3	A	0.45	10.3	51.0
	WBL	A	0.04	4.0	3.3	A	0.05	3.5	2.9
	WBT/R	A	0.36	8.2	72.8	A	0.34	7.1	72.3
	NBL	B	0.66	30.7	18.0	A	0.57	28.5	15.1
	NBT/R	A	0.09	5.9	3.7	A	0.10	5.4	3.9
	SBL	A	0.21	14.1	11.1	A	0.28	17.1	13.6
	SBT/R	A	0.22	4.5	7.1	A	0.23	5.3	7.4
	Overall	**A**	**0.45**	**11.4**	**-**	**A**	**0.48**	**10.8**	**-**
Realigned Greenbank Road at Cambrian Road *Signalized*	EBL	A	0.03	22.9	3.7	A	0.07	24.5	6.1
	EBT	A	0.28	32.3	24.0	A	0.45	35.0	38.2
	EBR	A	0.02	0.1	0.0	A	0.02	0.1	0.0
	WBL	A	0.12	27.2	10.3	A	0.31	32.8	18.6
	WBT	A	0.42	34.8	34.9	A	0.40	34.1	34.4
	WBR	A	0.27	5.3	10.7	A	0.23	4.4	8.4
	NBL	A	0.03	18.2	5.1	A	0.04	24.9	6.0
	NBT	A	0.29	15.8	37.9	A	0.28	21.7	43.4
	NBR	A	0.04	0.6	0.0	A	0.03	0.5	0.2
	SBL	A	0.35	53.0	15.7	A	0.48	54.3	23.8
	SBT/R	A	0.14	11.7	27.5	A	0.26	12.8	51.0
	Overall	**A**	**0.34**	**22.1**	**-**	**A**	**0.37**	**25.1**	**-**

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Barnsdale Road at Prince of Wales Drive *Roundabout*	EB	C	0.78	21.0	97.7	D	0.81	28.2	72.5
	WB	B	0.26	13.8	6.1	A	0.18	8.9	4.4
	NB	E	0.86	36.6	73.2	B	0.45	12.1	17.1
	SB	B	0.55	10.3	25.5	**F**	**1.07**	**57.7**	**568.7**
	Overall	**C**	**0.86**	**21.6**	-	**E**	**1.07**	**40.7**	-
	Mitigation Measure: with SBR								
	EB	C	0.78	21.0	97.9	D	0.84	31.8	77.7
	WB	B	0.26	13.8	6.1	A	0.18	8.9	4.4
	NB	E	0.86	36.6	73.2	B	0.45	12.2	17.1
	SBL/T	B	0.47	10.5	19.3	D	0.94	31.4	305.2
	SBR	A	0.47	7.9	19.3	D	0.94	25.8	305.2
	Overall	**C**	**0.86**	**21.0**	-	**D**	**0.94**	**26.0**	-
Barnsdale Road at Greenbank Road *Unsignalized*	EB	D	0.77	30.8	48.8	**F**	**1.28**	**149.1**	**168.0**
	WB	E	0.83	35.1	57.8	**F**	**1.19**	**111.2**	**135.8**
	NB	B	0.22	14.4	6.0	C	0.40	19.2	12.0
	SB	**F**	**1.03**	**77.4**	**117.0**	E	0.91	42.7	60.0
	Overall	**E**	-	**48.9**	-	**F**	-	**100.9**	-
	Mitigation Measure: with EBL and SBL								
	EBL	B	0.19	12.8	5.3	C	0.37	16.1	12.0
	EBT/R	C	0.59	20.6	28.5	**F**	**0.94**	**51.6**	**75.8**
	WB	E	0.82	36.3	60.0	**F**	**1.18**	**130.8**	**156.0**
	NB	B	0.22	14.4	6.0	C	0.39	18.9	12.0
	SBL	C	0.58	21.0	26.3	C	0.29	15.6	8.3
	SBT/R	C	0.54	18.1	24.0	C	0.64	23.5	29.3
	Overall	**C**	-	**23.9**	-	**F**	-	**64.9**	-
	Mitigation Measure: Signalized with EBL and SBL								
	EBL	A	0.34	17.1	14.4	A	0.50	12.5	15.2
	EBT/R	A	0.51	16.9	37.0	A	0.49	11.2	46.3
	WB	C	0.74	24.3	56.7	D	0.83	28.0	91.1
	NB	A	0.13	11.0	13.9	A	0.29	23.2	31.0
	SBL	A	0.49	16.0	41.7	A	0.30	24.3	27.1
	SBT/R	A	0.36	8.3	27.0	A	0.53	22.3	51.0
	Overall	**B**	**0.64**	**16.8**	-	**B**	**0.69**	**20.6**	-
Barnsdale Road at Realigned Greenbank Road *Signalized*	EBL	B	0.70	51.4	37.2	D	0.86	58.6	61.7
	EBT	A	0.51	29.9	63.7	C	0.73	33.1	97.3
	WBT	C	0.76	38.8	100.7	A	0.60	28.6	76.7
	WBR	A	0.11	5.0	6.8	A	0.11	3.7	6.3
	SBL	A	0.06	13.6	14.5	A	0.09	18.1	17.9
	SBR	A	0.26	3.9	19.9	A	0.22	5.5	14.6
	Overall	**A**	**0.59**	**28.5**	-	**A**	**0.57**	**30.1**	-
Barnsdale Road at Borrisokane Road/Highway 416 *Signalized*	EB	E	0.99	53.6	**#241.6**	E	0.99	54.5	**#284.7**
	WB	**F**	**1.33**	**180.2**	**#182.9**	**F**	**1.24**	**147.4**	**#274.6**
	NB	A	0.29	33.6	27.9	A	0.29	33.9	34.5
	SB	D	0.84	62.7	87.5	**F**	**1.22**	**157.9**	**#216.6**
	Overall	**F**	**1.20**	**107.5**	-	**F**	**1.23**	**107.6**	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
	Mitigation Measure: with EBL, WBL, and SBL								
	EBL	A	0.46	10.1	30.9	A	0.32	9.2	19.7
	EBT/R	B	0.61	27.5	89.8	D	0.84	35.8	**#156.4**
	WBL	C	0.77	16.8	60.5	D	0.81	29.2	**#61.6**
	WBT/R	A	0.38	15.3	49.0	A	0.41	15.4	51.6
	NB	A	0.36	29.6	23.0	A	0.49	33.0	29.1
	SBL	A	0.33	33.7	23.3	A	0.56	40.2	42.0
	SBT/R	B	0.65	36.4	45.9	E	0.91	60.7	**#98.2**
	Overall	**B**	**0.69**	**21.4**	-	**D**	**0.85**	**33.4**	-
	Mitigation Measure: with EBL, WBL, and SBL and SBR								
	EBL	A	0.44	8.8	25.3	A	0.30	8.0	m17.8
	EBT/R	A	0.53	24.5	92.9	C	0.79	30.7	**#163.2**
	WBL	B	0.69	11.1	48.4	C	0.71	17.8	45.6
	WBT/R	A	0.32	12.2	44.8	A	0.38	13.9	51.9
	NB	A	0.42	35.2	24.2	A	0.42	30.8	27.0
	SBL	A	0.43	42.9	24.9	B	0.70	51.9	42.1
	SBT	A	0.50	43.5	34.0	B	0.64	44.1	49.5
	SBR	A	0.22	1.4	0.0	A	0.35	3.7	4.9
	Overall	**A**	**0.60**	**18.0**	-	**C**	**0.75**	**24.9**	-
Barnsdale Road at Trail Road/ Highway 416 ***Unsignalized***	EB	A	0.00	7.6	0.0	A	-	0.0	0.0
	WB	A	0.08	8.7	1.5	A	0.11	8.7	3.0
	NB	C	0.63	18.9	33.8	E	0.92	43.9	91.5
	SB	E	0.07	38.3	1.5	**F**	**0.33**	**161.2**	**8.3**
	Overall	**A**	-	**9.3**	-	**F**	-	**23.5**	-
	Mitigation Measure: All-way stop controlled								
	EB	B	0.45	13.6	17.3	C	0.52	18.1	19.5
	WB	C	0.50	16.4	21.0	D	0.83	35.1	55.5
	NB	C	0.74	24.0	45.8	**F**	**1.11**	**104.4**	**148.5**
	SB	B	0.02	11.6	0.8	B	0.03	13.4	0.8
	Overall	**C**	-	**18.9**	-	**F**	-	**65.1**	-
	Mitigation Measure: All-way stop controlled with WBL and NBR								
	EB	C	0.50	15.8	20.3	C	0.54	19.8	21.8
	WBL	B	0.17	12.3	4.5	B	0.28	14.8	8.3
	WBT/R	B	0.37	13.7	12.8	C	0.61	21.0	27.0
	NBL/T	B	0.03	10.9	0.8	B	0.08	11.9	2.3
	NBR	D	0.75	27.0	49.5	**F**	**1.09**	**97.2**	**136.5**
	SB	B	0.02	12.4	0.8	B	0.03	13.8	0.8
	Overall	**C**	-	**19.8**	-	**F**	-	**54.5**	-
	Mitigation Measure: Signalized with WBL and NBR								
	EB	A	0.30	7.2	40.5	A	0.28	12.0	51.4
	WBL	A	0.16	5.2	17.2	A	0.25	10.9	18.8
	WBT/R	A	0.20	4.7	32.8	A	0.32	9.8	40.5
	NBL/T	A	0.09	29.5	5.4	A	0.20	24.1	8.2
	NBR	C	0.79	14.9	25.4	D	0.89	20.6	37.4
	SB	A	0.05	26.4	4.0	A	0.06	18.7	3.6
	Overall	**A**	**0.59**	**10.2**	-	**B**	**0.70**	**15.7**	-

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Dundonald Drive at Realigned Greenbank Road *Signalized*	EBL	B	0.67	50.3	46.7	A	0.57	50.3	35.1
	EBT/R	A	0.20	18.7	15.9	A	0.15	19.7	11.1
	WBL	A	0.04	28.8	5.1	A	0.04	30.8	5.1
	WBT/R	A	0.30	13.1	17.1	A	0.39	18.5	21.9
	NBL	A	0.03	5.2	2.9	A	0.06	3.8	3.5
	NBT/R	A	0.14	4.1	12.7	A	0.12	3.0	9.2
	SBL	A	0.09	5.7	4.8	A	0.15	4.4	3.8
	SBT/R	A	0.12	2.9	1.0	A	0.23	3.1	0.8
	Overall	**A**	**0.33**	**14.0**	**-**	**A**	**0.30**	**10.5**	**-**
Kilbirnie Drive at Realigned Greenbank Road *Signalized*	EBL	A	0.33	46.0	16.1	A	0.28	41.5	12.7
	EBT/R	A	0.24	4.7	4.8	A	0.17	3.9	1.0
	WBL	A	0.06	34.2	4.9	A	0.05	34.1	4.9
	WBT/R	A	0.31	11.4	11.1	A	0.32	12.9	12.3
	NBL	A	0.05	6.3	6.3	A	0.10	6.7	10.7
	NBT	A	0.07	5.3	10.0	A	0.07	5.0	10.0
	NBR	A	0.01	0.1	0.0	A	0.01	0.0	0.0
	SBL	A	0.08	11.9	10.8	A	0.13	10.3	14.4
	SBT	A	0.06	10.4	10.0	A	0.08	9.0	12.2
	SBR	A	0.05	0.4	0.0	A	0.09	0.4	0.6
	Overall	**A**	**0.26**	**12.1**	**-**	**A**	**0.23**	**9.9**	**-**
Cappamore Drive at Realigned Greenbank Road *Signalized*	EBL	A	0.15	42.0	10.9	A	0.13	42.5	9.4
	EBT/R	A	0.58	25.2	28.6	A	0.48	27.0	24.8
	WBL	A	0.05	38.6	3.9	A	0.02	37.3	2.8
	WBT/R	A	0.29	26.9	16.8	A	0.42	38.1	26.6
	NBL	A	0.05	13.4	17.9	A	0.12	11.4	28.3
	NBT/R	A	0.05	12.1	19.6	A	0.08	9.7	21.3
	SBL	A	0.02	5.0	4.4	A	0.04	6.5	9.6
	SBT/R	A	0.08	4.1	14.1	A	0.08	5.1	18.5
	Overall	**A**	**0.31**	**15.9**	**-**	**A**	**0.32**	**15.8**	**-**
Haiku Street at Borrisokane Road *Unsignalized*	WBL/R	B	0.07	11.0	1.5	C	0.30	15.1	9.8
	NBT/R	-	-	-	-	-	-	-	-
	SBL/T	A	0.05	8.1	1.5	A	0.05	8.2	1.5
	Overall	**A**	**-**	**1.6**	**-**	**A**	**-**	**3.6**	**-**
Dundonald Drive at Elevation Road *Unsignalized*	EB	B	0.06	12.3	1.5	B	0.05	11.8	1.5
	WB	B	0.16	10.4	4.5	B	0.26	10.9	8.3
	NB	A	0.01	7.3	0.0	A	0.01	7.4	0.0
	SB	A	0.10	7.7	2.3	A	0.07	7.5	1.5
	Overall	**A**	**-**	**6.3**	**-**	**A**	**-**	**7.0**	**-**
Kilbirnie Drive at Elevation Road *Unsignalized*	EB	B	0.04	10.0	0.8	A	0.04	9.9	0.8
	WB	B	0.11	10.4	3.0	B	0.20	10.8	5.3
	NB	A	0.01	7.3	0.0	A	0.01	7.3	0.0
	SB	A	0.03	7.6	0.8	A	0.02	7.5	0.8
	Overall	**A**	**-**	**4.3**	**-**	**A**	**-**	**5.7**	**-**

Notes:
Saturation flow rate of 1800 veh/h/lane
Queue is measured in metres
Peak Hour Factor = 1.00
Delay = average vehicle delay in seconds
m = metered queue
# = volume for the 95th %ile cycle exceeds capacity

The intersection of Cambrian Road at Elevation Road/Apolune Road, the northbound left-turn movements are expected to have high delays due to the two-way stop-control. Should the northbound left delay need to be

addressed, the intersection will require signalization to operate acceptably. This was identified as a 2036 future background condition.

Barnsdale Road at Prince of Wales Drive is expected to be over capacity on the southbound approach with an extended queue during the PM peak. The implementation of a southbound right-turn lane would alleviate the capacity constraints and queuing concerns. Extended queues are noted on the southbound approach during the PM peak. This was identified as a 2036 future background condition.

The Barnsdale Road at Greenbank Road intersection is expected to be over capacity on the southbound approach during the AM peak, and on the eastbound and westbound approaches during the PM peak. To alleviate the operational constraints, the intersection will require signalization with eastbound and southbound left-turn lanes. This was identified as a 2036 future background condition. The travel pattern changes once Re-Aligned Greenbank Road has been completed will remove the need for the westbound right-turn lane noted in the 2031 future background and future total conditions.

The signalized interchange intersection at Barnsdale Road at Borrisokane Road/Highway 416 is expected to have queueing concerns during both peaks, the westbound approach is expected to be over capacity during the AM peak, and the westbound and southbound approaches are expected to be over capacity during the PM peak. The inclusion of eastbound, westbound and southbound left-turn lanes will alleviate the capacity constraints. The addition of a southbound right turn-lane is not required operationally, although it should be considered as part of the design/construction of the initial intersection. This was identified as a 2036 future background condition.

For the Barnsdale Road at Trail Road/Highway 416, the southbound approach is expected to have high delays due to the two-way stop control. Given the low volumes along Trail Road, it is recommended that the warranted auxiliary lanes be provided and the southbound approach remain with the high delay. Should the southbound delay need to be addressed, the resulting mitigation would require signalization of the intersection to ensure the northbound approach maintain acceptable operations. The turn lanes and all-way stop-control mitigation measures were identified as a 2031 future background condition and the signalization noted in the 2031 future total conditions. If the signalization is considered, it should be implemented during the initial construction of the interchange.

The remaining intersections are expected to operate acceptably in the 2036 future total conditions.

7.2.2.3 Recommended Improvements

Based on the operational analysis provided, the following network improvements are indicated for consideration by the 2036 future total horizon:

- Cambrian Road at Elevation Road/Apolune Road:
  - Signalization
- Barnsdale Road at Prince of Wales Drive:
  - A 55-metre auxiliary southbound right turn lane
- Barnsdale Road at Greenbank Road:
  - Signalization
  - A 40-metre auxiliary eastbound left turn lane
  - A 65-metre auxiliary southbound left turn lane
- Barnsdale Road at Borrisokane Road/Highway 416:
  - Signalization
  - A 75-metre auxiliary eastbound left turn lane

  - A 125-metre auxiliary westbound left turn lane
  - A 40-metre auxiliary southbound left turn lane
  - A 15-metre auxiliary southbound right turn lane
- Barnsdale Road at Trail Road/Highway 416:
  - Signalization (optional)
  - A 30-metre westbound left turn lane
  - A 40-metre northbound right turn lane

7.3 Kilbirnie Road Extension Sensitivity

Per the City of Ottawa's request, the inclusion of Kilbirnie Road extension to Borrisokane Road has been analyzed to identify its potential impacts on the surrounding road network. It is expected that the intersection of Barnsdale Road at Borrisokane Road/Highway 416 would be the most affected. Therefore, the intersections of Kilbirnie Road at Borrisokane Road and Barnsdale Road at Borrisokane Road/Highway 416 have been included in this analysis.

7.3.1 2031 Future Total Conditions-Sensitivity

7.3.1.1 Warrant Analysis

Signal warrant analysis of Justification 7 was performed for the Borrisokane Road at Kilbirnie Drive intersection during 2031 future total-sensitivity conditions and the signal warrants was not met. The signal warrant calculation sheet are provided in Appendix I.

The left turn warrants were performed for the intersection of Kilbirnie Road at Borrisokane Road and the southbound left turn met the warrant during the PM peak hour. Given the warrant is met, the operational analysis will exclude the turn lane to determine in there is also an operational need for the auxiliary lane. The identified left turn warrants will remain the same as 2031 future background conditions for the intersection of Barnsdale Road at Borrisokane Road/Highway 416. The storage lengths have been adjusted for the 2031 future total volumes, based on TIA guidelines and TAC. The left turn warrants are provided in Appendix K.

7.3.1.2 Intersection Operations

As noted in the 2031 future background conditions, the interim conditions for the interchange at Barnsdale Road has been assumed to be completed by 2031, and it is anticipated that existing and future development trips from the adjacent community will use this connection and have been reassigned to Kilbirnie Drive. The unmitigated condition and the southbound left-turn lane only mitigation at the intersection of Barnsdale Road at Borrisokane Road/Highway 416 presented in the previous future total conditions have been excluded from this analysis, as they were provided previously to illustrate the incremental improvement required for the intersection and both conditions are not recommended for implementation. It should be noted that signal timing has been optimized in each scenario with the proposed mitigation measures.

Figure 31 illustrates the 2031 future total intersection volumes for this sensitivity analysis and Table 15Table 12 summarizes the intersection operations. Volumes have been balanced along the study area roadways. The level of service for signalized intersections is based on volume to capacity ratio (v/c) calculations for individual lane movements and MMLOS Guidelines weighted v/c methodology for the overall intersection, per direction from Transportation Engineering Services, and average delay for unsignalized intersections. The synchro worksheets are provided in Appendix P.

Figure 31: 2031 Future Total Volumes-Sensitivity

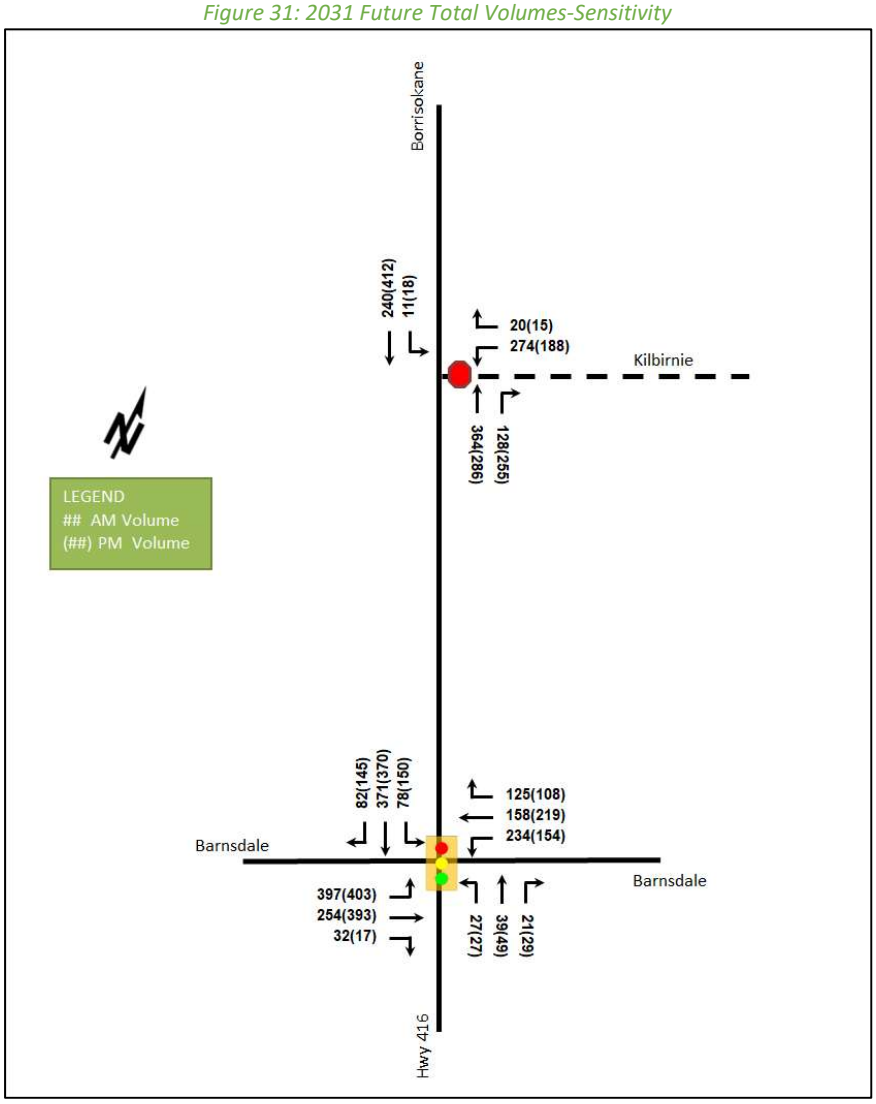


Table 15: 2031 Future Total Intersection Operations-Sensitivity

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Barnsdale Road at Borrisokane Road/Highway 416 *Signalized*	**Mitigation Measure: with EBL, WBL, and SBL**								
	EBL	C	0.74	21.7	62.8	C	0.78	26.5	74.2
	EBT/R	A	0.50	27.1	63.7	A	0.59	29.7	101.0
	WBL	A	0.48	16.1	34.9	A	0.38	17.6	27.0
	WBT/R	B	0.62	31.9	65.3	B	0.64	39.0	91.8
	NB	A	0.26	20.2	19.7	A	0.33	25.1	27.8
	SBL	A	0.21	23.5	20.0	A	0.37	30.4	41.4
	SBT/R	D	0.87	45.9	**#116.4**	E	0.93	58.6	**#161.4**
	Overall	**C**	**0.76**	**29.5**	-	**C**	**0.80**	**36.7**	-
	Mitigation Measure: with EBL, WBL, and SBL and SBR								
	EBL	B	0.68	16.9	57.6	C	0.73	19.3	58.8
	EBT/R	A	0.44	23.2	60.1	A	0.58	24.7	86.7
	WBL	A	0.45	13.6	32.0	A	0.34	12.7	21.5
	WBT/R	A	0.53	26.7	62.8	A	0.60	29.6	75.1
	NB	A	0.29	22.8	20.8	A	0.34	23.2	24.2
	SBL	A	0.25	26.4	21.1	A	0.45	30.6	37.2
	SBT	D	0.82	44.4	88.0	D	0.82	45.0	87.8
	SBR	A	0.16	0.6	0.0	A	0.28	2.4	4.3
	Overall	**B**	**0.69**	**24.6**	-	**C**	**0.72**	**26.0**	-
Kilbirnie Road at Borrisokane Road *Unsignalized*	WBL/R	D	0.71	32.0	40.5	E	0.70	40.5	36.8
	NBT/R	-	-	-	-	-	-	-	-
	SBL/T	A	0.01	8.4	0.0	A	0.06	8.6	1.5
	Overall	**A**	**-**	**9.2**	-	**A**	**-**	**7.5**	-

Notes: Saturation flow rate of 1800 veh/h/lane
Queue is measured in metres
Peak Hour Factor = 1.00
Delay = average vehicle delay in seconds
m = metered queue
# = volume for the 95th %ile cycle exceeds capacity

Overall, the sensitivity analysis indicates that both intersections will operate acceptable during the 2031 future total conditions. Queueing concerns may remain on the southbound approach during both peak hours without a southbound right-turn lane. The addition of the southbound right turn-lane should be considered as part of the design/construction of the initial intersection. This was identified as a 2031 future background condition.

The new intersection of Kilbirnie Road at Borrisokane Road is expected to operate acceptably in the 2031 future total conditions. The southbound left-turn lane is not required from an intersection operation perspective.

Comparing the intersection at Barnsdale Road at Borrisokane Road/Highway 416 with and without Kilbirnie Road extension in the 2031 future total horizon, the inclusion of Kilbirnie Road extension would generally result in reductions in the level of service for several movements, with some movements experiencing level of service decreases of up to two LOS grades. Overall intersection level of service would also decrease by one grade during the AM peak hour and two grades during the PM peak hour. A comparison of control delays indicates that the inclusion of Kilbirnie Road extension would generally leads to increased delays by 1.5 to 12.7 seconds for most movements during the AM peak hour and up to 15.5 seconds during the PM peak hour, although a few movements experience minor reductions. A review of the 95th percentile queues indicates that the inclusion of Kilbirnie Road extension would results in queue length increases for several movements during both the AM and PM peak hours. The most notable increase occurs for the southbound through/right movement, where the queue length increases by approximately 63 metres during the AM peak hour and 60 metres during the PM peak hour. This queuing concerns requires the addition of a southbound right-turn lane to ensure acceptable intersection operations.

An additional need for a southbound auxiliary left turn lane is noted for the Borrisokane Road and Kilbirnie Drive intersection.

Overall, the inclusion of Kilbirnie Road extension in the 2031 future total horizon does not indicate a net benefit to the intersection operations and will require additional infrastructure to be constructed to accommodate the change to the network. Therefore, while the intersection operations may be able to accommodate the additional volume on Borrisokane Road, it is not considered a determining factor or justification for the new connection prior to the ultimate Highway 416 interchange construction.

7.3.1.3 Changes in Recommendations

Based on the operational analysis provided, if Kilbirnie Road extension is implemented, the recommended improvements will need to be revised for the 2031 future total horizon, and those changes are summarized below:

Without the inclusion of Kilbirnie Road Extension

- Barnsdale Road at Borrisokane Road/Highway 416:
  - Signalization
  - A 75-metre auxiliary eastbound left turn lane
  - An 80-metre auxiliary westbound left turn lane
  - A 40-metre auxiliary southbound left turn lane
  - A 20-metre auxiliary southbound right turn lane

With the inclusion of Kilbirnie Road Extension

- Borrisokane Road at Kilbirnie Drive
  - An 8-metre auxiliary southbound left turn lane
- Barnsdale Road at Borrisokane Road/Highway 416:
  - Signalization
  - A 110-metre auxiliary eastbound left turn lane
  - A 65-metre auxiliary westbound left turn lane
  - A 40-metre auxiliary southbound left turn lane
  - An 8-metre auxiliary southbound right turn lane

7.3.2 2036 Future Total Conditions-Sensitivity

7.3.2.1 Warrant Analysis

Signal warrant analysis of Justification 7 was performed for the Borrisokane Road at Kilbirnie Drive intersection during 2036 future total-sensitivity conditions and the signal warrants was not met. The signal warrant calculation sheets are provided in Appendix I.

No additional left turn warrants were identified for the 2036 future total conditions. It is noted the southbound left turn has similar been excluded from the operational analysis to confirm if there is an operational need for the lane. The storage lengths have been adjusted for the 2036 future total volumes, based on TIA guidelines and TAC. The left turn warrants are provided in Appendix K.

7.3.2.2 Intersection Operations

As noted in the 2036 future background conditions, the interim Barnsdale Road interchange have been assumed to be completed. Additionally, Realigned Greenbank Road is assumed to be completed for the 2036 horizon and was considered in the analysis. Existing and future development trips from the adjacent community will use this connection and have been reassigned to Kilbirnie Drive. The unmitigated condition and the southbound left-turn lane only mitigation at the intersection of Barnsdale Road at Borrisokane Road/Highway 416 presented in the previous future total conditions have been excluded from this analysis, as they were provided previously to illustrate the incremental improvement required for the intersection and both conditions are not recommended for implementation. It should be noted that signal timing has been optimized in each scenario with the proposed mitigation measures.

Figure 32 illustrates the 2036 future total intersection volumes for this sensitivity analysis and Table 16Table 12 summarizes the intersection operations. Volumes have been balanced along the study area roadways. The level of service for signalized intersections is based on volume to capacity ratio (v/c) calculations for individual lane movements and MMLOS Guidelines weighted v/c methodology for the overall intersection, per direction from

Transportation Engineering Services, and average delay for unsignalized intersections. The synchro worksheets are provided in Appendix Q.

Figure 32: 2036 Future Total Volumes-Sensitivity

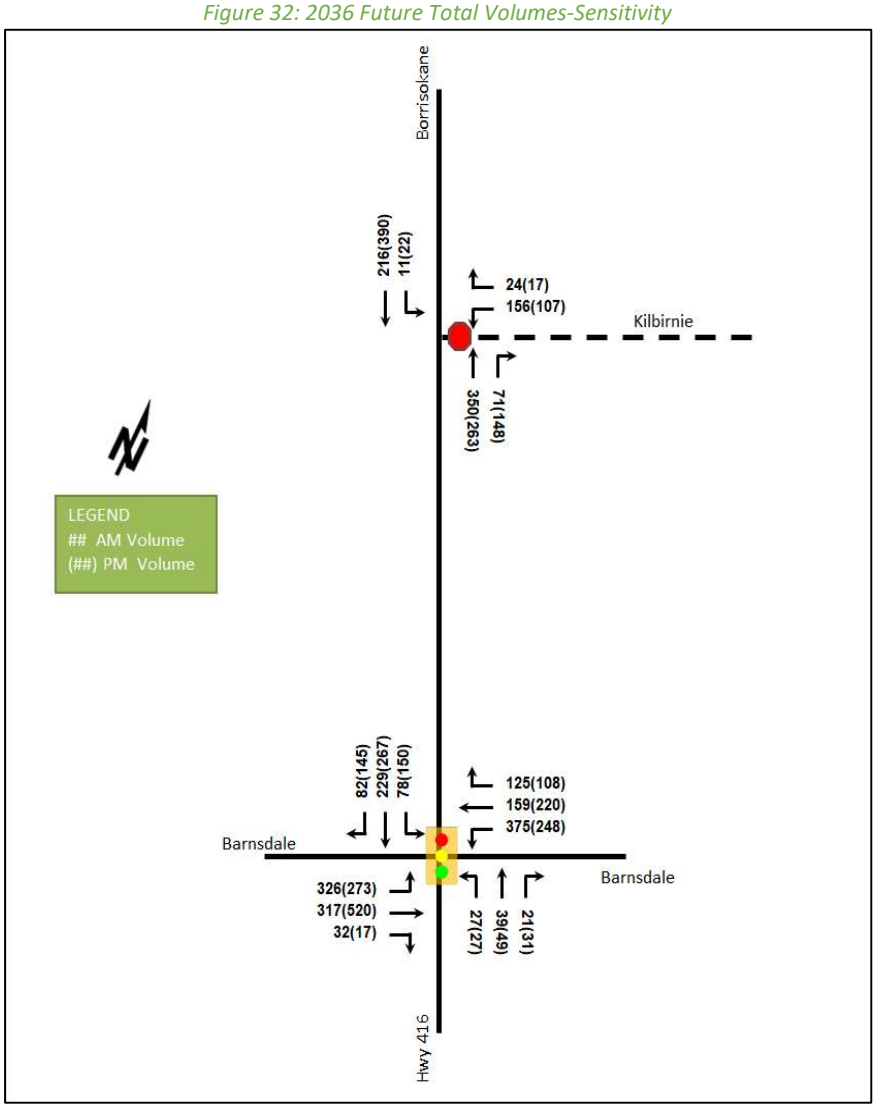


Table 16: 2036 Future Total Intersection Operations-Sensitivity

Intersection	Lane	AM Peak Hour				PM Peak Hour			
		LOS	V/C	Delay	Q (95th)	LOS	V/C	Delay	Q (95th)
Barnsdale Road at Borrisokane Road/Highway 416 *Signalized*	**Mitigation Measure: with EBL, WBL, and SBL**								
	EBL	A	0.54	12.9	43.1	A	0.50	14.2	42.1
	EBT/R	A	0.60	29.3	82.6	C	0.76	35.8	#156.4
	WBL	B	0.67	16.0	50.5	B	0.64	19.5	38.0
	WBT/R	A	0.47	21.7	57.3	A	0.49	25.9	78.8
	NB	A	0.30	24.1	21.2	A	0.37	28.7	30.1
	SBL	A	0.27	28.3	21.9	A	0.44	35.6	44.5
	SBT/R	C	0.78	41.3	72.4	D	0.89	55.8	#126.9
	Overall	**B**	**0.68**	**24.2**	**-**	**C**	**0.78**	**33.0**	**-**
	Mitigation Measure: with EBL, WBL, and SBL and SBR								
	EBL	A	0.50	10.1	36.2	A	0.46	9.9	31.0
	EBT/R	A	0.52	23.9	77.6	C	0.71	26.6	116.3
	WBL	B	0.62	12.0	42.5	A	0.57	13.1	28.0
	WBT/R	A	0.42	17.8	52.2	A	0.45	18.6	60.0
	NB	A	0.34	28.5	23.1	A	0.41	29.0	27.2
	SBL	A	0.30	32.1	23.4	A	0.58	40.4	41.2
	SBT	B	0.70	43.2	58.7	C	0.76	46.8	67.8
	SBR	A	0.22	3.4	4.3	A	0.38	10.5	16.9
	Overall	**A**	**0.60**	**20.1**	**-**	**B**	**0.69**	**24.1**	**-**
Kilbirnie Road at Borrisokane Road *Unsignalized*	WBL/R	C	0.39	17.6	13.5	C	0.32	18.7	10.5
	NBT/R	-	-	-	-	-	-	-	-
	SBL/T	A	0.01	8.2	0.0	A	0.02	8.2	0.8
	Overall	**A**	**-**	**3.9**	**-**	**A**	**-**	**2.6**	**-**

Notes:
Saturation flow rate of 1800 veh/h/lane
Queue is measured in metres
Peak Hour Factor = 1.00
Delay = average vehicle delay in seconds
m = metered queue
# = volume for the 95th %ile cycle exceeds capacity

Overall, the sensitivity analysis indicates that both intersections will operate acceptable during the 2036 future total conditions. Queueing concerns may remain on the eastbound and southbound approaches during the PM peak hour without a southbound right-turn lane. The addition of the southbound right turn-lane should be considered as part of the design/construction of the initial intersection. This was identified as a 2031 future background condition.

The new intersection of Kilbirnie Road at Borrisokane Road is expected to operate acceptably in the 2031 future total conditions. The southbound left-turn lane is not required from an intersection operation perspective.

Comparing the intersection at Barnsdale Road at Borrisokane Road/Highway 416 with and without Kilbirnie Road extension in the 2036 future total horizon, the inclusion of Kilbirnie Road extension would generally result in improvements in the level of service for several movements by one LOS grade, at the expense of the southbound through movement experiencing a reduction of one LOS grade. The overall intersection level of service would also improve by up to one grade during both peak hours. A comparison of control delays indicates that the inclusion of Kilbirnie Road extension would generally leads to reductions in delays of up to 10.8 seconds for most movements during the AM peak hour and up to 11.5 seconds during the PM peak hour, although a few movements, including westbound through/right movement, experience increases. A review of the 95th percentile queues indicates that the inclusion of Kilbirnie Road extension would results in both increases and reductions for several movements during both the AM and PM peak hours. The most notable decreases occur for the eastbound through/right and westbound left movements, where the queue lengths decrease by up to 50 metres during the

PM peak hour. However, queue lengths slightly increase for the westbound left, westbound through/right, and southbound through/right movements.

An additional need for a southbound auxiliary left turn lane is noted for the Borrisokane Road and Kilbirnie Drive intersection.

Overall, the inclusion of Kilbirnie Road extension in the 2036 future total horizon does not indicate a notable benefit to the intersection operations and will require additional infrastructure to be constructed to accommodate the change to the network. Therefore, while the intersection operations may be able to accommodate the additional volume on Borrisokane Road, it is not considered a determining factor or justification for the new connection prior to the ultimate Highway 416 interchange construction.

7.3.2.3 Changes in Recommendations

Based on the operational analysis provided, if Kilbirnie Road extension is implemented, the recommended improvements will need to be revised for the 2036 future total horizon, and those changes are summarized below:

Without the inclusion of Kilbirnie Road Extension

- Barnsdale Road at Borrisokane Road/Highway 416:
  - Signalization
  - A 75-metre auxiliary eastbound left turn lane
  - A 125-metre auxiliary westbound left turn lane
  - A 40-metre auxiliary southbound left turn lane
  - A 15-metre auxiliary southbound right turn lane

With the inclusion of Kilbirnie Road Extension

- Borrisokane Road at Kilbirnie Drive
  - An 8-metre auxiliary southbound left turn lane
- Barnsdale Road at Borrisokane Road/Highway 416:
  - Signalization
  - A 90-metre auxiliary eastbound left turn lane
  - A 100-metre auxiliary westbound left turn lane
  - A 40-metre auxiliary southbound left turn lane
  - A 20-metre auxiliary southbound right turn lane

7.4 Kilbirnie Road Extension Network Review

The implementation of the Kilbirnie Road extension to Borrisokane Road, prior to the construction of the ultimate Highway 416 interchange configuration, will change the road network within Barrhaven South and prioritize travel patterns that are is atypical from a community development perspective. Since earlier than 2006, the road network planned for Barrhaven South has been centered around the Greenbank Road and Longfields Drive corridors, with the Re-Aligned Greenbank Road corridor augmenting this strategy and providing connectivity beyond Barrhaven South. Borrisokane Road has remained as an industrial and aggregate land supportive roadway throughout with many policy directions to maintain that use and keep it separate from the planned residential community uses.

The extension of Kilbirnie Road will be counter to this philosophy and build out strategy, although it is acknowledged that the City of Ottawa has committed to eventuality as a result of the Highway 416 interchange ultimately severing the connection of Borrisokane Road to Barnsdale Road due to a free flow ramp from Barnsdale Road to northbound on Highway 416. While the connection of Borrisokane Road remains to Barnsdale Road, the extension of Kilbirnie Road is not achieving any network need or mitigating a change in the overall network.

The premature opening of the Kilbirnie Road connection is expected to result in upwards of 280 vehicles along this extension and through the new community, both from existing residents and new residents alike, once the interim Highway 416 interchange is opened. The inducement of this cut through traffic on Kilbirnie Drive will have a negative impact to surrounding community, potentially reducing active modes, impacting transit service, increasing roadway speeds, and increased road noise and mitigation costs. All of these will all lead to increased complaints and enforcement request to the Ward Councillors and City Staff.

The opening of Re-Aligned Greenbank Road is not expected to reduce this volume as it be an indirect way to access the interchange. This extension will be effectively shifting anticipated volumes from a newly constructed arterial roadway to a collector road within a residential community. This is poor network planning and inefficient use of planned new infrastructure.

The need for this extension has not been demonstrated within the preceding analysis and review and remains solely as a requirement of the ultimate Highway 416 interchange configurations. Therefore, Kilbirnie Drive should not extend to Borrisokane Road until the interchange expands to the ultimate configuration.

7.5 Network Road Capacity

To assess the future road capacity of the area network, the relevant roadways along Screenline 49 to the Barrhaven South PH3 lands were assessed and updated to the new TRANS Regional Model forecasts. The methodology and capacity is the same as discussed in Section 4.2.2. The base TRANS plots are summarized, and the additional expansion area volumes have been included in the additional 2046 horizon review. Table 17 summarizes the screenline capacity.

Table 17: Local Area Screenline Road Capacity – AM Peak

Horizon	Roadway	Lane Capacity [cars/hour/lane]	Lanes per Direction	Capacity [cars/hour]	Forecasted Volumes	Percent Utilization
2046 TRANS Model + Expansion Lands	Highway 416	2200	2	4400	NB – 3105 SB – 1200	NB – 71% SB – 27%
	Borrisokane	1000	1	1000	NB – 500 SB – 95	NB – 50% SB – 9 %
	Re-Aligned Greenbank	1000	2	2000	NB – 780 SB – 275	NB – 39% SB – 14%
	TOTAL	4200	5	7400	NB – 4385 SB - 1570	NB – 59% SB – 21%

Notes: Lane Capacity = single lane estimate
Percent Utilization = utilization range based on Volume for lane

Based on the forecasted volumes from the expansion lands, both S-1 and S-2, residual is noted along each of the screenline locations. The demand on Highway 416 is expected to increase from 64% to 71%. Both Borrisokane Road and Re-Aligned Greenbank Road are expected to remain consistent with the modelled conditions.

As the vast majority of Barrhaven South PH3 trips have been assigned to these roadways, impact to the remaining screenline roadways is expected to be negligible. The S-2 expansion lands will review the impacts along Longfields Road and Prince of Wales Drive, updating the utilizations shown above if the trip assignment differs from the assumptions made within this study.

8 Mobility Plan

8.1 Road Pattern and Connectivity

The Barrhaven South PH3 lands road network extends the existing collector network of Elevation Road, Kilbirnie Drive and Cappamore Drive, with an additional local extension of Moyard Drive. All of the road connections will allow permeability between the existing community and the new subdivision and ability to share area amenities. The collector road standard cross-sections permit the composition of complete street design and accessibility through the public realm.

8.2 Active Mode Connectivity

The active mode network consists of multi-use pathways along Elevation Road, sidewalk and cycletracks along Kilbirnie Drive and sidewalks along Cappamore Drive and Moyard Drive. Window streets along Barnsdale Road will allow connectivity to Barnsdale Road in the future. The woodlots, park and the stormwater management pond will allow for additional links and pathways, and walkway blocks through allow shortcuts through the community.

The links to the north and east provide safe access for the new community to key destinations such as retail amenities, the future park and ride, schools and parks.

During the plan of subdivision process, the local road network will be developed and provide the fine-grained detail for pedestrian permeability through walkway blocks, shortcuts and crossing locations. The new sidewalk facilities will provide safe and direct access to local transit stops and the future park and ride.

The neighbourhood equity index for the community/belonging domain related to mobility consists of the number of pedestrian and cyclist collisions, from a transportation perspective. The active mode facilities and off-road routes are expected to continue to provide a safe and equitable network. Similarly, the physical environment domain related to mobility consists of walkability and biking. These will be supported within the community, through the active node network discussed above.

8.3 Traffic Calming Design

The traffic calming elements within the Barrhaven South PH3 Lands will reduce vehicle speeds and improve safety for non-motorized users. The safer environment for pedestrians and cyclists that is created will encouraging walking and cycling as sustainable and healthier mobility options within the community. The improved overall road safety will make it easier for people of all ages and abilities to access key destinations such as parks and transit stops.

The design of the traffic calming elements will not restrict or disrupt transit service, permitting adequate clearance for buses to navigate smoothly, without causing delays. The traffic calming elements also can be integrated into the transit stop locations, permitted pedestrian crossings and reducing vehicle passing.

No vulnerable user collisions were noted on the boundary of the site and the traffic calming design is expected to support user safety.

8.4 Transportation Demand Management

The subject site has been assumed to rely predominantly on auto travel, followed by transit, walking, and cycling, and those assumptions have been carried through the analysis. The mode shares used within this report represent the unmodified district mode shares. Overall, the modal shares are likely to be achieved and supporting TDM measures should be provided.

The key TDM measures recommended for the Barrhaven South PH3 Lands as a whole include:

- Provide a multimodal travel option information package to new residents
- Provide transit incentives for new residents
- Contract with OC Transpo to provide early transit services until regular services are warranted by occupancy levels

The reliance on auto travel from suburban locations near the urban boundaries is expected; however, the TDM measures are aimed at supporting a shift to alternative modes. The residential land use of the adjacent communities and anticipated development within the Barrhaven South PH3 lands, will not fully internalize

community trips or achieve self containment for daily needs, and residents will still require travel beyond the community. As planned, the mobility network and TDM recommendations supporting land uses that could achieve a reduction of GHG emissions and vehicle kilometres travelled.

8.5 Local Transit Service

Based on the transit stops locations shown in Figure 21, the majority of residential units within the Barrhaven South PH3 lands are situated within 400 metres of the proposed transit stops, ensuring convenient and accessible public transportation options for the vast majority of new residents. The southwest quadrant of the concept plan will be beyond the 400-metre distance as the intersection of Elevation Road and Cappamore Drive is beyond 500 metres from the boundary of the Barrhaven South PH3 lands. It is expected that this will align closely to OC Transpo's service policy, which states that the street network in new subdivision plans must be designed to accommodate direct transit routes through the neighborhood, with the goal that 95 percent of all households are within a 400-metre walking distance of a transit stop.

In Section 6.3, the trip generation by mode was estimated, including an estimate of the number of transit trips that will be generated by the proposed development. Table 18 summarizes the transit trip generation.

Table 18: Trip Generation by Transit Mode

Travel Mode	Mode Share AM (PM)	AM Peak Hour			PM Peak Hour		
		In	Out	Total	In	Out	Total
Transit	Varies	75	164	239	115	85	200

The proposed development is anticipated to generate 239 AM and 200 PM peak hour two-way transit trips. From the trip distribution found in Section 6.3.2 and given existing bus routing to the north and east of the site, these values were split to the north (90%) and east (10%) relative to the site. A standard bus capacity of 45 passengers was assumed. Table 19 summarizes the forecasted site-generated transit ridership trips by direction relative to the site and provides equivalent bus loads based on this ridership.

Table 19: Forecasted Site-Generated Transit Ridership

General Destination To/From (relative to the site)	AM Peak Hour		PM Peak Hour		Service Type	Approximate Equivalent Peak Hour/Peak Direction Bus Loads
	In	Out	In	Out		
North	68	148	104	77	Bus	Three and one-third of standard buses
East	8	16	12	9	Bus	One-third of a standard bus

In total, a 15-20-minute AM peak hour service level is estimated to be required for the proposed lands to meet the transit demand, and a 30-minute PM peak hour service level. Ultimately these routes are expected to form local service extending from the future BRT along Re-Aligned Greenbank Road, the Kilbirnie park and ride. In the near term, the local service would have connectivity to the existing BRT stations at Barrhaven Towncentre and Marketplace. The current route in Barrhaven South is not expected to provide the service required for the Barrhaven South PH3 lands or the ongoing developments to the west of the Re-Aligned Greenbank Road corridor. A new dedicated route with peak hour service of 15–20-minute would meet the forecasted transit demand for the community.

As outlined in Section 3.1.1, the policies related to urban expansion lands focus on ensuring adequate infrastructure to surpass the new Official Plan's target of achieving an overall sustainable mode share across the City of 50% or higher by 2046. Given the forecasted mode shares, and assuming no significant increase in walking/cycling modes, the transit mode share would generally need to increase by 10% during the AM peak and 15% during the PM peak to bridge that gap in sustainable mode shares. This would represent an increase transit

service demand of an additional AM bus (based on outbound demand) and one and a half additional buses during the PM peak (based on inbound demand).

The neighbourhood equity index for the physical environment domain related to mobility includes the transit score. This includes average number of stops and routes within a 600-metre walk, number of stops per residents or area. Given the small area of the Barrhaven South PH3 lands, these metrics have limited applicability. For example, the road network that can support bus service and possible stop locations will not cover the total Barrhaven South PH3 area. This would be mitigated by the future Kilbirnie park and ride that will provide nearby access to higher order transit in the future. The Stonebridge-Half Moon Bay area to the north has an average of 4.1 routes and 6 stops within a 600-metre walk. The Barrhaven South PH3 lands do not require this average level of transit service. Overall, the planned local transit service outlined can support the community and would be service with synergy for adjacent communities north along Elevation Road.

8.6 Transit Priority

No transit priority is required along the boundary or within the Barrhaven South PH3 lands. Within the regional network, capacity exists across the Jock River and will not require alternative modes to address any additional constraints. Ultimately, the median BRT along the Re-Aligned Greenbank Road corridor and park and ride facility at Kilbirnie Drive will reduce traffic demands across the screenline and increase the sustainable travel mode targets for the City.

8.7 Multi-Modal Level of Service Review

Table 20 summarizes the multi-modal level of service (MMLOS) analysis for the boundary streets of Barnsdale Road and Borrisokane Road, and the internal roads of new local and collector roads. City of Ottawa typical cross-sections have been assumed for all future roadways. Borrisokane Road is within "Greenbelt or Rural" area, Barnsdale Road is within the "Suburban" area and the internal local and collector roads are within the "within 600m of a rapid transit station" area. The MMLOS analysis has been updated in accordance with the 2025 Multimodal Level of Service Transportation Guidelines Tool. The MMLOS worksheets have been provided in Appendix R.

Table 20: Boundary Street MMLOS Analysis

Roadway	Segment	Condition	Pedestrian LOS		Bicycle LOS		Transit LOS		Public Realm LOS	
			PLOS	Target	BLOS	Target	TLOS	Target	PRLOS	Target
Boundary Roadways	Borrisokane Road	Existing/ Future	F	D	E	D	-	-	E	E
	Barnsdale Road	Existing	F	C	E	C	-	-	E	E
		Future	C	C	C	C	-	-	C	C
Internal Roadways	Elevation Road	Future	B	A	A	B	-	-	B	B
	Kilbirnie Drive	Future	A	A	A	B	C	E	B	B
	Cappamore Drive	Future	B	A	A	B	C	E	B/C	C
	New local road	Future	B	A	A	B	-	-	C	C

Borrisokane Road will not meet the pedestrian or bicycle LOS targets in the existing and future conditions as it is a rural roadway. To meet the pedestrian LOS, either a 2.0-metre sidewalk with a 0.5-metre boulevard would be needed, or a 2.0-metre sidewalk combined with a reduction in operating speed to 60 km/h. To meet the bicycle

LOS, either a painted or physically separated bike lane (1.5-1.79-metre or 1.8-metre contraflow bike lane) would be required or a 1. 2-.49-metre paved shoulder with/without buffer.

Barnsdale Road will not meet the pedestrian and bicycle LOS targets in the existing conditions due to the roadway volumes and posted speed limits. Assuming a typical arterial cross-section for the future improvements, Barnsdale Road is expected to meet the pedestrian and bicycle LOS targets in the future conditions.

Elevation Road and Cappamore Road will not meet the pedestrian LOS targets in the future conditions. The maximum distance between controlled crossings needs to be between 231 and 260 metres. The local roads will not meet the pedestrian LOS targets in the future conditions. To meet the pedestrian LOS, a 1.5-2.99-metre boulevard would be required. Kilbirnie Drive will meet the MMLOS targets.

8.7.1 Boundary Road Design

The boundary road of Barnsdale Road will be protected for an ultimate right-of-way width of 39.5 metres (unequal widening of 17.25 metres to the north) and Borrisokane Road will be protected for an ultimate right-of-way width of 24 metres, as proposed within the Official Plan Schedule C16 update.

Given no pedestrian or cycling facilities are identified along Borrisokane Road, the existing rural cross-section is expected to remain. Barnsdale Road is anticipated to be semi-urbanized to an arterial standard. The cross-section will be determined through the Barnsdale Widening EA.

9 Implementation Strategy

9.1 Network Review and Identified Improvements

Based on the operational analysis for the forecasted conditions, in both the background and total conditions, network improvements have been identified for planning and possible implementation.

Highway 416 at Barnsdale Road interchange is under the purview of Ministry of Transportation of Ontario and the recommended interim conditions for the interchange include:

- Barnsdale Road at Borrisokane Road/Highway 416:
  - Signalization
  - A 75-metre auxiliary eastbound left turn lane
  - A 125-metre auxiliary westbound left turn lane
  - A 40-metre auxiliary southbound left turn lane
  - A 15-metre auxiliary southbound right turn lane (optional)
- Barnsdale Road at Trail Road/Highway 416:
  - Signalization (optional)
  - A 30-metre westbound left turn lane
  - A 40-metre northbound right turn lane

The extension of Kilbirnie Road is being contemplated for implementation prior to the need for this connection. Should this connection be implemented prior to the ultimate interchange configuration, the interim conditions for the Barnsdale Road and Borrisokane Road/Highway 416 intersection are recommended to include:

- Borrisokane Road at Kilbirnie Drive:
  - An 8-metre auxiliary southbound left turn lane
- Barnsdale Road at Borrisokane Road/Highway 416:
  - Signalization

    - A 90-metre auxiliary eastbound left turn lane
    - A 100-metre auxiliary westbound left turn lane
    - A 40-metre auxiliary southbound left turn lane
    - A 20-metre auxiliary southbound right turn lane (optional)

The following improvements have been identified as related to existing and background conditions and under the purview of the City of Ottawa to implement.

- Borrisokane Road at Cambrian Road:
    - Conversion into a single-lane roundabout by 2031
- Cambrian Road at Elevation:
    - Signalization by 2031
- Barnsdale Road at Prince of Wales Drive:
    - A 55-metre auxiliary southbound right turn lane
- Barnsdale Road at Greenbank Road:
    - Signalization
    - A 40-metre auxiliary eastbound left turn lane
    - A 60-metre auxiliary southbound left turn lane
    - A 15-metre auxiliary westbound right turn lane (optional, prior to Re-Aligned Greenbank Road)
- Re-Aligned Greenbank Road, Chapman Mills to Barnsdale by 2036:
    - As per detailed design for a 4-lane road only
    - New signalized intersections and auxiliary lanes at:
        - Cambrian Road
        - Dundonald Drive
        - Kilbirnie Drive
        - Cappamore Drive
        - Barnsdale Road

The following improvements have been identified as related to the forecasted conditions of the Barrhaven South PH3 lands and would be required to support the development of the urban expansion.

- Barnsdale Road at Greenbank Road:
    - Extension of the auxiliary southbound left turn lane from 60-metres to 65-metres

9.2 Improving Active Mode Network Connectivity

The review of the missing active mode links in the greater study area includes additional active mode facilities to the north along Borrisokane Road (north of Cambrian Road ideally) and Re-aligned Greenbank Road, and to the south along Greenbank Road, Prince of Wales and/or Rideau Valley Drive. The Borrisokane Road urbanization and Re-Aligned Greenbank Road are included within the City's priority network, while no specific improvements are identified for the south.

9.3 Improving Transit Network Connectivity

The addition of the Kilbirnie park and ride, ability for bus travel along Re-Aligned Greenbank Road and new local routes to loop along Elevation Road will provide high quality transit for the area.

10 Conclusion

The proposed concept plan for Barrhaven South Future Neighbourhood Phase 3 meets the City policy direction for a new community and can be supported the planned transportation network and local/intersection upgrades. The future regional improvements by the City of Ottawa will ultimately assist in the evolution of the community and Barrhaven South as whole and achieve a more sustainable travel mode profile.

Given the analysis, recommendations and implementation strategy outlined above, the New Community Overlay be removed for the subject lands from a transportation perspective.

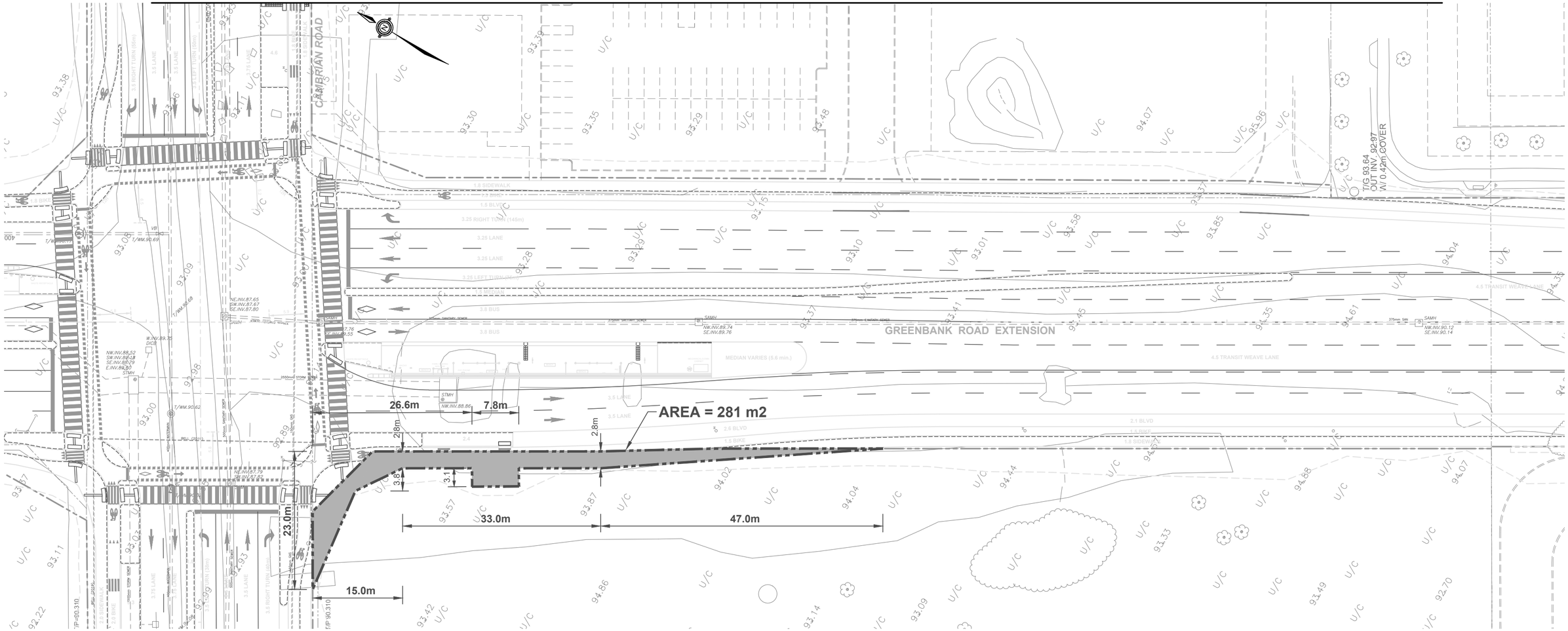
Prepared By:	Reviewed By:
Reihaneh Azhdar	LICENSED PROFESSIONAL ENGINEER A. J. HARTE 100149314 2026-03-06 PROVINCE OF ONTARIO
Reihaneh Azhdar Transportation Engineering-Intern	Andrew Harte, P.Eng. Senior Transportation Engineer

Appendix A

Realigned Greenbank Road Preliminary Design

CGH TRANSPORTATION

GREENBANK ROAD AND SOUTH WEST TRANSITWAY EXTENSION
MARKETPLACE AVENUE TO BARNSDALE ROAD



0 5 10 20m

PROPERTY REQUEST PLAN
3845 CAMBRIAN ROAD
N.T.S.

July 12, 2023

Appendix B

Interim and Ultimate Recommended Plan and The Borrisokane Realignment Options

CGH TRANSPORTATION

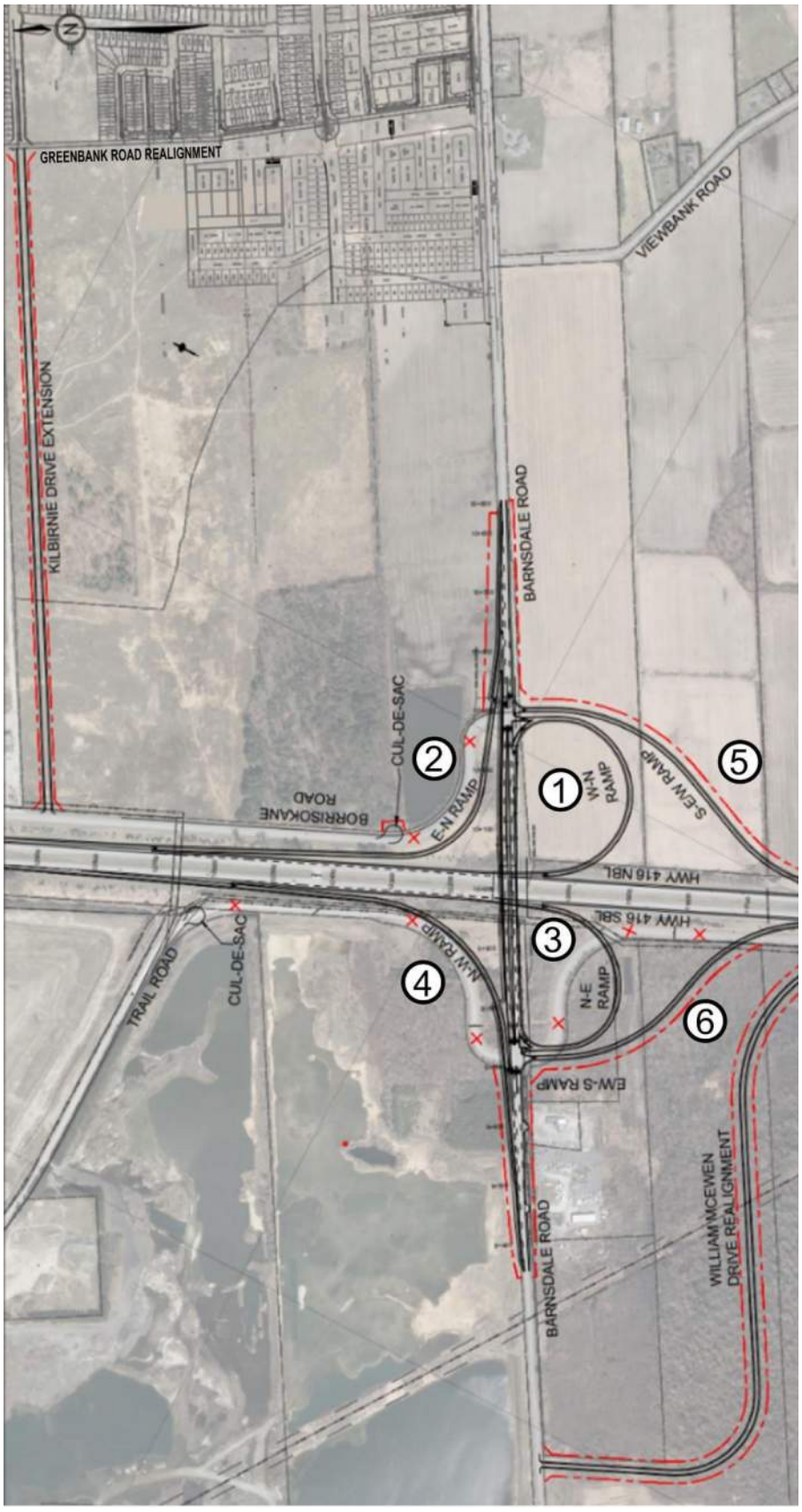


Figure 3: Ultimate Recommended Plan

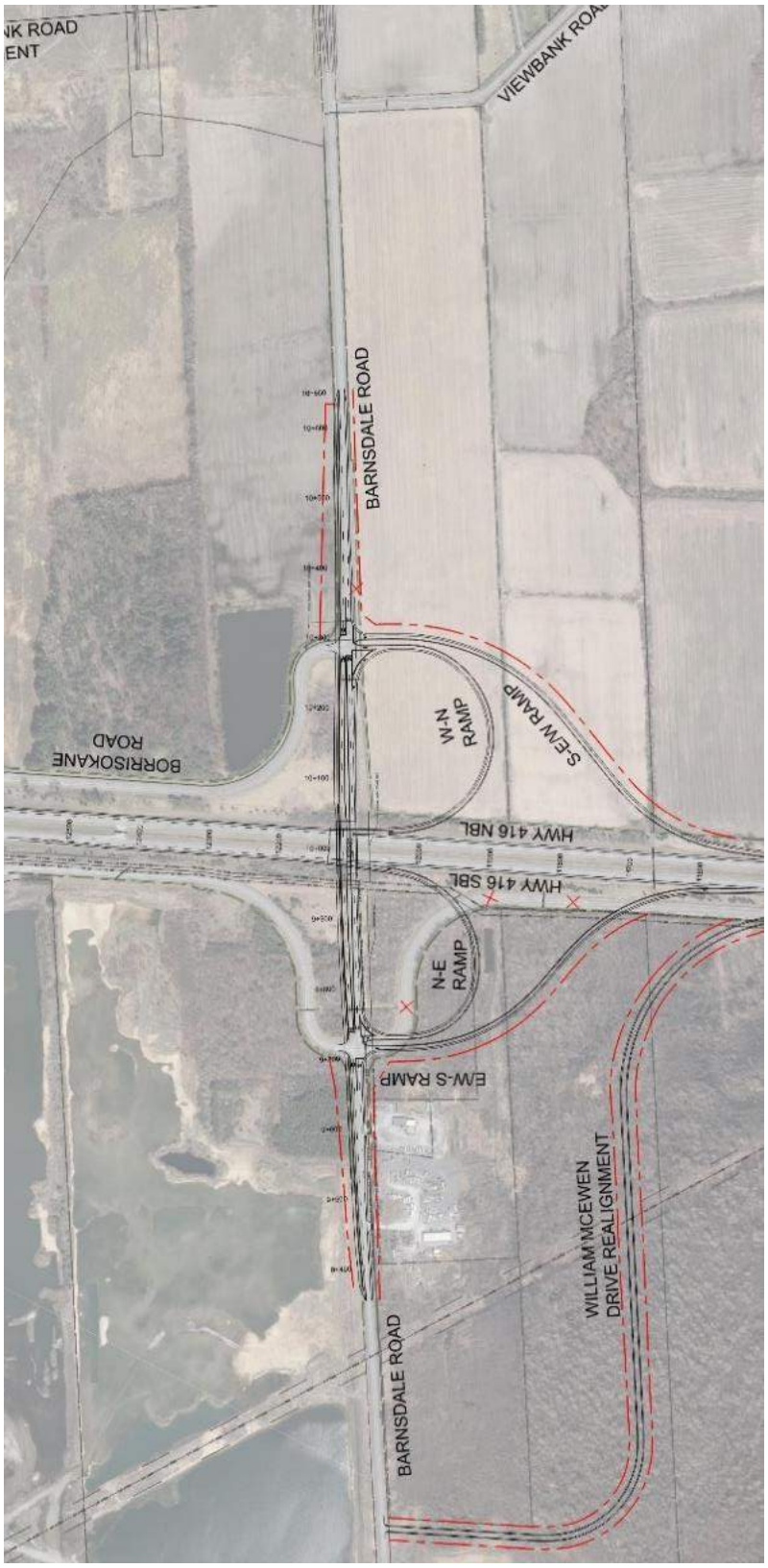


Figure 6: Interim Recommended Plan



Figure 7: Borrisokane Realignment Options

Appendix C

Longfields Drive Widening - Preliminary Design

CGH TRANSPORTATION


PRELIMINARY DESIGN
JOCKVALE ROAD / PRINCE OF WALES DRIVE
WIDENING
JUNE 2017
SCALE 1:500
JOCKVALE ROAD
PRINCE OF WALES DRIVE
JOCKVALE PRIVATE
FUTURE ROAD


KILSPINDIE RIDGE
FUTURE ROAD
JOCKVALE ROAD
RIDEAU VALLEY DRIVE
PRINCE OF WALES DRIVE
PRELIMINARY DESIGN
JOCKVALE ROAD / PRINCE OF WALES DRIVE
WIDENING
JUNE 2017
SCALE 1:500

Appendix D

Study Area Developments

Table D1: Area Development Details

#	Development	Application Type	Size	Build-Out Date	Estimated Completion	TIA Author
1	Caivan's Conservancy East	• ZBA • PoS	• 600 single family homes • 600 townhouses • 100 mid-rise dwelling units	2029	0%	CGH Transportation, 2021
2	Caivan's Conservancy West	• ZBA • PoS	• 462 single family homes • 499 townhouses	2030	0%	CGH Transportation, 2022
3	Glenview Homes	• PoS	• 116 single family homes • 92 townhomes	2024	90%	Stantec, 2017 Addendum, 2017
4	652 Flagstaff Drive	• SPA	• 14,631 sq. ft of commercial space	2025	0%	CGH Transportation, 2024
5	Mattamy's Half Moon Bay West Phase 4	• PoS	• 59 detached single-family homes	2026	0%	Stantec, 2016 Addendum, 2019
6	3432 Greenbank Road	• PoS	• 100 single family homes • 425 townhomes	2024	0%	CGH Transportation, 2022
7	3555 Borrisokane Road	• SPA	• a car wash	2024	0%	D. J. Halpenny & Associates Ltd, 2022
8	Mattamy's Half Moon Bay West Phase 3	• PoS	• 38 detached single-family homes • 190 townhomes • 0.43-hectare commercial block	2025	80%	CGH Transportation, 2021
9	3850 Cambrian Road	• SPA	• 17,000 sq. ft pharmacy • 18,781 sq. ft retail	2024	0%	CGH Transportation, 2023
10	3845 Cambrian Road	• SPA	• 28,000 sq. ft. grocery store • 5,430 sq. ft. retail store	2025	0%	CGH Transportation, 2025
11	3831 Cambrian Road	• SPA	• 4,024 sq. m supermarket • 929 sq. m retail store • 830 sq. m retail building • 1,060 sq. m mixed-use building	2023	0%	CGH Transportation, 2021
12	Meadow's Phase 7-8	• PoS	• 221 townhouses • 125 single family units	2025	20%	IBI, 2018
13	Caivan's Ridge Phases 1-2	• ZBA • PoS	• 279 townhouse units • 311 detached home units	2025	75%	CGH Transportation, 2019
14	Caivan's Ridge Phase 3-4	• ZBA • PoS	• 642 townhome units • 61 detached dwellings	2025	0%	CGH Transportation, 2021 Addendum, 2023

#	Development	Application Type	Size	Build-Out Date	Estimated Completion	TIA Author
15	Mattamy's Half Moon Bay South Phase 8	• SPA	• 228 stacked townhouse units	2024	0%	CGH Transportation, 2022
16	Mattamy's Half Moon Bay South Phase 7	• SPA	• 90 stacked townhouse units	2028	0%	CGH Transportation, 2025
17	Minto's Quinn's Pointe Stage 4	• PoS	• 536 single-family dwelling units • 493 townhomes • 100 apartment units • two elementary schools	2025	50%	Stantec, 2018
18	4386 Rideau Valley Drive	• ZBA • PoS	• 62 single detached houses • 16 semi-detached houses • 69 townhouses	2028	0%	Novatech, 2022
19	3809 Borrisokane	• ZBA	• 705,037 sq. ft light industrial campus	2031	0%	CGH Transportation, 2024
20	135 Halyard Lane	• SPA	• 800 students • 2,970 sq. ft of childcare centre	2024	0%	Dillon Consulting, 2022
21	3555 Borrisokane	• SPA	• 31,360 sq. ft Korean Community Church	2024	0%	Castleglenn Consultants, 2024
22	Barrhaven South Future Neighbourhoods Phase 4	• ZBA • PoS	• Up to 1400 units	2035	0%	CGH Transportation, Ongoing

Appendix E

TRANS Regional Model

CGH TRANSPORTATION

TRANS Regional Model

Version 1.01 - Assigned December 2024

AM Network Coding, Lane and Capacity

Screenline 49

2022 Model - Basecase

N/A

User Initials: TW
Plot Prepared: Oct 2025
EMME Scenario: 22002

TRANS

Legend

Lane Capacity

- 400 vphpl
- 600 vphpl
- 800 vphpl
- 1000 vphpl
- 1200 vphpl
- 1400 vphpl
- 1500 vphpl
- 1700 vphpl
- 1800 vphpl
- 1900 vphpl
- 2200 vphpl

umber of Lanes Per Direction

1 2 3 4 5

Distance (m)

200 400 600 800 1000

N

Nicolls Island

Rideau

Long Isl

Made with OpenP

The TRANS model is continuously refined & maintained, and all information is provided in good faith. However, model outputs are provided "as is", and no warranty or guarantee is provided as to the accuracy, reliability or reasonableness of the results. In using this data, you agree to accept any and all risks arising from any incorrect, incomplete, or misleading information.

Recipients are required to use caution and professional judgement in using and interpreting model outputs. In particular, caution should be used when focusing on a geographically limited area (such as a single road or intersection), as the model is primarily designed to simulate regional-scale phenomena and has been calibrated at a regional level.

As general good practice, it is recommended that the user confirm the network coding within the area of interest, and compare base year forecasts against traffic count data to assess the extent to which the model may be over- or under-estimating the travel demand.

TRANS Regional Model

Version 1.01 - Assigned December 2024

AM Network Coding, Lane and Capacity

Screenline 49

2046 Model - Priority Network

N/A

User Initials: TW
Plot Prepared: Oct 2025
EMME Scenario: 46011

TRANS

Legend

Lane Capacity

- 400 vphpl
- 600 vphpl
- 800 vphpl
- 1000 vphpl
- 1200 vphpl
- 1400 vphpl
- 1500 vphpl
- 1700 vphpl
- 1800 vphpl
- 1900 vphpl
- 2200 vphpl

N

umber of Lanes Per Direction

1 2 3 4 5

Distance (m)

200 400 600 800 1000

Nicolls Island

Rideau

Long Isl

Made with OpenP

The TRANS model is continuously refined & maintained, and all information is provided in good faith. However, model outputs are provided "as is", and no warranty or guarantee is provided as to the accuracy, reliability or reasonableness of the results. In using this data, you agree to accept any and all risks arising from any incorrect, incomplete, or misleading information.

Recipients are required to use caution and professional judgement in using and interpreting model outputs. In particular, caution should be used when focusing on a geographically limited area (such as a single road or intersection), as the model is primarily designed to simulate regional-scale phenomena and has been calibrated at a regional level.

As general good practice, it is recommended that the user confirm the network coding within the area of interest, and compare base year forecasts against traffic count data to assess the extent to which the model may be over- or under-estimating the travel demand.

Appendix F

Turning Movement Count Data

CGH TRANSPORTATION

Transportation Services - Traffic Services

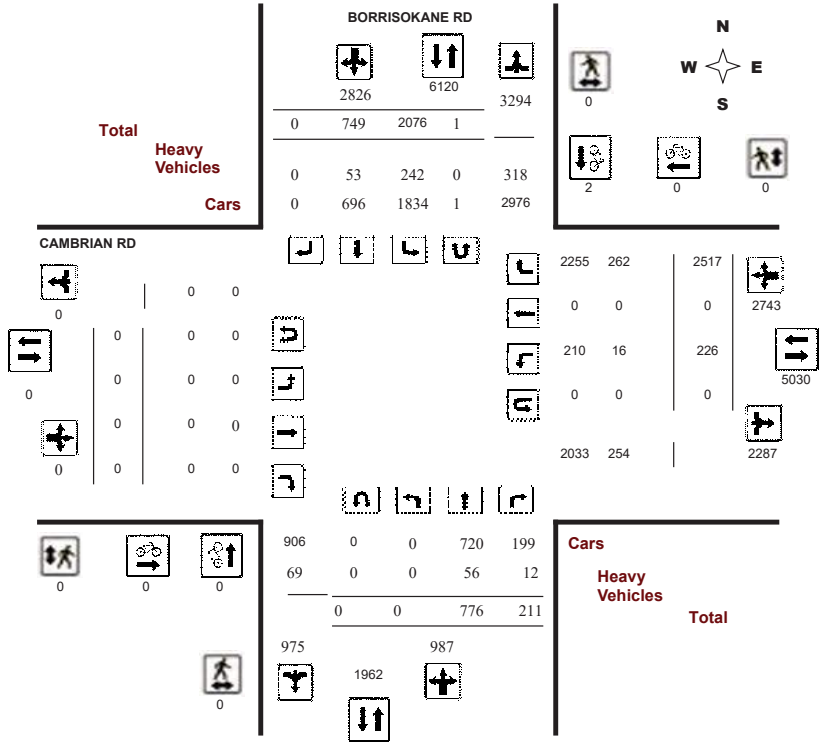
Turning Movement Count - Study Results

BORRISOKANE RD @ CAMBRIAN RD

Survey Date: Wednesday, April 20, 2022 **WO No:** 40246

Start Time: 07:00 **Device:** Miovision

Full Study Diagram



Transportation Services - Traffic Services

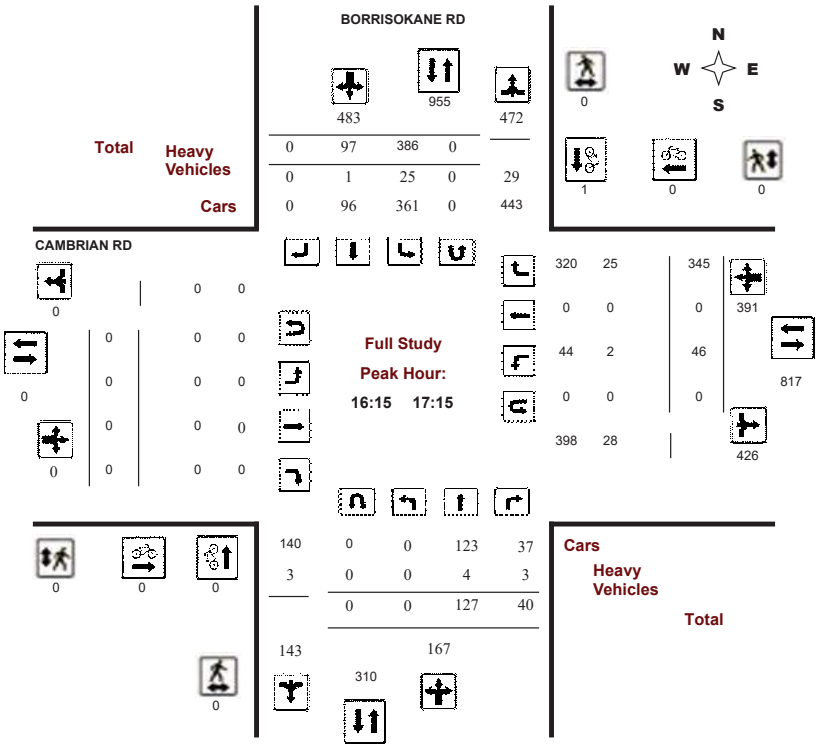
Turning Movement Count - Study Results

BORRISOKANE RD @ CAMBRIAN RD

Survey Date: Wednesday, April 20, 2022 **WO No:** 40246

Start Time: 07:00 **Device:** Miovision

Full Study Peak Hour Diagram



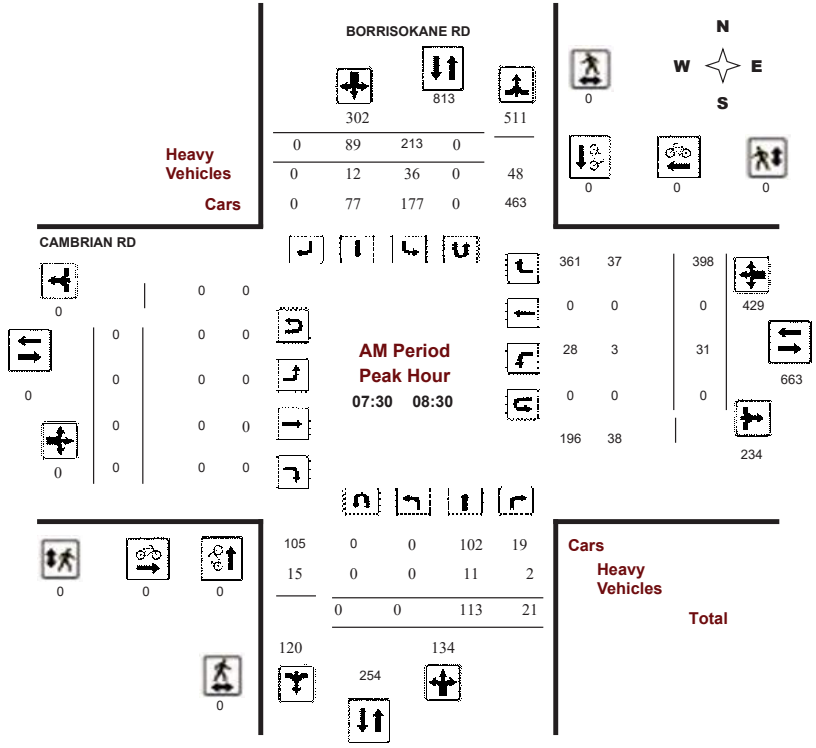
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

BORRISOKANE RD @ CAMBRIAN RD

Survey Date: Wednesday, April 20, 2022 **WO No:** 40246

Start Time: 07:00 **Device:** Miovision



Comments

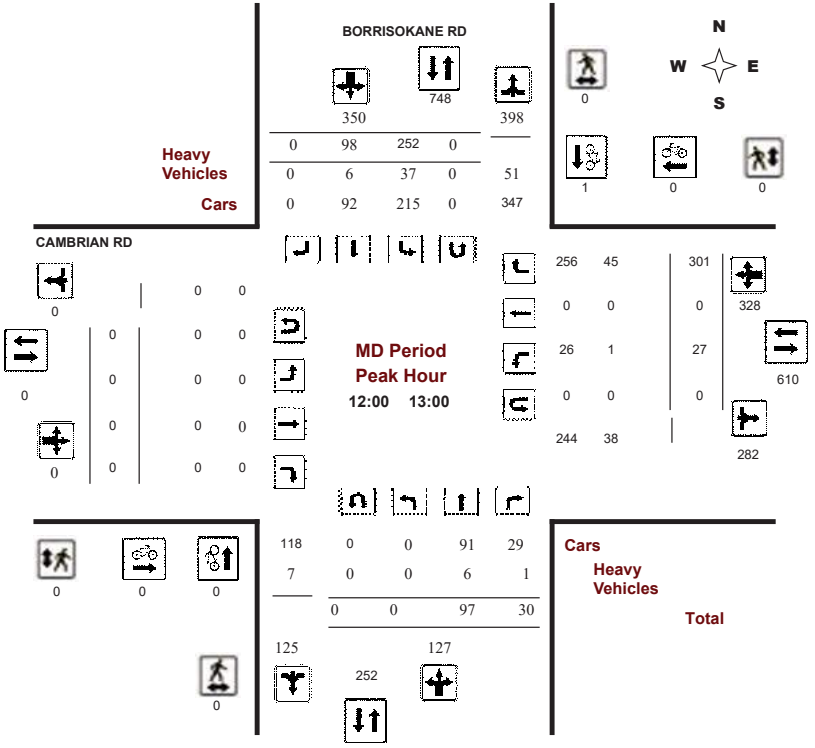
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

BORRISOKANE RD @ CAMBRIAN RD

Survey Date: Wednesday, April 20, 2022 **WO No:** 40246

Start Time: 07:00 **Device:** Miovision



Comments

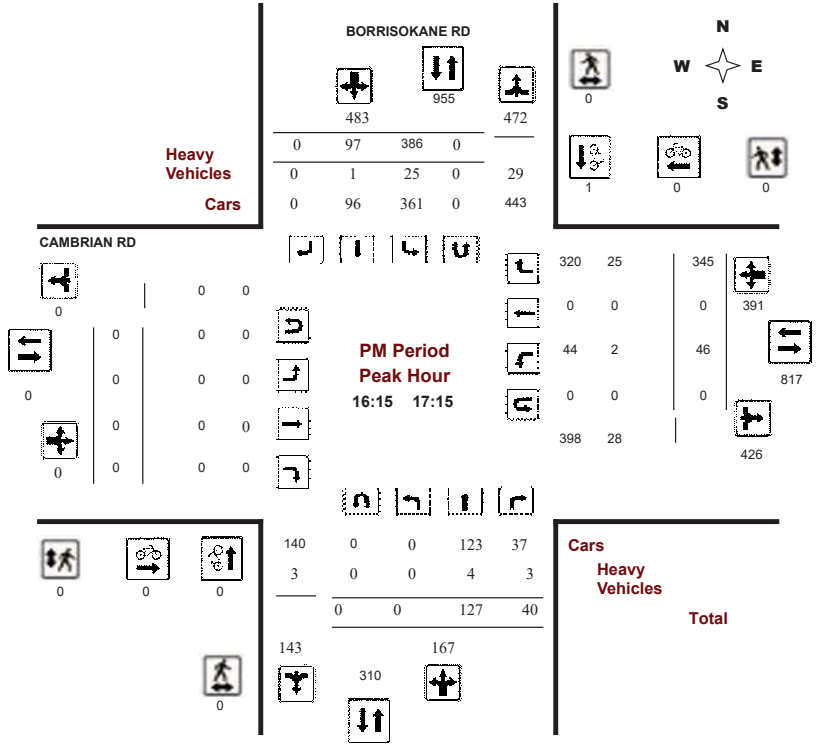
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

BORRISOKANE RD @ CAMBRIAN RD

Survey Date: Wednesday, April 20, 2022 **WO No:** 40246

Start Time: 07:00 **Device:** Miovision



Comments

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BORRISOKANE RD @ CAMBRIAN RD

Survey Date: Wednesday, April 20, 2022 **WO No:** 40246

Start Time: 07:00 **Device:** Miovision

Full Study Summary (8 HR Standard)

Survey Date: Wednesday, April 20, 2022

Total Observed U-Turns

Northbound: 0 Southbound: 1

Eastbound: 0 Westbound: 0

AADT Factor .90

	BORRISOKANE RD								CAMBRIAN RD								
	Northbound				Southbound				Eastbound				Westbound				
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total
07:00 08:00	0	89	24	**113**	188	85	0	**273**	**386**	0	0	0	**0**	21	0	338	**359**	**359**	**745**
08:00 09:00	0	91	21	**112**	209	98	0	**307**	**419**	0	0	0	**0**	33	0	410	**443**	**443**	**862**
09:00 10:00	0	79	24	**103**	171	90	0	**261**	**364**	0	0	0	**0**	13	0	297	**310**	**310**	**674**
11:30 12:30	0	95	30	**125**	224	95	0	**319**	**444**	0	0	0	**0**	22	0	261	**283**	**283**	**727**
12:30 13:30	0	72	20	**92**	228	84	0	**312**	**404**	0	0	0	**0**	25	0	257	**282**	**282**	**686**
15:00 16:00	0	130	23	**153**	312	101	0	**413**	**566**	0	0	0	**0**	30	0	301	**331**	**331**	**897**
16:00 17:00	0	136	34	**170**	355	101	0	**456**	**626**	0	0	0	**0**	47	0	337	**384**	**384**	**1010**
17:00 18:00	0	84	35	**119**	389	95	0	**484**	**603**	0	0	0	**0**	35	0	316	**351**	**351**	**954**
Sub Total	0	776	211	**987**	2076	749	0	**2825**	**3812**	0	0	0	**0**	226	0	2517	**2743**	**2743**	**6555**
U Turns	0			**0**	1			**1**	**1**	**0**			**0**	0			**0**	**0**	**1**
Total	0	776	211	**987**	2077	749	0	**2826**	**3813**	0	0	0	**0**	226	0	2517	**2743**	**2743**	**6556**
EQ 12Hr	0	1079	293	**1372**	2887	1041	0	**3928**	**5300**	0	0	0	**0**	314	0	3499	**3813**	**3813**	**9113**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	0	971	264	**1235**	2598	937	0	**3535**	**4770**	0	0	0	**0**	283	0	3149	**3432**	**3432**	**8202**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**.90**					
AVG 24Hr	0	1272	346	**1618**	3403	1227	0	**4630**	**6248**	0	0	0	**0**	371	0	4125	**4496**	**4496**	**10744**
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.														**1.31**					

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

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BORRISOKANE RD @ CAMBRIAN RD

Survey Date: Wednesday, April 20, 2022 **WO No:** 40246

Start Time: 07:00 **Device:** Miovision

Full Study Cyclist Volume

Time Period		BORRISOKANE RD			CAMBRIAN RD			Grand Total
		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	
07:00	07:15	0	0	**0**	0	0	**0**	**0**
07:15	07:30	0	0	**0**	0	0	**0**	**0**
07:30	07:45	0	0	**0**	0	0	**0**	**0**
07:45	08:00	0	0	**0**	0	0	**0**	**0**
08:00	08:15	0	0	**0**	0	0	**0**	**0**
08:15	08:30	0	0	**0**	0	0	**0**	**0**
08:30	08:45	0	0	**0**	0	0	**0**	**0**
08:45	09:00	0	0	**0**	0	0	**0**	**0**
09:00	09:15	0	0	**0**	0	0	**0**	**0**
09:15	09:30	0	0	**0**	0	0	**0**	**0**
09:30	09:45	0	0	**0**	0	0	**0**	**0**
09:45	10:00	0	0	**0**	0	0	**0**	**0**
11:30	11:45	0	0	**0**	0	0	**0**	**0**
11:45	12:00	0	0	**0**	0	0	**0**	**0**
12:00	12:15	0	0	**0**	0	0	**0**	**0**
12:15	12:30	0	0	**0**	0	0	**0**	**0**
12:30	12:45	0	1	**1**	0	0	**0**	**1**
12:45	13:00	0	0	**0**	0	0	**0**	**0**
13:00	13:15	0	0	**0**	0	0	**0**	**0**
13:15	13:30	0	0	**0**	0	0	**0**	**0**
15:00	15:15	0	0	**0**	0	0	**0**	**0**
15:15	15:30	0	0	**0**	0	0	**0**	**0**
15:30	15:45	0	0	**0**	0	0	**0**	**0**
15:45	16:00	0	0	**0**	0	0	**0**	**0**
16:00	16:15	0	0	**0**	0	0	**0**	**0**
16:15	16:30	0	0	**0**	0	0	**0**	**0**
16:30	16:45	0	1	**1**	0	0	**0**	**1**
16:45	17:00	0	0	**0**	0	0	**0**	**0**
17:00	17:15	0	0	**0**	0	0	**0**	**0**
17:15	17:30	0	0	**0**	0	0	**0**	**0**
17:30	17:45	0	0	**0**	0	0	**0**	**0**
17:45	18:00	0	0	**0**	0	0	**0**	**0**
Total		0	2	**2**	0	0	**0**	**2**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BORRISOKANE RD @ CAMBRIAN RD

Survey Date: Wednesday, April 20, 2022 **WO No:** 40246

Start Time: 07:00 **Device:** Miovision

Full Study Pedestrian Volume

Time Period		BORRISOKANE RD			CAMBRIAN RD			Grand Total
		NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	
07:00	07:15	0	0	**0**	0	0	**0**	**0**
07:15	07:30	0	0	**0**	0	0	**0**	**0**
07:30	07:45	0	0	**0**	0	0	**0**	**0**
07:45	08:00	0	0	**0**	0	0	**0**	**0**
08:00	08:15	0	0	**0**	0	0	**0**	**0**
08:15	08:30	0	0	**0**	0	0	**0**	**0**
08:30	08:45	0	0	**0**	0	0	**0**	**0**
08:45	09:00	0	0	**0**	0	0	**0**	**0**
09:00	09:15	0	0	**0**	0	0	**0**	**0**
09:15	09:30	0	0	**0**	0	0	**0**	**0**
09:30	09:45	0	0	**0**	0	0	**0**	**0**
09:45	10:00	0	0	**0**	0	0	**0**	**0**
11:30	11:45	0	0	**0**	0	0	**0**	**0**
11:45	12:00	0	0	**0**	0	0	**0**	**0**
12:00	12:15	0	0	**0**	0	0	**0**	**0**
12:15	12:30	0	0	**0**	0	0	**0**	**0**
12:30	12:45	0	0	**0**	0	0	**0**	**0**
12:45	13:00	0	0	**0**	0	0	**0**	**0**
13:00	13:15	0	0	**0**	0	0	**0**	**0**
13:15	13:30	0	0	**0**	0	0	**0**	**0**
15:00	15:15	0	0	**0**	0	0	**0**	**0**
15:15	15:30	0	0	**0**	0	0	**0**	**0**
15:30	15:45	0	0	**0**	0	0	**0**	**0**
15:45	16:00	0	0	**0**	0	0	**0**	**0**
16:00	16:15	0	0	**0**	0	0	**0**	**0**
16:15	16:30	0	0	**0**	0	0	**0**	**0**
16:30	16:45	0	0	**0**	0	0	**0**	**0**
16:45	17:00	0	0	**0**	0	0	**0**	**0**
17:00	17:15	0	0	**0**	0	0	**0**	**0**
17:15	17:30	0	0	**0**	0	0	**0**	**0**
17:30	17:45	0	0	**0**	0	0	**0**	**0**
17:45	18:00	0	0	**0**	0	0	**0**	**0**
Total	.....	0	0	**0**	0	0	**0**	**0**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BORRISOKANE RD @ CAMBRIAN RD

Survey Date: Wednesday, April 20, 2022 **WO No:** 40246

Start Time: 07:00 **Device:** Miovision

Full Study Heavy Vehicles

		BORRISOKANE RD									CAMBRIAN RD									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	0	3	0		12	4	0		**19**	0	0	0		0	0	4		**4**	**23**
07:15	07:30	0	2	1		12	2	0		**17**	0	0	0		0	0	9		**9**	**26**
07:30	07:45	0	3	0		6	3	0		**12**	0	0	0		0	0	9		**9**	**21**
07:45	08:00	0	3	0		11	1	0		**15**	0	0	0		0	0	7		**7**	**22**
08:00	08:15	0	3	0		7	4	0		**14**	0	0	0		1	0	11		**12**	**26**
08:15	08:30	0	2	2		12	4	0		**20**	0	0	0		2	0	10		**12**	**32**
08:30	08:45	0	1	0		10	1	0		**12**	0	0	0		0	0	7		**7**	**19**
08:45	09:00	0	1	0		5	2	0		**8**	0	0	0		2	0	14		**16**	**24**
09:00	09:15	0	2	1		6	2	0		**11**	0	0	0		1	0	11		**12**	**23**
09:15	09:30	0	2	1		15	0	0		**18**	0	0	0		1	0	9		**10**	**28**
09:30	09:45	0	2	0		9	2	0		**13**	0	0	0		0	0	14		**14**	**27**
09:45	10:00	0	2	1		4	4	0		**11**	0	0	0		0	0	7		**7**	**18**
11:30	11:45	0	2	1		3	1	0		**7**	0	0	0		0	0	8		**8**	**15**
11:45	12:00	0	2	1		7	1	0		**11**	0	0	0		0	0	4		**4**	**15**
12:00	12:15	0	0	0		14	1	0		**15**	0	0	0		0	0	12		**12**	**27**
12:15	12:30	0	1	1		9	3	0		**14**	0	0	0		1	0	12		**13**	**27**
12:30	12:45	0	1	0		3	2	0		**6**	0	0	0		0	0	10		**10**	**16**
12:45	13:00	0	4	0		11	0	0		**15**	0	0	0		0	0	11		**11**	**26**
13:00	13:15	0	2	0		9	3	0		**14**	0	0	0		1	0	9		**10**	**24**
13:15	13:30	0	3	0		11	3	0		**17**	0	0	0		1	0	9		**10**	**27**
15:00	15:15	0	2	0		8	1	0		**11**	0	0	0		0	0	8		**8**	**19**
15:15	15:30	0	3	0		7	2	0		**12**	0	0	0		0	0	12		**12**	**24**
15:30	15:45	0	3	0		10	3	0		**16**	0	0	0		0	0	9		**9**	**25**
15:45	16:00	0	2	0		10	0	0		**12**	0	0	0		2	0	9		**11**	**23**
16:00	16:15	0	0	0		6	1	0		**7**	0	0	0		2	0	8		**10**	**17**
16:15	16:30	0	0	2		12	0	0		**14**	0	0	0		0	0	7		**7**	**21**
16:30	16:45	0	2	0		6	1	0		**9**	0	0	0		2	0	5		**7**	**16**
16:45	17:00	0	1	0		7	0	0		**8**	0	0	0		0	0	8		**8**	**16**
17:00	17:15	0	1	1		0	0	0		**2**	0	0	0		0	0	5		**5**	**7**
17:15	17:30	0	0	0		0	0	0		**0**	0	0	0		0	0	3		**3**	**3**
17:30	17:45	0	1	0		0	2	0		**3**	0	0	0		0	0	1		**1**	**4**
17:45	18:00	0	0	0		0	0	0		**0**	0	0	0		0	0	0		**0**	**0**
Total:	None	0	56	12	**0**	242	53	0	**0**	**363**	0	0	0	**0**	16	0	262	**0**	**278**	**641**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BORRISOKANE RD @ CAMBRIAN RD

Survey Date: Wednesday, April 20, 2022 **WO No:** 40246

Start Time: 07:00 **Device:** Miovision

Full Study 15 Minute U-Turn Total

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

5562791 - COVID - CAMBRIAN RD @ APOLUNE ST ... - TMC

Wed Mar 23, 2022
Full Length (7 AM-10 AM, 11:30 AM-1:30 PM, 3 PM-6 PM)
All Classes (Lights and Motorcycles, Heavy, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 932641, Location: 45.246542, -75.752395, Site Code: 40238103

Provided by: City of Ottawa
100 Constellation Dr,
Nepean, ON, K2G 5J9, CA

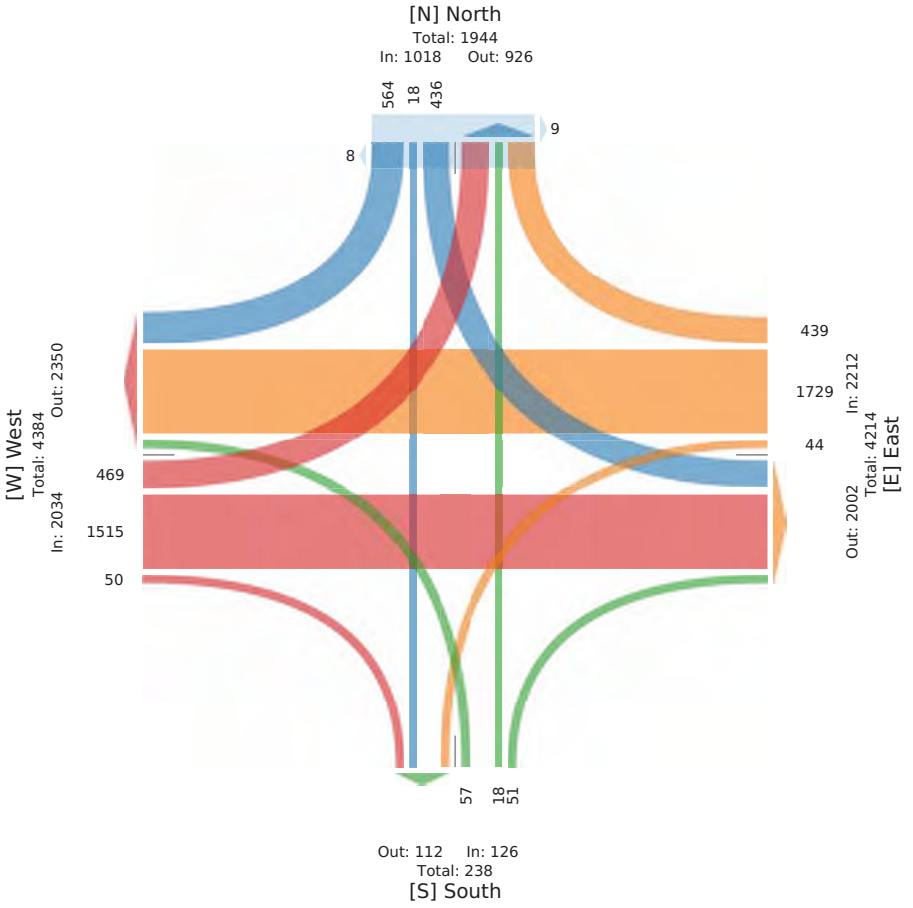
Leg / Direction	South Northbound						North Southbound						West Eastbound						East Westbound						
Time	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	Int
2022-03-23 7:00AM	0	2	0	0	**2**	0	11	0	16	0	**27**	0	15	26	5	0	**46**	0	3	68	8	0	**79**	0	**154**
7:15AM	0	0	0	0	**0**	0	14	0	20	0	**34**	0	11	21	1	0	**33**	0	1	57	10	0	**68**	0	**135**
7:30AM	0	1	0	0	**1**	0	15	0	29	0	**44**	0	8	35	5	0	**48**	0	0	79	14	0	**93**	0	**186**
7:45AM	1	0	0	0	**1**	0	9	1	19	0	**29**	0	19	38	2	0	**59**	0	2	80	16	0	**98**	0	**187**
Hourly Total	1	3	0	0	**4**	0	49	1	84	0	**134**	0	53	120	13	0	**186**	0	6	284	48	0	**338**	0	**662**
8:00AM	1	1	0	0	**2**	0	19	0	23	0	**42**	1	23	55	1	0	**79**	0	1	70	11	0	**82**	0	**205**
8:15AM	0	0	1	0	**1**	0	11	1	24	0	**36**	3	13	41	2	0	**56**	0	4	79	11	0	**94**	0	**187**
8:30AM	1	0	0	0	**1**	0	24	0	25	0	**49**	2	18	36	1	0	**55**	0	2	78	14	0	**94**	0	**199**
8:45AM	1	1	0	0	**2**	0	22	0	28	0	**50**	3	10	28	4	0	**42**	0	5	68	11	0	**84**	0	**178**
Hourly Total	3	2	1	0	**6**	0	76	1	100	0	**177**	9	64	160	8	0	**232**	0	12	295	47	0	**354**	0	**769**
9:00AM	3	0	3	0	**6**	0	12	1	21	0	**34**	3	18	27	2	0	**47**	0	2	69	18	0	**89**	0	**176**
9:15AM	2	1	0	0	**3**	0	7	0	9	0	**16**	3	15	37	4	0	**56**	0	1	47	14	0	**62**	0	**137**
9:30AM	2	0	2	0	**4**	0	10	0	17	0	**27**	1	12	32	3	0	**47**	0	2	33	12	0	**47**	0	**125**
9:45AM	2	1	3	0	**6**	0	16	1	16	0	**33**	0	10	27	1	0	**38**	0	4	44	19	0	**67**	0	**144**
Hourly Total	9	2	8	0	**19**	0	45	2	63	0	**110**	7	55	123	10	0	**188**	0	9	193	63	0	**265**	0	**582**
11:30AM	0	1	3	0	**4**	0	9	0	14	0	**23**	0	7	29	0	0	**36**	0	2	40	11	0	**53**	0	**116**
11:45AM	2	1	4	0	**7**	0	14	1	9	0	**24**	0	13	27	0	0	**40**	0	2	54	11	0	**67**	0	**138**
Hourly Total	2	2	7	0	**11**	0	23	1	23	0	**47**	0	20	56	0	0	**76**	0	4	94	22	0	**120**	0	**254**
12:00PM	2	0	5	0	**7**	0	12	3	15	0	**30**	0	14	37	1	0	**52**	0	0	45	11	0	**56**	0	**145**
12:15PM	3	0	3	0	**6**	0	10	0	10	0	**20**	0	9	39	1	0	**49**	0	2	35	19	0	**56**	0	**131**
12:30PM	3	1	1	0	**5**	0	12	1	13	0	**26**	0	12	32	3	0	**47**	0	2	27	14	0	**43**	0	**121**
12:45PM	1	1	2	0	**4**	0	13	0	10	0	**23**	0	9	39	1	0	**49**	0	2	37	11	0	**50**	0	**126**
Hourly Total	9	2	11	0	**22**	0	47	4	48	0	**99**	0	44	147	6	0	**197**	0	6	144	55	0	**205**	0	**523**
1:00PM	0	1	1	0	**2**	0	13	2	14	0	**29**	0	8	28	3	0	**39**	0	1	38	13	0	**52**	0	**122**
1:15PM	4	1	3	0	**8**	0	8	0	11	0	**19**	0	10	45	5	0	**60**	0	1	40	10	0	**51**	0	**138**
Hourly Total	4	2	4	0	**10**	0	21	2	25	0	**48**	0	18	73	8	0	**99**	0	2	78	23	0	**103**	0	**260**
3:00PM	4	1	3	0	**8**	0	15	1	31	0	**47**	0	16	50	1	0	**67**	0	1	53	11	0	**65**	0	**187**
3:15PM	3	1	2	0	**6**	0	8	0	10	0	**18**	0	16	71	2	0	**89**	0	0	56	14	0	**70**	0	**183**
3:30PM	8	1	4	0	**13**	0	18	3	17	0	**38**	1	11	63	1	0	**75**	0	2	43	14	0	**59**	0	**185**
3:45PM	5	0	1	0	**6**	0	21	0	17	0	**38**	0	19	68	0	0	**87**	0	0	63	16	0	**79**	0	**210**
Hourly Total	20	3	10	0	**33**	0	62	4	75	0	**141**	1	62	252	4	0	**318**	0	3	215	55	0	**273**	0	**765**
4:00PM	1	0	2	0	**3**	0	20	0	14	0	**34**	0	19	80	0	0	**99**	0	0	56	17	0	**73**	0	**209**
4:15PM	2	0	0	0	**2**	0	17	0	16	0	**33**	0	16	68	0	0	**84**	0	0	55	22	0	**77**	0	**196**
4:30PM	2	0	5	0	**7**	0	14	2	21	0	**37**	0	26	70	0	0	**96**	0	0	62	18	0	**80**	0	**220**
4:45PM	2	1	0	0	**3**	0	14	0	19	0	**33**	0	16	74	0	0	**90**	0	0	59	11	0	**70**	0	**196**
Hourly Total	7	1	7	0	**15**	0	65	2	70	0	**137**	0	77	292	0	0	**369**	0	0	232	68	0	**300**	0	**821**
5:00PM	0	0	0	0	**0**	0	12	0	27	0	**39**	0	18	69	1	0	**88**	0	0	52	11	0	**63**	0	**190**
5:15PM	2	0	1	0	**3**	0	16	1	20	0	**37**	0	20	78	0	0	**98**	0	0	51	12	0	**63**	0	**201**
5:30PM	0	1	1	0	**2**	0	10	0	19	0	**29**	0	18	74	0	0	**92**	0	2	54	18	0	**74**	0	**197**
5:45PM	0	0	1	0	**1**	0	10	0	10	0	**20**	0	20	71	0	0	**91**	0	0	37	17	0	**54**	0	**166**
Hourly Total	2	1	3	0	**6**	0	48	1	76	0	**125**	0	76	292	1	0	**369**	0	2	194	58	0	**254**	0	**754**
Total	57	18	51	0	**126**	0	436	18	564	0	**1018**	17	469	1515	50	0	**2034**	0	44	1729	439	0	**2212**	0	**5390**
% Approach	45.2%	14.3%	40.5%	0%	-	-	42.8%	1.8%	55.4%	0%	-	-	23.1%	74.5%	2.5%	0%	-	-	2.0%	78.2%	19.8%	0%	-	-	-
% Total	1.1%	0.3%	0.9%	0%	**2.3%**	-	8.1%	0.3%	10.5%	0%	**18.9%**	-	8.7%	28.1%	0.9%	0%	**37.7%**	-	0.8%	32.1%	8.1%	0%	**41.0%**	-	-
Lights and Motorcycles	44	13	42	0	**99**	-	416	11	533	0	**960**	-	437	1467	40	0	**1944**	-	37	1669	411	0	**2117**	-	5120
% Lights and Motorcycles	77.2%	72.2%	82.4%	0%	**78.6%**	-	95.4%	61.1%	94.5%	0%	**94.3%**	-	93.2%	96.8%	80.0%	0%	**95.6%**	-	84.1%	96.5%	93.6%	0%	**95.7%**	-	95.0%
Heavy	13	4	9	0	**26**	-	20	5	31	0	**56**	-	32	48	10	0	**90**	-	7	59	28	0	**94**	-	266
% Heavy	22.8%	22.2%	17.6%	0%	**20.6%**	-	4.6%	27.8%	5.5%	0%	**5.5%**	-	6.8%	3.2%	20.0%	0%	**4.4%**	-	15.9%	3.4%	6.4%	0%	**4.2%**	-	4.9%
Bicycles on Road	0	1	0	0	**1**	-	0	2	0	0	**2**	-	0	0	0	0	**0**	-	0	1	0	0	**1**	-	4
% Bicycles on Road	0%	5.6%	0%	0%	**0.8%**	-	0%	11.1%	0%	0%	**0.2%**	-	0%	0%	0%	0%	**0%**	-	0%	0.1%	0%	0%	**0%**	-	0.1%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	17	-	-	-	-	-	0	-	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	0%	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

5562791 - COVID - CAMBRIAN RD @ APOLUNE ST ... - TMC

Wed Mar 23, 2022
Full Length (7 AM-10 AM, 11:30 AM-1:30 PM, 3 PM-6 PM)
All Classes (Lights and Motorcycles, Heavy, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 932641, Location: 45.246542, -75.752395, Site Code: 40238103

Provided by: City of Ottawa
100 Constellation Dr,
Nepean, ON, K2G 5J9, CA



5562791 - COVID - CAMBRIAN RD @ APOLUNE ST ... - TMC

Wed Mar 23, 2022
AM Peak (7:45 AM - 8:45 AM)
All Classes (Lights and Motorcycles, Heavy, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 932641, Location: 45.246542, -75.752395, Site Code: 40238103

Provided by: City of Ottawa
100 Constellation Dr,
Nepean, ON, K2G 5J9, CA

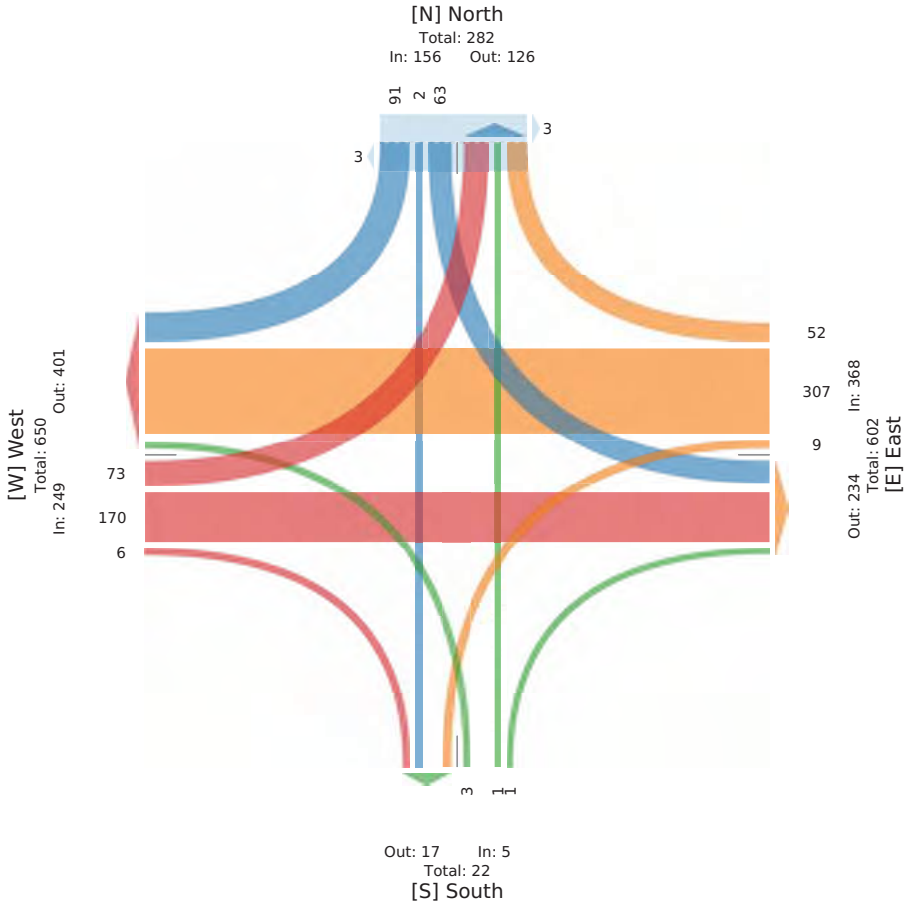
Leg / Direction	South Northbound						North Southbound						West Eastbound						East Westbound						
Time	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	Int
2022-03-23 7:45AM	1	0	0	0	**1**	0	9	1	19	0	**29**	0	19	38	2	0	**59**	0	2	80	16	0	**98**	0	**187**
8:00AM	1	1	0	0	**2**	0	19	0	23	0	**42**	1	23	55	1	0	**79**	0	1	70	11	0	**82**	0	**205**
8:15AM	0	0	1	0	**1**	0	11	1	24	0	**36**	3	13	41	2	0	**56**	0	4	79	11	0	**94**	0	**187**
8:30AM	1	0	0	0	**1**	0	24	0	25	0	**49**	2	18	36	1	0	**55**	0	2	78	14	0	**94**	0	**199**
Total	3	1	1	0	**5**	0	63	2	91	0	**156**	6	73	170	6	0	**249**	0	9	307	52	0	**368**	0	**778**
% Approach	60.0%	20.0%	20.0%	0%	**-**	-	40.4%	1.3%	58.3%	0%	**-**	-	29.3%	68.3%	2.4%	0%	**-**	-	2.4%	83.4%	14.1%	0%	**-**	-	-
% Total	0.4%	0.1%	0.1%	0%	**0.6%**	-	8.1%	0.3%	11.7%	0%	**20.1%**	-	9.4%	21.9%	0.8%	0%	**32.0%**	-	1.2%	39.5%	6.7%	0%	**47.3%**	-	-
PHF	0.750	0.250	0.250	-	**0.625**	-	0.656	0.500	0.910	-	**0.796**	-	0.793	0.773	0.750	-	**0.788**	-	0.563	0.956	0.813	-	**0.936**	-	0.948
Lights and Motorcycles	1	1	1	0	**3**	-	59	0	85	0	**144**	-	65	161	3	0	**229**	-	9	298	45	0	**352**	-	728
% Lights and Motorcycles	33.3%	100%	100%	0%	**60.0%**	-	93.7%	0%	93.4%	0%	**92.3%**	-	89.0%	94.7%	50.0%	0%	**92.0%**	-	100%	97.1%	86.5%	0%	**95.7%**	-	93.6%
Heavy	2	0	0	0	**2**	-	4	2	6	0	**12**	-	8	9	3	0	**20**	-	0	8	7	0	**15**	-	49
% Heavy	66.7%	0%	0%	0%	**40.0%**	-	6.3%	100%	6.6%	0%	**7.7%**	-	11.0%	5.3%	50.0%	0%	**8.0%**	-	0%	2.6%	13.5%	0%	**4.1%**	-	6.3%
Bicycles on Road	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0	1	0	0	**1**	-	1
% Bicycles on Road	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%	0.3%	0%	0%	**0.3%**	-	0.1%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	6	-	-	-	-	-	0	-	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	100%	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	0%	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

5562791 - COVID - CAMBRIAN RD @ APOLUNE ST ... - TMC

Wed Mar 23, 2022
AM Peak (7:45 AM - 8:45 AM)
All Classes (Lights and Motorcycles, Heavy, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 932641, Location: 45.246542, -75.752395, Site Code: 40238103

Provided by: City of Ottawa
100 Constellation Dr,
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5562791 - COVID - CAMBRIAN RD @ APOLUNE ST ... - TMC

Wed Mar 23, 2022
Midday Peak (11:45 AM - 12:45 PM)
All Classes (Lights and Motorcycles, Heavy, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 932641, Location: 45.246542, -75.752395, Site Code: 40238103

Provided by: City of Ottawa
100 Constellation Dr,
Nepean, ON, K2G 5J9, CA

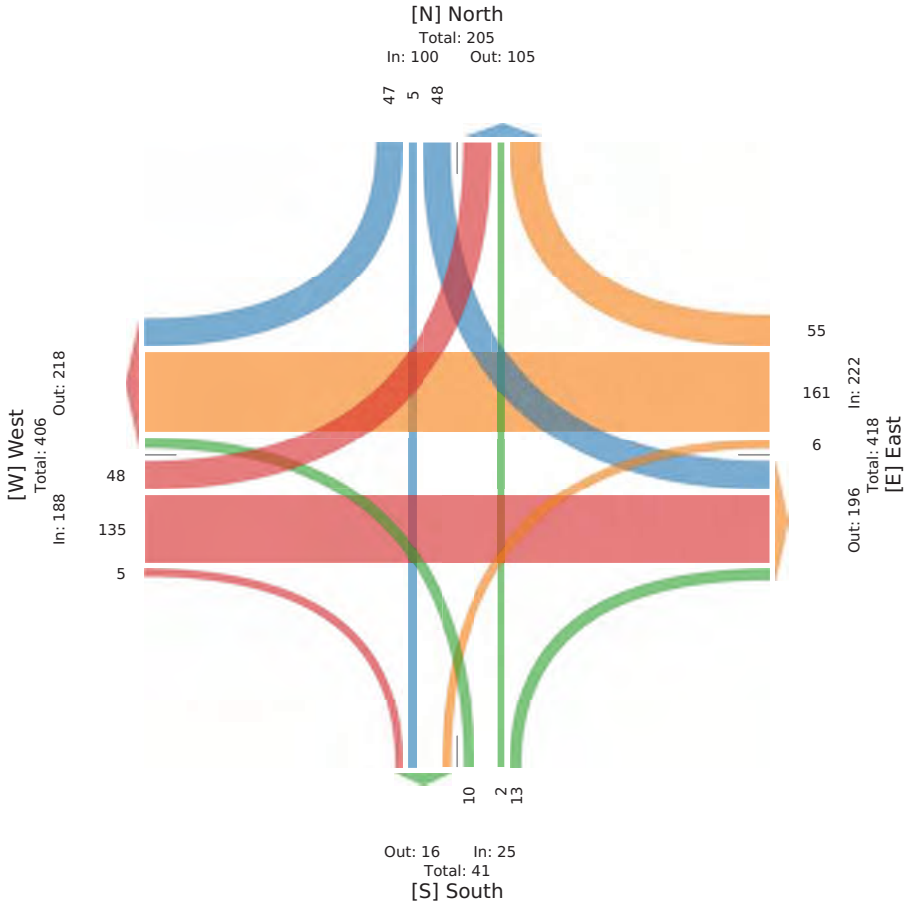
Leg	South						North						West						East						
Direction	Northbound						Southbound						Eastbound						Westbound						
Time	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	Int
2022-03-23 11:45AM	2	1	4	0	**7**	0	14	1	9	0	**24**	0	13	27	0	0	**40**	0	2	54	11	0	**67**	0	**138**
12:00PM	2	0	5	0	**7**	0	12	3	15	0	**30**	0	14	37	1	0	**52**	0	0	45	11	0	**56**	0	**145**
12:15PM	3	0	3	0	**6**	0	10	0	10	0	**20**	0	9	39	1	0	**49**	0	2	35	19	0	**56**	0	**131**
12:30PM	3	1	1	0	**5**	0	12	1	13	0	**26**	0	12	32	3	0	**47**	0	2	27	14	0	**43**	0	**121**
Total	10	2	13	0	**25**	0	48	5	47	0	**100**	0	48	135	5	0	**188**	0	6	161	55	0	**222**	0	**535**
% Approach	40.0%	8.0%	52.0%	0%	**-**	-	48.0%	5.0%	47.0%	0%	**-**	-	25.5%	71.8%	2.7%	0%	**-**	-	2.7%	72.5%	24.8%	0%	**-**	-	-
% Total	1.9%	0.4%	2.4%	0%	**4.7%**	-	9.0%	0.9%	8.8%	0%	**18.7%**	-	9.0%	25.2%	0.9%	0%	**35.1%**	-	1.1%	30.1%	10.3%	0%	**41.5%**	-	-
PHF	0.833	0.500	0.650	-	**0.893**	-	0.857	0.417	0.783	-	**0.833**	-	0.857	0.865	0.417	-	**0.904**	-	0.750	0.745	0.724	-	**0.828**	-	0.922
Lights and Motorcycles	7	2	9	0	**18**	-	43	5	43	0	**91**	-	45	131	3	0	**179**	-	4	151	51	0	**206**	-	494
% Lights and Motorcycles	70.0%	100%	69.2%	0%	**72.0%**	-	89.6%	100%	91.5%	0%	**91.0%**	-	93.8%	97.0%	60.0%	0%	**95.2%**	-	66.7%	93.8%	92.7%	0%	**92.8%**	-	92.3%
Heavy	3	0	4	0	**7**	-	5	0	4	0	**9**	-	3	4	2	0	**9**	-	2	10	4	0	**16**	-	41
% Heavy	30.0%	0%	30.8%	0%	**28.0%**	-	10.4%	0%	8.5%	0%	**9.0%**	-	6.3%	3.0%	40.0%	0%	**4.8%**	-	33.3%	6.2%	7.3%	0%	**7.2%**	-	7.7%
Bicycles on Road	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0	0	0	0	**0**	-	0
% Bicycles on Road	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

*Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

5562791 - COVID - CAMBRIAN RD @ APOLUNE ST ... - TMC

Wed Mar 23, 2022
Midday Peak (11:45 AM - 12:45 PM)
All Classes (Lights and Motorcycles, Heavy, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 932641, Location: 45.246542, -75.752395, Site Code: 40238103

Provided by: City of Ottawa
100 Constellation Dr,
Nepean, ON, K2G 5J9, CA



5562791 - COVID - CAMBRIAN RD @ APOLUNE ST ... - TMC

Wed Mar 23, 2022
PM Peak (3:45 PM - 4:45 PM) - Overall Peak Hour
All Classes (Lights and Motorcycles, Heavy, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 932641, Location: 45.246542, -75.752395, Site Code: 40238103

Provided by: City of Ottawa
100 Constellation Dr,
Nepean, ON, K2G 5J9, CA

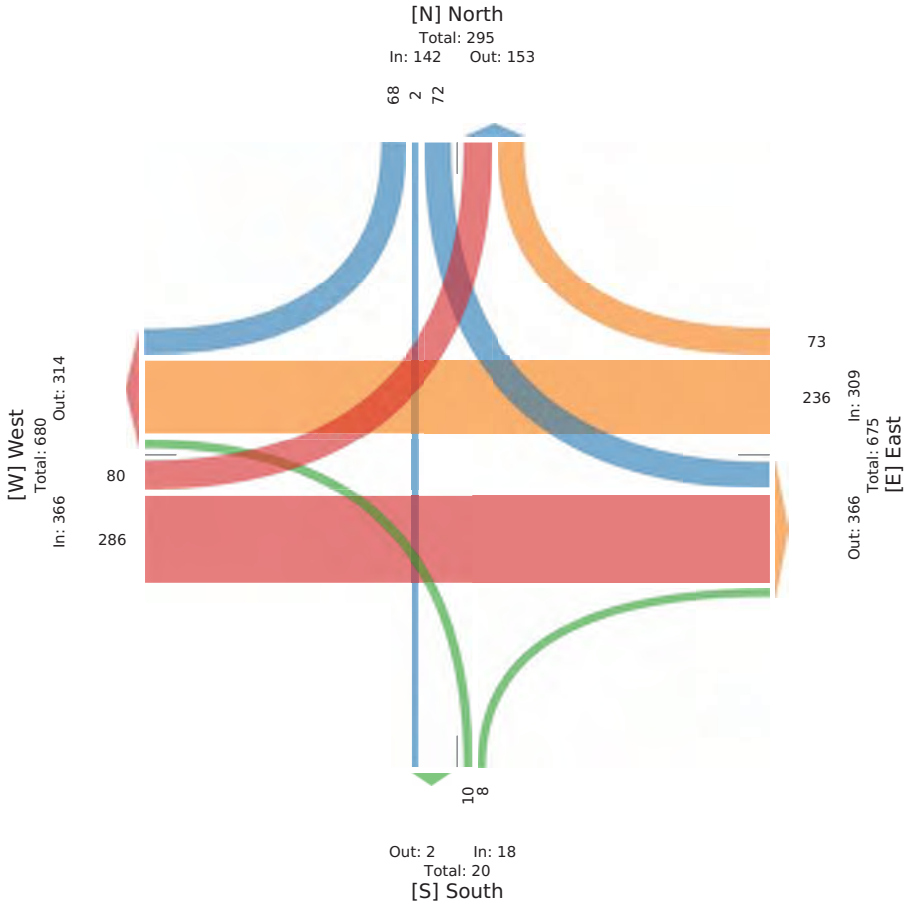
Leg	South						North						West						East						
Direction	Northbound						Southbound						Eastbound						Westbound						
Time	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	L	T	R	U	App	Ped*	Int
2022-03-23 3:45PM	5	0	1	0	**6**	0	21	0	17	0	**38**	0	19	68	0	0	**87**	0	0	63	16	0	**79**	0	**210**
4:00PM	1	0	2	0	**3**	0	20	0	14	0	**34**	0	19	80	0	0	**99**	0	0	56	17	0	**73**	0	**209**
4:15PM	2	0	0	0	**2**	0	17	0	16	0	**33**	0	16	68	0	0	**84**	0	0	55	22	0	**77**	0	**196**
4:30PM	2	0	5	0	**7**	0	14	2	21	0	**37**	0	26	70	0	0	**96**	0	0	62	18	0	**80**	0	**220**
Total	10	0	8	0	**18**	0	72	2	68	0	**142**	0	80	286	0	0	**366**	0	0	236	73	0	**309**	0	**835**
% Approach	55.6%	0%	44.4%	0%	**-**	-	50.7%	1.4%	47.9%	0%	**-**	-	21.9%	78.1%	0%	0%	**-**	-	0%	76.4%	23.6%	0%	**-**	-	-
% Total	1.2%	0%	1.0%	0%	**2.2%**	-	8.6%	0.2%	8.1%	0%	**17.0%**	-	9.6%	34.3%	0%	0%	**43.8%**	-	0%	28.3%	8.7%	0%	**37.0%**	-	-
PHF	0.500	-	0.400	-	**0.643**	-	0.857	0.250	0.810	-	**0.928**	-	0.769	0.894	-	-	**0.924**	-	-	0.937	0.830	-	**0.966**	-	0.952
Lights and Motorcycles	9	0	8	0	**17**	-	72	1	66	0	**139**	-	78	280	0	0	**358**	-	0	230	70	0	**300**	-	814
% Lights and Motorcycles	90.0%	0%	100%	0%	**94.4%**	-	100%	50.0%	97.1%	0%	**97.9%**	-	97.5%	97.9%	0%	0%	**97.8%**	-	0%	97.5%	95.9%	0%	**97.1%**	-	97.5%
Heavy	1	0	0	0	**1**	-	0	0	2	0	**2**	-	2	6	0	0	**8**	-	0	6	3	0	**9**	-	20
% Heavy	10.0%	0%	0%	0%	**5.6%**	-	0%	0%	2.9%	0%	**1.4%**	-	2.5%	2.1%	0%	0%	**2.2%**	-	0%	2.5%	4.1%	0%	**2.9%**	-	2.4%
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%	50.0%	0%	0%	**0.7%**	-	0%	0%	0%	0%	**0%**	-	0%	0%	0%	0%	**0%**	-	0.1%
Pedestrians	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	
% Pedestrians	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bicycles on Crosswalk	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	-	-	-	-	-	0	
% Bicycles on Crosswalk	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

* Pedestrians and Bicycles on Crosswalk. L: Left, R: Right, T: Thru, U: U-Turn

5562791 - COVID - CAMBRIAN RD @ APOLUNE ST ... - TMC

Wed Mar 23, 2022
PM Peak (3:45 PM - 4:45 PM) - Overall Peak Hour
All Classes (Lights and Motorcycles, Heavy, Pedestrians, Bicycles on Road, Bicycles on Crosswalk)
All Movements
ID: 932641, Location: 45.246542, -75.752395, Site Code: 40238103

Provided by: City of Ottawa
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Transportation Services - Traffic Services

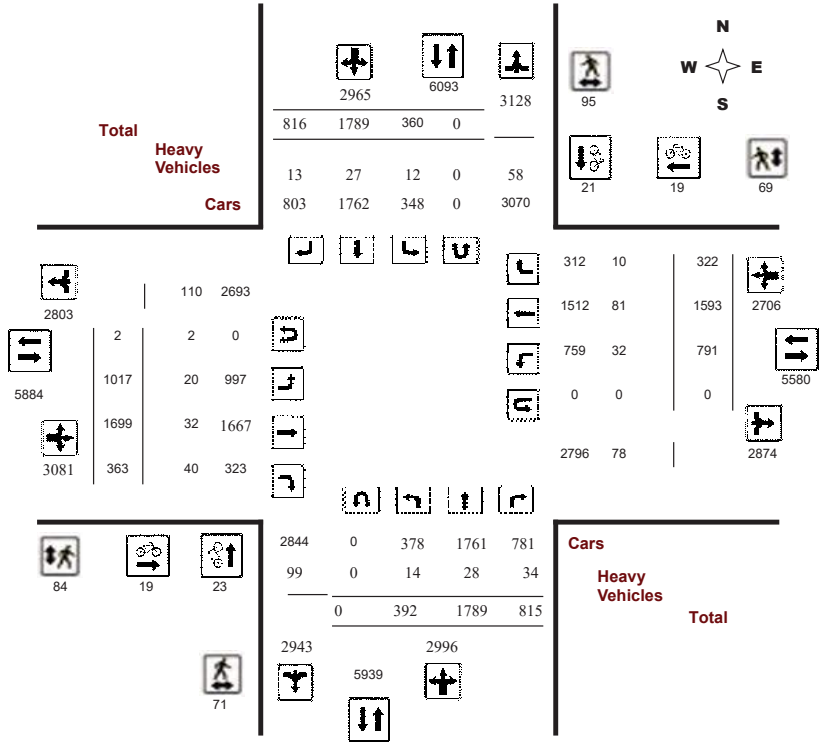
Turning Movement Count - Study Results

CAMBRIAN RD @ GREENBANK RD

Survey Date: Tuesday, April 26, 2022 **WO No:** 40249

Start Time: 07:00 **Device:** Miovision

Full Study Diagram



Transportation Services - Traffic Services

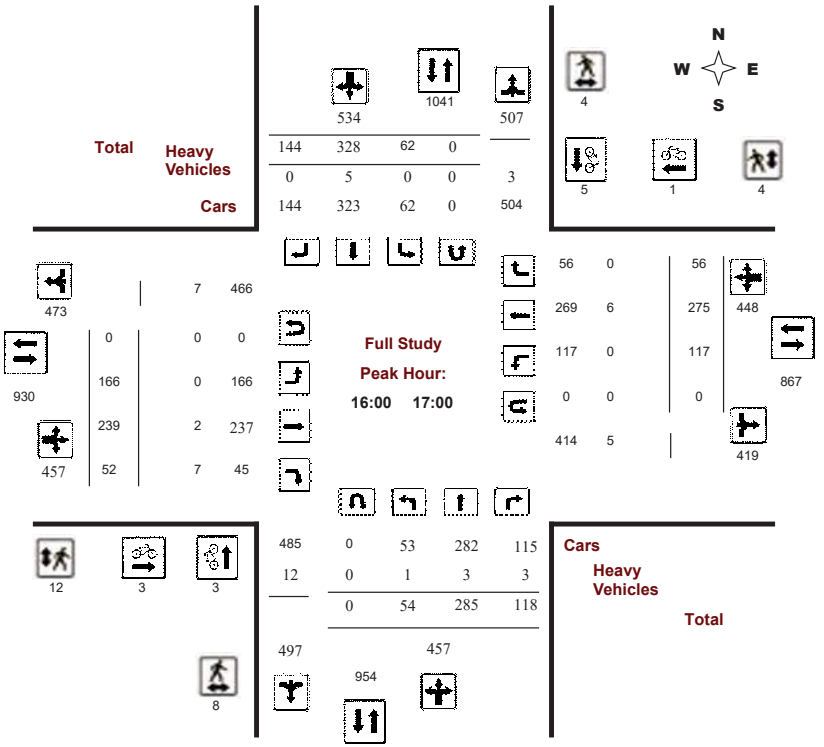
Turning Movement Count - Study Results

CAMBRIAN RD @ GREENBANK RD

Survey Date: Tuesday, April 26, 2022 **WO No:** 40249

Start Time: 07:00 **Device:** Miovision

Full Study Peak Hour Diagram



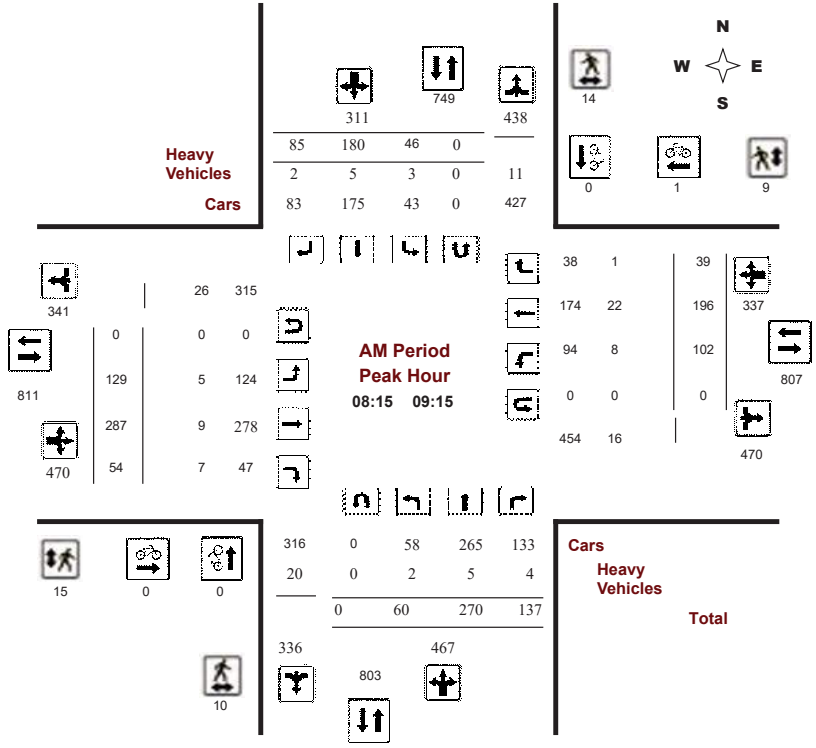
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

CAMBRIAN RD @ GREENBANK RD

Survey Date: Tuesday, April 26, 2022 **WO No:** 40249

Start Time: 07:00 **Device:** Miovision



Comments

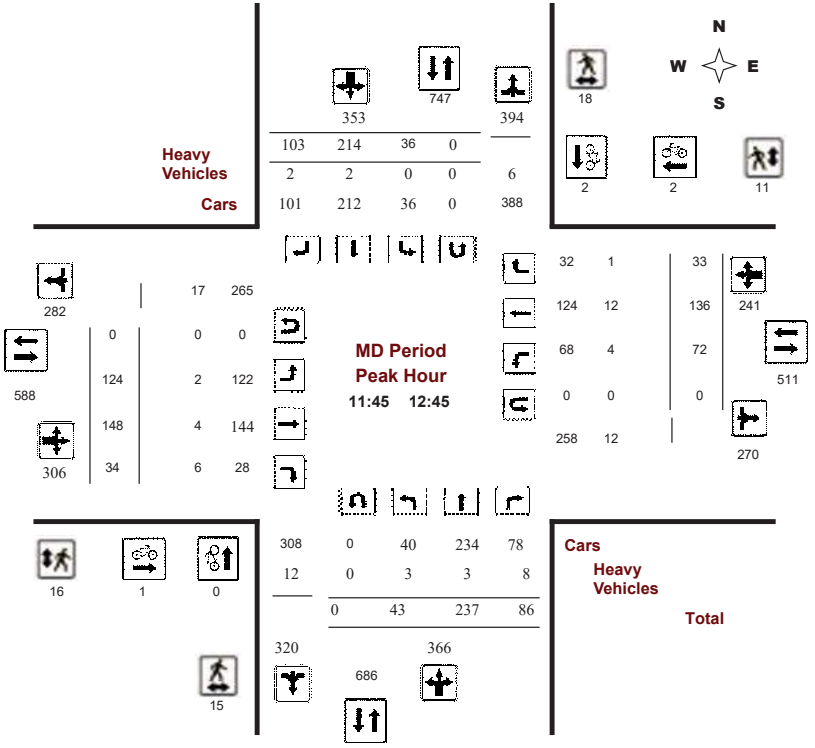
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

CAMBRIAN RD @ GREENBANK RD

Survey Date: Tuesday, April 26, 2022 **WO No:** 40249

Start Time: 07:00 **Device:** Miovision



Comments

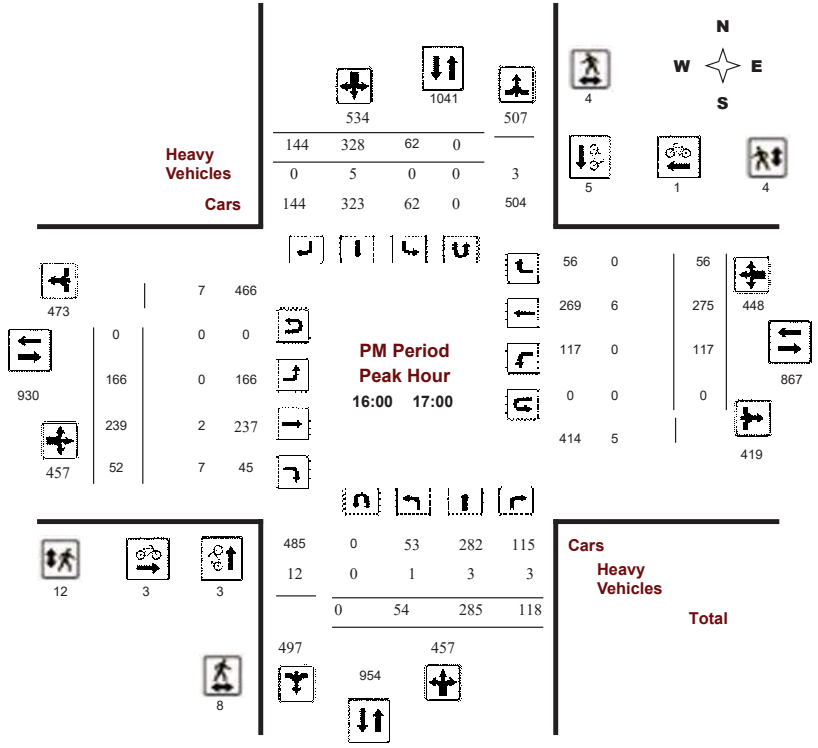
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

CAMBRIAN RD @ GREENBANK RD

Survey Date: Tuesday, April 26, 2022 **WO No:** 40249

Start Time: 07:00 **Device:** Miovision



Comments

Transportation Services - Traffic Services

Turning Movement Count - Study Results

CAMBRIAN RD @ GREENBANK RD

Survey Date: Tuesday, April 26, 2022 **WO No:** 40249

Start Time: 07:00 **Device:** Miovision

Full Study Summary (8 HR Standard)

Survey Date: Tuesday, April 26, 2022

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 2 Westbound: 0

AADT Factor .90

	Northbound				Southbound				Eastbound				Westbound					
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total
07:00 08:00	44	176	111	**331**	51	72	49	**172**	**503**	121	241	35	**397**	73	157	40	**270**	**667**	**1170**
08:00 09:00	42	240	138	**420**	45	162	68	**275**	**695**	119	308	49	**476**	114	190	31	**335**	**811**	**1506**
09:00 10:00	54	204	95	**353**	35	161	98	**294**	**647**	102	156	37	**295**	70	145	41	**256**	**551**	**1198**
11:30 12:30	45	229	79	**353**	40	208	89	**337**	**690**	135	140	36	**311**	75	129	33	**237**	**548**	**1238**
12:30 13:30	36	193	65	**294**	32	215	113	**360**	**654**	102	129	41	**272**	80	146	37	**263**	**535**	**1189**
15:00 16:00	60	199	104	**363**	49	320	116	**485**	**848**	127	232	58	**417**	139	227	38	**404**	**821**	**1669**
16:00 17:00	54	285	118	**457**	62	328	144	**534**	**991**	166	239	52	**457**	117	275	56	**448**	**905**	**1896**
17:00 18:00	57	263	105	**425**	46	323	139	**508**	**933**	145	254	55	**454**	123	324	46	**493**	**947**	**1880**
Sub Total	392	1789	815	**2996**	360	1789	816	**2965**	**5961**	1017	1699	363	**3079**	791	1593	322	**2706**	**5785**	**11746**
U Turns	0			**0**	0			**0**	**0**	**2**			**2**	0			**0**	**2**	**2**
Total	392	1789	815	**2996**	360	1789	816	**2965**	**5961**	1019	1699	363	**3081**	791	1593	322	**2706**	**5787**	**11748**
EQ 12Hr	545	2487	1133	**4165**	500	2487	1134	**4121**	**8286**	1416	2362	505	**4283**	1099	2214	448	**3761**	**8044**	**16330**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	490	2238	1020	**3748**	450	2238	1021	**3709**	**7457**	1274	2126	454	**3854**	989	1993	403	**3385**	**7239**	**14696**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**.90**					
AVG 24Hr	642	2932	1336	**4910**	590	2932	1338	**4860**	**9770**	1669	2785	595	**5049**	1296	2611	528	**4435**	**9484**	**19254**
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.														**1.31**					

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

Transportation Services - Traffic Services

Turning Movement Count - Study Results

CAMBRIAN RD @ GREENBANK RD

Survey Date: Tuesday, April 26, 2022 **WO No:** 40249

Start Time: 07:00 **Device:** Miovision

Full Study Cyclist Volume

Time Period		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00	07:15	0	0	**0**	0	0	**0**	**0**
07:15	07:30	1	0	**1**	2	0	**2**	**3**
07:30	07:45	3	0	**3**	2	0	**2**	**5**
07:45	08:00	6	0	**6**	2	1	**3**	**9**
08:00	08:15	1	0	**1**	0	1	**1**	**2**
08:15	08:30	0	0	**0**	0	1	**1**	**1**
08:30	08:45	0	0	**0**	0	0	**0**	**0**
08:45	09:00	0	0	**0**	0	0	**0**	**0**
09:00	09:15	0	0	**0**	0	0	**0**	**0**
09:15	09:30	0	0	**0**	0	0	**0**	**0**
09:30	09:45	0	0	**0**	0	0	**0**	**0**
09:45	10:00	0	1	**1**	0	1	**1**	**2**
11:30	11:45	0	1	**1**	1	1	**2**	**3**
11:45	12:00	0	0	**0**	0	1	**1**	**1**
12:00	12:15	0	0	**0**	0	1	**1**	**1**
12:15	12:30	0	1	**1**	1	0	**1**	**2**
12:30	12:45	0	1	**1**	0	0	**0**	**1**
12:45	13:00	1	0	**1**	1	0	**1**	**2**
13:00	13:15	0	0	**0**	0	1	**1**	**1**
13:15	13:30	0	0	**0**	0	0	**0**	**0**
15:00	15:15	0	1	**1**	2	0	**2**	**3**
15:15	15:30	2	3	**5**	2	1	**3**	**8**
15:30	15:45	0	0	**0**	0	0	**0**	**0**
15:45	16:00	2	1	**3**	1	1	**2**	**5**
16:00	16:15	0	0	**0**	0	0	**0**	**0**
16:15	16:30	1	0	**1**	0	1	**1**	**2**
16:30	16:45	2	2	**4**	3	0	**3**	**7**
16:45	17:00	0	3	**3**	0	0	**0**	**3**
17:00	17:15	0	4	**4**	0	4	**4**	**8**
17:15	17:30	0	0	**0**	0	2	**2**	**2**
17:30	17:45	4	1	**5**	1	1	**2**	**7**
17:45	18:00	0	2	**2**	1	1	**2**	**4**
Total		23	21	**44**	19	19	**38**	**82**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

CAMBRIAN RD @ GREENBANK RD

Survey Date: Tuesday, April 26, 2022 **WO No:** 40249

Start Time: 07:00 **Device:** Miovision

Full Study Pedestrian Volume

Time Period		NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00	07:15	1	2	**3**	2	2	**4**	**7**
07:15	07:30	1	0	**1**	1	2	**3**	**4**
07:30	07:45	1	8	**9**	2	3	**5**	**14**
07:45	08:00	2	6	**8**	3	3	**6**	**14**
08:00	08:15	1	2	**3**	0	0	**0**	**3**
08:15	08:30	1	1	**2**	7	0	**7**	**9**
08:30	08:45	1	2	**3**	3	0	**3**	**6**
08:45	09:00	7	11	**18**	3	0	**3**	**21**
09:00	09:15	1	0	**1**	2	9	**11**	**12**
09:15	09:30	0	2	**2**	1	3	**4**	**6**
09:30	09:45	0	0	**0**	3	1	**4**	**4**
09:45	10:00	0	0	**0**	1	0	**1**	**1**
11:30	11:45	3	0	**3**	1	0	**1**	**4**
11:45	12:00	2	2	**4**	2	2	**4**	**8**
12:00	12:15	3	3	**6**	6	3	**9**	**15**
12:15	12:30	7	6	**13**	4	4	**8**	**21**
12:30	12:45	3	7	**10**	4	2	**6**	**16**
12:45	13:00	1	2	**3**	0	2	**2**	**5**
13:00	13:15	0	0	**0**	2	0	**2**	**2**
13:15	13:30	1	1	**2**	0	2	**2**	**4**
15:00	15:15	5	0	**5**	2	6	**8**	**13**
15:15	15:30	2	2	**4**	1	2	**3**	**7**
15:30	15:45	2	3	**5**	1	3	**4**	**9**
15:45	16:00	3	17	**20**	1	12	**13**	**33**
16:00	16:15	1	0	**1**	1	1	**2**	**3**
16:15	16:30	2	4	**6**	5	2	**7**	**13**
16:30	16:45	0	0	**0**	4	1	**5**	**5**
16:45	17:00	5	0	**5**	2	0	**2**	**7**
17:00	17:15	2	3	**5**	5	0	**5**	**10**
17:15	17:30	4	4	**8**	5	1	**6**	**14**
17:30	17:45	3	6	**9**	4	2	**6**	**15**
17:45	18:00	6	1	**7**	6	1	**7**	**14**
Total		71	95	**166**	84	69	**153**	**319**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

CAMBRIAN RD @ GREENBANK RD

Survey Date: Tuesday, April 26, 2022 **WO No:** 40249

Start Time: 07:00 **Device:** Miovision

Full Study Heavy Vehicles

Time Period		Northbound				Southbound					Eastbound					Westbound					Grand Total
		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	STR TOT	LT	ST	RT	W TOT	STR TOT	
07:00	07:15	1	0	0		0	0	0		**1**	1	1	2		**4**	0	0	0		**0**	**5**
07:15	07:30	1	3	0		0	1	0		**5**	1	0	1		**2**	2	2	0		**6**	**11**
07:30	07:45	1	4	1		1	0	1		**8**	3	2	2		**7**	2	3	1		**6**	**21**
07:45	08:00	0	1	0		4	3	1		**9**	0	0	0		**0**	1	3	0		**4**	**13**
08:00	08:15	1	0	0		0	2	2		**5**	1	2	0		**3**	2	2	0		**4**	**12**
08:15	08:30	0	0	0		0	4	1		**5**	2	2	2		**6**	2	9	0		**11**	**22**
08:30	08:45	0	0	0		2	0	0		**2**	2	3	2		**7**	3	4	0		**7**	**16**
08:45	09:00	1	4	4		0	1	0		**10**	0	2	2		**4**	2	3	1		**6**	**20**
09:00	09:15	1	1	0		1	0	1		**4**	1	2	1		**4**	1	6	0		**7**	**15**
09:15	09:30	0	0	1		1	0	2		**4**	1	3	0		**4**	1	4	0		**5**	**13**
09:30	09:45	2	0	3		0	2	0		**7**	2	0	1		**3**	1	4	2		**7**	**17**
09:45	10:00	0	0	0		0	1	0		**1**	1	0	2		**3**	2	2	1		**5**	**9**
11:30	11:45	1	1	1		0	3	0		**6**	1	0	1		**2**	2	1	2		**5**	**13**
11:45	12:00	1	2	1		0	1	1		**6**	1	2	2		**5**	1	4	1		**6**	**17**
12:00	12:15	0	0	4		0	0	1		**5**	1	2	1		**4**	1	2	0		**3**	**12**
12:15	12:30	0	1	3		0	1	0		**5**	0	0	2		**2**	2	1	0		**3**	**10**
12:30	12:45	2	0	0		0	0	0		**2**	0	0	1		**1**	0	5	0		**5**	**8**
12:45	13:00	0	0	1		1	0	0		**2**	0	0	1		**1**	1	4	0		**5**	**8**
13:00	13:15	1	0	2		0	0	0		**3**	1	1	1		**3**	1	1	0		**2**	**8**
13:15	13:30	0	2	1		0	1	0		**4**	0	1	1		**2**	2	3	1		**6**	**12**
15:00	15:15	0	0	2		0	1	1		**4**	0	4	1		**5**	1	3	0		**4**	**13**
15:15	15:30	0	1	2		0	0	1		**4**	1	0	1		**2**	0	0	0		**0**	**6**
15:30	15:45	0	2	1		1	0	0		**4**	0	1	0		**1**	2	1	0		**3**	**8**
15:45	16:00	0	0	1		1	1	0		**3**	0	1	0		**1**	0	2	1		**3**	**9**
16:00	16:15	0	1	2		0	3	0		**6**	0	2	3		**5**	0	3	0		**3**	**14**
16:15	16:30	0	2	0		0	1	0		**3**	0	0	2		**2**	0	0	0		**0**	**5**
16:30	16:45	1	0	1		0	1	0		**3**	0	0	1		**1**	0	0	0		**0**	**4**
16:45	17:00	0	0	0		0	0	0		**0**	0	0	1		**1**	0	3	0		**3**	**4**
17:00	17:15	0	0	0		0	0	0		**0**	0	0	4		**4**	0	2	0		**2**	**6**
17:15	17:30	0	1	2		0	0	0		**3**	0	0	0		**0**	0	2	0		**2**	**5**
17:30	17:45	0	1	1		0	0	0		**2**	0	1	2		**3**	0	1	0		**1**	**6**
17:45	18:00	0	1	0		0	0	1		**2**	0	0	0		**0**	0	1	0		**1**	**3**
Total:	None	14	28	34	**0**	12	27	13	**0**	**128**	20	32	40	**0**	**92**	32	81	10	**0**	**123**	**345**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

CAMBRIAN RD @ GREENBANK RD

Survey Date: Tuesday, April 26, 2022 **WO No:** 40249

Start Time: 07:00 **Device:** Miovision

Full Study 15 Minute U-Turn Total

Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	**0**
07:15	07:30	0	0	0	0	**0**
07:30	07:45	0	0	0	0	**0**
07:45	08:00	0	0	0	0	**0**
08:00	08:15	0	0	0	0	**0**
08:15	08:30	0	0	0	0	**0**
08:30	08:45	0	0	0	0	**0**
08:45	09:00	0	0	0	0	**0**
09:00	09:15	0	0	0	0	**0**
09:15	09:30	0	0	0	0	**0**
09:30	09:45	0	0	0	0	**0**
09:45	10:00	0	0	0	0	**0**
11:30	11:45	0	0	0	0	**0**
11:45	12:00	0	0	0	0	**0**
12:00	12:15	0	0	0	0	**0**
12:15	12:30	0	0	0	0	**0**
12:30	12:45	0	0	0	0	**0**
12:45	13:00	0	0	0	0	**0**
13:00	13:15	0	0	0	0	**0**
13:15	13:30	0	0	0	0	**0**
15:00	15:15	0	0	0	0	**0**
15:15	15:30	0	0	0	0	**0**
15:30	15:45	0	0	0	0	**0**
15:45	16:00	0	0	2	0	**2**
16:00	16:15	0	0	0	0	**0**
16:15	16:30	0	0	0	0	**0**
16:30	16:45	0	0	0	0	**0**
16:45	17:00	0	0	0	0	**0**
17:00	17:15	0	0	0	0	**0**
17:15	17:30	0	0	0	0	**0**
17:30	17:45	0	0	0	0	**0**
17:45	18:00	0	0	0	0	**0**
Total		0	0	2	0	**2**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Project #24-105 - CGH Transportation

Intersection Count Report

Intersection:	Borrisokane Rd & Barnsdale Rd
Municipality:	Ottawa
Count Date:	Wednesday, Mar 20, 2024
Site Code:	2410400005
Count Categories:	Cars, Trucks, Bicycles, Pedestrians
Count Period:	07:00-10:00, 11:30-13:30, 15:00-18:00
Weather:	Clear
Comments:	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Summary

Intersection:	Borrisokane Rd & Barnsdale Rd
Site Code:	2410400005
Municipality:	Ottawa
Count Date:	Mar 20, 2024

Borrisokane Rd - Traffic Summary

	North Approach Totals						South Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
Hour	**Left**	**Thru**	**Right**	**U-Turn**	**Total**	**Peds**	**Left**	**Thru**	**Right**	**U-Turn**	**Total**	**Peds**	**Total**
07:00 - 08:00	58	0	55	0	113	0	0	0	0	0	0	0	113
08:00 - 09:00	67	0	54	0	121	0	0	0	0	0	0	0	121
09:00 - 10:00	52	0	34	0	86	0	0	0	0	0	0	0	86
BREAK													
11:30 - 12:00	31	0	23	1	55	0	0	0	0	0	0	0	55
12:00 - 13:00	54	0	44	0	98	0	0	0	0	0	0	0	98
13:00 - 13:30	50	0	27	1	78	0	0	0	0	0	0	0	78
BREAK													
15:00 - 16:00	104	0	76	0	180	0	0	0	0	0	0	0	180
16:00 - 17:00	110	0	93	0	203	0	0	0	0	0	0	0	203
17:00 - 18:00	93	0	51	0	144	0	0	0	0	0	0	0	144
GRAND TOTAL	**619**	**0**	**457**	**2**	**1078**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1078**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Summary

Intersection: Borrisokane Rd & Barnsdale Rd
Site Code: 2410400005
Municipality: Ottawa
Count Date: Mar 20, 2024

Barnsdale Rd - Traffic Summary

Hour	East Approach Totals (Includes Cars, Trucks, Bicycles)						West Approach Totals (Includes Cars, Trucks, Bicycles)						Total
	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	
07:00 - 08:00	0	146	70	0	216	0	49	181	0	0	230	0	446
08:00 - 09:00	0	150	98	0	248	0	77	150	0	0	227	0	475
09:00 - 10:00	0	115	62	0	177	0	35	80	0	0	115	0	292
BREAK													
11:30 - 12:00	0	33	32	0	65	0	16	31	0	0	47	0	112
12:00 - 13:00	0	71	64	0	135	0	40	63	0	0	103	0	238
13:00 - 13:30	0	33	14	0	47	0	16	43	0	0	59	0	106
BREAK													
15:00 - 16:00	0	171	84	0	255	0	68	171	0	0	239	0	494
16:00 - 17:00	0	216	104	0	320	0	55	194	0	0	249	0	569
17:00 - 18:00	0	155	110	0	265	0	48	157	0	0	205	0	470
GRAND TOTAL	**0**	**1090**	**638**	**0**	**1728**	**0**	**404**	**1070**	**0**	**0**	**1474**	**0**	**3202**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Borrisokane Rd & Barnsdale Rd
Site Code: 2410400005
Municipality: Ottawa
Count Date: Mar 20, 2024

North Approach - Borrisokane Rd

Start Time	Cars				Total	Trucks				Total	Bicycles				Total	Total Peds
	↰	↑	↱	↩		↰	↑	↱	↩		↰	↑	↱	↩		
07:00	10	0	9	0	19	0	0	1	0	1	0	0	0	0	0	0
07:15	15	0	14	0	29	1	0	0	0	1	0	0	0	0	0	0
07:30	16	0	20	0	36	1	0	1	0	2	0	0	0	0	0	0
07:45	15	0	9	0	24	0	0	1	0	1	0	0	0	0	0	0
08:00	7	0	14	0	21	0	0	1	0	1	0	0	0	0	0	0
08:15	17	0	12	0	29	1	0	0	0	1	0	0	0	0	0	0
08:30	26	0	13	0	39	0	0	0	0	0	0	0	0	0	0	0
08:45	14	0	13	0	27	2	0	1	0	3	0	0	0	0	0	0
09:00	15	0	13	0	28	1	0	0	0	1	0	0	0	0	0	0
09:15	15	0	10	0	25	0	0	0	0	0	0	0	0	0	0	0
09:30	8	0	3	0	11	0	0	0	0	0	0	0	0	0	0	0
09:45	13	0	8	0	21	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	171	0	138	0	309	6	0	5	0	11	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Borrisokane Rd & Barnsdale Rd
Site Code: 2410400005
Municipality: Ottawa
Count Date: Mar 20, 2024

North Approach - Borrisokane Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	
11:30	20	0	13	0	33	0	0	1	1	2	0	0	0	0	0	0
11:45	9	0	9	0	18	2	0	0	0	2	0	0	0	0	0	0
12:00	12	0	11	0	23	0	0	0	0	0	0	0	0	0	0	0
12:15	11	0	7	0	18	1	0	2	0	3	0	0	0	0	0	0
12:30	14	0	6	0	20	0	0	1	0	1	0	0	0	0	0	0
12:45	16	0	17	0	33	0	0	0	0	0	0	0	0	0	0	0
13:00	24	0	15	1	40	1	0	0	0	1	0	0	0	0	0	0
13:15	24	0	12	0	36	1	0	0	0	1	0	0	0	0	0	0
SUBTOTAL	130	0	90	1	221	5	0	4	1	10	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Borrisokane Rd & Barnsdale Rd
Site Code: 2410400005
Municipality: Ottawa
Count Date: Mar 20, 2024

North Approach - Borrisokane Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	
15:00	17	0	11	0	28	0	0	0	0	0	0	0	0	0	0	0
15:15	24	0	17	0	41	2	0	0	0	2	0	0	0	0	0	0
15:30	26	0	21	0	47	2	0	0	0	2	0	0	0	0	0	0
15:45	32	0	26	0	58	1	0	1	0	2	0	0	0	0	0	0
16:00	28	0	16	0	44	1	0	2	0	3	0	0	0	0	0	0
16:15	29	0	25	0	54	0	0	0	0	0	0	0	0	0	0	0
16:30	29	0	30	0	59	2	0	3	0	5	0	0	0	0	0	0
16:45	21	0	17	0	38	0	0	0	0	0	0	0	0	0	0	0
17:00	25	0	22	0	47	0	0	0	0	0	0	0	0	0	0	0
17:15	26	0	12	0	38	0	0	0	0	0	0	0	0	0	0	0
17:30	27	0	7	0	34	0	0	0	0	0	0	0	0	0	0	0
17:45	15	0	10	0	25	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	299	0	214	0	513	8	0	6	0	14	0	0	0	0	0	0
GRAND TOTAL	**600**	**0**	**442**	**1**	**1043**	**19**	**0**	**15**	**1**	**35**	**0**	**0**	**0**	**0**	**0**	**0**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Borrisokane Rd & Barnsdale Rd
Site Code: 2410400005
Municipality: Ottawa
Count Date: Mar 20, 2024

East Approach - Barnsdale Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
07:00	0	41	11	0	52	0	0	1	0	1	0	0	0	0	0	0
07:15	0	38	14	0	52	0	1	0	0	1	0	0	0	0	0	0
07:30	0	35	20	0	55	0	2	1	0	3	0	0	0	0	0	0
07:45	0	28	22	0	50	0	1	1	0	2	0	0	0	0	0	0
08:00	0	34	17	0	51	0	1	0	0	1	0	0	0	0	0	0
08:15	0	39	32	0	71	0	2	1	0	3	0	0	0	0	0	0
08:30	0	37	26	0	63	0	0	0	0	0	0	0	0	0	0	0
08:45	0	33	22	0	55	0	4	0	0	4	0	0	0	0	0	0
09:00	0	29	22	0	51	0	6	0	0	6	0	0	0	0	0	0
09:15	0	25	21	0	46	0	4	1	0	5	0	0	0	0	0	0
09:30	0	23	8	0	31	0	2	1	0	3	0	0	0	0	0	0
09:45	0	24	9	0	33	0	2	0	0	2	0	0	0	0	0	0
SUBTOTAL	0	386	224	0	610	0	25	6	0	31	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Borrisokane Rd & Barnsdale Rd
Site Code: 2410400005
Municipality: Ottawa
Count Date: Mar 20, 2024

East Approach - Barnsdale Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
11:30	0	20	11	0	31	0	0	2	0	2	0	0	0	0	0	0
11:45	0	13	19	0	32	0	0	0	0	0	0	0	0	0	0	0
12:00	0	20	18	0	38	0	4	1	0	5	0	0	0	0	0	0
12:15	0	11	16	0	27	0	1	0	0	1	0	0	0	0	0	0
12:30	0	18	13	0	31	0	2	2	0	4	0	0	0	0	0	0
12:45	0	14	14	0	28	0	1	0	0	1	0	0	0	0	0	0
13:00	0	17	5	0	22	0	0	0	0	0	0	0	0	0	0	0
13:15	0	14	9	0	23	0	2	0	0	2	0	0	0	0	0	0
SUBTOTAL	0	127	105	0	232	0	10	5	0	15	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Borrisokane Rd & Barnsdale Rd
Site Code: 2410400005
Municipality: Ottawa
Count Date: Mar 20, 2024

East Approach - Barnsdale Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
15:00	0	32	19	0	51	0	2	1	0	3	0	0	0	0	0	0
15:15	0	31	17	0	48	0	3	1	0	4	0	0	0	0	0	0
15:30	0	44	18	0	62	0	4	1	0	5	0	0	0	0	0	0
15:45	0	52	27	0	79	0	3	0	0	3	0	0	0	0	0	0
16:00	0	56	23	0	79	0	4	0	0	4	0	0	0	0	0	0
16:15	0	46	27	0	73	0	3	0	0	3	0	0	0	0	0	0
16:30	0	45	30	0	75	0	0	0	0	0	0	0	0	0	0	0
16:45	0	60	24	0	84	0	2	0	0	2	0	0	0	0	0	0
17:00	0	42	22	0	64	0	0	0	0	0	0	0	0	0	0	0
17:15	0	43	27	0	70	0	1	0	0	1	0	0	0	0	0	0
17:30	0	37	36	0	73	0	0	0	0	0	0	0	0	0	0	0
17:45	0	32	25	0	57	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	520	295	0	815	0	22	3	0	25	0	0	0	0	0	0
GRAND TOTAL	0	1033	624	0	1657	0	57	14	0	71	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Borrisokane Rd & Barnsdale Rd
Site Code: 2410400005
Municipality: Ottawa
Count Date: Mar 20, 2024

West Approach - Barnsdale Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
07:00	6	35	0	0	41	0	7	0	0	7	0	0	0	0	0	0
07:15	13	56	0	0	69	0	7	0	0	7	0	0	0	0	0	0
07:30	8	34	0	0	42	0	2	0	0	2	0	0	0	0	0	0
07:45	20	38	0	0	58	2	2	0	0	4	0	0	0	0	0	0
08:00	28	45	0	0	73	0	1	0	0	1	0	0	0	0	0	0
08:15	21	42	0	0	63	0	1	0	0	1	0	0	0	0	0	0
08:30	19	31	0	0	50	0	1	0	0	1	0	0	0	0	0	0
08:45	8	28	0	0	36	1	1	0	0	2	0	0	0	0	0	0
09:00	8	18	0	0	26	1	3	0	0	4	0	0	0	0	0	0
09:15	13	24	0	0	37	0	1	0	0	1	0	0	0	0	0	0
09:30	5	19	0	0	24	0	1	0	0	1	0	0	0	0	0	0
09:45	8	12	0	0	20	0	2	0	0	2	0	0	0	0	0	0
SUBTOTAL	157	382	0	0	539	4	29	0	0	33	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Borrisokane Rd & Barnsdale Rd
Site Code: 2410400005
Municipality: Ottawa
Count Date: Mar 20, 2024

West Approach - Barnsdale Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
11:30	5	12	0	0	17	1	0	0	0	1	0	0	0	0	0	0
11:45	10	19	0	0	29	0	0	0	0	0	0	0	0	0	0	0
12:00	6	6	0	0	12	1	1	0	0	2	0	0	0	0	0	0
12:15	8	19	0	0	27	0	1	0	0	1	0	0	0	0	0	0
12:30	14	16	0	0	30	1	0	0	0	1	0	0	0	0	0	0
12:45	10	19	0	0	29	0	1	0	0	1	0	0	0	0	0	0
13:00	9	19	0	0	28	0	1	0	0	1	0	0	0	0	0	0
13:15	7	23	0	0	30	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	69	133	0	0	202	3	4	0	0	7	0	0	0	0	0	0

Ontario Traffic Inc.
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Traffic Count Data

Intersection: Borrisokane Rd & Barnsdale Rd
Site Code: 2410400005
Municipality: Ottawa
Count Date: Mar 20, 2024

West Approach - Barnsdale Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
15:00	14	34	0	0	48	0	2	0	0	2	0	0	0	0	0	0
15:15	16	51	0	0	67	0	2	0	0	2	0	0	0	0	0	0
15:30	14	36	0	0	50	0	0	0	0	0	0	0	0	0	0	0
15:45	24	42	0	0	66	0	4	0	0	4	0	0	0	0	0	0
16:00	11	30	0	0	41	0	0	0	0	0	0	0	0	0	0	0
16:15	14	56	0	0	70	0	6	0	0	6	0	0	0	0	0	0
16:30	15	49	0	0	64	0	0	0	0	0	0	0	0	0	0	0
16:45	15	51	0	0	66	0	2	0	0	2	0	0	0	0	0	0
17:00	13	30	0	0	43	0	1	0	0	1	0	0	0	0	0	0
17:15	9	54	0	0	63	0	0	0	0	0	0	0	0	0	0	0
17:30	11	45	0	0	56	0	0	0	0	0	0	0	0	0	0	0
17:45	15	27	0	0	42	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	171	505	0	0	676	0	17	0	0	17	0	0	0	0	0	0
GRAND TOTAL	397	1020	0	0	1417	7	50	0	0	57	0	0	0	0	0	0

Peak Hour Diagram

Specified Period
From: 07:00:00
To: 10:00:00

One Hour Peak
From: 07:45:00
To: 08:45:00

Intersection: Borrisokane Rd & Barnsdale Rd
Site Code: 2410400005
Count Date: Mar 20, 2024

Weather conditions: Clear

**** Unsignalized Intersection ****

Major Road: Barnsdale Rd runs E/W

North Approach

	Out	In	Total
Cars	113	185	298
Trucks	3	4	7
Bicycles	0	0	0
	116	**189**	**305**

Borrisokane Rd

Bicycles	0	0	0
Trucks	2	1	0
Cars	48	65	0
Totals	**50**	**66**	**0**

Peds: 0

East Approach

	Out	In	Total
Cars	235	221	456
Trucks	6	6	12
Bicycles	0	0	0
	241	**227**	**468**

Barnsdale Rd

Bicycles	Trucks	Cars	Totals
0	0	0	**0**
0	2	88	**90**
0	5	156	**161**

Peds: 0



Peds: 0

Peds: 0

Barnsdale Rd

Totals	Cars	Trucks	Bicycles
0	0	0	0
99	97	2	0
142	138	4	0

West Approach

	Out	In	Total
Cars	244	186	430
Trucks	7	6	13
Bicycles	0	0	0
	251	**192**	**443**

- Cars - Trucks - Bicycles

Comments

Peak Hour Summary

Intersection: Borrisokane Rd & Barnsdale Rd
Site Code: 2410400005
Count Date: Mar 20, 2024
Period: 07:00 - 10:00

Peak Hour Data (07:45 - 08:45)

Start Time	North Approach Borrisokane Rd				Peds	Total	South Approach				Peds	Total	East Approach Barnsdale Rd				Peds	Total	West Approach Barnsdale Rd				Peds	Total	Total Vehicles
07:45	15		10	0	0	25					0		29	23	0	0	52		22	40		0	0	62	139
08:00	7		15	0	0	22					0		35	17	0	0	52		28	46		0	0	74	148
08:15	18		12	0	0	30					0		41	33	0	0	74		21	43		0	0	64	168
08:30	26		13	0	0	39					0		37	26	0	0	63		19	32		0	0	51	153
Grand Total	**66**		**50**	**0**	**0**	**116**					**0**	**0**	**142**	**99**	**0**	**0**	**241**		**90**	**161**		**0**	**0**	**251**	**608**
Approach %	56.9		43.1	0		-						-	58.9	41.1	0		-		35.9	64.1	0			-	
Totals %	10.9		8.2	0		19.1						0	23.4	16.3	0		39.6		14.8	26.5	0			41.3	
PHF	**0.63**		**0.83**	**0**		**0.74**						**0**	**0.87**	**0.75**	**0**		**0.81**		**0.8**	**0.88**	**0**			**0.85**	**0.9**
Cars	65		48	0		113						0	138	97	0		235		88	156	0			244	592
% Cars	98.5		96	0		97.4						0	97.2	98	0		97.5		97.8	96.9	0			97.2	97.4
Trucks	1		2	0		3						0	4	2	0		6		2	5	0			7	16
% Trucks	1.5		4	0		2.6						0	2.8	2	0		2.5		2.2	3.1	0			2.8	2.6
Bicycles	0		0	0		0						0	0	0	0		0		0	0	0			0	0
% Bicycles	0		0	0		0						0	0	0	0		0		0	0	0			0	0
Peds					0	-					0	-				0	-						0	-	0
% Peds					0	-					0	-				0	-						0	-	

Peak Hour Diagram

Specified Period
From: 11:30:00
To: 13:30:00

One Hour Peak
From: 12:30:00
To: 13:30:00

Intersection: Borrisokane Rd & Barnsdale Rd
Site Code: 2410400005
Count Date: Mar 20, 2024

Weather conditions: Clear

**** Unsignalized Intersection ****

Major Road: Barnsdale Rd runs E/W

North Approach

	Out	In	Total
Cars	129	82	211
Trucks	3	3	6
Bicycles	0	0	0
	132	**85**	**217**

Borrisokane Rd

Bicycles	0	0	0
Trucks	1	2	0
Cars	50	78	1
Totals	**51**	**80**	**1**

Peds: 0

East Approach

	Out	In	Total
Cars	104	155	259
Trucks	7	4	11
Bicycles	0	0	0
	111	**159**	**270**

Barnsdale Rd

Bicycles	Trucks	Cars	Totals
0	0	0	**0**
0	1	40	**41**
0	2	77	**79**

Peds: 0

Peds: 0

Barnsdale Rd

	Totals	Cars	Trucks	Bicycles
	0	0	0	0
	43	41	2	0
	68	63	5	0

Peds: 0

West Approach

	Out	In	Total
Cars	117	113	230
Trucks	3	6	9
Bicycles	0	0	0
	120	**119**	**239**

- Cars - Trucks - Bicycles

Comments

Peak Hour Summary

Intersection: Borrisokane Rd & Barnsdale Rd
Site Code: 2410400005
Count Date: Mar 20, 2024
Period: 11:30 - 13:30

Peak Hour Data (12:30 - 13:30)

Start Time	North Approach Borrisokane Rd						South Approach						East Approach Barnsdale Rd						West Approach Barnsdale Rd						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
12:30	14		7	0	0	21					0		20	15	0	0	35	15	16		0	0	31	87
12:45	16		17	0	0	33					0		15	14	0	0	29	10	20		0	0	30	92
13:00	25		15	1	0	41					0		17	5	0	0	22	9	20		0	0	29	92
13:15	25		12	0	0	37					0		16	9	0	0	25	7	23		0	0	30	92
Grand Total	**80**		**51**	**1**	**0**	**132**					**0**	**0**	**68**	**43**	**0**	**0**	**111**	**41**	**79**		**0**	**0**	**120**	**363**
Approach %	60.6		38.6	0.8		-					-		61.3	38.7	0		-	34.2	65.8	0			-	
Totals %	22		14	0.3		36.4					0		18.7	11.8	0		30.6	11.3	21.8	0			33.1	
PHF	**0.8**		**0.75**	**0.25**		**0.8**					**0**		**0.85**	**0.72**	**0**		**0.79**	**0.68**	**0.86**	**0**			**0.97**	**0.99**
Cars	78		50	1		129					0		63	41	0		104	40	77	0			117	350
% Cars	97.5		98	100		97.7					0		92.6	95.3	0		93.7	97.6	97.5	0			97.5	96.4
Trucks	2		1	0		3					0		5	2	0		7	1	2	0			3	13
% Trucks	2.5		2	0		2.3					0		7.4	4.7	0		6.3	2.4	2.5	0			2.5	3.6
Bicycles	0		0	0		0					0		0	0	0		0	0	0	0			0	0
% Bicycles	0		0	0		0					0		0	0	0		0	0	0	0			0	0
Peds					0	-					0	-				0	-					0	-	0
% Peds					0	-					0	-				0	-					0	-	

Peak Hour Diagram

Specified Period
From: 15:00:00
To: 18:00:00

One Hour Peak
From: 15:45:00
To: 16:45:00

Intersection: Borrisokane Rd & Barnsdale Rd
Site Code: 2410400005
Count Date: Mar 20, 2024

Weather conditions: Clear

**** Unsignalized Intersection ****

Major Road: Barnsdale Rd runs E/W

North Approach

	Out	In	Total
Cars	215	171	386
Trucks	10	0	10
Bicycles	0	0	0
	225	171	396

Borrisokane Rd

Bicycles	0	0	0
Trucks	6	4	0
Cars	97	118	0
Totals	103	122	0

Peds: 0

East Approach

	Out	In	Total
Cars	306	295	601
Trucks	10	14	24
Bicycles	0	0	0
	316	309	625

Barnsdale Rd

Bicycles	Trucks	Cars	Totals
0	0	0	0
0	0	64	64
0	10	177	187

Peds: 0

Barnsdale Rd

	Bicycles	Trucks	Cars
Totals	0	0	0
0	107	107	0
0	209	199	10

Peds: 0

West Approach

	Out	In	Total
Cars	241	296	537
Trucks	10	16	26
Bicycles	0	0	0
	251	312	563

- Cars - Trucks - Bicycles

Comments

Peak Hour Summary

Intersection: Borrisokane Rd & Barnsdale Rd
Site Code: 2410400005
Count Date: Mar 20, 2024
Period: 15:00 - 18:00

Peak Hour Data (15:45 - 16:45)

Start Time	North Approach Borrisokane Rd						South Approach						East Approach Barnsdale Rd						West Approach Barnsdale Rd						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
15:45	33		27	0	0	60					0		55	27	0	0	82	24	46		0	0	70	212
16:00	29		18	0	0	47					0		60	23	0	0	83	11	30		0	0	41	171
16:15	29		25	0	0	54					0		49	27	0	0	76	14	62		0	0	76	206
16:30	31		33	0	0	64					0		45	30	0	0	75	15	49		0	0	64	203
Grand Total	**122**		**103**	**0**	**0**	**225**					**0**	**0**	**209**	**107**	**0**	**0**	**316**	**64**	**187**		**0**	**0**	**251**	**792**
Approach %	54.2		45.8	0		-						-	66.1	33.9	0		-	25.5	74.5	0			-	
Totals %	15.4		13	0		28.4						0	26.4	13.5	0		39.9	8.1	23.6	0			31.7	
PHF	**0.92**		**0.78**	**0**		**0.88**						**0**	**0.87**	**0.89**	**0**		**0.95**	**0.67**	**0.75**	**0**			**0.83**	**0.93**
Cars	118		97	0		215						0	199	107	0		306	64	177	0			241	762
% Cars	96.7		94.2	0		95.6						0	95.2	100	0		96.8	100	94.7	0			96	96.2
Trucks	4		6	0		10						0	10	0	0		10	0	10	0			10	30
% Trucks	3.3		5.8	0		4.4						0	4.8	0	0		3.2	0	5.3	0			4	3.8
Bicycles	0		0	0		0						0	0	0	0		0	0	0	0			0	0
% Bicycles	0		0	0		0						0	0	0	0		0	0	0	0			0	0
Peds					0	-					0	-				0	-					0	-	0
% Peds					0	-					0	-				0	-					0	-	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Project #24-105 - CGH Transportation

Intersection Count Report

Intersection:	Greenbank Rd & Barnsdale Rd
Municipality:	Ottawa
Count Date:	Wednesday, Mar 20, 2024
Site Code:	2410400004
Count Categories:	Cars, Trucks, Bicycles, Pedestrians
Count Period:	07:00-10:00, 11:30-13:30, 15:00-18:00
Weather:	Clear
Comments:	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Summary

Intersection:	Greenbank Rd & Barnsdale Rd
Site Code:	2410400004
Municipality:	Ottawa
Count Date:	Mar 20, 2024

Greenbank Rd - Traffic Summary

	North Approach Totals						South Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
Hour	**Left**	**Thru**	**Right**	**U-Turn**	**Total**	**Peds**	**Left**	**Thru**	**Right**	**U-Turn**	**Total**	**Peds**	**Total**
07:00 - 08:00	334	116	42	0	492	0	11	49	2	0	62	0	554
08:00 - 09:00	257	98	50	0	405	1	13	74	3	0	90	0	495
09:00 - 10:00	198	77	38	0	313	0	12	55	3	0	70	0	383
BREAK													
11:30 - 12:00	54	35	9	0	98	0	4	29	1	0	34	0	132
12:00 - 13:00	91	62	15	0	168	0	4	68	1	0	73	0	241
13:00 - 13:30	55	35	7	0	97	1	3	17	1	0	21	0	118
BREAK													
15:00 - 16:00	96	129	44	0	269	1	14	89	3	0	106	1	375
16:00 - 17:00	169	150	69	1	389	0	10	106	3	0	119	0	508
17:00 - 18:00	150	83	51	0	284	0	7	107	2	0	116	0	400
GRAND TOTAL	**1404**	**785**	**325**	**1**	**2515**	**3**	**78**	**594**	**19**	**0**	**691**	**1**	**3206**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Summary

Intersection: Greenbank Rd & Barnsdale Rd
Site Code: 2410400004
Municipality: Ottawa
Count Date: Mar 20, 2024

Barnsdale Rd - Traffic Summary

	East Approach Totals						West Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
Hour	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	Total
07:00 - 08:00	2	119	59	0	180	0	38	163	7	0	208	0	388
08:00 - 09:00	3	139	135	0	277	1	37	145	10	0	192	0	469
09:00 - 10:00	3	98	76	0	177	0	20	92	8	0	120	0	297
BREAK													
11:30 - 12:00	3	38	35	0	76	0	12	41	3	0	56	0	132
12:00 - 13:00	3	96	98	0	197	1	32	69	9	0	110	0	307
13:00 - 13:30	0	43	31	0	74	1	17	50	8	0	75	0	149
BREAK													
15:00 - 16:00	2	157	191	0	350	1	45	173	15	0	233	0	583
16:00 - 17:00	0	191	270	0	461	0	59	185	21	0	265	0	726
17:00 - 18:00	6	179	259	0	444	0	68	127	9	0	204	0	648
GRAND TOTAL	**22**	**1060**	**1154**	**0**	**2236**	**4**	**328**	**1045**	**90**	**0**	**1463**	**0**	**3699**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Greenbank Rd & Barnsdale Rd
Site Code: 2410400004
Municipality: Ottawa
Count Date: Mar 20, 2024

North Approach - Greenbank Rd

	Cars					Trucks					Bicycles					
Start Time	↰	↑	↱	↩	Total	↰	↑	↱	↩	Total	↰	↑	↱	↩	Total	Total Peds
07:00	71	25	10	0	106	0	0	0	0	0	0	0	0	0	0	0
07:15	80	28	15	0	123	0	0	1	0	1	0	0	0	0	0	0
07:30	94	25	7	0	126	0	1	0	0	1	0	0	0	0	0	0
07:45	88	35	9	0	132	1	2	0	0	3	0	0	0	0	0	0
08:00	66	20	11	0	97	0	0	0	0	0	0	0	0	0	0	0
08:15	61	28	13	0	102	0	2	0	0	2	0	0	0	0	0	0
08:30	69	26	11	0	106	0	0	0	0	0	0	0	0	0	0	0
08:45	60	22	15	0	97	1	0	0	0	1	0	0	0	0	0	1
09:00	71	27	11	0	109	5	1	2	0	8	0	0	0	0	0	0
09:15	57	20	11	0	88	2	0	2	0	4	0	0	0	0	0	0
09:30	39	14	5	0	58	1	0	1	0	2	0	0	0	0	0	0
09:45	22	15	6	0	43	1	0	0	0	1	0	0	0	0	0	0
SUBTOTAL	778	285	124	0	1187	11	6	6	0	23	0	0	0	0	0	1

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Greenbank Rd & Barnsdale Rd
Site Code: 2410400004
Municipality: Ottawa
Count Date: Mar 20, 2024

North Approach - Greenbank Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
11:30	24	20	3	0	47	1	0	0	0	1	0	0	0	0	0	0
11:45	29	14	6	0	49	0	1	0	0	1	0	0	0	0	0	0
12:00	29	19	3	0	51	0	0	0	0	0	0	0	0	0	0	0
12:15	29	11	3	0	43	0	0	1	0	1	0	0	0	0	0	0
12:30	21	15	4	0	40	1	0	0	0	1	0	0	0	0	0	0
12:45	10	17	3	0	30	1	0	1	0	2	0	0	0	0	0	0
13:00	31	19	0	0	50	0	0	0	0	0	0	0	0	0	0	1
13:15	24	15	7	0	46	0	1	0	0	1	0	0	0	0	0	0
SUBTOTAL	197	130	29	0	356	3	2	2	0	7	0	0	0	0	0	1

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Greenbank Rd & Barnsdale Rd
Site Code: 2410400004
Municipality: Ottawa
Count Date: Mar 20, 2024

North Approach - Greenbank Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
15:00	31	14	9	0	54	0	0	0	0	0	0	0	0	0	0	0
15:15	24	25	9	0	58	0	0	0	0	0	0	0	0	0	0	0
15:30	26	24	9	0	59	0	1	0	0	1	0	0	0	0	0	1
15:45	15	63	16	0	94	0	2	1	0	3	0	0	0	0	0	0
16:00	46	45	23	0	114	3	3	0	0	6	0	0	0	0	0	0
16:15	44	35	8	1	88	2	0	1	0	3	0	0	0	0	0	0
16:30	35	27	13	0	75	1	0	0	0	1	0	0	0	0	0	0
16:45	38	40	24	0	102	0	0	0	0	0	0	0	0	0	0	0
17:00	19	20	14	0	53	0	0	0	0	0	0	0	0	0	0	0
17:15	40	31	10	0	81	1	1	0	0	2	0	0	0	0	0	0
17:30	41	23	18	0	82	0	1	0	0	1	0	0	0	0	0	0
17:45	49	7	9	0	65	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	408	354	162	1	925	7	8	2	0	17	0	0	0	0	0	1
GRAND TOTAL	1383	769	315	1	2468	21	16	10	0	47	0	0	0	0	0	3

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Greenbank Rd & Barnsdale Rd
Site Code: 2410400004
Municipality: Ottawa
Count Date: Mar 20, 2024

South Approach - Greenbank Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
07:00	1	15	1	0	17	0	0	0	0	0	0	0	0	0	0	0
07:15	3	6	0	0	9	1	1	0	0	2	0	0	0	0	0	0
07:30	2	12	1	0	15	1	2	0	0	3	0	0	0	0	0	0
07:45	3	13	0	0	16	0	0	0	0	0	0	0	0	0	0	0
08:00	1	17	0	0	18	0	2	0	0	2	0	0	0	0	0	0
08:15	3	21	0	0	24	0	0	0	0	0	0	0	0	0	0	0
08:30	4	15	2	0	21	1	0	0	0	1	0	0	0	0	0	0
08:45	2	17	1	0	20	2	2	0	0	4	0	0	0	0	0	0
09:00	4	16	2	0	22	0	1	0	0	1	0	0	0	0	0	0
09:15	4	13	0	0	17	1	0	0	0	1	0	0	0	0	0	0
09:30	0	11	1	0	12	0	0	0	0	0	0	0	0	0	0	0
09:45	3	14	0	0	17	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	30	170	8	0	208	6	8	0	0	14	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Greenbank Rd & Barnsdale Rd
Site Code: 2410400004
Municipality: Ottawa
Count Date: Mar 20, 2024

South Approach - Greenbank Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
11:30	2	14	0	0	16	0	0	0	0	0	0	0	0	0	0	0
11:45	2	15	1	0	18	0	0	0	0	0	0	0	0	0	0	0
12:00	1	13	0	0	14	0	0	0	0	0	0	0	0	0	0	0
12:15	1	23	0	0	24	0	0	0	0	0	0	0	0	0	0	0
12:30	0	18	0	0	18	0	1	0	0	1	0	0	0	0	0	0
12:45	1	11	1	0	13	1	2	0	0	3	0	0	0	0	0	0
13:00	0	8	0	0	8	0	0	0	0	0	0	0	0	0	0	0
13:15	2	8	1	0	11	1	1	0	0	2	0	0	0	0	0	0
SUBTOTAL	9	110	3	0	122	2	4	0	0	6	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Greenbank Rd & Barnsdale Rd
Site Code: 2410400004
Municipality: Ottawa
Count Date: Mar 20, 2024

South Approach - Greenbank Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
15:00	4	29	2	0	35	0	0	0	0	0	0	0	0	0	0	0
15:15	4	12	0	0	16	1	0	0	0	1	0	0	0	0	0	0
15:30	3	26	0	0	29	1	2	0	0	3	0	0	0	0	0	1
15:45	1	20	1	0	22	0	0	0	0	0	0	0	0	0	0	0
16:00	2	31	1	0	34	0	0	0	0	0	0	0	0	0	0	0
16:15	2	20	0	0	22	0	0	0	0	0	0	0	0	0	0	0
16:30	4	18	2	0	24	0	0	0	0	0	0	0	0	0	0	0
16:45	2	37	0	0	39	0	0	0	0	0	0	0	0	0	0	0
17:00	3	33	1	0	37	0	0	0	0	0	0	0	0	0	0	0
17:15	2	14	0	0	16	0	0	0	0	0	0	0	0	0	0	0
17:30	2	23	1	0	26	0	0	0	0	0	0	0	0	0	0	0
17:45	0	37	0	0	37	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	29	300	8	0	337	2	2	0	0	4	0	0	0	0	0	1
GRAND TOTAL	68	580	19	0	667	10	14	0	0	24	0	0	0	0	0	1

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Greenbank Rd & Barnsdale Rd
Site Code: 2410400004
Municipality: Ottawa
Count Date: Mar 20, 2024

East Approach - Barnsdale Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
07:00	0	22	14	0	36	0	0	0	0	0	0	0	0	0	0	0
07:15	0	32	14	0	46	0	2	1	0	3	0	0	0	0	0	0
07:30	2	29	10	0	41	0	1	2	0	3	0	0	0	0	0	0
07:45	0	30	18	0	48	0	3	0	0	3	0	0	0	0	0	0
08:00	0	32	36	0	68	0	2	1	0	3	0	0	0	0	0	1
08:15	2	38	34	0	74	0	2	0	0	2	0	0	0	0	0	0
08:30	0	33	31	0	64	0	0	3	0	3	0	0	0	0	0	0
08:45	1	27	29	0	57	0	5	1	0	6	0	0	0	0	0	0
09:00	1	22	17	0	40	0	3	0	0	3	0	0	0	0	0	0
09:15	2	23	25	0	50	0	5	4	0	9	0	0	0	0	0	0
09:30	0	21	13	0	34	0	1	0	0	1	0	0	0	0	0	0
09:45	0	22	15	0	37	0	1	2	0	3	0	0	0	0	0	0
SUBTOTAL	8	331	256	0	595	0	25	14	0	39	0	0	0	0	0	1

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Greenbank Rd & Barnsdale Rd
Site Code: 2410400004
Municipality: Ottawa
Count Date: Mar 20, 2024

East Approach - Barnsdale Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
11:30	0	16	15	0	31	0	1	1	0	2	0	0	0	0	0	0
11:45	3	21	17	0	41	0	0	2	0	2	0	0	0	0	0	0
12:00	1	29	30	0	60	0	2	1	0	3	0	0	0	0	0	0
12:15	1	22	24	0	47	0	0	1	0	1	0	0	0	0	0	1
12:30	0	18	19	0	37	0	1	0	0	1	0	0	0	0	0	0
12:45	1	24	23	0	48	0	0	0	0	0	0	0	0	0	0	0
13:00	0	25	19	0	44	0	0	0	0	0	0	0	0	0	0	0
13:15	0	16	12	0	28	0	2	0	0	2	0	0	0	0	0	1
SUBTOTAL	6	171	159	0	336	0	6	5	0	11	0	0	0	0	0	2

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Greenbank Rd & Barnsdale Rd
Site Code: 2410400004
Municipality: Ottawa
Count Date: Mar 20, 2024

East Approach - Barnsdale Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
15:00	0	28	34	0	62	0	1	0	0	1	0	0	0	0	0	0
15:15	1	30	49	0	80	0	4	1	0	5	0	0	0	0	0	0
15:30	1	40	55	0	96	0	1	2	0	3	0	0	0	0	0	1
15:45	0	51	50	0	101	0	2	0	0	2	0	0	0	0	0	0
16:00	0	46	51	0	97	0	3	2	0	5	0	0	0	0	0	0
16:15	0	53	56	0	109	0	0	1	0	1	0	0	0	0	0	0
16:30	0	42	80	0	122	0	0	0	0	0	0	0	0	0	0	0
16:45	0	45	80	0	125	0	2	0	0	2	0	0	0	0	0	0
17:00	2	48	48	0	98	0	1	1	0	2	0	0	0	0	0	0
17:15	1	51	74	0	126	0	1	0	0	1	0	0	0	0	0	0
17:30	1	39	70	0	110	0	0	0	0	0	0	0	0	0	0	0
17:45	2	39	66	0	107	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	8	512	713	0	1233	0	15	7	0	22	0	0	0	0	0	1
GRAND TOTAL	22	1014	1128	0	2164	0	46	26	0	72	0	0	0	0	0	4

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Greenbank Rd & Barnsdale Rd
Site Code: 2410400004
Municipality: Ottawa
Count Date: Mar 20, 2024

West Approach - Barnsdale Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	
07:00	6	26	1	0	33	2	3	1	0	6	0	0	0	0	0	0
07:15	9	48	0	0	57	1	3	0	0	4	0	0	0	0	0	0
07:30	6	49	2	0	57	2	1	0	0	3	0	0	0	0	0	0
07:45	12	32	3	0	47	0	1	0	0	1	0	0	0	0	0	0
08:00	10	32	2	0	44	1	1	0	0	2	0	0	0	0	0	0
08:15	12	41	5	0	58	0	0	1	0	1	0	0	0	0	0	0
08:30	7	33	0	0	40	0	0	0	0	0	0	0	0	0	0	0
08:45	7	38	2	0	47	0	0	0	0	0	0	0	0	0	0	0
09:00	8	22	2	0	32	1	3	0	0	4	0	0	0	0	0	0
09:15	2	32	1	0	35	0	2	0	0	2	0	0	0	0	0	0
09:30	5	13	3	0	21	0	1	0	0	1	0	0	0	0	0	0
09:45	4	18	2	0	24	0	1	0	0	1	0	0	0	0	0	0
SUBTOTAL	88	384	23	0	495	7	16	2	0	25	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Greenbank Rd & Barnsdale Rd
Site Code: 2410400004
Municipality: Ottawa
Count Date: Mar 20, 2024

West Approach - Barnsdale Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	
11:30	7	22	1	0	30	0	0	0	0	0	0	0	0	0	0	0
11:45	5	19	1	0	25	0	0	1	0	1	0	0	0	0	0	0
12:00	8	14	1	0	23	0	1	0	0	1	0	0	0	0	0	0
12:15	7	15	2	0	24	0	1	0	0	1	0	0	0	0	0	0
12:30	4	17	1	0	22	0	0	0	0	0	0	0	0	0	0	0
12:45	13	20	5	0	38	0	1	0	0	1	0	0	0	0	0	0
13:00	8	23	4	0	35	0	2	0	0	2	0	0	0	0	0	0
13:15	9	24	4	0	37	0	1	0	0	1	0	0	0	0	0	0
SUBTOTAL	61	154	19	0	234	0	6	1	0	7	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Greenbank Rd & Barnsdale Rd
Site Code: 2410400004
Municipality: Ottawa
Count Date: Mar 20, 2024

West Approach - Barnsdale Rd

Start Time	Cars				Total	Trucks				Total	Bicycles				Total	Total Peds
15:00	10	43	0	0	53	0	5	1	0	6	0	0	0	0	0	0
15:15	12	40	3	0	55	0	4	0	0	4	0	0	0	0	0	0
15:30	10	34	5	0	49	0	1	0	0	1	0	0	0	0	0	0
15:45	11	42	5	0	58	2	4	1	0	7	0	0	0	0	0	0
16:00	14	41	3	0	58	0	1	1	0	2	0	0	0	0	0	0
16:15	16	51	5	0	72	0	4	0	0	4	0	0	0	0	0	0
16:30	20	44	7	0	71	0	2	1	0	3	0	0	0	0	0	0
16:45	9	39	4	0	52	0	3	0	0	3	0	0	0	0	0	0
17:00	14	30	3	0	47	1	0	0	0	1	0	0	0	0	0	0
17:15	19	46	3	0	68	0	1	0	0	1	0	0	0	0	0	0
17:30	25	31	1	0	57	0	0	0	0	0	0	0	0	0	0	0
17:45	9	19	2	0	30	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	169	460	41	0	670	3	25	4	0	32	0	0	0	0	0	0
GRAND TOTAL	318	998	83	0	1399	10	47	7	0	64	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Diagram

Specified Period
From: 07:00:00
To: 10:00:00

One Hour Peak
From: 07:30:00
To: 08:30:00

Intersection: Greenbank Rd & Barnsdale Rd
Site Code: 2410400004
Count Date: Mar 20, 2024

Weather conditions: Clear

**** Unsignalized Intersection ****

Major Road: Barnsdale Rd runs E/W

North Approach

	Out	In	Total
Cars	457	201	658
Trucks	6	10	16
Bicycles	0	0	0
	463	211	674

Greenbank Rd

Bicycles	0	0	0	0
Trucks	0	5	1	0
Cars	40	108	309	0
Totals	40	113	310	0

East Approach

	Out	In	Total
Cars	231	464	695
Trucks	11	4	15
Bicycles	0	0	0
	242	468	710

Peds: 0

Barnsdale Rd

			Totals
0	0	0	0
0	3	40	43
0	3	154	157
0	1	12	13

Peds: 0

Peds: 1

Barnsdale Rd

Totals			
0	0	0	0
101	98	3	0
137	129	8	0
4	4	0	0

Peds: 0

West Approach

	Out	In	Total
Cars	206	178	384
Trucks	7	9	16
Bicycles	0	0	0
	213	187	400

Greenbank Rd

Totals	10	67	1	0
Cars	9	63	1	0
Trucks	1	4	0	0
Bicycles	0	0	0	0

South Approach

	Out	In	Total
Cars	73	124	197
Trucks	5	6	11
Bicycles	0	0	0
	78	130	208

- Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Greenbank Rd & Barnsdale Rd
Site Code: 2410400004
Count Date: Mar 20, 2024
Period: 07:00 - 10:00

Peak Hour Data (07:30 - 08:30)

Start Time	North Approach Greenbank Rd						South Approach Greenbank Rd						East Approach Barnsdale Rd						West Approach Barnsdale Rd						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
07:30	94	26	7	0	0	127	3	14	1	0	0	18	2	30	12	0	0	44	8	50	2	0	0	60	249
07:45	89	37	9	0	0	135	3	13	0	0	0	16	0	33	18	0	0	51	12	33	3	0	0	48	250
08:00	66	20	11	0	0	97	1	19	0	0	0	20	0	34	37	0	1	71	11	33	2	0	0	46	234
08:15	61	30	13	0	0	104	3	21	0	0	0	24	2	40	34	0	0	76	12	41	6	0	0	59	263
Grand Total	**310**	**113**	**40**	**0**	**0**	**463**	**10**	**67**	**1**	**0**	**0**	**78**	**4**	**137**	**101**	**0**	**1**	**242**	**43**	**157**	**13**	**0**	**0**	**213**	**996**
Approach %	67	24.4	8.6	0		-	12.8	85.9	1.3	0		-	1.7	56.6	41.7	0		-	20.2	73.7	6.1	0		-	
Totals %	31.1	11.3	4	0		46.5	1	6.7	0.1	0		7.8	0.4	13.8	10.1	0		24.3	4.3	15.8	1.3	0		21.4	
PHF	**0.82**	**0.76**	**0.77**	**0**		**0.86**	**0.83**	**0.8**	**0.25**	**0**		**0.81**	**0.5**	**0.86**	**0.68**	**0**		**0.8**	**0.9**	**0.79**	**0.54**	**0**		**0.89**	**0.95**
Cars	309	108	40	0		457	9	63	1	0		73	4	129	98	0		231	40	154	12	0		206	967
% Cars	99.7	95.6	100	0		98.7	90	94	100	0		93.6	100	94.2	97	0		95.5	93	98.1	92.3	0		96.7	97.1
Trucks	1	5	0	0		6	1	4	0	0		5	0	8	3	0		11	3	3	1	0		7	29
% Trucks	0.3	4.4	0	0		1.3	10	6	0	0		6.4	0	5.8	3	0		4.5	7	1.9	7.7	0		3.3	2.9
Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
% Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Peds					0	-					0	-					1	-					0	-	1
% Peds					0	-					0	-					100	-					0	-	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Diagram

Specified Period
From: 11:30:00
To: 13:30:00

One Hour Peak
From: 11:30:00
To: 12:30:00

Intersection: Greenbank Rd & Barnsdale Rd
Site Code: 2410400004
Count Date: Mar 20, 2024

Weather conditions: Clear

**** Unsignalized Intersection ****

Major Road: Barnsdale Rd runs E/W

North Approach

	Out	In	Total
Cars	190	178	368
Trucks	3	5	8
Bicycles	0	0	0
	193	183	376

Greenbank Rd

Bicycles	0	0	0	0
Trucks	1	1	1	0
Cars	15	64	111	0
Totals	16	65	112	0

East Approach

	Out	In	Total
Cars	179	182	361
Trucks	8	3	11
Bicycles	0	0	0
	187	185	372

Barnsdale Rd

			Totals	
0	0	0	0	↶
0	0	27	27	↑
0	2	70	72	→
0	1	5	6	↓

Peds: 0

Peds: 0



Peds: 1

Peds: 0

Barnsdale Rd

Totals			
0	0	0	0
91	86	5	0
91	88	3	0
5	5	0	0

West Approach

	Out	In	Total
Cars	102	109	211
Trucks	3	4	7
Bicycles	0	0	0
	105	113	218

Greenbank Rd

Totals	6	65	1	0
Cars	6	65	1	0
Trucks	0	0	0	0
Bicycles	0	0	0	0

South Approach

	Out	In	Total
Cars	72	74	146
Trucks	0	2	2
Bicycles	0	0	0
	72	76	148

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Greenbank Rd & Barnsdale Rd
Site Code: 2410400004
Count Date: Mar 20, 2024
Period: 11:30 - 13:30

Peak Hour Data (11:30 - 12:30)

Start Time	North Approach Greenbank Rd						South Approach Greenbank Rd						East Approach Barnsdale Rd						West Approach Barnsdale Rd						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
11:30	25	20	3	0	0	48	2	14	0	0	0	16	0	17	16	0	0	33	7	22	1	0	0	30	127
11:45	29	15	6	0	0	50	2	15	1	0	0	18	3	21	19	0	0	43	5	19	2	0	0	26	137
12:00	29	19	3	0	0	51	1	13	0	0	0	14	1	31	31	0	0	63	8	15	1	0	0	24	152
12:15	29	11	4	0	0	44	1	23	0	0	0	24	1	22	25	0	1	48	7	16	2	0	0	25	141
Grand Total	**112**	**65**	**16**	**0**	**0**	**193**	**6**	**65**	**1**	**0**	**0**	**72**	**5**	**91**	**91**	**0**	**1**	**187**	**27**	**72**	**6**	**0**	**0**	**105**	**557**
Approach %	58	33.7	8.3	0		-	8.3	90.3	1.4	0		-	2.7	48.7	48.7	0		-	25.7	68.6	5.7	0		-	
Totals %	20.1	11.7	2.9	0		34.6	1.1	11.7	0.2	0		12.9	0.9	16.3	16.3	0		33.6	4.8	12.9	1.1	0		18.9	
PHF	**0.97**	**0.81**	**0.67**	**0**		**0.95**	**0.75**	**0.71**	**0.25**	**0**		**0.75**	**0.42**	**0.73**	**0.73**	**0**		**0.74**	**0.84**	**0.82**	**0.75**	**0**		**0.88**	**0.92**
Cars	111	64	15	0		190	6	65	1	0		72	5	88	86	0		179	27	70	5	0		102	543
% Cars	99.1	98.5	93.8	0		98.4	100	100	100	0		100	100	96.7	94.5	0		95.7	100	97.2	83.3	0		97.1	97.5
Trucks	1	1	1	0		3	0	0	0	0		0	0	3	5	0		8	0	2	1	0		3	14
% Trucks	0.9	1.5	6.3	0		1.6	0	0	0	0		0	0	3.3	5.5	0		4.3	0	2.8	16.7	0		2.9	2.5
Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
% Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Peds					0	-					0	-					1	-					0	-	1
% Peds					0	-					0	-					100	-					0	-	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Diagram

Specified Period
From: 15:00:00
To: 18:00:00

One Hour Peak
From: 16:00:00
To: 17:00:00

Intersection: Greenbank Rd & Barnsdale Rd
Site Code: 2410400004
Count Date: Mar 20, 2024

Weather conditions: Clear

**** Unsignalized Intersection ****

Major Road: Barnsdale Rd runs E/W

North Approach

	Out	In	Total
Cars	379	433	812
Trucks	10	3	13
Bicycles	0	0	0
	389	**436**	**825**

Greenbank Rd

Bicycles	0	0	0	0
Trucks	1	3	6	0
Cars	68	147	163	1
Totals	**69**	**150**	**169**	**1**

East Approach

	Out	In	Total
Cars	453	341	794
Trucks	8	16	24
Bicycles	0	0	0
	461	**357**	**818**

Barnsdale Rd

Cars	Trucks	Bicycles	Totals	
0	0	0	**0**	
0	0	59	**59**	
0	10	175	**185**	
0	2	19	**21**	

Peds: 0

Peds: 0

Peds: 0

Barnsdale Rd

	Totals	Cars	Trucks	Bicycles
	0	0	0	0
	270	267	3	0
	191	186	5	0
	0	0	0	0

West Approach

	Out	In	Total
Cars	253	264	517
Trucks	12	6	18
Bicycles	0	0	0
	265	**270**	**535**

Greenbank Rd

Totals	**10**	**106**	**3**	**0**
Cars	10	106	3	0
Trucks	0	0	0	0
Bicycles	0	0	0	0

South Approach

	Out	In	Total
Cars	119	166	285
Trucks	0	5	5
Bicycles	0	0	0
	119	**171**	**290**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Greenbank Rd & Barnsdale Rd
Site Code: 2410400004
Count Date: Mar 20, 2024
Period: 15:00 - 18:00

Peak Hour Data (16:00 - 17:00)

Start Time	North Approach Greenbank Rd						South Approach Greenbank Rd						East Approach Barnsdale Rd						West Approach Barnsdale Rd						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
16:00	49	48	23	0	0	120	2	31	1	0	0	34	0	49	53	0	0	102	14	42	4	0	0	60	316
16:15	46	35	9	1	0	91	2	20	0	0	0	22	0	53	57	0	0	110	16	55	5	0	0	76	299
16:30	36	27	13	0	0	76	4	18	2	0	0	24	0	42	80	0	0	122	20	46	8	0	0	74	296
16:45	38	40	24	0	0	102	2	37	0	0	0	39	0	47	80	0	0	127	9	42	4	0	0	55	323
Grand Total	**169**	**150**	**69**	**1**	**0**	**389**	**10**	**106**	**3**	**0**	**0**	**119**	**0**	**191**	**270**	**0**	**0**	**461**	**59**	**185**	**21**	**0**	**0**	**265**	**1234**
Approach %	43.4	38.6	17.7	0.3		-	8.4	89.1	2.5	0		-	0	41.4	58.6	0		-	22.3	69.8	7.9	0		-	
Totals %	13.7	12.2	5.6	0.1		31.5	0.8	8.6	0.2	0		9.6	0	15.5	21.9	0		37.4	4.8	15	1.7	0		21.5	
PHF	**0.86**	**0.78**	**0.72**	**0.25**		**0.81**	**0.63**	**0.72**	**0.38**	**0**		**0.76**	**0**	**0.9**	**0.84**	**0**		**0.91**	**0.74**	**0.84**	**0.66**	**0**		**0.87**	**0.96**
Cars	163	147	68	1		379	10	106	3	0		119	0	186	267	0		453	59	175	19	0		253	1204
% Cars	96.4	98	98.6	100		97.4	100	100	100	0		100	0	97.4	98.9	0		98.3	100	94.6	90.5	0		95.5	97.6
Trucks	6	3	1	0		10	0	0	0	0		0	0	5	3	0		8	0	10	2	0		12	30
% Trucks	3.6	2	1.4	0		2.6	0	0	0	0		0	0	2.6	1.1	0		1.7	0	5.4	9.5	0		4.5	2.4
Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
% Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Peds					0	-					0	-					0	-					0	-	0
% Peds					0	-					0	-					0	-					0	-	

Ontario Traffic Inc.
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Project #24-105 - CGH Transportation

Intersection Count Report

Intersection: Prince of Wales Dr & Barnsdale Rd
Municipality: Ottawa
Count Date: Wednesday, Mar 20, 2024
Site Code: 2410400006
Count Categories: Cars, Trucks, Bicycles, Pedestrians
Count Period: 07:00-10:00, 11:30-13:30, 15:00-18:00
Weather: Clear
Comments:

Ontario Traffic Inc.
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Traffic Count Summary

Intersection: Prince of Wales Dr & Barnsdale Rd
Site Code: 2410400006
Municipality: Ottawa
Count Date: Mar 20, 2024

Prince of Wales Dr - Traffic Summary

	North Approach Totals						South Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
Hour	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	Total
07:00 - 08:00	1	198	143	2	344	0	2	418	5	0	425	0	769
08:00 - 09:00	0	238	181	0	419	0	2	370	10	0	382	0	801
09:00 - 10:00	0	200	130	1	331	0	2	261	6	0	269	0	600
BREAK													
11:30 - 12:00	1	95	42	1	139	0	2	90	7	0	99	0	238
12:00 - 13:00	0	219	151	0	370	0	2	208	4	0	214	0	584
13:00 - 13:30	0	107	57	0	164	0	0	82	3	0	85	0	249
BREAK													
15:00 - 16:00	0	393	295	2	690	0	3	213	9	1	226	0	916
16:00 - 17:00	0	478	388	3	869	0	6	248	4	1	259	0	1128
17:00 - 18:00	0	368	366	1	735	0	3	262	6	0	271	0	1006
GRAND TOTAL	**2**	**2296**	**1753**	**10**	**4061**	**0**	**22**	**2152**	**54**	**2**	**2230**	**0**	**6291**

Ontario Traffic Inc.
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Traffic Count Summary

Intersection: Prince of Wales Dr & Barnsdale Rd
Site Code: 2410400006
Municipality: Ottawa
Count Date: Mar 20, 2024

Barnsdale Rd - Traffic Summary

	East Approach Totals						West Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
Hour	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	Total
07:00 - 08:00	11	43	0	0	54	0	447	52	2	0	501	0	555
08:00 - 09:00	15	76	1	0	92	0	336	73	2	1	412	0	504
09:00 - 10:00	10	44	1	0	55	0	253	50	1	0	304	0	359
BREAK													
11:30 - 12:00	3	26	1	0	30	0	75	21	3	0	99	0	129
12:00 - 13:00	6	41	0	0	47	0	118	40	3	0	161	0	208
13:00 - 13:30	2	16	0	0	18	0	79	28	3	0	110	0	128
BREAK													
15:00 - 16:00	5	66	1	0	72	0	216	84	2	0	302	0	374
16:00 - 17:00	7	78	2	0	87	0	264	94	2	0	360	0	447
17:00 - 18:00	10	87	2	0	99	0	223	78	5	0	306	0	405
GRAND TOTAL	**69**	**477**	**8**	**0**	**554**	**0**	**2011**	**520**	**23**	**1**	**2555**	**0**	**3109**

Ontario Traffic Inc.
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Traffic Count Data

Intersection: Prince of Wales Dr & Barnsdale Rd
Site Code: 2410400006
Municipality: Ottawa
Count Date: Mar 20, 2024

North Approach - Prince of Wales Dr

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	
07:00	0	38	31	0	69	0	3	0	0	3	0	0	0	0	0	0
07:15	0	46	35	0	81	0	3	3	0	6	0	0	0	0	0	0
07:30	0	45	31	2	78	1	1	3	0	5	0	0	0	0	0	0
07:45	0	58	38	0	96	0	4	2	0	6	0	0	0	0	0	0
08:00	0	69	45	0	114	0	3	1	0	4	0	0	0	0	0	0
08:15	0	56	46	0	102	0	4	2	0	6	0	0	0	0	0	0
08:30	0	52	49	0	101	0	5	4	0	9	0	0	0	0	0	0
08:45	0	45	31	0	76	0	4	3	0	7	0	0	0	0	0	0
09:00	0	43	33	0	76	0	2	4	0	6	0	0	0	0	0	0
09:15	0	48	27	0	75	0	4	3	0	7	0	0	0	0	0	0
09:30	0	54	29	0	83	0	2	1	0	3	0	0	0	0	0	0
09:45	0	45	30	1	76	0	2	3	0	5	0	0	0	0	0	0
SUBTOTAL	0	599	425	3	1027	1	37	29	0	67	0	0	0	0	0	0

Ontario Traffic Inc.
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Traffic Count Data

Intersection: Prince of Wales Dr & Barnsdale Rd
Site Code: 2410400006
Municipality: Ottawa
Count Date: Mar 20, 2024

North Approach - Prince of Wales Dr

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	
11:30	0	37	18	1	56	0	6	1	0	7	0	0	0	0	0	0
11:45	1	51	22	0	74	0	1	1	0	2	0	0	0	0	0	0
12:00	0	57	42	0	99	0	3	2	0	5	0	0	0	0	0	0
12:15	0	53	36	0	89	0	2	1	0	3	0	0	0	0	0	0
12:30	0	54	30	0	84	0	2	1	0	3	0	0	0	0	0	0
12:45	0	46	38	0	84	0	2	1	0	3	0	0	0	0	0	0
13:00	0	53	34	0	87	0	2	1	0	3	0	0	0	0	0	0
13:15	0	50	22	0	72	0	2	0	0	2	0	0	0	0	0	0
SUBTOTAL	1	401	242	1	645	0	20	8	0	28	0	0	0	0	0	0

Ontario Traffic Inc.
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Traffic Count Data

Intersection: Prince of Wales Dr & Barnsdale Rd
Site Code: 2410400006
Municipality: Ottawa
Count Date: Mar 20, 2024

North Approach - Prince of Wales Dr

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
15:00	0	82	49	1	132	0	4	1	0	5	0	0	0	0	0	0
15:15	0	95	70	0	165	0	3	4	0	7	0	0	0	0	0	0
15:30	0	92	86	1	179	0	1	3	0	4	0	0	0	0	0	0
15:45	0	113	82	0	195	0	3	0	0	3	0	0	0	0	0	0
16:00	0	134	79	3	216	0	2	4	0	6	0	0	0	0	0	0
16:15	0	108	87	0	195	0	1	0	0	1	0	0	0	0	0	0
16:30	0	119	104	0	223	0	0	0	0	0	0	0	0	0	0	0
16:45	0	113	112	0	225	0	1	2	0	3	0	0	0	0	0	0
17:00	0	106	89	0	195	0	2	2	0	4	0	0	0	0	0	0
17:15	0	101	101	0	202	0	2	0	0	2	0	0	0	0	0	0
17:30	0	88	92	0	180	0	2	0	0	2	0	0	0	0	0	0
17:45	0	67	82	1	150	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	1218	1033	6	2257	0	21	16	0	37	0	0	0	0	0	0
GRAND TOTAL	1	2218	1700	10	3929	1	78	53	0	132	0	0	0	0	0	0

Ontario Traffic Inc.
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Traffic Count Data

Intersection: Prince of Wales Dr & Barnsdale Rd
Site Code: 2410400006
Municipality: Ottawa
Count Date: Mar 20, 2024

South Approach - Prince of Wales Dr

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
07:00	0	103	1	0	104	0	0	0	0	0	0	0	0	0	0	0
07:15	1	94	0	0	95	0	4	0	0	4	0	0	0	0	0	0
07:30	0	96	1	0	97	0	5	1	0	6	0	0	0	0	0	0
07:45	1	114	2	0	117	0	2	0	0	2	0	0	0	0	0	0
08:00	0	103	5	0	108	0	3	0	0	3	0	0	0	0	0	0
08:15	2	88	4	0	94	0	5	0	0	5	0	0	0	0	0	0
08:30	0	85	0	0	85	0	1	0	0	1	0	0	0	0	0	0
08:45	0	84	1	0	85	0	1	0	0	1	0	0	0	0	0	0
09:00	0	76	1	0	77	0	2	0	0	2	0	0	0	0	0	0
09:15	0	57	2	0	59	0	5	0	0	5	0	0	0	0	0	0
09:30	1	58	2	0	61	0	3	0	0	3	0	0	0	0	0	0
09:45	1	58	1	0	60	0	2	0	0	2	0	0	0	0	0	0
SUBTOTAL	6	1016	20	0	1042	0	33	1	0	34	0	0	0	0	0	0

Ontario Traffic Inc.
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Traffic Count Data

Intersection: Prince of Wales Dr & Barnsdale Rd
Site Code: 2410400006
Municipality: Ottawa
Count Date: Mar 20, 2024

South Approach - Prince of Wales Dr

Start Time	Cars				Total	Trucks				Total	Bicycles				Total	Total Peds
11:30	1	52	2	0	55	1	5	0	0	6	0	0	0	0	0	0
11:45	0	31	4	0	35	0	2	1	0	3	0	0	0	0	0	0
12:00	1	48	0	0	49	0	4	0	0	4	0	0	0	0	0	0
12:15	0	57	4	0	61	0	5	0	0	5	0	0	0	0	0	0
12:30	1	45	0	0	46	0	5	0	0	5	0	0	0	0	0	0
12:45	0	43	0	0	43	0	1	0	0	1	0	0	0	0	0	0
13:00	0	28	2	0	30	0	2	1	0	3	0	0	0	0	0	0
13:15	0	47	0	0	47	0	5	0	0	5	0	0	0	0	0	0
SUBTOTAL	3	351	12	0	366	1	29	2	0	32	0	0	0	0	0	0

Ontario Traffic Inc.
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Traffic Count Data

Intersection: Prince of Wales Dr & Barnsdale Rd
Site Code: 2410400006
Municipality: Ottawa
Count Date: Mar 20, 2024

South Approach - Prince of Wales Dr

Start Time	Cars				Total	Trucks				Total	Bicycles				Total	Total Peds
15:00	0	46	1	0	47	0	3	0	0	3	0	0	0	0	0	0
15:15	0	50	2	0	52	0	4	0	0	4	0	0	0	0	0	0
15:30	1	57	4	0	62	1	3	0	0	4	0	0	0	0	0	0
15:45	0	50	2	1	53	1	0	0	0	1	0	0	0	0	0	0
16:00	2	50	1	0	53	0	0	0	0	0	0	0	0	0	0	0
16:15	1	73	1	0	75	0	2	0	0	2	0	0	0	0	0	0
16:30	1	57	0	1	59	0	0	0	0	0	0	0	0	0	0	0
16:45	2	66	1	0	69	0	0	1	0	1	0	0	0	0	0	0
17:00	0	67	2	0	69	0	1	0	0	1	0	0	0	0	0	0
17:15	1	61	2	0	64	0	2	0	0	2	0	0	0	0	0	0
17:30	0	69	1	0	70	0	1	0	0	1	0	0	0	0	0	0
17:45	2	60	1	0	63	0	1	0	0	1	0	0	0	0	0	0
SUBTOTAL	10	706	18	2	736	2	17	1	0	20	0	0	0	0	0	0
GRAND TOTAL	**19**	**2073**	**50**	**2**	**2144**	**3**	**79**	**4**	**0**	**86**	**0**	**0**	**0**	**0**	**0**	**0**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Prince of Wales Dr & Barnsdale Rd
Site Code: 2410400006
Municipality: Ottawa
Count Date: Mar 20, 2024

East Approach - Barnsdale Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	
07:00	3	9	0	0	12	0	0	0	0	0	0	0	0	0	0	0
07:15	5	5	0	0	10	0	1	0	0	1	0	0	0	0	0	0
07:30	1	15	0	0	16	0	0	0	0	0	0	0	0	0	0	0
07:45	2	12	0	0	14	0	1	0	0	1	0	0	0	0	0	0
08:00	3	20	0	0	23	0	0	0	0	0	0	0	0	0	0	0
08:15	6	21	0	0	27	0	0	0	0	0	0	0	0	0	0	0
08:30	2	18	1	0	21	0	1	0	0	1	0	0	0	0	0	0
08:45	4	15	0	0	19	0	1	0	0	1	0	0	0	0	0	0
09:00	1	13	0	0	14	1	0	0	0	1	0	0	0	0	0	0
09:15	6	16	1	0	23	0	2	0	0	2	0	0	0	0	0	0
09:30	0	8	0	0	8	0	0	0	0	0	0	0	0	0	0	0
09:45	2	5	0	0	7	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	35	157	2	0	194	1	6	0	0	7	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Prince of Wales Dr & Barnsdale Rd
Site Code: 2410400006
Municipality: Ottawa
Count Date: Mar 20, 2024

East Approach - Barnsdale Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	↰	↑	↱	↷	Total	
11:30	2	10	0	0	12	0	0	0	0	0	0	0	0	0	0	0
11:45	1	15	1	0	17	0	1	0	0	1	0	0	0	0	0	0
12:00	1	14	0	0	15	0	1	0	0	1	0	0	0	0	0	0
12:15	3	11	0	0	14	0	0	0	0	0	0	0	0	0	0	0
12:30	2	7	0	0	9	0	0	0	0	0	0	0	0	0	0	0
12:45	0	8	0	0	8	0	0	0	0	0	0	0	0	0	0	0
13:00	1	7	0	0	8	0	0	0	0	0	0	0	0	0	0	0
13:15	1	8	0	0	9	0	1	0	0	1	0	0	0	0	0	0
SUBTOTAL	11	80	1	0	92	0	3	0	0	3	0	0	0	0	0	0

Ontario Traffic Inc.
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Traffic Count Data

Intersection: Prince of Wales Dr & Barnsdale Rd
Site Code: 2410400006
Municipality: Ottawa
Count Date: Mar 20, 2024

East Approach - Barnsdale Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
15:00	0	8	1	0	9	0	0	0	0	0	0	0	0	0	0	0
15:15	1	16	0	0	17	0	2	0	0	2	0	0	0	0	0	0
15:30	1	16	0	0	17	0	0	0	0	0	0	0	0	0	0	0
15:45	3	24	0	0	27	0	0	0	0	0	0	0	0	0	0	0
16:00	2	25	1	0	28	0	0	0	0	0	0	0	0	0	0	0
16:15	2	19	1	0	22	0	0	0	0	0	0	0	0	0	0	0
16:30	1	16	0	0	17	0	0	0	0	0	0	0	0	0	0	0
16:45	2	18	0	0	20	0	0	0	0	0	0	0	0	0	0	0
17:00	1	28	0	0	29	1	1	0	0	2	0	0	0	0	0	0
17:15	3	22	0	0	25	1	0	0	0	1	0	0	0	0	0	0
17:30	1	19	0	0	20	0	0	0	0	0	0	0	0	0	0	0
17:45	3	17	2	0	22	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	20	228	5	0	253	2	3	0	0	5	0	0	0	0	0	0
GRAND TOTAL	66	465	8	0	539	3	12	0	0	15	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Prince of Wales Dr & Barnsdale Rd
Site Code: 2410400006
Municipality: Ottawa
Count Date: Mar 20, 2024

West Approach - Barnsdale Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
07:00	93	3	0	0	96	2	0	0	0	2	0	0	0	0	0	0
07:15	114	11	1	0	126	2	2	0	0	4	0	0	0	0	0	0
07:30	129	16	1	0	146	1	0	0	0	1	0	0	0	0	0	0
07:45	104	20	0	0	124	2	0	0	0	2	0	0	0	0	0	0
08:00	93	13	1	0	107	2	0	0	0	2	0	0	0	0	0	0
08:15	81	19	0	0	100	0	0	0	0	0	0	0	0	0	0	0
08:30	80	25	0	1	106	1	0	0	0	1	0	0	0	0	0	0
08:45	79	16	1	0	96	0	0	0	0	0	0	0	0	0	0	0
09:00	81	14	0	0	95	4	4	0	0	8	0	0	0	0	0	0
09:15	74	17	0	0	91	4	0	1	0	5	0	0	0	0	0	0
09:30	48	4	0	0	52	3	0	0	0	3	0	0	0	0	0	0
09:45	37	10	0	0	47	2	1	0	0	3	0	0	0	0	0	0
SUBTOTAL	1013	168	4	1	1186	23	7	1	0	31	0	0	0	0	0	0

Ontario Traffic Inc.
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Traffic Count Data

Intersection: Prince of Wales Dr & Barnsdale Rd
Site Code: 2410400006
Municipality: Ottawa
Count Date: Mar 20, 2024

West Approach - Barnsdale Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
11:30	31	12	1	0	44	2	0	0	0	2	0	0	0	0	0	0
11:45	42	9	1	0	52	0	0	1	0	1	0	0	0	0	0	0
12:00	27	13	1	0	41	1	1	0	0	2	0	0	0	0	0	0
12:15	35	5	0	0	40	0	0	0	0	0	0	0	0	0	0	0
12:30	33	9	1	0	43	1	0	1	0	2	0	0	0	0	0	0
12:45	21	12	0	0	33	0	0	0	0	0	0	0	0	0	0	0
13:00	35	14	0	0	49	2	2	0	0	4	0	0	0	0	0	0
13:15	41	11	3	0	55	1	1	0	0	2	0	0	0	0	0	0
SUBTOTAL	265	85	7	0	357	7	4	2	0	13	0	0	0	0	0	0

Ontario Traffic Inc.
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Traffic Count Data

Intersection: Prince of Wales Dr & Barnsdale Rd
Site Code: 2410400006
Municipality: Ottawa
Count Date: Mar 20, 2024

West Approach - Barnsdale Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
15:00	48	31	0	0	79	3	2	0	0	5	0	0	0	0	0	0
15:15	46	14	0	0	60	2	1	0	0	3	0	0	0	0	0	0
15:30	43	20	2	0	65	1	0	0	0	1	0	0	0	0	0	0
15:45	72	14	0	0	86	1	2	0	0	3	0	0	0	0	0	0
16:00	67	24	0	0	91	4	1	0	0	5	0	0	0	0	0	0
16:15	62	28	0	0	90	4	3	0	0	7	0	0	0	0	0	0
16:30	63	18	1	0	82	1	2	0	0	3	0	0	0	0	0	0
16:45	60	17	1	0	78	3	1	0	0	4	0	0	0	0	0	0
17:00	45	20	1	0	66	0	0	0	0	0	0	0	0	0	0	0
17:15	66	22	0	0	88	1	0	0	0	1	0	0	0	0	0	0
17:30	55	20	2	0	77	0	0	0	0	0	0	0	0	0	0	0
17:45	56	16	2	0	74	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	683	244	9	0	936	20	12	0	0	32	0	0	0	0	0	0
GRAND TOTAL	1961	497	20	1	2479	50	23	3	0	76	0	0	0	0	0	0

Ontario Traffic Inc.
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Peak Hour Diagram

Specified Period
From: 07:00:00
To: 10:00:00

One Hour Peak
From: 07:30:00
To: 08:30:00

Intersection: Prince of Wales Dr & Barnsdale Rd
Site Code: 2410400006
Count Date: Mar 20, 2024

Weather conditions: Clear

**** Unsignalized Intersection ****

Major Road: Prince of Wales Dr runs N/S

North Approach

	Out	In	Total
Cars	390	810	1200
Trucks	21	20	41
Bicycles	0	0	0
	411	830	1241

Prince of Wales Dr

Bicycles	0	0	0	0
Trucks	8	12	1	0
Cars	160	228	0	2
Totals	168	240	1	2

Peds: 0

East Approach

	Out	In	Total
Cars	80	80	160
Trucks	1	2	3
Bicycles	0	0	0
	81	82	163

Barnsdale Rd

Bicycles	Trucks	Cars	Totals	
0	0	0	0	
0	5	407	412	
0	0	68	68	
0	0	2	2	

Peds: 0



Peds: 0

Peds: 0

Barnsdale Rd

	Totals	Cars	Trucks	Bicycles
	0	0	0	0
	0	0	0	0
	69	68	1	0
	12	12	0	0

West Approach

	Out	In	Total
Cars	477	231	708
Trucks	5	9	14
Bicycles	0	0	0
	482	240	722

Totals	3	416	13	0
Cars	3	401	12	0
Trucks	0	15	1	0
Bicycles	0	0	0	0

Prince of Wales Dr

South Approach

	Out	In	Total
Cars	416	242	658
Trucks	16	12	28
Bicycles	0	0	0
	432	254	686

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Prince of Wales Dr & Barnsdale Rd
Site Code: 2410400006
Count Date: Mar 20, 2024
Period: 07:00 - 10:00

Peak Hour Data (07:30 - 08:30)

Start Time	North Approach Prince of Wales Dr						South Approach Prince of Wales Dr						East Approach Barnsdale Rd						West Approach Barnsdale Rd						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
07:30	1	46	34	2	0	83	0	101	2	0	0	103	1	15	0	0	0	16	130	16	1	0	0	147	349
07:45	0	62	40	0	0	102	1	116	2	0	0	119	2	13	0	0	0	15	106	20	0	0	0	126	362
08:00	0	72	46	0	0	118	0	106	5	0	0	111	3	20	0	0	0	23	95	13	1	0	0	109	361
08:15	0	60	48	0	0	108	2	93	4	0	0	99	6	21	0	0	0	27	81	19	0	0	0	100	334
Grand Total	**1**	**240**	**168**	**2**	**0**	**411**	**3**	**416**	**13**	**0**	**0**	**432**	**12**	**69**	**0**	**0**	**0**	**81**	**412**	**68**	**2**	**0**	**0**	**482**	**1406**
Approach %	0.2	58.4	40.9	0.5		-	0.7	96.3	3	0		-	14.8	85.2	0	0		-	85.5	14.1	0.4	0		-	
Totals %	0.1	17.1	11.9	0.1		29.2	0.2	29.6	0.9	0		30.7	0.9	4.9	0	0		5.8	29.3	4.8	0.1	0		34.3	
PHF	**0.25**	**0.83**	**0.88**	**0.25**		**0.87**	**0.38**	**0.9**	**0.65**	**0**		**0.91**	**0.5**	**0.82**	**0**	**0**		**0.75**	**0.79**	**0.85**	**0.5**	**0**		**0.82**	**0.97**
Cars	0	228	160	2		390	3	401	12	0		416	12	68	0	0		80	407	68	2	0		477	1363
% Cars	0	95	95.2	100		94.9	100	96.4	92.3	0		96.3	100	98.6	0	0		98.8	98.8	100	100	0		99	96.9
Trucks	1	12	8	0		21	0	15	1	0		16	0	1	0	0		1	5	0	0	0		5	43
% Trucks	100	5	4.8	0		5.1	0	3.6	7.7	0		3.7	0	1.4	0	0		1.2	1.2	0	0	0		1	3.1
Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
% Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Peds					0	-					0	-					0	-					0	-	0
% Peds					0	-					0	-					0	-					0	-	

Peak Hour Diagram

Specified Period
From: 11:30:00
To: 13:30:00

One Hour Peak
From: 11:45:00
To: 12:45:00

Intersection: Prince of Wales Dr & Barnsdale Rd
Site Code: 2410400006
Count Date: Mar 20, 2024

Weather conditions: Clear

**** Unsignalized Intersection ****

Major Road: Prince of Wales Dr runs N/S

North Approach

	Out	In	Total
Cars	346	319	665
Trucks	13	18	31
Bicycles	0	0	0
	359	337	696

Prince of Wales Dr

Bicycles	0	0	0	0
Trucks	5	8	0	0
Cars	130	215	1	0
Totals	135	223	1	0

Peds: 0

East Approach

	Out	In	Total
Cars	55	45	100
Trucks	2	2	4
Bicycles	0	0	0
	57	47	104

Barnsdale Rd

Bicycles	Trucks	Cars	Totals	
0	0	0	0	
0	2	137	139	
0	1	36	37	
0	2	3	5	

Peds: 0



Peds: 0

Barnsdale Rd

	Totals	Cars	Trucks	Bicycles
	0	0	0	0
	1	1	0	0
	49	47	2	0
	7	7	0	0

Peds: 0

West Approach

	Out	In	Total
Cars	176	179	355
Trucks	5	7	12
Bicycles	0	0	0
	181	186	367

Prince of Wales Dr

Totals	2	197	9	0
Cars	2	181	8	0
Trucks	0	16	1	0
Bicycles	0	0	0	0

South Approach

	Out	In	Total
Cars	191	225	416
Trucks	17	10	27
Bicycles	0	0	0
	208	235	443

Cars - Trucks - Bicycles

Comments

Peak Hour Summary

Intersection: Prince of Wales Dr & Barnsdale Rd
Site Code: 2410400006
Count Date: Mar 20, 2024
Period: 11:30 - 13:30

Peak Hour Data (11:45 - 12:45)

Start Time	North Approach Prince of Wales Dr						South Approach Prince of Wales Dr						East Approach Barnsdale Rd						West Approach Barnsdale Rd						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
11:45	1	52	23	0	0	76	0	33	5	0	0	38	1	16	1	0	0	18	42	9	2	0	0	53	185
12:00	0	60	44	0	0	104	1	52	0	0	0	53	1	15	0	0	0	16	28	14	1	0	0	43	216
12:15	0	55	37	0	0	92	0	62	4	0	0	66	3	11	0	0	0	14	35	5	0	0	0	40	212
12:30	0	56	31	0	0	87	1	50	0	0	0	51	2	7	0	0	0	9	34	9	2	0	0	45	192
Grand Total	**1**	**223**	**135**	**0**	**0**	**359**	**2**	**197**	**9**	**0**	**0**	**208**	**7**	**49**	**1**	**0**	**0**	**57**	**139**	**37**	**5**	**0**	**0**	**181**	**805**
Approach %	0.3	62.1	37.6	0		-	1	94.7	4.3	0		-	12.3	86	1.8	0		-	76.8	20.4	2.8	0		-	
Totals %	0.1	27.7	16.8	0		44.6	0.2	24.5	1.1	0		25.8	0.9	6.1	0.1	0		7.1	17.3	4.6	0.6	0		22.5	
PHF	**0.25**	**0.93**	**0.77**	**0**		**0.86**	**0.5**	**0.79**	**0.45**	**0**		**0.79**	**0.58**	**0.77**	**0.25**	**0**		**0.79**	**0.83**	**0.66**	**0.63**	**0**		**0.85**	**0.93**
Cars	1	215	130	0		346	2	181	8	0		191	7	47	1	0		55	137	36	3	0		176	768
% Cars	100	96.4	96.3	0		96.4	100	91.9	88.9	0		91.8	100	95.9	100	0		96.5	98.6	97.3	60	0		97.2	95.4
Trucks	0	8	5	0		13	0	16	1	0		17	0	2	0	0		2	2	1	2	0		5	37
% Trucks	0	3.6	3.7	0		3.6	0	8.1	11.1	0		8.2	0	4.1	0	0		3.5	1.4	2.7	40	0		2.8	4.6
Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
% Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Peds					0	-					0	-					0	-					0	-	0
% Peds					0	-					0	-					0	-					0	-	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Diagram

Specified Period
From: 15:00:00
To: 18:00:00

One Hour Peak
From: 16:00:00
To: 17:00:00

Intersection: Prince of Wales Dr & Barnsdale Rd
Site Code: 2410400006
Count Date: Mar 20, 2024

Weather conditions: Clear

**** Unsignalized Intersection **** **Major Road:** Prince of Wales Dr runs N/S

North Approach

	Out	In	Total
Cars	859	503	1362
Trucks	10	14	24
Bicycles	0	0	0
	869	517	1386

Prince of Wales Dr

Bicycles	0	0	0	0
Trucks	6	4	0	0
Cars	382	474	0	3
Totals	388	478	0	3

Peds: 0

East Approach

	Out	In	Total
Cars	87	90	177
Trucks	0	8	8
Bicycles	0	0	0
	87	98	185

Barnsdale Rd

			Totals	
0	0	0	0	
0	12	252	264	
0	7	87	94	
0	0	2	2	

Peds: 0

Peds: 0

Barnsdale Rd

Totals			
0	0	0	0
2	2	0	0
78	78	0	0
7	7	0	0

West Approach

	Out	In	Total
Cars	341	466	807
Trucks	19	6	25
Bicycles	0	0	0
	360	472	832

Peds: 0

Totals	6	248	4	1
Cars	6	246	3	1
Trucks	0	2	1	0
Bicycles	0	0	0	0

Prince of Wales Dr

South Approach

	Out	In	Total
Cars	256	484	740
Trucks	3	4	7
Bicycles	0	0	0
	259	488	747

- Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
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Peak Hour Summary

Intersection: Prince of Wales Dr & Barnsdale Rd
Site Code: 2410400006
Count Date: Mar 20, 2024
Period: 15:00 - 18:00

Peak Hour Data (16:00 - 17:00)

Start Time	North Approach Prince of Wales Dr						South Approach Prince of Wales Dr						East Approach Barnsdale Rd						West Approach Barnsdale Rd						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
16:00	0	136	83	3	0	222	2	50	1	0	0	53	2	25	1	0	0	28	71	25	0	0	0	96	399
16:15	0	109	87	0	0	196	1	75	1	0	0	77	2	19	1	0	0	22	66	31	0	0	0	97	392
16:30	0	119	104	0	0	223	1	57	0	1	0	59	1	16	0	0	0	17	64	20	1	0	0	85	384
16:45	0	114	114	0	0	228	2	66	2	0	0	70	2	18	0	0	0	20	63	18	1	0	0	82	400
Grand Total	**0**	**478**	**388**	**3**	**0**	**869**	**6**	**248**	**4**	**1**	**0**	**259**	**7**	**78**	**2**	**0**	**0**	**87**	**264**	**94**	**2**	**0**	**0**	**360**	**1575**
Approach %	0	55	44.6	0.3		-	2.3	95.8	1.5	0.4		-	8	89.7	2.3	0		-	73.3	26.1	0.6	0		-	
Totals %	0	30.3	24.6	0.2		55.2	0.4	15.7	0.3	0.1		16.4	0.4	5	0.1	0		5.5	16.8	6	0.1	0		22.9	
PHF	**0**	**0.88**	**0.85**	**0.25**		**0.95**	**0.75**	**0.83**	**0.5**	**0.25**		**0.84**	**0.88**	**0.78**	**0.5**	**0**		**0.78**	**0.93**	**0.76**	**0.5**	**0**		**0.93**	**0.98**
Cars	0	474	382	3		859	6	246	3	1		256	7	78	2	0		87	252	87	2	0		341	1543
% Cars	0	99.2	98.5	100		98.8	100	99.2	75	100		98.8	100	100	100	0		100	95.5	92.6	100	0		94.7	98
Trucks	0	4	6	0		10	0	2	1	0		3	0	0	0	0		0	12	7	0	0		19	32
% Trucks	0	0.8	1.5	0		1.2	0	0.8	25	0		1.2	0	0	0	0		0	4.5	7.4	0	0		5.3	2
Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
% Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Peds					0	-					0	-					0	-					0	-	0
% Peds					0	-					0	-					0	-					0	-	

Figure 7: Existing Highway 416 and Barnsdale Road Traffic Volumes



Table 7: Summary of Existing Utility Infrastructure Near the Study Area

Utility	Relocation Details
Bell Canada	- **Conflict** with above ground infrastructure running along the west side Hwy. 416/William McEwen Dr. – utility pole relocation requirements to be confirmed during the future Detail Design phase. - **No Conflict** with above ground infrastructure running along the south side of Barnsdale west of Hwy. 416. - **No Conflict** with underground bell infrastructure running along the south side of Barnsdale west of Hwy. 416.
Hydro One	- **No Conflict** with above ground power lines south of the interchange limits.
Hydro Ottawa	- **Conflict** with above ground infrastructure running along the west side Hwy. 416/William McEwen Dr. – utility pole relocation requirements to be confirmed during the future Detail Design phase. - **Conflict** with planned future underground 12x680 Hydro Ottawa Ducts running along the east side of Borrisokane Rd., crossing Barnsdale Rd. – final location and impacts to be confirmed during the future Detail Design phase. - **No Conflict** with underground 8x680 duct crossing Hwy. 416 both north and south of Barnsdale Rd. - **No Conflict** with above ground infrastructure running along the south side of Barnsdale west of Hwy. 416.

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Project #24-160 - CGH Transportation

Intersection Count Report

Intersection:	Borrisokane Rd - Tartan Dr & Strandherd Dr
Municipality:	Ottawa
Count Date:	Tuesday, Apr 23, 2024
Site Code:	2416000005
Count Categories:	Cars, Trucks, Bicycles, Pedestrians
Count Period:	07:00-10:00, 11:30-13:30, 15:00-18:00
Weather:	Clear
Comments:	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Summary

Intersection:	Borrisokane Rd - Tartan Dr & Strandherd Dr
Site Code:	2416000005
Municipality:	Ottawa
Count Date:	Apr 23, 2024

Tartan Dr - Traffic Summary

	North Approach Totals						South Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
Hour	**Left**	**Thru**	**Right**	**U-Turn**	**Total**	**Peds**	**Left**	**Thru**	**Right**	**U-Turn**	**Total**	**Peds**	**Total**
07:00 - 08:00	20	17	65	0	102	1	522	39	91	0	652	0	754
08:00 - 09:00	49	56	112	0	217	2	549	93	160	0	802	1	1019
09:00 - 10:00	42	31	68	0	141	1	458	57	107	0	622	1	763
BREAK													
11:30 - 12:00	28	12	24	0	64	1	175	14	43	0	232	3	296
12:00 - 13:00	49	20	70	0	139	1	293	34	85	0	412	2	551
13:00 - 13:30	28	12	28	0	68	0	136	10	33	0	179	0	247
BREAK													
15:00 - 16:00	63	79	91	0	233	1	358	70	114	1	543	2	776
16:00 - 17:00	76	68	77	0	221	0	421	59	132	0	612	0	833
17:00 - 18:00	45	61	58	0	164	1	411	58	112	0	581	1	745
GRAND TOTAL	**400**	**356**	**593**	**0**	**1349**	**8**	**3323**	**434**	**877**	**1**	**4635**	**10**	**5984**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Summary

Intersection: Borrisokane Rd - Tartan Dr & Strandherd Dr
Site Code: 2416000005
Municipality: Ottawa
Count Date: Apr 23, 2024

Strandherd Dr - Traffic Summary

	East Approach Totals						West Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
Hour	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	Total
07:00 - 08:00	55	555	22	0	632	3	49	382	242	0	673	0	1305
08:00 - 09:00	76	579	79	0	734	1	96	377	261	0	734	2	1468
09:00 - 10:00	69	639	61	0	769	1	70	442	222	0	734	1	1503
BREAK													
11:30 - 12:00	22	262	23	0	307	0	29	259	117	0	405	4	712
12:00 - 13:00	95	539	53	0	687	0	57	576	318	0	951	1	1638
13:00 - 13:30	29	237	26	0	292	0	31	269	162	0	462	1	754
BREAK													
15:00 - 16:00	111	553	94	0	758	1	118	596	469	0	1183	1	1941
16:00 - 17:00	124	651	70	0	845	1	131	728	520	0	1379	0	2224
17:00 - 18:00	117	605	64	0	786	0	93	728	594	0	1415	1	2201
GRAND TOTAL	**698**	**4620**	**492**	**0**	**5810**	**7**	**674**	**4357**	**2905**	**0**	**7936**	**11**	**13746**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Borrisokane Rd - Tartan Dr & Strandherd Dr
Site Code: 2416000005
Municipality: Ottawa
Count Date: Apr 23, 2024

North Approach - Tartan Dr

	Cars					Trucks					Bicycles					
Start Time	↰	↑	↱	↩	Total	↰	↑	↱	↩	Total	↰	↑	↱	↩	Total	Total Peds
07:00	1	3	14	0	18	1	0	1	0	2	0	0	0	0	0	0
07:15	3	3	16	0	22	0	0	0	0	0	0	0	0	0	0	0
07:30	7	6	22	0	35	5	0	0	0	5	0	0	0	0	0	0
07:45	3	5	12	0	20	0	0	0	0	0	0	0	0	0	0	1
08:00	6	10	36	0	52	3	0	0	0	3	0	0	0	0	0	1
08:15	20	12	34	0	66	0	1	1	0	2	0	0	0	0	0	0
08:30	13	18	25	0	56	2	0	0	0	2	0	0	0	0	0	0
08:45	5	14	15	0	34	0	1	1	0	2	0	0	0	0	0	1
09:00	7	12	17	0	36	0	0	0	0	0	0	0	0	0	0	0
09:15	11	8	20	0	39	2	1	0	0	3	0	0	0	0	0	1
09:30	9	8	14	0	31	1	0	1	0	2	0	0	0	0	0	0
09:45	12	2	15	0	29	0	0	1	0	1	0	0	0	0	0	0
SUBTOTAL	97	101	240	0	438	14	3	5	0	22	0	0	0	0	0	4

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Borrisokane Rd - Tartan Dr & Strandherd Dr
Site Code: 2416000005
Municipality: Ottawa
Count Date: Apr 23, 2024

North Approach - Tartan Dr

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
11:30	13	6	14	0	33	3	0	0	0	3	0	0	0	0	0	0
11:45	12	6	10	0	28	0	0	0	0	0	0	0	0	0	0	1
12:00	11	1	20	0	32	0	0	0	0	0	0	0	0	0	0	1
12:15	12	4	15	0	31	1	1	1	0	3	0	0	0	0	0	0
12:30	12	5	16	0	33	1	0	0	0	1	0	0	0	0	0	0
12:45	10	8	18	0	36	2	1	0	0	3	0	0	0	0	0	0
13:00	18	8	16	0	42	1	0	0	0	1	0	0	0	0	0	0
13:15	9	4	12	0	25	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	97	42	121	0	260	8	2	1	0	11	0	0	0	0	0	2

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Borrisokane Rd - Tartan Dr & Strandherd Dr
Site Code: 2416000005
Municipality: Ottawa
Count Date: Apr 23, 2024

North Approach - Tartan Dr

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
15:00	7	3	16	0	26	1	0	0	0	1	0	0	0	0	0	0
15:15	17	19	20	0	56	0	1	2	0	3	0	0	0	0	0	0
15:30	25	41	32	0	98	0	1	2	0	3	0	0	0	0	0	0
15:45	12	14	19	0	45	1	0	0	0	1	0	0	0	0	0	1
16:00	16	25	26	0	67	1	0	1	0	2	0	0	0	0	0	0
16:15	20	7	15	0	42	1	0	0	0	1	0	0	0	0	0	0
16:30	21	20	21	0	62	0	0	0	0	0	0	0	0	0	0	0
16:45	16	16	14	0	46	1	0	0	0	1	0	0	0	0	0	0
17:00	13	16	13	0	42	2	0	0	0	2	0	0	0	0	0	0
17:15	8	16	15	0	39	0	0	0	0	0	0	0	0	0	0	0
17:30	12	18	16	0	46	1	0	0	0	1	0	0	0	0	0	1
17:45	8	11	14	0	33	1	0	0	0	1	0	0	0	0	0	0
SUBTOTAL	175	206	221	0	602	9	2	5	0	16	0	0	0	0	0	2
GRAND TOTAL	369	349	582	0	1300	31	7	11	0	49	0	0	0	0	0	8

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Borrisokane Rd - Tartan Dr & Strandherd Dr
Site Code: 2416000005
Municipality: Ottawa
Count Date: Apr 23, 2024

South Approach - Borrisokane Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
07:00	125	7	13	0	145	2	1	0	0	3	0	0	0	0	0	0
07:15	123	2	21	0	146	1	0	1	0	2	0	0	0	0	0	0
07:30	148	7	26	0	181	5	0	1	0	6	0	0	0	0	0	0
07:45	113	21	28	0	162	5	1	1	0	7	0	0	0	0	0	0
08:00	127	21	34	0	182	1	0	2	0	3	0	0	0	0	0	0
08:15	127	32	37	0	196	4	1	1	0	6	0	0	0	0	0	0
08:30	161	21	35	0	217	12	0	2	0	14	0	0	0	0	0	1
08:45	114	17	49	0	180	3	1	0	0	4	0	0	0	0	0	0
09:00	158	25	39	0	222	7	0	0	0	7	0	0	0	0	0	0
09:15	124	12	25	0	161	7	0	1	0	8	0	0	0	0	0	0
09:30	82	6	22	0	110	9	1	0	0	10	0	0	0	0	0	0
09:45	67	13	19	0	99	4	0	1	0	5	0	0	0	0	0	1
SUBTOTAL	1469	184	348	0	2001	60	5	10	0	75	0	0	0	0	0	2

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Borrisokane Rd - Tartan Dr & Strandherd Dr
Site Code: 2416000005
Municipality: Ottawa
Count Date: Apr 23, 2024

South Approach - Borrisokane Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
11:30	87	6	19	0	112	4	0	0	0	4	0	0	0	0	0	3
11:45	75	8	24	0	107	9	0	0	0	9	0	0	0	0	0	0
12:00	79	6	26	0	111	4	0	1	0	5	0	0	0	0	0	1
12:15	78	11	25	0	114	5	0	1	0	6	0	0	0	0	0	1
12:30	55	8	17	0	80	5	0	0	0	5	0	0	0	0	0	0
12:45	59	9	14	0	82	8	0	1	0	9	0	0	0	0	0	0
13:00	63	6	18	0	87	3	0	2	0	5	0	0	0	0	0	0
13:15	61	4	13	0	78	9	0	0	0	9	0	0	0	0	0	0
SUBTOTAL	557	58	156	0	771	47	0	5	0	52	0	0	0	0	0	5

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Borrisokane Rd - Tartan Dr & Strandherd Dr
Site Code: 2416000005
Municipality: Ottawa
Count Date: Apr 23, 2024

South Approach - Borrisokane Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
15:00	89	13	20	0	122	9	0	0	0	9	0	0	0	0	0	0
15:15	69	28	23	0	120	7	0	3	0	10	0	0	0	0	0	2
15:30	77	15	28	0	120	2	0	4	0	6	0	0	0	0	0	0
15:45	101	14	36	1	152	4	0	0	0	4	0	0	0	0	0	0
16:00	88	19	37	0	144	12	0	0	0	12	0	0	0	0	0	0
16:15	94	14	22	0	130	8	0	2	0	10	0	0	0	0	0	0
16:30	120	11	35	0	166	2	1	0	0	3	0	0	0	0	0	0
16:45	90	14	35	0	139	7	0	1	0	8	0	0	0	0	0	0
17:00	105	14	26	0	145	1	0	0	0	1	0	0	0	0	0	1
17:15	123	16	33	0	172	2	0	1	0	3	0	0	0	0	0	0
17:30	82	13	30	0	125	1	0	1	0	2	0	0	0	0	0	0
17:45	96	15	21	0	132	1	0	0	0	1	0	0	0	0	0	0
SUBTOTAL	1134	186	346	1	1667	56	1	12	0	69	0	0	0	0	0	3
GRAND TOTAL	3160	428	850	1	4439	163	6	27	0	196	0	0	0	0	0	10

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Borrisokane Rd - Tartan Dr & Strandherd Dr
Site Code: 2416000005
Municipality: Ottawa
Count Date: Apr 23, 2024

East Approach - Strandherd Dr

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
07:00	8	108	5	0	121	0	2	1	0	3	0	0	0	0	0	0
07:15	17	135	2	0	154	0	7	2	0	9	0	0	0	0	0	3
07:30	15	130	2	0	147	2	15	0	0	17	0	0	0	0	0	0
07:45	11	148	10	0	169	2	10	0	0	12	0	0	0	0	0	0
08:00	12	114	17	0	143	1	13	2	0	16	0	0	0	0	0	0
08:15	16	105	33	0	154	1	11	1	0	13	0	0	0	0	0	1
08:30	19	163	8	0	190	0	6	1	0	7	0	0	0	0	0	0
08:45	25	155	17	0	197	2	12	0	0	14	0	0	0	0	0	0
09:00	28	207	8	0	243	1	19	2	0	22	0	0	0	0	0	0
09:15	12	153	23	0	188	0	7	1	0	8	0	0	0	0	0	0
09:30	15	109	15	0	139	0	15	1	0	16	0	0	0	0	0	0
09:45	13	118	11	0	142	0	11	0	0	11	0	0	0	0	0	1
SUBTOTAL	191	1645	151	0	1987	9	128	11	0	148	0	0	0	0	0	5

Ontario Traffic Inc.
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Traffic Count Data

Intersection: Borrisokane Rd - Tartan Dr & Strandherd Dr
Site Code: 2416000005
Municipality: Ottawa
Count Date: Apr 23, 2024

East Approach - Strandherd Dr

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
11:30	8	112	12	0	132	1	8	1	0	10	0	0	0	0	0	0
11:45	13	131	10	0	154	0	11	0	0	11	0	0	0	0	0	0
12:00	23	129	9	0	161	0	9	1	0	10	0	0	0	0	0	0
12:15	19	104	10	0	133	1	4	0	0	5	0	0	0	0	0	0
12:30	29	148	11	0	188	1	12	2	0	15	0	0	0	0	0	0
12:45	22	129	20	0	171	0	4	0	0	4	0	0	0	0	0	0
13:00	12	104	14	0	130	1	15	1	0	17	0	0	0	0	0	0
13:15	16	108	10	0	134	0	10	1	0	11	0	0	0	0	0	0
SUBTOTAL	142	965	96	0	1203	4	73	6	0	83	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Borrisokane Rd - Tartan Dr & Strandherd Dr
Site Code: 2416000005
Municipality: Ottawa
Count Date: Apr 23, 2024

East Approach - Strandherd Dr

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
15:00	22	91	18	0	131	1	7	1	0	9	0	0	0	0	0	0
15:15	21	149	32	0	202	0	8	0	0	8	0	0	0	0	0	0
15:30	32	130	24	0	186	1	12	1	0	14	0	0	0	0	0	1
15:45	32	150	18	0	200	2	6	0	0	8	0	0	0	0	0	0
16:00	36	171	18	0	225	0	13	1	0	14	0	0	0	0	0	1
16:15	33	150	22	0	205	1	9	0	0	10	0	0	0	0	0	0
16:30	25	150	12	0	187	1	5	1	0	7	0	0	0	0	0	0
16:45	28	151	16	0	195	0	2	0	0	2	0	0	0	0	0	0
17:00	36	156	15	0	207	1	2	1	0	4	0	0	0	0	0	0
17:15	27	143	17	0	187	0	4	0	0	4	0	0	0	0	0	0
17:30	33	144	11	0	188	0	2	1	0	3	0	0	0	0	0	0
17:45	20	152	19	0	191	0	2	0	0	2	0	0	0	0	0	0
SUBTOTAL	345	1737	222	0	2304	7	72	6	0	85	0	0	0	0	0	2
GRAND TOTAL	678	4347	469	0	5494	20	273	23	0	316	0	0	0	0	0	7

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Borrisokane Rd - Tartan Dr & Strandherd Dr
Site Code: 2416000005
Municipality: Ottawa
Count Date: Apr 23, 2024

West Approach - Strandherd Dr

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
07:00	11	53	53	0	117	0	8	7	0	15	0	0	0	0	0	0
07:15	4	79	61	0	144	1	13	16	0	30	0	0	0	0	0	0
07:30	10	111	35	0	156	2	13	4	0	19	0	0	0	0	0	0
07:45	20	96	63	0	179	1	9	3	0	13	0	0	0	0	0	0
08:00	22	75	61	0	158	1	7	4	0	12	0	0	0	0	0	1
08:15	24	77	60	0	161	0	9	11	0	20	0	0	0	0	0	0
08:30	15	84	52	0	151	0	14	4	0	18	0	0	0	0	0	1
08:45	34	98	66	0	198	0	13	3	0	16	0	0	0	0	0	0
09:00	18	86	46	0	150	0	8	9	0	17	0	0	0	0	0	0
09:15	22	113	63	0	198	1	14	3	0	18	0	0	0	0	0	1
09:30	14	96	49	0	159	0	11	3	0	14	0	0	0	0	0	0
09:45	14	105	43	0	162	1	9	6	0	16	0	0	0	0	0	0
SUBTOTAL	208	1073	652	0	1933	7	128	73	0	208	0	0	0	0	0	3

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Traffic Count Data

Intersection: Borrisokane Rd - Tartan Dr & Strandherd Dr
Site Code: 2416000005
Municipality: Ottawa
Count Date: Apr 23, 2024

West Approach - Strandherd Dr

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
11:30	12	121	54	0	187	3	9	4	0	16	0	0	0	0	0	3
11:45	14	118	56	0	188	0	11	3	0	14	0	0	0	0	0	1
12:00	10	128	69	0	207	2	9	5	0	16	0	0	0	0	0	1
12:15	16	139	75	0	230	0	13	6	0	19	0	0	0	0	0	0
12:30	18	133	85	0	236	1	12	4	0	17	0	0	0	0	0	0
12:45	10	131	64	0	205	0	11	10	0	21	0	0	0	0	0	0
13:00	19	113	75	0	207	0	16	6	0	22	0	0	0	0	0	1
13:15	12	123	76	0	211	0	17	5	0	22	0	0	0	0	0	0
SUBTOTAL	111	1006	554	0	1671	6	98	43	0	147	0	0	0	0	0	6

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Borrisokane Rd - Tartan Dr & Strandherd Dr
Site Code: 2416000005
Municipality: Ottawa
Count Date: Apr 23, 2024

West Approach - Strandherd Dr

Start Time	Cars				Total	Trucks				Total	Bicycles				Total	Total Peds
15:00	23	123	94	0	240	1	7	1	0	9	0	0	0	0	0	0
15:15	33	128	103	0	264	0	1	2	0	3	0	0	0	0	0	0
15:30	35	160	123	0	318	0	9	7	0	16	0	0	0	0	0	0
15:45	26	164	135	0	325	0	4	4	0	8	0	0	0	0	0	1
16:00	22	174	115	0	311	0	13	0	0	13	0	0	0	0	0	0
16:15	41	176	119	0	336	0	4	0	0	4	0	0	0	0	0	0
16:30	35	176	134	0	345	0	2	7	0	9	0	0	0	0	0	0
16:45	33	182	144	0	359	0	1	1	0	2	0	0	0	0	0	0
17:00	20	175	155	0	350	0	0	1	0	1	0	0	0	0	0	0
17:15	28	172	159	0	359	0	2	0	0	2	0	0	0	0	0	1
17:30	24	191	148	0	363	0	4	0	0	4	0	0	0	0	0	0
17:45	21	183	130	0	334	0	1	1	0	2	0	0	0	0	0	0
SUBTOTAL	341	2004	1559	0	3904	1	48	24	0	73	0	0	0	0	0	2
GRAND TOTAL	660	4083	2765	0	7508	14	274	140	0	428	0	0	0	0	0	11

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Diagram

Specified Period
From: 07:00:00
To: 10:00:00

One Hour Peak
From: 08:30:00
To: 09:30:00

Intersection: Borrisokane Rd - Tartan Dr & Strandherd Dr
Site Code: 2416000005
Count Date: Apr 23, 2024

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Strandherd Dr runs E/W

North Approach

	Out	In	Total
Cars	165	220	385
Trucks	7	6	13
Bicycles	0	0	0
	172	226	398

Tartan Dr

Bicycles	0	0	0	0
Trucks	1	2	4	0
Cars	77	52	36	0
Totals	78	54	40	0

East Approach

	Out	In	Total
Cars	818	565	1383
Trucks	51	56	107
Bicycles	0	0	0
	869	621	1490

Strandherd Dr

			Totals	
0	0	0	0	U-turn
0	1	89	90	Left
0	49	381	430	Through
0	19	227	246	Right

Peds: 2 | Peds: 0 | Peds: 1

Strandherd Dr

Totals			
0	0	0	0
60	56	4	0
722	678	44	0
87	84	3	0

West Approach

	Out	In	Total
Cars	697	1312	2009
Trucks	69	74	143
Bicycles	0	0	0
	766	1386	2152

Borrisokane Rd

Totals	586	76	151	0
Cars	557	75	148	0
Trucks	29	1	3	0
Bicycles	0	0	0	0

South Approach

	Out	In	Total
Cars	780	363	1143
Trucks	33	24	57
Bicycles	0	0	0
	813	387	1200

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Borrisokane Rd - Tartan Dr & Strandherd Dr
Site Code: 2416000005
Count Date: Apr 23, 2024
Period: 07:00 - 10:00

Peak Hour Data (08:30 - 09:30)

Start Time	North Approach Tartan Dr						South Approach Borrisokane Rd						East Approach Strandherd Dr						West Approach Strandherd Dr						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
08:30	15	18	25	0	0	58	173	21	37	0	1	231	19	169	9	0	0	197	15	98	56	0	1	169	655
08:45	5	15	16	0	1	36	117	18	49	0	0	184	27	167	17	0	0	211	34	111	69	0	0	214	645
09:00	7	12	17	0	0	36	165	25	39	0	0	229	29	226	10	0	0	265	18	94	55	0	0	167	697
09:15	13	9	20	0	1	42	131	12	26	0	0	169	12	160	24	0	0	196	23	127	66	0	1	216	623
Grand Total	**40**	**54**	**78**	**0**	**2**	**172**	**586**	**76**	**151**	**0**	**1**	**813**	**87**	**722**	**60**	**0**	**0**	**869**	**90**	**430**	**246**	**0**	**2**	**766**	**2620**
Approach %	23.3	31.4	45.3	0		-	72.1	9.3	18.6	0		-	10	83.1	6.9	0		-	11.7	56.1	32.1	0		-	
Totals %	1.5	2.1	3	0		6.6	22.4	2.9	5.8	0		31	3.3	27.6	2.3	0		33.2	3.4	16.4	9.4	0		29.2	
PHF	**0.67**	**0.75**	**0.78**	**0**		**0.74**	**0.85**	**0.76**	**0.77**	**0**		**0.88**	**0.75**	**0.8**	**0.63**	**0**		**0.82**	**0.66**	**0.85**	**0.89**	**0**		**0.89**	**0.94**
Cars	36	52	77	0		165	557	75	148	0		780	84	678	56	0		818	89	381	227	0		697	2460
% Cars	90	96.3	98.7	0		95.9	95.1	98.7	98	0		95.9	96.6	93.9	93.3	0		94.1	98.9	88.6	92.3	0		91	93.9
Trucks	4	2	1	0		7	29	1	3	0		33	3	44	4	0		51	1	49	19	0		69	160
% Trucks	10	3.7	1.3	0		4.1	4.9	1.3	2	0		4.1	3.4	6.1	6.7	0		5.9	1.1	11.4	7.7	0		9	6.1
Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
% Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Peds					2	-					1	-					0	-					2	-	5
% Peds					40	-					20	-					0	-					40	-	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Diagram

Specified Period From: 11:30:00 To: 13:30:00

One Hour Peak From: 12:00:00 To: 13:00:00

Intersection: Borrisokane Rd - Tartan Dr & Strandherd Dr
Site Code: 2416000005
Count Date: Apr 23, 2024

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Strandherd Dr runs E/W

North Approach

	Out	In	Total
Cars	132	138	270
Trucks	7	6	13
Bicycles	0	0	0
	139	**144**	**283**

Tartan Dr

Bicycles	0	0	0	0
Trucks	1	2	4	0
Cars	69	18	45	0
Totals	**70**	**20**	**49**	**0**

East Approach

	Out	In	Total
Cars	653	658	1311
Trucks	34	52	86
Bicycles	0	0	0
	687	**710**	**1397**

Strandherd Dr

			Totals	
0	0	0	**0**	U-turn
0	3	54	**57**	Left
0	45	531	**576**	Through
0	25	293	**318**	Right

Peds: 1

Peds: 1

Peds: 0

Peds: 2

Strandherd Dr

	Totals			
U-turn	**0**	0	0	0
Left	**53**	50	3	0
Through	**539**	510	29	0
Right	**95**	93	2	0

West Approach

	Out	In	Total
Cars	878	850	1728
Trucks	73	52	125
Bicycles	0	0	0
	951	**902**	**1853**

Totals	**293**	**34**	**85**	**0**
Cars	271	34	82	0
Trucks	22	0	3	0
Bicycles	0	0	0	0

Borrisokane Rd

South Approach

	Out	In	Total
Cars	387	404	791
Trucks	25	29	54
Bicycles	0	0	0
	412	**433**	**845**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Borrisokane Rd - Tartan Dr & Strandherd Dr
Site Code: 2416000005
Count Date: Apr 23, 2024
Period: 11:30 - 13:30

Peak Hour Data (12:00 - 13:00)

Start Time	North Approach Tartan Dr						South Approach Borrisokane Rd						East Approach Strandherd Dr						West Approach Strandherd Dr						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
12:00	11	1	20	0	1	32	83	6	27	0	1	116	23	138	10	0	0	171	12	137	74	0	1	223	542
12:15	13	5	16	0	0	34	83	11	26	0	1	120	20	108	10	0	0	138	16	152	81	0	0	249	541
12:30	13	5	16	0	0	34	60	8	17	0	0	85	30	160	13	0	0	203	19	145	89	0	0	253	575
12:45	12	9	18	0	0	39	67	9	15	0	0	91	22	133	20	0	0	175	10	142	74	0	0	226	531
Grand Total	**49**	**20**	**70**	**0**	**1**	**139**	**293**	**34**	**85**	**0**	**2**	**412**	**95**	**539**	**53**	**0**	**0**	**687**	**57**	**576**	**318**	**0**	**1**	**951**	**2189**
Approach %	35.3	14.4	50.4	0		-	71.1	8.3	20.6	0		-	13.8	78.5	7.7	0		-	6	60.6	33.4	0		-	
Totals %	2.2	0.9	3.2	0		6.3	13.4	1.6	3.9	0		18.8	4.3	24.6	2.4	0		31.4	2.6	26.3	14.5	0		43.4	
PHF	**0.94**	**0.56**	**0.88**	**0**		**0.89**	**0.88**	**0.77**	**0.79**	**0**		**0.86**	**0.79**	**0.84**	**0.66**	**0**		**0.85**	**0.75**	**0.95**	**0.89**	**0**		**0.94**	**0.95**
Cars	45	18	69	0		132	271	34	82	0		387	93	510	50	0		653	54	531	293	0		878	2050
% Cars	91.8	90	98.6	0		95	92.5	100	96.5	0		93.9	97.9	94.6	94.3	0		95.1	94.7	92.2	92.1	0		92.3	93.7
Trucks	4	2	1	0		7	22	0	3	0		25	2	29	3	0		34	3	45	25	0		73	139
% Trucks	8.2	10	1.4	0		5	7.5	0	3.5	0		6.1	2.1	5.4	5.7	0		4.9	5.3	7.8	7.9	0		7.7	6.3
Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
% Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Peds					1	-					2	-					0	-					1	-	4
% Peds					25	-					50	-					0	-					25	-	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Diagram

Specified Period
From: 15:00:00
To: 18:00:00

One Hour Peak
From: 16:00:00
To: 17:00:00

Intersection: Borrisokane Rd - Tartan Dr & Strandherd Dr
Site Code: 2416000005
Count Date: Apr 23, 2024

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: Strandherd Dr runs E/W

North Approach

	Out	In	Total
Cars	217	257	474
Trucks	4	3	7
Bicycles	0	0	0
	221	260	481

Tartan Dr

Bicycles	0	0	0	0
Trucks	1	0	3	0
Cars	76	68	73	0
Totals	77	68	76	0

East Approach

	Out	In	Total
Cars	812	910	1722
Trucks	33	26	59
Bicycles	0	0	0
	845	936	1781

Strandherd Dr

			Totals	
0	0	0	0	
0	0	131	131	
0	20	708	728	
0	8	512	520	

Peds: 0

Peds: 0

Peds: 1

Peds: 0

Strandherd Dr

	Totals			
	0	0	0	0
	70	68	2	0
	651	622	29	0
	124	122	2	0

West Approach

	Out	In	Total
Cars	1351	1090	2441
Trucks	28	59	87
Bicycles	0	0	0
	1379	1149	2528

Borrisokane Rd

Totals	421	59	132	0
Cars	392	58	129	0
Trucks	29	1	3	0
Bicycles	0	0	0	0

South Approach

	Out	In	Total
Cars	579	702	1281
Trucks	33	10	43
Bicycles	0	0	0
	612	712	1324

- Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Borrisokane Rd - Tartan Dr & Strandherd Dr
Site Code: 2416000005
Count Date: Apr 23, 2024
Period: 15:00 - 18:00

Peak Hour Data (16:00 - 17:00)

Start Time	North Approach Tartan Dr						South Approach Borrisokane Rd						East Approach Strandherd Dr						West Approach Strandherd Dr						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
16:00	17	25	27	0	0	69	100	19	37	0	0	156	36	184	19	0	1	239	22	187	115	0	0	324	788
16:15	21	7	15	0	0	43	102	14	24	0	0	140	34	159	22	0	0	215	41	180	119	0	0	340	738
16:30	21	20	21	0	0	62	122	12	35	0	0	169	26	155	13	0	0	194	35	178	141	0	0	354	779
16:45	17	16	14	0	0	47	97	14	36	0	0	147	28	153	16	0	0	197	33	183	145	0	0	361	752
Grand Total	**76**	**68**	**77**	**0**	**0**	**221**	**421**	**59**	**132**	**0**	**0**	**612**	**124**	**651**	**70**	**0**	**1**	**845**	**131**	**728**	**520**	**0**	**0**	**1379**	**3057**
Approach %	34.4	30.8	34.8	0		-	68.8	9.6	21.6	0		-	14.7	77	8.3	0		-	9.5	52.8	37.7	0		-	
Totals %	2.5	2.2	2.5	0		7.2	13.8	1.9	4.3	0		20	4.1	21.3	2.3	0		27.6	4.3	23.8	17	0		45.1	
PHF	**0.9**	**0.68**	**0.71**	**0**		**0.8**	**0.86**	**0.78**	**0.89**	**0**		**0.91**	**0.86**	**0.88**	**0.8**	**0**		**0.88**	**0.8**	**0.97**	**0.9**	**0**		**0.95**	**0.97**
Cars	73	68	76	0		217	392	58	129	0		579	122	622	68	0		812	131	708	512	0		1351	2959
% Cars	96.1	100	98.7	0		98.2	93.1	98.3	97.7	0		94.6	98.4	95.5	97.1	0		96.1	100	97.3	98.5	0		98	96.8
Trucks	3	0	1	0		4	29	1	3	0		33	2	29	2	0		33	0	20	8	0		28	98
% Trucks	3.9	0	1.3	0		1.8	6.9	1.7	2.3	0		5.4	1.6	4.5	2.9	0		3.9	0	2.7	1.5	0		2	3.2
Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
% Bicycles	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0
Peds					0	-					0	-					1	-					0	-	1
% Peds					0	-					0	-					100	-					0	-	

Ottawa

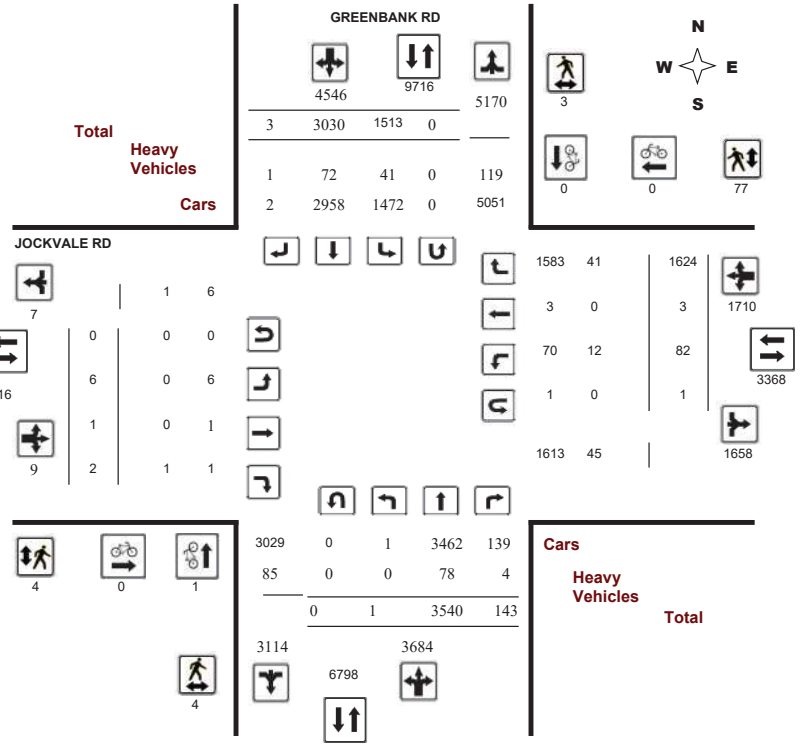
Transportation Services - Traffic Services

Turning Movement Count - Study Results

GREENBANK RD @ JOCKVALE RD

Survey Date: Wednesday, January 08, 2020
Start Time: 07:00
WO No: 39522
Device: Miovision

Full Study Diagram



5469202 - WED JAN 03, 2020 - 8HRS - LORETTA

Transportation Services - Traffic Services

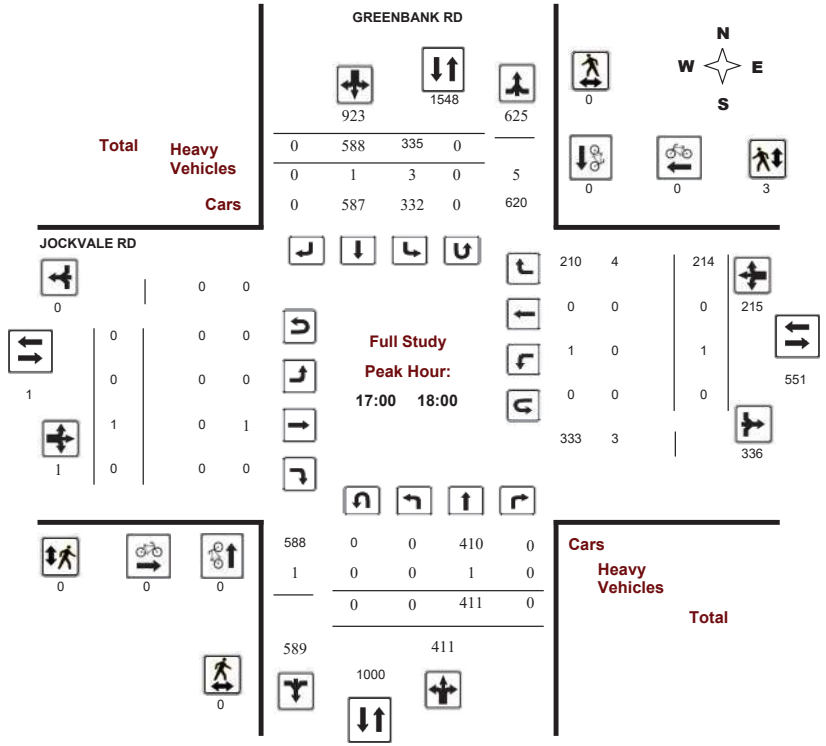
Turning Movement Count - Study Results

GREENBANK RD @ JOCKVALE RD

Survey Date: Wednesday, January 08, 2020 **WO No:** 39522

Start Time: 07:00 **Device:** Miovision

Full Study Peak Hour Diagram



5469202 - WED JAN 03, 2020 - 8HRS - LORETTA

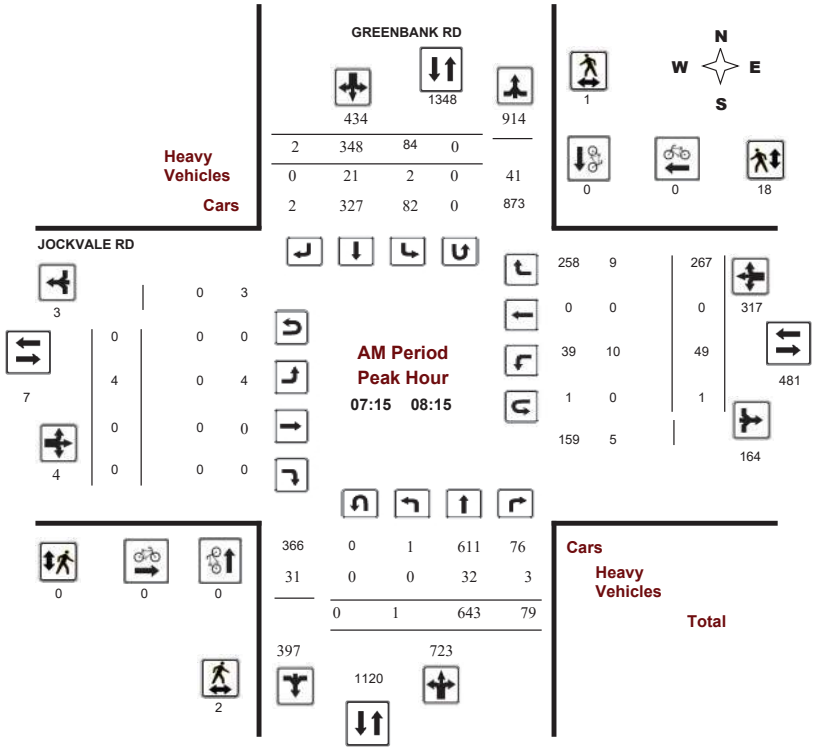
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

GREENBANK RD @ JOCKVALE RD

Survey Date: Wednesday, January 08, 2020 **WO No:** 39522

Start Time: 07:00 **Device:** Miovision



Comments 5469202 - WED JAN 03, 2020 - 8HRS - LORETTA

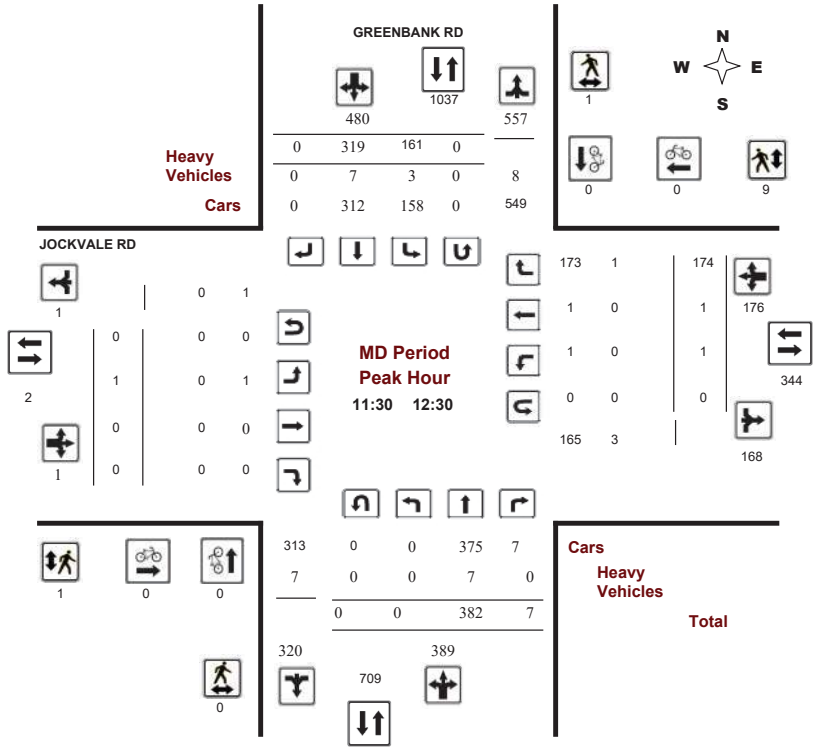
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

GREENBANK RD @ JOCKVALE RD

Survey Date: Wednesday, January 08, 2020 **WO No:** 39522

Start Time: 07:00 **Device:** Miovision



Comments 5469202 - WED JAN 03, 2020 - 8HRS - LORETTA

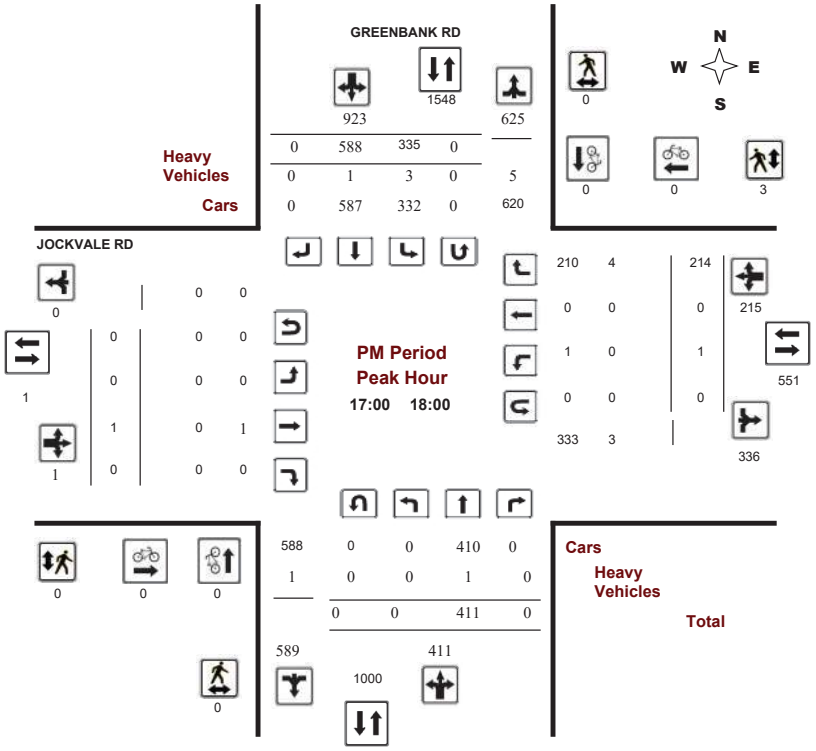
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

GREENBANK RD @ JOCKVALE RD

Survey Date: Wednesday, January 08, 2020 **WO No:** 39522

Start Time: 07:00 **Device:** Miovision



Comments 5469202 - WED JAN 03, 2020 - 8HRS - LORETTA

Transportation Services - Traffic Services

Turning Movement Count - Study Results

GREENBANK RD @ JOCKVALE RD

Survey Date: Wednesday, January 08, 2020 **WO No:** 39522

Start Time: 07:00 **Device:** Miovision

Full Study Summary (8 HR Standard)

Survey Date: Wednesday, January 08, 202

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 0 Westbound: 1

AADT Factor 1.00

	GREENBANK RD								JOCKVALE RD									
	Northbound				Southbound				Eastbound				Westbound					
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total
07:00 08:00	1	672	75	**748**	73	345	2	**420**	**1168**	3	0	0	**3**	49	0	257	**306**	**309**	**1477**
08:00 09:00	0	546	15	**561**	114	215	1	**330**	**891**	1	0	2	**3**	10	0	257	**267**	**270**	**1161**
09:00 10:00	0	453	6	**459**	111	242	0	**353**	**812**	1	0	0	**1**	6	1	170	**177**	**178**	**990**
11:30 12:30	0	382	7	**389**	161	319	0	**480**	**869**	1	0	0	**1**	1	1	174	**176**	**177**	**1046**
12:30 13:30	0	289	13	**302**	164	310	0	**474**	**776**	0	0	0	**0**	7	0	161	**168**	**168**	**944**
15:00 16:00	0	372	14	**386**	259	489	0	**748**	**1134**	0	0	0	**0**	3	0	172	**175**	**175**	**1309**
16:00 17:00	0	415	13	**428**	296	522	0	**818**	**1246**	0	0	0	**0**	5	1	219	**225**	**225**	**1471**
17:00 18:00	0	411	0	**411**	335	588	0	**923**	**1334**	0	1	0	**1**	1	0	214	**215**	**216**	**1550**
Sub Total	1	3540	143	**3684**	1513	3030	3	**4546**	**8230**	6	1	2	**9**	82	3	1624	**1709**	**1718**	**9948**
U Turns				**0**				**0**	**0**				**0**				**1**	**1**	**1**
Total	1	3540	143	**3684**	1513	3030	3	**4546**	**8230**	6	1	2	**9**	82	3	1624	**1710**	**1719**	**9949**
EQ 12Hr	1	4921	199	**5121**	2103	4212	4	**6319**	**11440**	8	1	3	**13**	114	4	2257	**2377**	**2389**	**13829**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	1	4637	187	**4826**	1982	3969	4	**5955**	**11440**	8	1	3	**12**	107	4	2127	**2240**	**2389**	**13829**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**1**					
AVG 24Hr	2	6075	245	**6322**	2596	5200	5	**7801**	**14123**	10	2	3	**15**	141	5	2787	**2935**	**2950**	**17073**
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.														**1.31**					

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

Transportation Services - Traffic Services

Turning Movement Count - Study Results

GREENBANK RD @ JOCKVALE RD

Survey Date: Wednesday, January 08, 2020 **WO No:** 39522

Start Time: 07:00 **Device:** Miovision

Full Study 15 Minute Increments

		GREENBANK RD								JOCKVALE RD									
		Northbound				Southbound				Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	0	174	2	176	17	62	0	79	553	0	0	0	0	5	0	57	62	553	317
07:15	07:30	0	176	6	182	16	98	0	114	644	0	0	0	0	12	0	62	74	644	370
07:30	07:45	0	137	24	161	19	97	1	117	599	1	0	0	1	17	0	69	86	599	365
07:45	08:00	1	185	43	229	21	88	1	110	698	2	0	0	2	15	0	69	85	698	426
08:00	08:15	0	145	6	151	28	65	0	93	527	1	0	0	1	5	0	67	72	527	317
08:15	08:30	0	144	1	145	26	63	0	89	503	0	0	0	0	2	0	60	62	503	296
08:30	08:45	0	137	2	139	28	40	1	69	448	0	0	1	1	1	0	61	62	448	271
08:45	09:00	0	120	6	126	32	47	0	79	444	0	0	1	1	2	0	69	71	444	277
09:00	09:15	0	144	2	146	30	66	0	96	500	0	0	0	0	3	0	45	48	500	290
09:15	09:30	0	125	2	127	27	62	0	89	458	0	0	0	0	0	0	55	55	458	271
09:30	09:45	0	87	0	87	28	56	0	84	355	0	0	0	0	1	0	40	41	355	212
09:45	10:00	0	97	2	99	26	58	0	84	371	1	0	0	1	2	1	30	33	371	217
11:30	11:45	0	105	2	107	44	69	0	113	442	0	0	0	0	1	0	47	48	442	268
11:45	12:00	0	94	1	95	34	56	0	90	380	1	0	0	1	0	1	44	45	380	231
12:00	12:15	0	104	2	106	47	96	0	143	493	0	0	0	0	0	0	44	44	493	293
12:15	12:30	0	79	2	81	36	98	0	134	431	0	0	0	0	0	0	39	39	431	254
12:30	12:45	0	81	1	82	30	65	0	95	377	0	0	0	0	2	0	52	54	377	231
12:45	13:00	0	77	7	84	40	77	0	117	393	0	0	0	0	1	0	37	38	393	239
13:00	13:15	0	53	1	54	49	86	0	135	359	0	0	0	0	0	0	31	31	359	220
13:15	13:30	0	78	4	82	45	82	0	127	414	0	0	0	0	4	0	41	45	414	254
15:00	15:15	0	83	5	88	59	96	0	155	470	0	0	0	0	1	0	47	48	470	291
15:15	15:30	0	94	5	99	55	114	0	169	511	0	0	0	0	1	0	34	35	511	303
15:30	15:45	0	84	3	87	75	152	0	227	584	0	0	0	0	1	0	33	34	584	348
15:45	16:00	0	111	1	112	70	127	0	197	605	0	0	0	0	0	0	58	58	605	367
16:00	16:15	0	95	4	99	91	120	0	211	581	0	0	0	0	0	0	56	56	581	366
16:15	16:30	0	112	1	113	65	132	0	197	602	0	0	0	0	2	0	46	48	602	358
16:30	16:45	0	97	4	101	68	141	0	209	605	0	0	0	0	2	0	55	57	605	367
16:45	17:00	0	111	4	115	72	129	0	201	619	0	0	0	0	1	1	62	64	619	380
17:00	17:15	0	109	0	109	87	127	0	214	610	0	0	0	0	0	0	51	51	610	374
17:15	17:30	0	106	0	106	83	151	0	234	665	0	0	0	0	0	0	68	68	665	408
17:30	17:45	0	88	0	88	79	156	0	235	618	0	1	0	1	0	0	51	51	618	375
17:45	18:00	0	108	0	108	86	154	0	240	655	0	0	0	0	1	0	44	45	655	393
Total:		1	3540	143	3684	1513	3030	3	4546	16514	6	1	2	9	82	3	1624	1710	16514	9,949

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

GREENBANK RD @ JOCKVALE RD

Survey Date: Wednesday, January 08, 2020 **WO No:** 39522

Start Time: 07:00 **Device:** Miovision

Full Study Cyclist Volume

Time Period		GREENBANK RD			JOCKVALE RD			
		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00	07:15	0	0	0	0	0	0	0
07:15	07:30	0	0	0	0	0	0	0
07:30	07:45	0	0	0	0	0	0	0
07:45	08:00	0	0	0	0	0	0	0
08:00	08:15	0	0	0	0	0	0	0
08:15	08:30	0	0	0	0	0	0	0
08:30	08:45	0	0	0	0	0	0	0
08:45	09:00	0	0	0	0	0	0	0
09:00	09:15	1	0	1	0	0	0	1
09:15	09:30	0	0	0	0	0	0	0
09:30	09:45	0	0	0	0	0	0	0
09:45	10:00	0	0	0	0	0	0	0
11:30	11:45	0	0	0	0	0	0	0
11:45	12:00	0	0	0	0	0	0	0
12:00	12:15	0	0	0	0	0	0	0
12:15	12:30	0	0	0	0	0	0	0
12:30	12:45	0	0	0	0	0	0	0
12:45	13:00	0	0	0	0	0	0	0
13:00	13:15	0	0	0	0	0	0	0
13:15	13:30	0	0	0	0	0	0	0
15:00	15:15	0	0	0	0	0	0	0
15:15	15:30	0	0	0	0	0	0	0
15:30	15:45	0	0	0	0	0	0	0
15:45	16:00	0	0	0	0	0	0	0
16:00	16:15	0	0	0	0	0	0	0
16:15	16:30	0	0	0	0	0	0	0
16:30	16:45	0	0	0	0	0	0	0
16:45	17:00	0	0	0	0	0	0	0
17:00	17:15	0	0	0	0	0	0	0
17:15	17:30	0	0	0	0	0	0	0
17:30	17:45	0	0	0	0	0	0	0
17:45	18:00	0	0	0	0	0	0	0
Total		1	0	1	0	0	0	1

Transportation Services - Traffic Services

Turning Movement Count - Study Results

GREENBANK RD @ JOCKVALE RD

Survey Date: Wednesday, January 08, 2020 **WO No:** 39522

Start Time: 07:00 **Device:** Miovision

Full Study Pedestrian Volume

Time Period		GREENBANK RD			JOCKVALE RD			
		NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00	07:15	0	0	**0**	0	4	**4**	**4**
07:15	07:30	0	0	**0**	0	8	**8**	**8**
07:30	07:45	0	1	**1**	0	4	**4**	**5**
07:45	08:00	2	0	**2**	0	2	**2**	**4**
08:00	08:15	0	0	**0**	0	4	**4**	**4**
08:15	08:30	0	0	**0**	0	1	**1**	**1**
08:30	08:45	0	0	**0**	0	2	**2**	**2**
08:45	09:00	0	0	**0**	0	0	**0**	**0**
09:00	09:15	0	0	**0**	0	0	**0**	**0**
09:15	09:30	0	0	**0**	0	1	**1**	**1**
09:30	09:45	0	0	**0**	0	1	**1**	**1**
09:45	10:00	0	0	**0**	1	3	**4**	**4**
11:30	11:45	0	0	**0**	0	5	**5**	**5**
11:45	12:00	0	0	**0**	0	0	**0**	**0**
12:00	12:15	0	0	**0**	0	2	**2**	**2**
12:15	12:30	0	1	**1**	1	2	**3**	**4**
12:30	12:45	0	0	**0**	0	1	**1**	**1**
12:45	13:00	0	0	**0**	0	2	**2**	**2**
13:00	13:15	0	0	**0**	0	3	**3**	**3**
13:15	13:30	0	0	**0**	0	0	**0**	**0**
15:00	15:15	0	0	**0**	0	5	**5**	**5**
15:15	15:30	1	0	**1**	1	1	**2**	**3**
15:30	15:45	1	1	**2**	1	6	**7**	**9**
15:45	16:00	0	0	**0**	0	4	**4**	**4**
16:00	16:15	0	0	**0**	0	2	**2**	**2**
16:15	16:30	0	0	**0**	0	3	**3**	**3**
16:30	16:45	0	0	**0**	0	5	**5**	**5**
16:45	17:00	0	0	**0**	0	3	**3**	**3**
17:00	17:15	0	0	**0**	0	1	**1**	**1**
17:15	17:30	0	0	**0**	0	1	**1**	**1**
17:30	17:45	0	0	**0**	0	1	**1**	**1**
17:45	18:00	0	0	**0**	0	0	**0**	**0**
Total		4	3	**7**	4	77	**81**	**88**

5469202 - WED JAN 03, 2020 - 8HRS - LORETTA

Transportation Services - Traffic Services

Turning Movement Count - Study Results

GREENBANK RD @ JOCKVALE RD

Survey Date: Wednesday, January 08, 2020 **WO No:** 39522

Start Time: 07:00 **Device:** Miovision

Full Study Heavy Vehicles

		GREENBANK RD									JOCKVALE RD									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	0	0	0	**2**	2	2	0	**4**	**6**	0	0	0	**0**	0	0	0	**2**	**2**	**4**
07:15	07:30	0	2	0	**19**	0	10	0	**14**	**33**	0	0	0	**0**	7	0	2	**9**	**9**	**21**
07:30	07:45	0	25	3	**31**	0	2	0	**30**	**61**	0	0	0	**0**	1	0	3	**7**	**7**	**34**
07:45	08:00	0	3	0	**9**	0	4	0	**10**	**19**	0	0	0	**0**	2	0	3	**5**	**5**	**12**
08:00	08:15	0	2	0	**7**	2	5	0	**10**	**17**	0	0	0	**0**	0	0	1	**3**	**3**	**10**
08:15	08:30	0	4	0	**11**	5	7	0	**18**	**29**	0	0	0	**0**	0	0	2	**7**	**7**	**18**
08:30	08:45	0	2	0	**4**	1	1	1	**6**	**10**	0	0	1	**2**	0	0	1	**2**	**4**	**7**
08:45	09:00	0	9	0	**10**	0	1	0	**16**	**26**	0	0	0	**0**	0	0	6	**6**	**6**	**16**
09:00	09:15	0	0	0	**1**	3	0	0	**3**	**4**	0	0	0	**0**	1	0	0	**4**	**4**	**4**
09:15	09:30	0	0	0	**0**	1	0	0	**1**	**1**	0	0	0	**0**	0	0	0	**1**	**1**	**1**
09:30	09:45	0	1	0	**5**	1	3	0	**6**	**11**	0	0	0	**0**	1	0	1	**3**	**3**	**7**
09:45	10:00	0	2	0	**4**	1	2	0	**6**	**10**	0	0	0	**0**	0	0	1	**2**	**2**	**6**
11:30	11:45	0	3	0	**3**	1	0	0	**4**	**7**	0	0	0	**0**	0	0	0	**1**	**1**	**4**
11:45	12:00	0	1	0	**2**	1	1	0	**4**	**6**	0	0	0	**0**	0	0	1	**2**	**2**	**4**
12:00	12:15	0	1	0	**5**	0	4	0	**5**	**10**	0	0	0	**0**	0	0	0	**0**	**0**	**5**
12:15	12:30	0	2	0	**4**	1	2	0	**5**	**9**	0	0	0	**0**	0	0	0	**1**	**1**	**5**
12:30	12:45	0	2	0	**5**	1	3	0	**8**	**13**	0	0	0	**0**	0	0	2	**3**	**3**	**8**
12:45	13:00	0	0	0	**4**	0	4	0	**4**	**8**	0	0	0	**0**	0	0	0	**0**	**0**	**4**
13:00	13:15	0	1	0	**4**	2	3	0	**6**	**10**	0	0	0	**0**	0	0	0	**2**	**2**	**6**
13:15	13:30	0	5	0	**10**	0	5	0	**12**	**22**	0	0	0	**0**	0	0	2	**2**	**2**	**12**
15:00	15:15	0	0	0	**1**	2	1	0	**4**	**5**	0	0	0	**0**	0	0	1	**3**	**3**	**4**
15:15	15:30	0	2	0	**3**	0	1	0	**6**	**9**	0	0	0	**0**	0	0	3	**3**	**3**	**6**
15:30	15:45	0	1	0	**7**	3	6	0	**13**	**20**	0	0	0	**0**	0	0	3	**6**	**6**	**13**
15:45	16:00	0	4	0	**5**	3	1	0	**11**	**16**	0	0	0	**0**	0	0	3	**6**	**6**	**11**
16:00	16:15	0	1	0	**4**	5	3	0	**10**	**14**	0	0	0	**0**	0	0	1	**6**	**6**	**10**
16:15	16:30	0	2	0	**2**	1	0	0	**3**	**5**	0	0	0	**0**	0	0	0	**1**	**1**	**3**
16:30	16:45	0	1	1	**2**	1	0	0	**2**	**4**	0	0	0	**0**	0	0	0	**2**	**2**	**3**
16:45	17:00	0	1	0	**1**	1	0	0	**3**	**4**	0	0	0	**0**	0	0	1	**2**	**2**	**3**
17:00	17:15	0	1	0	**2**	1	1	0	**3**	**5**	0	0	0	**0**	0	0	0	**1**	**1**	**3**
17:15	17:30	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	0	0	0	**0**	**0**	**0**
17:30	17:45	0	0	0	**0**	1	0	0	**1**	**1**	0	0	0	**0**	0	0	0	**1**	**1**	**1**
17:45	18:00	0	0	0	**0**	1	0	0	**5**	**5**	0	0	0	**0**	0	0	4	**5**	**5**	**5**
Total:	None	0	78	4	**167**	41	72	1	**233**	**400**	0	0	1	**2**	12	0	41	**98**	**100**	**250**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

GREENBANK RD @ JOCKVALE RD

Survey Date: Wednesday, January 08, 2020 **WO No:** 39522

Start Time: 07:00 **Device:** Miovision

Full Study 15 Minute U-Turn Total

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

Transportation Services - Traffic Services

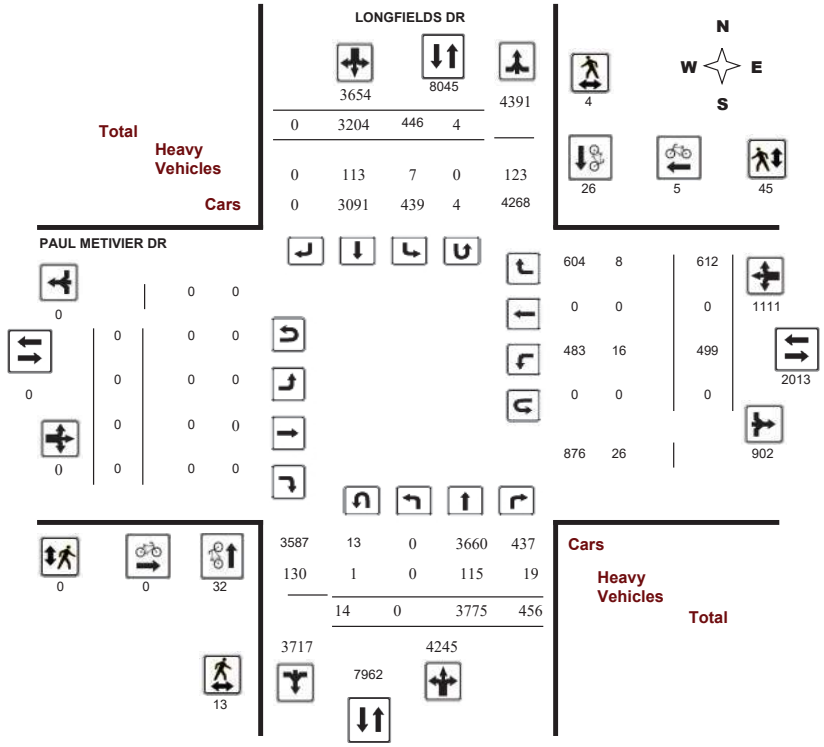
Turning Movement Count - Study Results

LONGFIELDS DR @ PAUL METIVIER DR

Survey Date: Thursday, June 22, 2017 **WO No:** 36939

Start Time: 07:00 **Device:** Miovision

Full Study Diagram


LONGFIELDS DR
PAUL METIVIER DR
N
W
E
S
Total
Heavy Vehicles
Cars
3654
8045
4391
0 3204 446 4
0 113 7 0 123
0 3091 439 4 4268
4
26
5
45
604 8
0 0
483 16
0 0
876 26
612
0
499
0
1111
2013
902
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

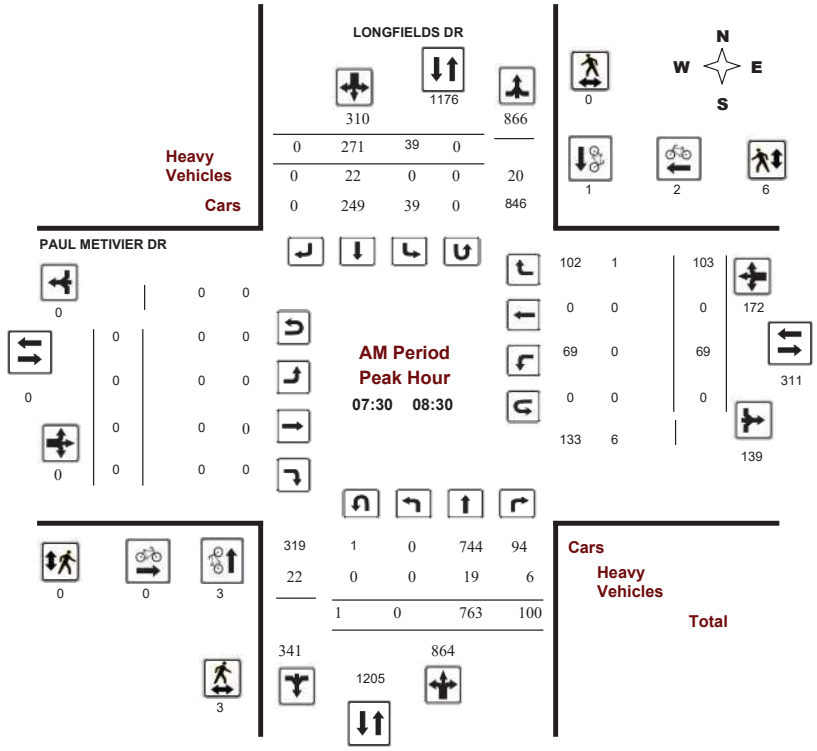
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

LONGFIELDS DR @ PAUL METIVIER DR

Survey Date: Thursday, June 22, 2017 **WO No:** 36939

Start Time: 07:00 **Device:** Miovision



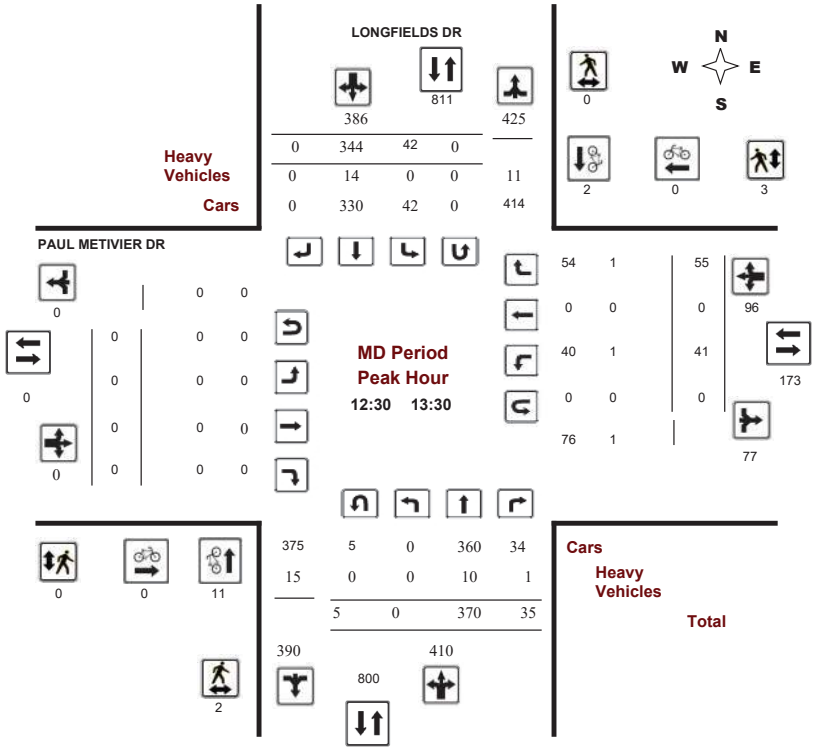
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

LONGFIELDS DR @ PAUL METIVIER DR

Survey Date: Thursday, June 22, 2017 **WO No:** 36939

Start Time: 07:00 **Device:** Miovision



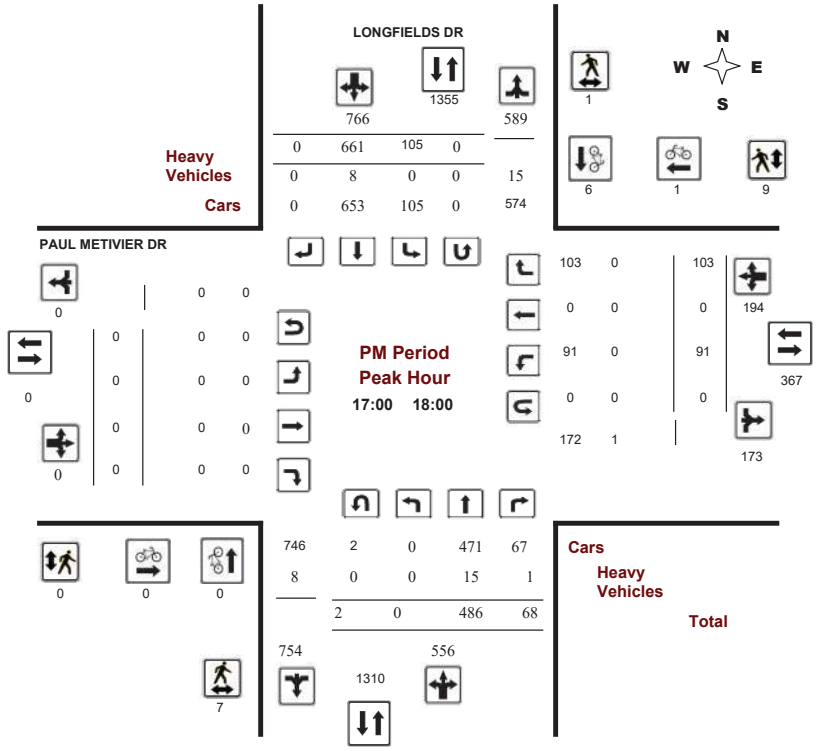
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

LONGFIELDS DR @ PAUL METIVIER DR

Survey Date: Thursday, June 22, 2017 **WO No:** 36939

Start Time: 07:00 **Device:** Miovision



Comments

Transportation Services - Traffic Services

Turning Movement Count - Study Results

LONGFIELDS DR @ PAUL METIVIER DR

Survey Date: Thursday, June 22, 2017 **WO No:** 36939

Start Time: 07:00 **Device:** Miovision

Full Study Summary (8 HR Standard)

Survey Date: Thursday, June 22, 2017

Total Observed U-Turns

Northbound: 14 Southbound: 4

Eastbound: 0 Westbound: 0

AADT Factor .90

	LONGFIELDS DR								PAUL METIVIER DR								
	Northbound				Southbound				Eastbound				Westbound				
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total
07:00 08:00	0	682	70	**752**	31	213	0	**244**	**996**	0	0	0	**0**	60	0	77	**137**	**137**	**1133**
08:00 09:00	0	676	86	**762**	46	279	0	**325**	**1087**	0	0	0	**0**	57	0	113	**170**	**170**	**1257**
09:00 10:00	0	424	42	**466**	31	263	0	**294**	**760**	0	0	0	**0**	50	0	63	**113**	**113**	**873**
11:30 12:30	0	361	31	**392**	37	340	0	**377**	**769**	0	0	0	**0**	38	0	54	**92**	**92**	**861**
12:30 13:30	0	370	35	**405**	42	344	0	**386**	**791**	0	0	0	**0**	41	0	55	**96**	**96**	**887**
15:00 16:00	0	374	53	**427**	60	490	0	**550**	**977**	0	0	0	**0**	65	0	57	**122**	**122**	**1099**
16:00 17:00	0	402	71	**473**	94	614	0	**708**	**1181**	0	0	0	**0**	97	0	90	**187**	**187**	**1368**
17:00 18:00	0	486	68	**554**	105	661	0	**766**	**1320**	0	0	0	**0**	91	0	103	**194**	**194**	**1514**
Sub Total	0	3775	456	**4231**	446	3204	0	**3650**	**7881**	0	0	0	**0**	499	0	612	**1111**	**1111**	**8992**
U Turns	14			**14**	4			**4**	**18**	**0**			**0**	0			**0**	**0**	**18**
Total	14	3775	456	**4245**	450	3204	0	**3654**	**7899**	0	0	0	**0**	499	0	612	**1111**	**1111**	**9010**
EQ 12Hr	19	5247	634	**5900**	626	4454	0	**5080**	**10980**	0	0	0	**0**	694	0	851	**1545**	**1545**	**12525**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.																	**1.39**		
AVG 12Hr	17	4722	571	**5310**	563	4009	0	**4572**	**9882**	0	0	0	**0**	625	0	766	**1391**	**1391**	**11273**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.																	**.90**		
AVG 24Hr	22	6186	748	**6956**	738	5252	0	**5990**	**12946**	0	0	0	**0**	819	0	1003	**1822**	**1822**	**14768**
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.																	**1.31**		

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

Transportation Services - Traffic Services

Turning Movement Count - Study Results

LONGFIELDS DR @ PAUL METIVIER DR

Survey Date: Thursday, June 22, 2017 **WO No:** 36939

Start Time: 07:00 **Device:** Miovision

Full Study 15 Minute Increments

		LONGFIELDS DR									PAUL METIVIER DR									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	0	143	11	154	6	41	0	47	**201**	0	0	0	0	10	0	16	26	**26**	**227**
07:15	07:30	0	158	14	172	5	53	0	58	**230**	0	0	0	0	11	0	19	30	**30**	**260**
07:30	07:45	0	204	18	222	10	59	0	69	**291**	0	0	0	0	20	0	20	40	**40**	**331**
07:45	08:00	0	177	27	204	10	60	0	70	**274**	0	0	0	0	19	0	22	41	**41**	**315**
08:00	08:15	1	202	25	228	9	72	0	81	**309**	0	0	0	0	17	0	31	48	**48**	**357**
08:15	08:30	0	180	30	210	10	80	0	90	**300**	0	0	0	0	13	0	30	43	**43**	**343**
08:30	08:45	0	148	9	157	17	69	0	86	**243**	0	0	0	0	17	0	23	40	**40**	**283**
08:45	09:00	2	146	22	170	11	58	0	69	**239**	0	0	0	0	10	0	29	39	**39**	**278**
09:00	09:15	0	134	14	148	8	78	0	86	**234**	0	0	0	0	15	0	20	35	**35**	**269**
09:15	09:30	0	88	12	100	12	71	0	83	**183**	0	0	0	0	13	0	9	22	**22**	**205**
09:30	09:45	2	100	6	108	9	59	0	68	**176**	0	0	0	0	11	0	12	23	**23**	**199**
09:45	10:00	0	102	10	112	2	55	0	57	**169**	0	0	0	0	11	0	22	33	**33**	**202**
11:30	11:45	1	88	8	97	9	86	0	95	**192**	0	0	0	0	13	0	15	28	**28**	**220**
11:45	12:00	0	88	10	98	5	78	0	83	**181**	0	0	0	0	8	0	12	20	**20**	**201**
12:00	12:15	1	94	6	101	9	89	0	98	**199**	0	0	0	0	9	0	15	24	**24**	**223**
12:15	12:30	0	91	7	98	15	87	0	102	**200**	0	0	0	0	8	0	12	20	**20**	**220**
12:30	12:45	0	99	12	111	10	80	0	90	**201**	0	0	0	0	8	0	17	25	**25**	**226**
12:45	13:00	1	96	8	105	12	82	0	94	**199**	0	0	0	0	9	0	15	24	**24**	**223**
13:00	13:15	4	81	9	94	8	92	0	100	**194**	0	0	0	0	13	0	9	22	**22**	**216**
13:15	13:30	0	94	6	100	12	90	0	102	**202**	0	0	0	0	11	0	14	25	**25**	**227**
15:00	15:15	0	89	11	100	18	114	0	132	**232**	0	0	0	0	19	0	12	31	**31**	**263**
15:15	15:30	0	93	13	106	12	125	0	137	**243**	0	0	0	0	21	0	20	41	**41**	**284**
15:30	15:45	0	87	18	105	13	118	0	131	**236**	0	0	0	0	12	0	7	19	**19**	**255**
15:45	16:00	0	105	11	116	17	133	0	150	**266**	0	0	0	0	13	0	18	31	**31**	**297**
16:00	16:15	0	98	10	108	20	122	0	142	**250**	0	0	0	0	20	0	19	39	**39**	**289**
16:15	16:30	0	96	19	115	29	153	0	182	**297**	0	0	0	0	25	0	22	47	**47**	**344**
16:30	16:45	0	111	25	136	23	161	0	184	**320**	0	0	0	0	23	0	21	44	**44**	**364**
16:45	17:00	0	97	17	114	24	178	0	202	**316**	0	0	0	0	29	0	28	57	**57**	**373**
17:00	17:15	1	109	15	125	22	176	0	198	**323**	0	0	0	0	28	0	26	54	**54**	**377**
17:15	17:30	0	130	14	144	27	154	0	181	**325**	0	0	0	0	20	0	21	41	**41**	**366**
17:30	17:45	0	121	23	144	22	163	0	185	**329**	0	0	0	0	24	0	19	43	**43**	**372**
17:45	18:00	1	126	16	143	34	168	0	202	**345**	0	0	0	0	19	0	37	56	**56**	**401**
Total:		14	3775	456	4245	450	3204	0	3654	**7899**	0	0	0	0	499	0	612	1111	**7899**	**9,010**

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

LONGFIELDS DR @ PAUL METIVIER DR

Survey Date: Thursday, June 22, 2017 **WO No:** 36939

Start Time: 07:00 **Device:** Miovision

Full Study Cyclist Volume

		LONGFIELDS DR			PAUL METIVIER DR			
Time Period		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00	07:15	0	0	**0**	0	0	**0**	**0**
07:15	07:30	0	0	**0**	0	0	**0**	**0**
07:30	07:45	2	0	**2**	0	2	**2**	**4**
07:45	08:00	0	1	**1**	0	0	**0**	**1**
08:00	08:15	0	0	**0**	0	0	**0**	**0**
08:15	08:30	1	0	**1**	0	0	**0**	**1**
08:30	08:45	0	0	**0**	0	0	**0**	**0**
08:45	09:00	1	0	**1**	0	0	**0**	**1**
09:00	09:15	0	0	**0**	0	0	**0**	**0**
09:15	09:30	5	2	**7**	0	0	**0**	**7**
09:30	09:45	0	1	**1**	0	0	**0**	**1**
09:45	10:00	1	1	**2**	0	0	**0**	**2**
11:30	11:45	1	1	**2**	0	0	**0**	**2**
11:45	12:00	1	1	**2**	0	0	**0**	**2**
12:00	12:15	2	2	**4**	0	1	**1**	**5**
12:15	12:30	0	2	**2**	0	0	**0**	**2**
12:30	12:45	1	1	**2**	0	0	**0**	**2**
12:45	13:00	6	0	**6**	0	0	**0**	**6**
13:00	13:15	0	1	**1**	0	0	**0**	**1**
13:15	13:30	4	0	**4**	0	0	**0**	**4**
15:00	15:15	0	0	**0**	0	0	**0**	**0**
15:15	15:30	4	0	**4**	0	0	**0**	**4**
15:30	15:45	0	3	**3**	0	0	**0**	**3**
15:45	16:00	1	1	**2**	0	0	**0**	**2**
16:00	16:15	1	1	**2**	0	0	**0**	**2**
16:15	16:30	1	1	**2**	0	0	**0**	**2**
16:30	16:45	0	1	**1**	0	0	**0**	**1**
16:45	17:00	0	0	**0**	0	1	**1**	**1**
17:00	17:15	0	2	**2**	0	0	**0**	**2**
17:15	17:30	0	0	**0**	0	0	**0**	**0**
17:30	17:45	0	2	**2**	0	0	**0**	**2**
17:45	18:00	0	2	**2**	0	1	**1**	**3**
Total		32	26	**58**	0	5	**5**	**63**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

LONGFIELDS DR @ PAUL METIVIER DR

Survey Date: Thursday, June 22, 2017 **WO No:** 36939

Start Time: 07:00 **Device:** Miovision

Full Study Pedestrian Volume

	LONGFIELDS DR			PAUL METIVIER DR			
Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00 07:15	0	0	**0**	0	0	**0**	**0**
07:15 07:30	0	0	**0**	0	1	**1**	**1**
07:30 07:45	2	0	**2**	0	1	**1**	**3**
07:45 08:00	0	0	**0**	0	2	**2**	**2**
08:00 08:15	0	0	**0**	0	1	**1**	**1**
08:15 08:30	1	0	**1**	0	2	**2**	**3**
08:30 08:45	0	0	**0**	0	2	**2**	**2**
08:45 09:00	0	0	**0**	0	1	**1**	**1**
09:00 09:15	0	0	**0**	0	0	**0**	**0**
09:15 09:30	0	0	**0**	0	4	**4**	**4**
09:30 09:45	0	0	**0**	0	0	**0**	**0**
09:45 10:00	0	0	**0**	0	3	**3**	**3**
11:30 11:45	0	0	**0**	0	1	**1**	**1**
11:45 12:00	0	0	**0**	0	0	**0**	**0**
12:00 12:15	0	0	**0**	0	2	**2**	**2**
12:15 12:30	0	0	**0**	0	1	**1**	**1**
12:30 12:45	0	0	**0**	0	1	**1**	**1**
12:45 13:00	2	0	**2**	0	0	**0**	**2**
13:00 13:15	0	0	**0**	0	1	**1**	**1**
13:15 13:30	0	0	**0**	0	1	**1**	**1**
15:00 15:15	0	1	**1**	0	6	**6**	**7**
15:15 15:30	0	0	**0**	0	1	**1**	**1**
15:30 15:45	0	0	**0**	0	0	**0**	**0**
15:45 16:00	0	0	**0**	0	0	**0**	**0**
16:00 16:15	0	1	**1**	0	1	**1**	**2**
16:15 16:30	0	0	**0**	0	1	**1**	**1**
16:30 16:45	1	0	**1**	0	1	**1**	**2**
16:45 17:00	0	1	**1**	0	2	**2**	**3**
17:00 17:15	2	0	**2**	0	2	**2**	**4**
17:15 17:30	4	0	**4**	0	3	**3**	**7**
17:30 17:45	1	0	**1**	0	3	**3**	**4**
17:45 18:00	0	1	**1**	0	1	**1**	**2**
Total	13	4	**17**	0	45	**45**	**62**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

LONGFIELDS DR @ PAUL METIVIER DR

Survey Date: Thursday, June 22, 2017 **WO No:** 36939

Start Time: 07:00 **Device:** Miovision

Full Study Heavy Vehicles

		LONGFIELDS DR									PAUL METIVIER DR									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	0	1	0	**1**	2	2	0	**4**	**5**	0	0	0	**0**	0	0	0	**0**	**0**	**5**
07:15	07:30	0	4	0	**4**	0	7	0	**7**	**11**	0	0	0	**0**	3	0	0	**3**	**3**	**14**
07:30	07:45	0	7	2	**9**	0	5	0	**5**	**14**	0	0	0	**0**	0	0	0	**0**	**0**	**14**
07:45	08:00	0	5	0	**5**	0	4	0	**4**	**9**	0	0	0	**0**	0	0	0	**0**	**0**	**9**
08:00	08:15	0	2	4	**6**	0	4	0	**4**	**10**	0	0	0	**0**	0	0	1	**1**	**1**	**11**
08:15	08:30	0	5	0	**5**	0	9	0	**9**	**14**	0	0	0	**0**	0	0	0	**0**	**0**	**14**
08:30	08:45	0	3	0	**3**	1	8	0	**9**	**12**	0	0	0	**0**	1	0	0	**1**	**1**	**13**
08:45	09:00	0	6	4	**10**	1	2	0	**3**	**13**	0	0	0	**0**	0	0	0	**0**	**0**	**13**
09:00	09:15	0	3	0	**3**	0	8	0	**8**	**11**	0	0	0	**0**	1	0	0	**1**	**1**	**12**
09:15	09:30	0	2	0	**2**	1	1	0	**2**	**4**	0	0	0	**0**	1	0	0	**1**	**1**	**5**
09:30	09:45	0	3	0	**3**	0	2	0	**2**	**5**	0	0	0	**0**	0	0	0	**0**	**0**	**6**
09:45	10:00	0	4	0	**4**	0	4	0	**4**	**8**	0	0	0	**0**	1	0	0	**1**	**1**	**9**
11:30	11:45	0	2	0	**2**	0	4	0	**4**	**6**	0	0	0	**0**	0	0	0	**0**	**0**	**6**
11:45	12:00	0	3	1	**4**	0	5	0	**5**	**9**	0	0	0	**0**	0	0	0	**0**	**0**	**9**
12:00	12:15	0	6	0	**6**	0	2	0	**2**	**8**	0	0	0	**0**	0	0	0	**0**	**0**	**8**
12:15	12:30	0	3	0	**3**	0	4	0	**4**	**7**	0	0	0	**0**	0	0	0	**0**	**0**	**7**
12:30	12:45	0	3	1	**4**	0	3	0	**3**	**7**	0	0	0	**0**	0	0	0	**0**	**0**	**7**
12:45	13:00	0	1	0	**1**	0	2	0	**2**	**3**	0	0	0	**0**	1	0	0	**1**	**1**	**4**
13:00	13:15	0	3	0	**3**	0	3	0	**3**	**6**	0	0	0	**0**	0	0	0	**0**	**0**	**6**
13:15	13:30	0	3	0	**3**	0	6	0	**6**	**9**	0	0	0	**0**	0	0	1	**1**	**1**	**10**
15:00	15:15	0	2	0	**2**	0	3	0	**3**	**5**	0	0	0	**0**	0	0	0	**0**	**0**	**5**
15:15	15:30	0	7	0	**7**	0	3	0	**3**	**10**	0	0	0	**0**	2	0	1	**3**	**3**	**13**
15:30	15:45	0	5	1	**6**	0	4	0	**4**	**10**	0	0	0	**0**	2	0	0	**2**	**2**	**12**
15:45	16:00	0	2	0	**2**	0	3	0	**3**	**5**	0	0	0	**0**	2	0	1	**3**	**3**	**8**
16:00	16:15	0	5	1	**6**	2	3	0	**5**	**11**	0	0	0	**0**	1	0	1	**2**	**2**	**13**
16:15	16:30	0	6	1	**7**	0	0	0	**0**	**7**	0	0	0	**0**	0	0	2	**2**	**2**	**9**
16:30	16:45	0	2	1	**3**	0	3	0	**3**	**6**	0	0	0	**0**	0	0	1	**1**	**1**	**7**
16:45	17:00	0	2	2	**4**	0	1	0	**1**	**5**	0	0	0	**0**	1	0	0	**1**	**1**	**6**
17:00	17:15	0	2	1	**3**	0	3	0	**3**	**6**	0	0	0	**0**	0	0	0	**0**	**0**	**6**
17:15	17:30	0	3	0	**3**	0	1	0	**1**	**4**	0	0	0	**0**	0	0	0	**0**	**0**	**4**
17:30	17:45	0	4	0	**4**	0	2	0	**2**	**6**	0	0	0	**0**	0	0	0	**0**	**0**	**6**
17:45	18:00	0	6	0	**6**	0	2	0	**2**	**8**	0	0	0	**0**	0	0	0	**0**	**0**	**8**
Total:	None	0	115	19	**134**	7	113	0	**120**	**254**	0	0	0	**0**	16	0	8	**24**	**24**	**279**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

LONGFIELDS DR @ PAUL METIVIER DR

Survey Date: Thursday, June 22, 2017 **WO No:** 36939

Start Time: 07:00 **Device:** Miovision

Full Study 15 Minute U-Turn Total

Time Period		LONGFIELDS DR Northbound U-Turn Total	LONGFIELDS DR Southbound U-Turn Total	PAUL METIVIER DR Eastbound U-Turn Total	PAUL METIVIER DR Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	**0**
07:15	07:30	0	0	0	0	**0**
07:30	07:45	0	0	0	0	**0**
07:45	08:00	0	0	0	0	**0**
08:00	08:15	1	0	0	0	**1**
08:15	08:30	0	0	0	0	**0**
08:30	08:45	0	0	0	0	**0**
08:45	09:00	2	1	0	0	**3**
09:00	09:15	0	0	0	0	**0**
09:15	09:30	0	0	0	0	**0**
09:30	09:45	2	0	0	0	**2**
09:45	10:00	0	0	0	0	**0**
11:30	11:45	1	0	0	0	**1**
11:45	12:00	0	0	0	0	**0**
12:00	12:15	1	0	0	0	**1**
12:15	12:30	0	1	0	0	**1**
12:30	12:45	0	0	0	0	**0**
12:45	13:00	1	0	0	0	**1**
13:00	13:15	4	0	0	0	**4**
13:15	13:30	0	0	0	0	**0**
15:00	15:15	0	0	0	0	**0**
15:15	15:30	0	0	0	0	**0**
15:30	15:45	0	0	0	0	**0**
15:45	16:00	0	0	0	0	**0**
16:00	16:15	0	0	0	0	**0**
16:15	16:30	0	1	0	0	**1**
16:30	16:45	0	1	0	0	**1**
16:45	17:00	0	0	0	0	**0**
17:00	17:15	1	0	0	0	**1**
17:15	17:30	0	0	0	0	**0**
17:30	17:45	0	0	0	0	**0**
17:45	18:00	1	0	0	0	**1**
Total		14	4	0	0	**18**

Transportation Services - Traffic Services

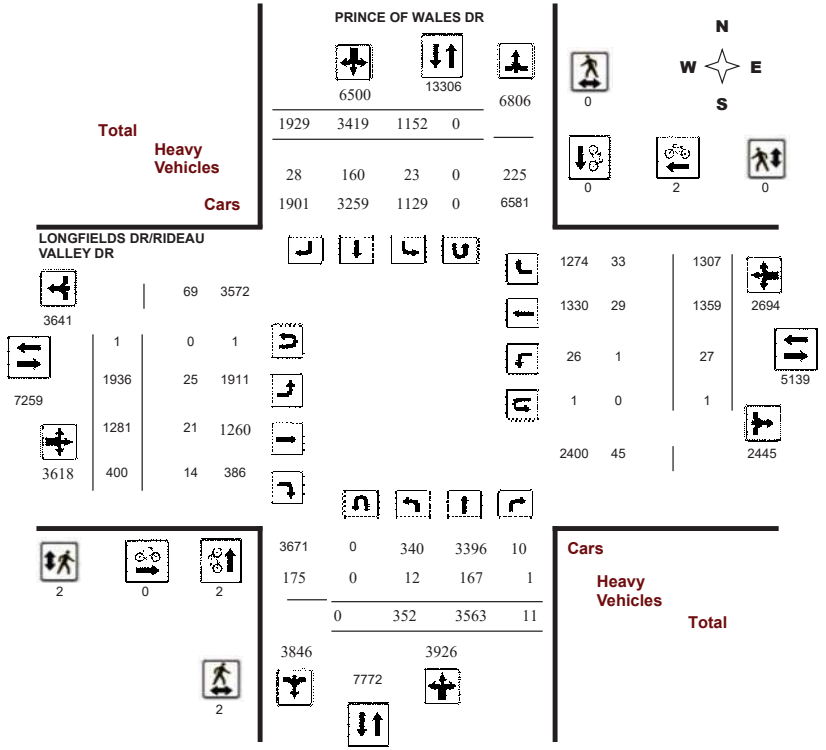
Turning Movement Count - Study Results

LONGFIELDS DR/RIDEAU VALLEY DR @ PRINCE OF WALES DR

Survey Date: Tuesday, February 06, 2024 **WO No:** 41466

Start Time: 07:00 **Device:** Miovision

Full Study Diagram



Transportation Services - Traffic Services

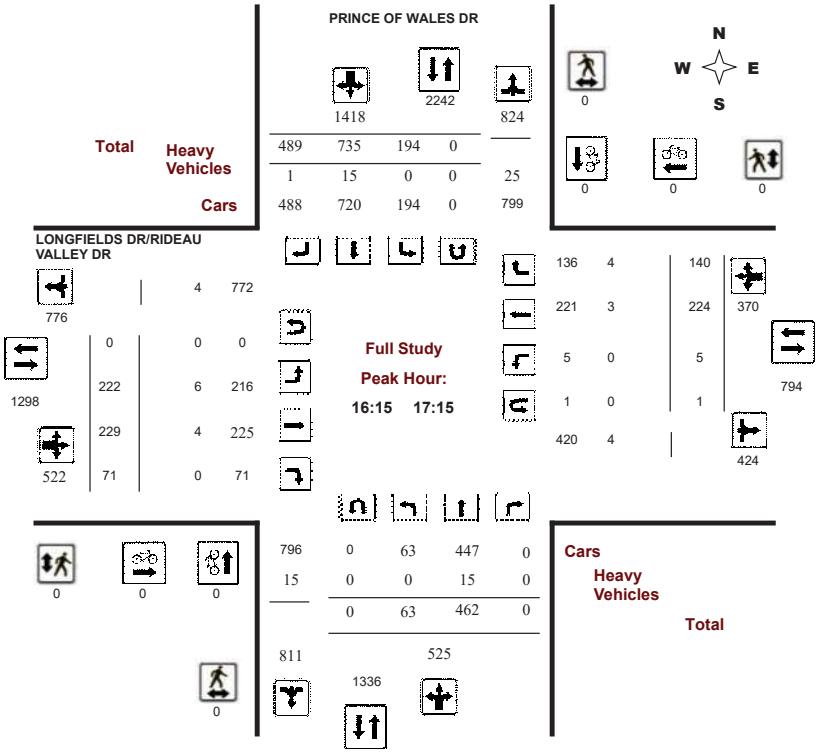
Turning Movement Count - Study Results

LONGFIELDS DR/RIDEAU VALLEY DR @ PRINCE OF WALES DR

Survey Date: Tuesday, February 06, 2024 **WO No:** 41466

Start Time: 07:00 **Device:** Miovision

Full Study Peak Hour Diagram



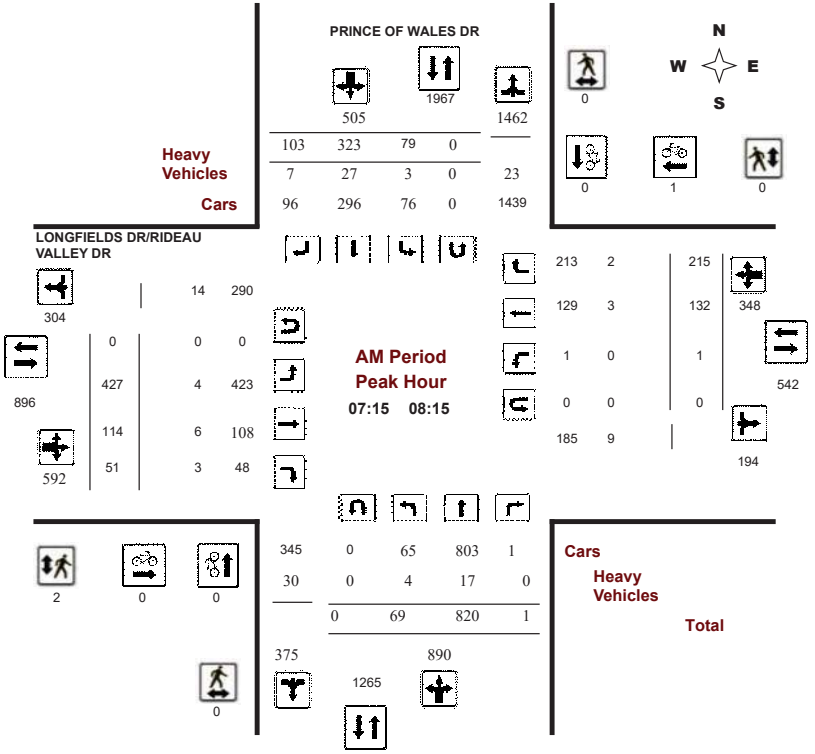
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

LONGFIELDS DR/RIDEAU VALLEY DR @ PRINCE OF WALES DR

Survey Date: Tuesday, February 06, 2024 **WO No:** 41466

Start Time: 07:00 **Device:** Miovision



Comments

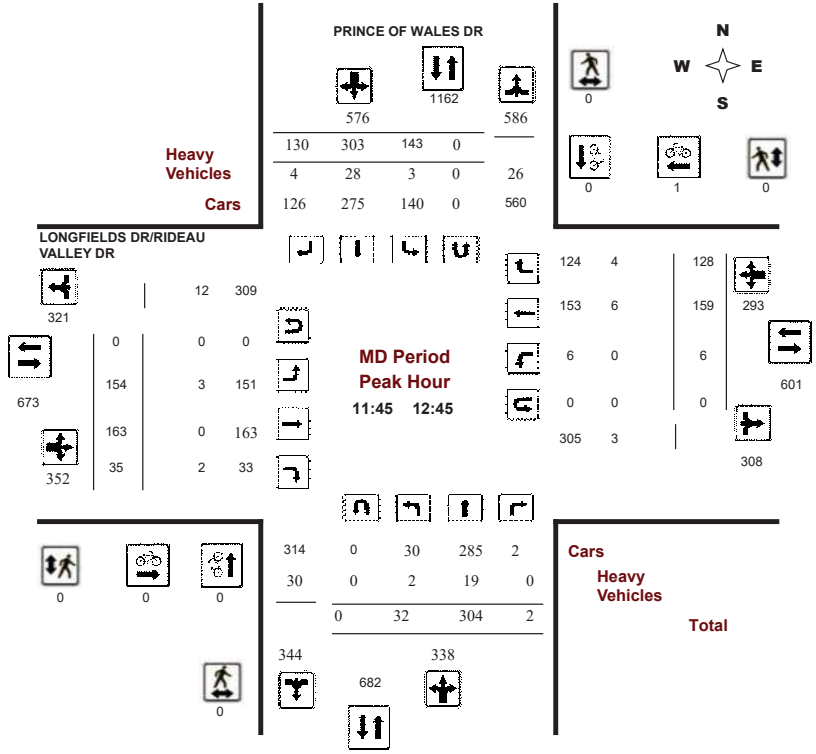
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

LONGFIELDS DR/RIDEAU VALLEY DR @ PRINCE OF WALES DR

Survey Date: Tuesday, February 06, 2024 **WO No:** 41466

Start Time: 07:00 **Device:** Miovision



Comments

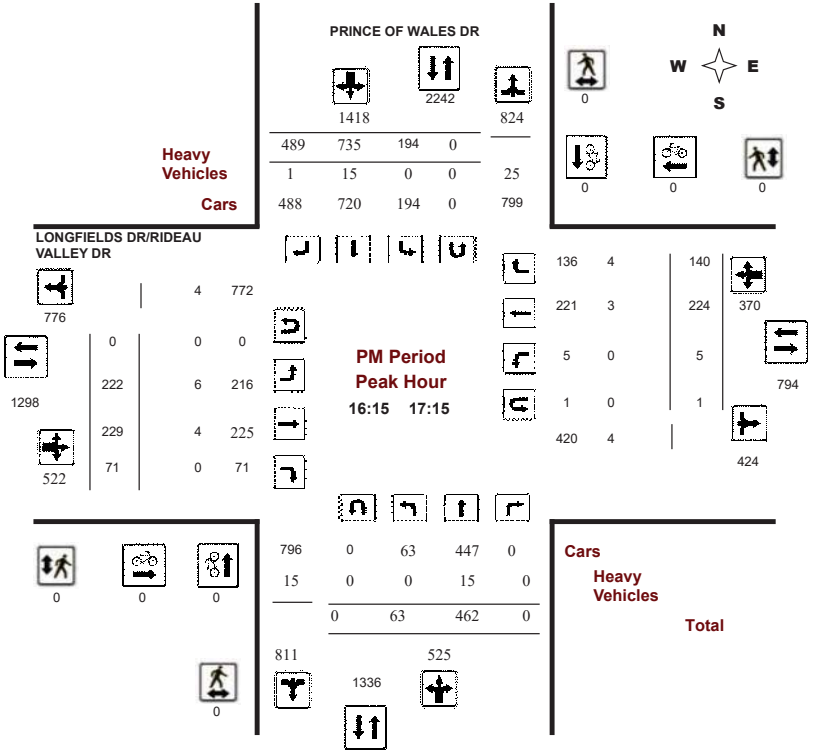
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

LONGFIELDS DR/RIDEAU VALLEY DR @ PRINCE OF WALES DR

Survey Date: Tuesday, February 06, 2024 **WO No:** 41466

Start Time: 07:00 **Device:** Miovision



Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Project #24-160 - CGH Transportation

Intersection Count Report

Intersection:	Borrisokane Rd & Haiku St
Municipality:	Ottawa
Count Date:	Tuesday, Apr 23, 2024
Site Code:	2416000006
Count Categories:	Cars, Trucks, Bicycles, Pedestrians
Count Period:	07:00-10:00, 11:30-13:30, 15:00-18:00
Weather:	Clear
Comments:	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Summary

Intersection:	Borrisokane Rd & Haiku St
Site Code:	2416000006
Municipality:	Ottawa
Count Date:	Apr 23, 2024

Borrisokane Rd - Traffic Summary

	North Approach Totals						South Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
Hour	**Left**	**Thru**	**Right**	**U-Turn**	**Total**	**Peds**	**Left**	**Thru**	**Right**	**U-Turn**	**Total**	**Peds**	**Total**
07:00 - 08:00	47	88	0	0	135	0	0	107	34	0	141	0	276
08:00 - 09:00	69	98	0	0	167	0	0	145	35	0	180	0	347
09:00 - 10:00	54	80	0	0	134	0	0	109	25	0	134	0	268
BREAK													
11:30 - 12:00	24	41	0	0	65	0	0	53	15	0	68	0	133
12:00 - 13:00	59	91	0	0	150	0	0	67	21	0	88	0	238
13:00 - 13:30	36	43	0	0	79	0	0	47	13	0	60	0	139
BREAK													
15:00 - 16:00	82	163	0	0	245	0	0	132	31	0	163	0	408
16:00 - 17:00	92	169	0	0	261	0	0	122	36	0	158	0	419
17:00 - 18:00	103	141	0	0	244	0	0	124	40	0	164	0	408
GRAND TOTAL	**566**	**914**	**0**	**0**	**1480**	**0**	**0**	**906**	**250**	**0**	**1156**	**0**	**2636**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Summary

Intersection: Borrisokane Rd & Haiku St
Site Code: 2416000006
Municipality: Ottawa
Count Date: Apr 23, 2024

Haiku St - Traffic Summary

	East Approach Totals						West Approach Totals						
	Includes Cars, Trucks, Bicycles						Includes Cars, Trucks, Bicycles						
Hour	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	Total
07:00 - 08:00	49	0	94	0	143	0	0	0	0	0	0	0	143
08:00 - 09:00	33	0	111	0	144	0	0	0	0	0	0	0	144
09:00 - 10:00	37	0	85	0	122	0	0	0	0	0	0	0	122
BREAK													
11:30 - 12:00	6	0	26	0	32	0	0	0	0	0	0	0	32
12:00 - 13:00	26	0	58	0	84	0	0	0	0	0	0	0	84
13:00 - 13:30	8	0	25	0	33	0	0	0	0	0	0	0	33
BREAK													
15:00 - 16:00	44	0	115	0	159	0	0	0	0	0	0	0	159
16:00 - 17:00	68	0	105	0	173	0	0	0	0	0	0	0	173
17:00 - 18:00	29	0	80	0	109	0	0	0	0	0	0	0	109
GRAND TOTAL	**300**	**0**	**699**	**0**	**999**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**999**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Borrisokane Rd & Haiku St
Site Code: 2416000006
Municipality: Ottawa
Count Date: Apr 23, 2024

North Approach - Borrisokane Rd

	Cars					Trucks					Bicycles					
Start Time	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	Total Peds
07:00	9	20	0	0	29	0	1	0	0	1	0	0	0	0	0	0
07:15	10	27	0	0	37	6	0	0	0	6	0	0	0	0	0	0
07:30	11	17	0	0	28	3	1	0	0	4	0	0	0	0	0	0
07:45	8	20	0	0	28	0	2	0	0	2	0	0	0	0	0	0
08:00	17	19	0	0	36	1	0	0	0	1	0	0	0	0	0	0
08:15	15	17	0	0	32	6	3	0	0	9	0	0	0	0	0	0
08:30	17	29	0	0	46	3	0	0	0	3	0	0	0	0	0	0
08:45	8	29	0	0	37	2	1	0	0	3	0	0	0	0	0	0
09:00	11	20	0	0	31	2	1	0	0	3	0	0	0	0	0	0
09:15	13	21	0	0	34	6	0	0	0	6	0	0	0	0	0	0
09:30	12	18	0	0	30	0	0	0	0	0	0	0	0	0	0	0
09:45	8	20	0	0	28	2	0	0	0	2	0	0	0	0	0	0
SUBTOTAL	139	257	0	0	396	31	9	0	0	40	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Borrisokane Rd & Haiku St
Site Code: 2416000006
Municipality: Ottawa
Count Date: Apr 23, 2024

North Approach - Borrisokane Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
11:30	7	15	0	0	22	2	1	0	0	3	0	0	0	0	0	0
11:45	11	24	0	0	35	4	1	0	0	5	0	0	0	0	0	0
12:00	7	17	0	0	24	2	0	0	0	2	0	0	0	0	0	0
12:15	14	23	0	0	37	3	0	0	0	3	0	0	0	0	0	0
12:30	19	24	0	0	43	4	0	0	0	4	0	0	0	0	0	0
12:45	7	25	0	0	32	3	2	0	0	5	0	0	0	0	0	0
13:00	14	16	0	0	30	3	2	0	0	5	0	0	0	0	0	0
13:15	15	25	0	0	40	4	0	0	0	4	0	0	0	0	0	0
SUBTOTAL	94	169	0	0	263	25	6	0	0	31	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Borrisokane Rd & Haiku St
Site Code: 2416000006
Municipality: Ottawa
Count Date: Apr 23, 2024

North Approach - Borrisokane Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
15:00	12	28	0	0	40	5	0	0	0	5	0	0	0	0	0	0
15:15	16	45	0	0	61	1	0	0	0	1	0	0	0	0	0	0
15:30	21	51	0	0	72	3	1	0	0	4	0	0	0	0	0	0
15:45	21	36	0	0	57	3	2	0	0	5	0	0	0	0	0	0
16:00	18	50	0	0	68	1	0	0	0	1	0	0	0	0	0	0
16:15	25	30	0	0	55	0	2	0	0	2	0	0	0	0	0	0
16:30	24	43	0	0	67	5	2	0	0	7	0	0	0	0	0	0
16:45	19	42	0	0	61	0	0	0	0	0	0	0	0	0	0	0
17:00	26	37	0	0	63	0	1	0	0	1	0	0	0	0	0	0
17:15	39	34	0	0	73	0	0	0	0	0	0	0	0	0	0	0
17:30	22	28	0	0	50	0	0	0	0	0	0	0	0	0	0	0
17:45	16	41	0	0	57	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	259	465	0	0	724	18	8	0	0	26	0	0	0	0	0	0
GRAND TOTAL	492	891	0	0	1383	74	23	0	0	97	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Borrisokane Rd & Haiku St
Site Code: 2416000006
Municipality: Ottawa
Count Date: Apr 23, 2024

South Approach - Borrisokane Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
07:00	0	12	3	0	15	0	3	0	0	3	0	0	0	0	0	0
07:15	0	18	7	0	25	0	1	1	0	2	0	0	0	0	0	0
07:30	0	24	13	0	37	0	1	1	0	2	0	0	0	0	0	0
07:45	0	44	8	0	52	0	4	1	0	5	0	0	0	0	0	0
08:00	0	33	7	0	40	0	3	1	0	4	0	0	0	0	0	0
08:15	0	37	8	0	45	0	2	1	0	3	0	0	0	0	0	0
08:30	0	34	10	0	44	0	3	1	0	4	0	0	0	0	0	0
08:45	0	33	7	0	40	0	0	0	0	0	0	0	0	0	0	0
09:00	0	25	7	0	32	0	1	1	0	2	0	0	0	0	0	0
09:15	0	31	6	0	37	0	0	0	0	0	0	0	0	0	0	0
09:30	0	23	4	0	27	0	3	0	0	3	0	0	0	0	0	0
09:45	0	23	6	0	29	0	3	1	0	4	0	0	0	0	0	0
SUBTOTAL	0	337	86	0	423	0	24	8	0	32	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Borrisokane Rd & Haiku St
Site Code: 2416000006
Municipality: Ottawa
Count Date: Apr 23, 2024

South Approach - Borrisokane Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	↰	↑	↱	↶	Total	
11:30	0	22	7	0	29	0	1	1	0	2	0	0	0	0	0	0
11:45	0	30	6	0	36	0	0	1	0	1	0	0	0	0	0	0
12:00	0	17	6	0	23	0	0	0	0	0	0	0	0	0	0	0
12:15	0	21	1	0	22	0	0	1	0	1	0	0	0	0	0	0
12:30	0	16	5	0	21	0	2	0	0	2	0	0	0	0	0	0
12:45	0	8	7	0	15	0	3	1	0	4	0	0	0	0	0	0
13:00	0	17	3	0	20	0	2	1	0	3	0	0	0	0	0	0
13:15	0	26	8	0	34	0	2	1	0	3	0	0	0	0	0	0
SUBTOTAL	0	157	43	0	200	0	10	6	0	16	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Borrisokane Rd & Haiku St
Site Code: 2416000006
Municipality: Ottawa
Count Date: Apr 23, 2024

South Approach - Borrisokane Rd

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
15:00	0	23	3	0	26	0	3	0	0	3	0	0	0	0	0	0
15:15	0	34	5	0	39	0	0	1	0	1	0	0	0	0	0	0
15:30	0	29	9	0	38	0	3	0	0	3	0	0	0	0	0	0
15:45	0	38	13	0	51	0	2	0	0	2	0	0	0	0	0	0
16:00	0	21	8	0	29	0	2	0	0	2	0	0	0	0	0	0
16:15	0	30	6	0	36	0	1	0	0	1	0	0	0	0	0	0
16:30	0	30	11	0	41	0	1	0	0	1	0	0	0	0	0	0
16:45	0	37	11	0	48	0	0	0	0	0	0	0	0	0	0	0
17:00	0	27	15	0	42	0	0	0	0	0	0	0	0	0	0	0
17:15	0	33	7	0	40	0	0	0	0	0	0	0	0	0	0	0
17:30	0	32	11	0	43	0	0	0	0	0	0	0	0	0	0	0
17:45	0	31	7	0	38	0	1	0	0	1	0	0	0	0	0	0
SUBTOTAL	0	365	106	0	471	0	13	1	0	14	0	0	0	0	0	0
GRAND TOTAL	0	859	235	0	1094	0	47	15	0	62	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Borrisokane Rd & Haiku St
Site Code: 2416000006
Municipality: Ottawa
Count Date: Apr 23, 2024

East Approach - Haiku St

Start Time	Cars					Trucks					Bicycles					Total Peds
					Total					Total					Total	
07:00	10	0	16	0	26	0	0	1	0	1	0	0	0	0	0	0
07:15	7	0	21	0	28	1	0	1	0	2	0	0	0	0	0	0
07:30	17	0	24	0	41	0	0	6	0	6	0	0	0	0	0	0
07:45	13	0	23	0	36	1	0	2	0	3	0	0	0	0	0	0
08:00	10	0	19	0	29	0	0	2	0	2	0	0	0	0	0	0
08:15	5	0	29	0	34	0	0	4	0	4	0	0	0	0	0	0
08:30	9	0	24	0	33	1	0	5	0	6	0	0	0	0	0	0
08:45	8	0	26	0	34	0	0	2	0	2	0	0	0	0	0	0
09:00	9	0	42	0	51	1	0	1	0	2	0	0	0	0	0	0
09:15	7	0	14	0	21	2	0	3	0	5	0	0	0	0	0	0
09:30	9	0	8	0	17	2	0	5	0	7	0	0	0	0	0	0
09:45	7	0	11	0	18	0	0	1	0	1	0	0	0	0	0	0
SUBTOTAL	111	0	257	0	368	8	0	33	0	41	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Borrisokane Rd & Haiku St
Site Code: 2416000006
Municipality: Ottawa
Count Date: Apr 23, 2024

East Approach - Haiku St

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
11:30	3	0	13	0	16	1	0	0	0	1	0	0	0	0	0	0
11:45	2	0	9	0	11	0	0	4	0	4	0	0	0	0	0	0
12:00	7	0	12	0	19	0	0	4	0	4	0	0	0	0	0	0
12:15	3	0	12	0	15	0	0	2	0	2	0	0	0	0	0	0
12:30	9	0	9	0	18	0	0	3	0	3	0	0	0	0	0	0
12:45	6	0	11	0	17	1	0	5	0	6	0	0	0	0	0	0
13:00	2	0	12	0	14	0	0	1	0	1	0	0	0	0	0	0
13:15	4	0	10	0	14	2	0	2	0	4	0	0	0	0	0	0
SUBTOTAL	36	0	88	0	124	4	0	21	0	25	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Data

Intersection: Borrisokane Rd & Haiku St
Site Code: 2416000006
Municipality: Ottawa
Count Date: Apr 23, 2024

East Approach - Haiku St

Start Time	Cars					Trucks					Bicycles					Total Peds
	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	↰	↑	↱	↻	Total	
15:00	6	0	22	0	28	3	0	7	0	10	0	0	0	0	0	0
15:15	9	0	20	0	29	0	0	1	0	1	0	0	0	0	0	0
15:30	10	0	23	0	33	0	0	4	0	4	0	0	0	0	0	0
15:45	16	0	35	0	51	0	0	3	0	3	0	0	0	0	0	0
16:00	15	0	24	0	39	2	0	4	0	6	0	0	0	0	0	0
16:15	11	0	20	0	31	2	0	0	0	2	0	0	0	0	0	0
16:30	27	0	34	0	61	1	0	1	0	2	0	0	0	0	0	0
16:45	10	0	18	0	28	0	0	4	0	4	0	0	0	0	0	0
17:00	8	0	26	0	34	0	0	0	0	0	0	0	0	0	0	0
17:15	10	0	24	0	34	1	0	0	0	1	0	0	0	0	0	0
17:30	4	0	20	0	24	0	0	0	0	0	0	0	0	0	0	0
17:45	6	0	10	0	16	0	0	0	0	0	0	0	0	0	0	0
SUBTOTAL	132	0	276	0	408	9	0	24	0	33	0	0	0	0	0	0
GRAND TOTAL	279	0	621	0	900	21	0	78	0	99	0	0	0	0	0	0

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Diagram

Specified Period		One Hour Peak	
From:	07:00:00	From:	07:45:00
To:	10:00:00	To:	08:45:00

Intersection: Borrisokane Rd & Haiku St
Site Code: 2416000006
Count Date: Apr 23, 2024

Weather conditions: Clear

**** Unsignalized Intersection ****

Major Road: Borrisokane Rd runs N/S

North Approach

	Out	In	Total
Cars	142	243	385
Trucks	15	25	40
Bicycles	0	0	0
	157	268	425

Borrisokane Rd

Bicycles	0	0	0
Trucks	5	10	0
Cars	85	57	0
Totals	90	67	0

Peds: 0

Peds: 0

Peds: 0

Totals	160	37	0
Cars	148	33	0
Trucks	12	4	0
Bicycles	0	0	0

Borrisokane Rd

East Approach

	Out	In	Total
Cars	132	90	222
Trucks	15	14	29
Bicycles	0	0	0
	147	104	251

Haiku St

	Totals	Cars	Trucks	Bicycles
	0	0	0	0
	108	95	13	0
	39	37	2	0

South Approach

	Out	In	Total
Cars	181	122	303
Trucks	16	7	23
Bicycles	0	0	0
	197	129	326

- Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Borrisokane Rd & Haiku St
Site Code: 2416000006
Count Date: Apr 23, 2024
Period: 07:00 - 10:00

Peak Hour Data (07:45 - 08:45)

Start Time	North Approach Borrisokane Rd				Peds	Total	South Approach Borrisokane Rd				Peds	Total	East Approach Haiku St				Peds	Total	West Approach				Peds	Total	Total Vehicles
07:45	8	22		0	0	30		48	9	0	0	57	14		25	0	0	39					0		126
08:00	18	19		0	0	37		36	8	0	0	44	10		21	0	0	31					0		112
08:15	21	20		0	0	41		39	9	0	0	48	5		33	0	0	38					0		127
08:30	20	29		0	0	49		37	11	0	0	48	10		29	0	0	39					0		136
Grand Total	**67**	**90**		**0**	**0**	**157**		**160**	**37**	**0**	**0**	**197**	**39**		**108**	**0**	**0**	**147**					**0**	**0**	**501**
Approach %	42.7	57.3		0		-		81.2	18.8	0		-	26.5		73.5	0		-						-	
Totals %	13.4	18		0		31.3		31.9	7.4	0		39.3	7.8		21.6	0		29.3					0		
PHF	**0.8**	**0.78**		**0**		**0.8**		**0.83**	**0.84**	**0**		**0.86**	**0.7**		**0.82**	**0**		**0.94**					**0**		**0.92**
Cars	57	85		0		142		148	33	0		181	37		95	0		132					0		455
% Cars	85.1	94.4		0		90.4		92.5	89.2	0		91.9	94.9		88	0		89.8					0		90.8
Trucks	10	5		0		15		12	4	0		16	2		13	0		15					0		46
% Trucks	14.9	5.6		0		9.6		7.5	10.8	0		8.1	5.1		12	0		10.2					0		9.2
Bicycles	0	0		0		0		0	0	0		0	0		0	0		0					0		0
% Bicycles	0	0		0		0		0	0	0		0	0		0	0		0					0		0
Peds					0	-					0	-					0	-					0	-	0
% Peds					0	-					0	-					0	-					0	-	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Diagram

Specified Period		One Hour Peak	
From:	11:30:00	From:	12:30:00
To:	13:30:00	To:	13:30:00

Intersection: Borrisokane Rd & Haiku St
Site Code: 2416000006
Count Date: Apr 23, 2024

Weather conditions: Clear

**** Unsignalized Intersection ****

Major Road: Borrisokane Rd runs N/S

North Approach

	Out	In	Total
Cars	145	109	254
Trucks	18	20	38
Bicycles	0	0	0
	163	129	292

Borrisokane Rd

Bicycles	0	0	0
Trucks	4	14	0
Cars	90	55	0
Totals	94	69	0

Peds: 0

Peds: 0

Peds: 0

Totals	76	26	0
Cars	67	23	0
Trucks	9	3	0
Bicycles	0	0	0

Borrisokane Rd

East Approach

	Out	In	Total
Cars	63	78	141
Trucks	14	17	31
Bicycles	0	0	0
	77	95	172

Haiku St

	Totals	Cars	Trucks	Bicycles
	0	0	0	0
	53	42	11	0
	24	21	3	0

South Approach

	Out	In	Total
Cars	90	111	201
Trucks	12	7	19
Bicycles	0	0	0
	102	118	220

- Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Borrisokane Rd & Haiku St
Site Code: 2416000006
Count Date: Apr 23, 2024
Period: 11:30 - 13:30

Peak Hour Data (12:30 - 13:30)

Start Time	North Approach Borrisokane Rd				Peds	Total	South Approach Borrisokane Rd				Peds	Total	East Approach Haiku St				Peds	Total	West Approach				Peds	Total	Total Vehicles
12:30	23	24		0	0	47		18	5	0	0	23	9		12	0	0	21					0		91
12:45	10	27		0	0	37		11	8	0	0	19	7		16	0	0	23					0		79
13:00	17	18		0	0	35		19	4	0	0	23	2		13	0	0	15					0		73
13:15	19	25		0	0	44		28	9	0	0	37	6		12	0	0	18					0		99
Grand Total	**69**	**94**	**0**	**0**		**163**		**76**	**26**	**0**	**0**	**102**	**24**		**53**	**0**	**0**	**77**					**0**	**0**	**342**
Approach %	42.3	57.7	0			-		74.5	25.5	0		-	31.2		68.8	0		-						-	
Totals %	20.2	27.5	0			47.7		22.2	7.6	0		29.8	7		15.5	0		22.5					0		
PHF	**0.75**	**0.87**	**0**			**0.87**		**0.68**	**0.72**	**0**		**0.69**	**0.67**		**0.83**	**0**		**0.84**					**0**	**0.86**	
Cars	55	90	0			145		67	23	0		90	21		42	0		63					0		298
% Cars	79.7	95.7	0			89		88.2	88.5	0		88.2	87.5		79.2	0		81.8					0		87.1
Trucks	14	4	0			18		9	3	0		12	3		11	0		14					0		44
% Trucks	20.3	4.3	0			11		11.8	11.5	0		11.8	12.5		20.8	0		18.2					0		12.9
Bicycles	0	0	0			0		0	0	0		0	0		0	0		0					0		0
% Bicycles	0	0	0			0		0	0	0		0	0		0	0		0					0		0
Peds					0	-					0	-					0	-					0	-	0
% Peds					0	-					0	-					0	-					0	-	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Diagram

Specified Period		One Hour Peak	
From:	15:00:00	From:	15:45:00
To:	18:00:00	To:	16:45:00

Intersection: Borrisokane Rd & Haiku St
Site Code: 2416000006
Count Date: Apr 23, 2024

Weather conditions: Clear

**** Unsignalized Intersection ****

Major Road: Borrisokane Rd runs N/S

North Approach

	Out	In	Total
Cars	247	232	479
Trucks	15	14	29
Bicycles	0	0	0
	262	246	508

Borrisokane Rd

Bicycles	0	0	0
Trucks	6	9	0
Cars	159	88	0
Totals	165	97	0

Peds: 0

Peds: 0

Peds: 0

Totals	125	38	0
Cars	119	38	0
Trucks	6	0	0
Bicycles	0	0	0

Borrisokane Rd

East Approach

	Out	In	Total
Cars	182	126	308
Trucks	13	9	22
Bicycles	0	0	0
	195	135	330

Haiku St

	Totals	Cars	Trucks	Bicycles
	0	0	0	0
	121	113	8	0
	74	69	5	0

South Approach

	Out	In	Total
Cars	157	228	385
Trucks	6	11	17
Bicycles	0	0	0
	163	239	402

- Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: Borrisokane Rd & Haiku St
Site Code: 2416000006
Count Date: Apr 23, 2024
Period: 15:00 - 18:00

Peak Hour Data (15:45 - 16:45)

Start Time	North Approach Borrisokane Rd				Peds	Total	South Approach Borrisokane Rd				Peds	Total	East Approach Haiku St				Peds	Total	West Approach				Peds	Total	Total Vehicles
15:45	24	38		0	0	62		40	13	0	0	53	16		38	0	0	54					0		169
16:00	19	50		0	0	69		23	8	0	0	31	17		28	0	0	45					0		145
16:15	25	32		0	0	57		31	6	0	0	37	13		20	0	0	33					0		127
16:30	29	45		0	0	74		31	11	0	0	42	28		35	0	0	63					0		179
Grand Total	**97**	**165**		**0**	**0**	**262**		**125**	**38**	**0**	**0**	**163**	**74**		**121**	**0**	**0**	**195**					**0**	**0**	**620**
Approach %	37	63		0		-		76.7	23.3	0		-	37.9		62.1	0		-						-	
Totals %	15.6	26.6		0		42.3		20.2	6.1	0		26.3	11.9		19.5	0		31.5					0		
PHF	**0.84**	**0.83**		**0**		**0.89**		**0.78**	**0.73**	**0**		**0.77**	**0.66**		**0.8**	**0**		**0.77**					**0**		**0.87**
Cars	88	159		0		247		119	38	0		157	69		113	0		182					0		586
% Cars	90.7	96.4		0		94.3		95.2	100	0		96.3	93.2		93.4	0		93.3					0		94.5
Trucks	9	6		0		15		6	0	0		6	5		8	0		13					0		34
% Trucks	9.3	3.6		0		5.7		4.8	0	0		3.7	6.8		6.6	0		6.7					0		5.5
Bicycles	0	0		0		0		0	0	0		0	0		0	0		0					0		0
% Bicycles	0	0		0		0		0	0	0		0	0		0	0		0					0		0
Peds					0	-					0	-					0	-					0	-	0
% Peds					0	-					0	-					0	-					0	-	

Transportation Services - Traffic Services

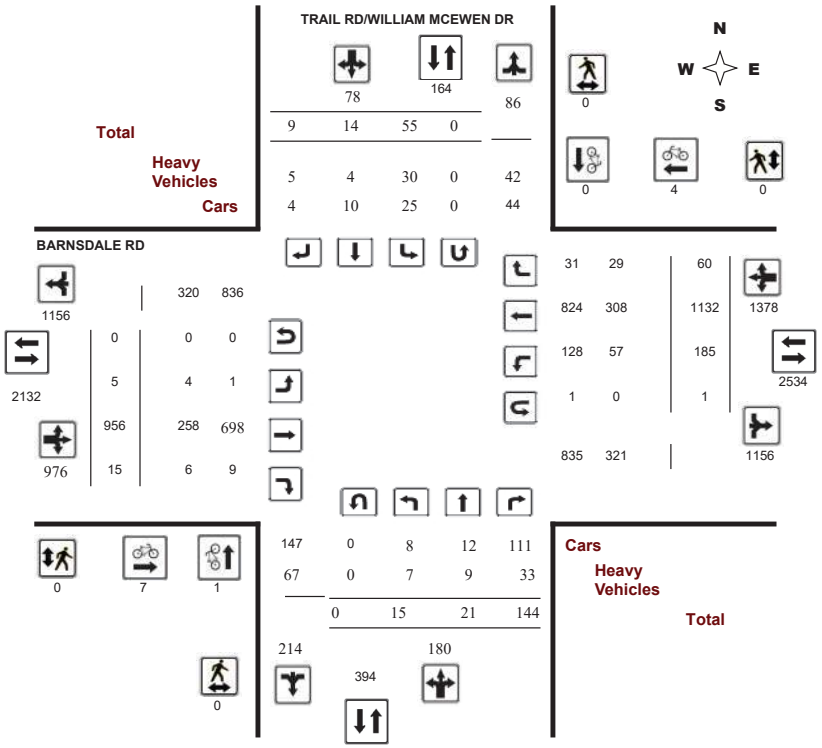
Turning Movement Count - Study Results

BARNSDALE RD @ TRAIL RD/WILLIAM MCEWEN DR

Survey Date: Monday, July 26, 2021 **WO No:** 39868

Start Time: 07:00 **Device:** Miovision

Full Study Diagram



Transportation Services - Traffic Services

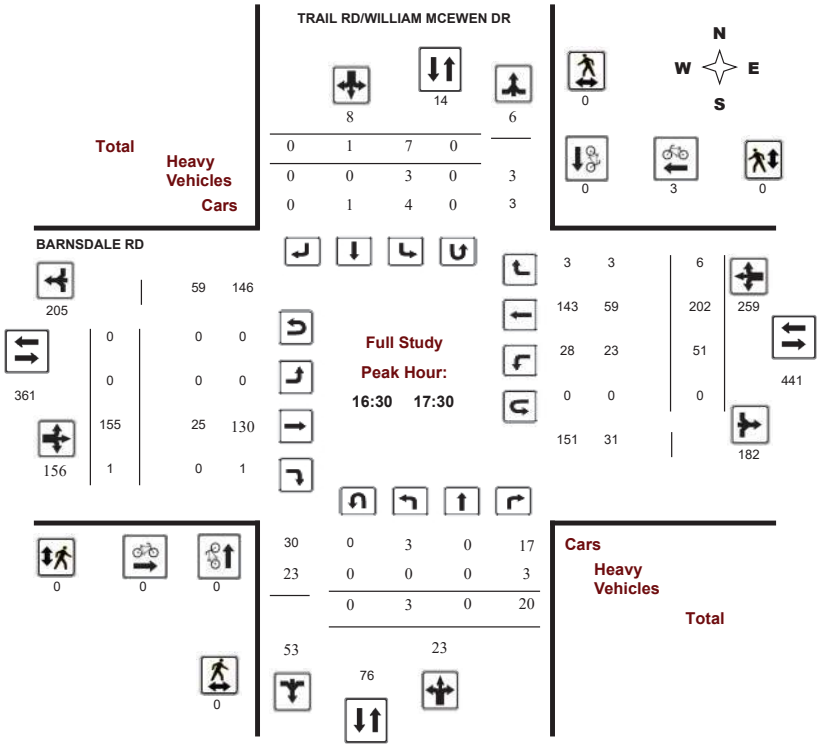
Turning Movement Count - Study Results

BARNSDALE RD @ TRAIL RD/WILLIAM MCEWEN DR

Survey Date: Monday, July 26, 2021 **WO No:** 39868

Start Time: 07:00 **Device:** Miovision

Full Study Peak Hour Diagram



Transportation Services - Traffic Services

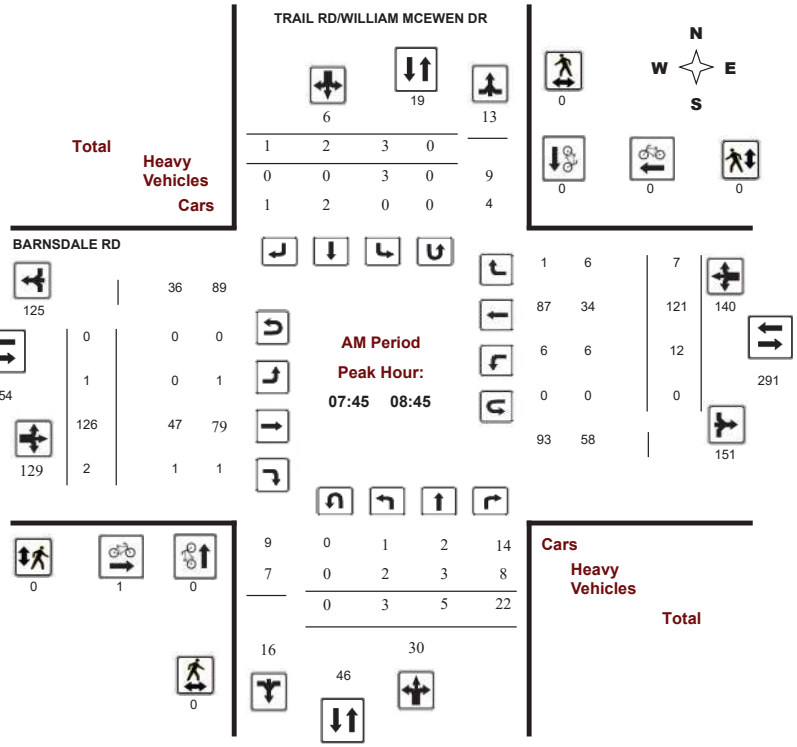
Turning Movement Count - Study Results

BARNSDALE RD @ TRAIL RD/WILLIAM MCEWEN DR

Survey Date: Monday, July 26, 2021 **WO No:** 39868

Start Time: 07:00 **Device:** Miovision

AM Period Peak Hour Diagram



Transportation Services - Traffic Services

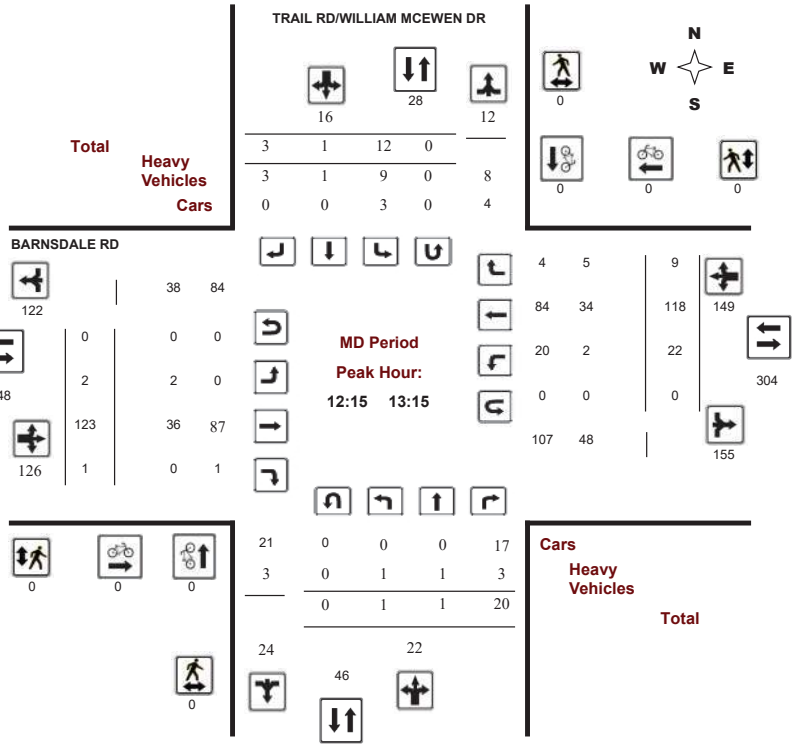
Turning Movement Count - Study Results

BARNSDALE RD @ TRAIL RD/WILLIAM MCEWEN DR

Survey Date: Monday, July 26, 2021 **WO No:** 39868

Start Time: 07:00 **Device:** Miovision

MD Period Peak Hour Diagram



Transportation Services - Traffic Services

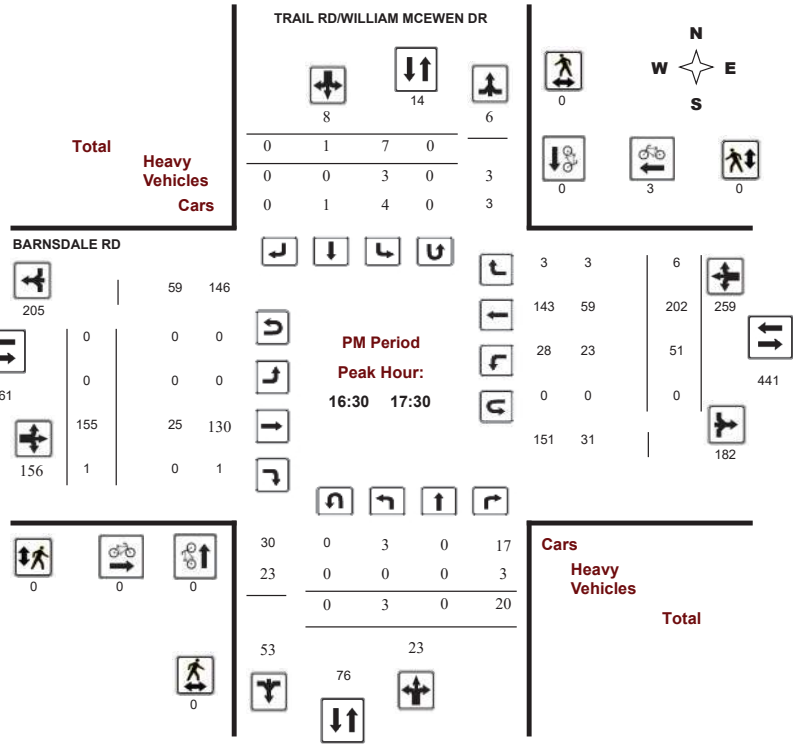
Turning Movement Count - Study Results

BARNSDALE RD @ TRAIL RD/WILLIAM MCEWEN DR

Survey Date: Monday, July 26, 2021 **WO No:** 39868

Start Time: 07:00 **Device:** Miovision

PM Period Peak Hour Diagram



Transportation Services - Traffic Services

Turning Movement Count - Study Results

BARNSDALE RD @ TRAIL RD/WILLIAM MCEWEN DR

Survey Date: Monday, July 26, 2021 **WO No:** 39868

Start Time: 07:00 **Device:** Miovision

Full Study Summary (8 HR Standard)

Survey Date: Monday, July 26, 2021

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 0 Westbound: 1

AADT Factor 1.00

	TRAIL RD/WILLIAM MCEWEN DR								BARNSDALE RD									
	Northbound				Southbound				Eastbound				Westbound					
Period	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total
07:00 08:00	2	4	20	**26**	6	0	1	**7**	**33**	1	111	1	**113**	11	113	5	**129**	**242**	**275**
08:00 09:00	3	6	16	**25**	0	2	1	**3**	**28**	1	119	3	**123**	13	130	7	**150**	**273**	**301**
09:00 10:00	1	3	24	**28**	6	3	0	**9**	**37**	1	84	2	**87**	18	105	9	**132**	**219**	**256**
11:30 12:30	2	1	11	**14**	10	0	3	**13**	**27**	0	104	0	**104**	11	107	6	**124**	**228**	**255**
12:30 13:30	1	3	19	**23**	8	2	2	**12**	**35**	2	118	1	**121**	27	115	11	**153**	**274**	**309**
15:00 16:00	0	1	23	**24**	5	3	1	**9**	**33**	0	140	3	**143**	31	196	10	**237**	**380**	**413**
16:00 17:00	5	2	17	**24**	11	2	0	**13**	**37**	0	153	2	**155**	36	208	7	**251**	**406**	**443**
17:00 18:00	1	1	14	**16**	9	2	1	**12**	**28**	0	127	3	**130**	38	158	5	**201**	**331**	**359**
Sub Total	15	21	144	**180**	55	14	9	**78**	**258**	5	956	15	**976**	185	1132	60	**1377**	**2353**	**2611**
U Turns				**0**				**0**	**0**				**0**				**1**	**1**	**1**
Total	15	21	144	**180**	55	14	9	**78**	**258**	5	956	15	**976**	185	1132	60	**1378**	**2354**	**2612**
EQ 12Hr	21	29	200	**250**	76	19	13	**108**	**359**	7	1329	21	**1357**	257	1573	83	**1915**	**3272**	**3631**

Note: These values are calculated by multiplying the totals by the appropriate expansion factor. **1.39**

AVG 12Hr	21	29	200	**250**	76	25	16	**108**	**359**	7	1329	21	**1357**	257	1573	83	**1915**	**3272**	**3631**

Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor. **1.00**

AVG 24Hr	28	38	262	**328**	100	33	21	**141**	**470**	9	1741	28	**1778**	337	2061	109	**2509**	**4286**	**4757**

Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor. **1.31**

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

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BARNSDALE RD @ TRAIL RD/WILLIAM MCEWEN DR

Survey Date: Monday, July 26, 2021 **WO No:** 39868

Start Time: 07:00 **Device:** Miovision

Full Study 15 Minute Increments

		TRAIL RD/WILLIAM MCEWEN DR									BARNSDALE RD									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	2	0	6	8	0	0	1	1	9	1	29	0	30	5	29	0	34	64	73
07:15	07:30	0	1	6	7	1	0	0	1	8	0	29	0	29	3	21	2	26	55	63
07:30	07:45	0	2	1	3	2	0	0	2	5	0	23	1	24	1	38	1	40	64	69
07:45	08:00	0	1	7	8	3	0	0	3	11	0	30	0	30	2	25	2	29	59	70
08:00	08:15	3	0	6	9	0	2	0	2	11	0	28	0	28	2	30	2	34	62	73
08:15	08:30	0	0	6	6	0	0	0	0	6	1	39	2	42	5	35	1	41	83	89
08:30	08:45	0	4	3	7	0	0	1	1	8	0	29	0	29	3	31	2	36	65	73
08:45	09:00	0	2	1	3	0	0	0	0	3	0	23	1	24	3	34	2	39	63	66
09:00	09:15	0	0	5	5	2	0	0	2	7	0	20	0	20	8	25	3	36	56	63
09:15	09:30	0	0	7	7	1	0	0	1	8	1	22	1	24	2	31	2	35	59	67
09:30	09:45	0	3	9	12	2	2	0	4	16	0	23	1	24	4	25	4	33	57	73
09:45	10:00	1	0	3	4	1	1	0	2	6	0	19	0	19	4	24	0	28	47	53
11:30	11:45	1	0	3	4	1	0	0	1	5	0	19	0	19	1	24	1	26	45	50
12:00	12:15	0	0	2	2	2	0	1	3	5	0	22	0	22	4	27	1	33	55	60
17:45	18:00	0	0	0	0	5	2	0	7	7	0	28	0	28	0	28	1	29	57	64
17:30	17:45	0	1	2	3	1	0	1	2	5	0	21	2	23	7	40	1	48	71	76
11:45	12:00	1	1	2	4	2	0	0	2	6	0	36	0	36	3	29	2	34	70	76
12:15	12:30	0	0	4	4	5	0	2	7	11	0	27	0	27	3	27	2	32	59	70
12:30	12:45	0	0	4	4	3	0	0	3	7	2	43	0	45	5	34	4	43	88	95
12:45	13:00	1	1	9	11	1	0	0	1	12	0	28	0	28	11	30	2	43	71	83
13:00	13:15	0	0	3	3	3	1	1	5	8	0	25	1	26	3	27	1	31	57	65
13:15	13:30	0	2	3	5	1	1	1	3	8	0	22	0	22	8	24	4	36	58	66
15:00	15:15	0	1	5	6	0	1	1	2	8	0	33	1	34	5	44	1	50	84	92
15:15	15:30	0	0	4	4	0	0	0	0	4	0	34	1	35	7	48	2	57	92	96
15:30	15:45	0	0	6	6	4	1	0	5	11	0	29	1	30	9	59	5	73	103	114
16:15	16:30	1	2	5	8	4	0	0	4	12	0	42	1	43	9	45	1	55	98	110
16:45	17:00	2	0	5	7	2	1	0	3	10	0	51	0	51	9	52	0	61	112	122
17:00	17:15	0	0	7	7	2	0	0	2	9	0	34	0	34	19	41	1	61	95	104
17:15	17:30	1	0	5	6	1	0	0	1	7	0	44	1	45	12	49	2	63	108	115
15:45	16:00	0	0	8	8	1	1	0	2	10	0	44	0	44	10	45	2	57	101	111
16:00	16:15	2	0	4	6	3	1	0	4	10	0	34	1	35	7	51	3	61	96	106
16:30	16:45	0	0	3	3	2	0	0	2	5	0	26	0	26	11	60	3	74	100	105
Total:		15	21	144	180	55	14	9	78	258	5	956	15	976	185	1132	60	1378	2354	2,612

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BARNSDALE RD @ TRAIL RD/WILLIAM MCEWEN DR

Survey Date: Monday, July 26, 2021 **WO No:** 39868

Start Time: 07:00 **Device:** Miovision

Full Study Cyclist Volume

		TRAIL RD/WILLIAM MCEWEN DR			BARNSDALE RD			
Time Period		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00	07:15	0	0	0	0	0	0	0
07:15	07:30	0	0	0	0	0	0	0
07:30	07:45	0	0	0	0	0	0	0
07:45	08:00	0	0	0	0	0	0	0
08:00	08:15	0	0	0	1	0	1	1
08:15	08:30	0	0	0	0	0	0	0
08:30	08:45	0	0	0	0	0	0	0
08:45	09:00	0	0	0	0	0	0	0
09:00	09:15	0	0	0	0	0	0	0
09:15	09:30	0	0	0	0	0	0	0
09:30	09:45	0	0	0	0	1	1	1
09:45	10:00	0	0	0	0	0	0	0
11:30	11:45	1	0	1	1	0	1	2
12:00	12:15	0	0	0	0	0	0	0
17:45	18:00	0	0	0	1	0	1	1
17:30	17:45	0	0	0	0	0	0	0
11:45	12:00	0	0	0	2	0	2	2
12:15	12:30	0	0	0	0	0	0	0
12:30	12:45	0	0	0	0	0	0	0
12:45	13:00	0	0	0	0	0	0	0
13:00	13:15	0	0	0	0	0	0	0
13:15	13:30	0	0	0	0	0	0	0
15:00	15:15	0	0	0	0	0	0	0
15:15	15:30	0	0	0	0	0	0	0
15:30	15:45	0	0	0	1	0	1	1
16:15	16:30	0	0	0	0	0	0	0
16:45	17:00	0	0	0	0	1	1	1
17:00	17:15	0	0	0	0	2	2	2
17:15	17:30	0	0	0	0	0	0	0
15:45	16:00	0	0	0	1	0	1	1
16:00	16:15	0	0	0	0	0	0	0
16:30	16:45	0	0	0	0	0	0	0
Total		1	0	1	7	4	11	12

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BARNSDALE RD @ TRAIL RD/WILLIAM MCEWEN DR

Survey Date: Monday, July 26, 2021 **WO No:** 39868

Start Time: 07:00 **Device:** Miovision

Full Study Pedestrian Volume

		TRAIL RD/WILLIAM MCEWEN DR			BARNSDALE RD			
Time Period		NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00	07:15	0	0	**0**	0	0	**0**	**0**
07:15	07:30	0	0	**0**	0	0	**0**	**0**
07:30	07:45	0	0	**0**	0	0	**0**	**0**
07:45	08:00	0	0	**0**	0	0	**0**	**0**
08:00	08:15	0	0	**0**	0	0	**0**	**0**
08:15	08:30	0	0	**0**	0	0	**0**	**0**
08:30	08:45	0	0	**0**	0	0	**0**	**0**
08:45	09:00	0	0	**0**	0	0	**0**	**0**
09:00	09:15	0	0	**0**	0	0	**0**	**0**
09:15	09:30	0	0	**0**	0	0	**0**	**0**
09:30	09:45	0	0	**0**	0	0	**0**	**0**
09:45	10:00	0	0	**0**	0	0	**0**	**0**
11:30	11:45	0	0	**0**	0	0	**0**	**0**
12:00	12:15	0	0	**0**	0	0	**0**	**0**
17:45	18:00	0	0	**0**	0	0	**0**	**0**
17:30	17:45	0	0	**0**	0	0	**0**	**0**
11:45	12:00	0	0	**0**	0	0	**0**	**0**
12:15	12:30	0	0	**0**	0	0	**0**	**0**
12:30	12:45	0	0	**0**	0	0	**0**	**0**
12:45	13:00	0	0	**0**	0	0	**0**	**0**
13:00	13:15	0	0	**0**	0	0	**0**	**0**
13:15	13:30	0	0	**0**	0	0	**0**	**0**
15:00	15:15	0	0	**0**	0	0	**0**	**0**
15:15	15:30	0	0	**0**	0	0	**0**	**0**
15:30	15:45	0	0	**0**	0	0	**0**	**0**
16:15	16:30	0	0	**0**	0	0	**0**	**0**
16:45	17:00	0	0	**0**	0	0	**0**	**0**
17:00	17:15	0	0	**0**	0	0	**0**	**0**
17:15	17:30	0	0	**0**	0	0	**0**	**0**
15:45	16:00	0	0	**0**	0	0	**0**	**0**
16:00	16:15	0	0	**0**	0	0	**0**	**0**
16:30	16:45	0	0	**0**	0	0	**0**	**0**
Total	.....	0	0	**0**	0	0	**0**	**0**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BARNSDALE RD @ TRAIL RD/WILLIAM MCEWEN DR

Survey Date: Monday, July 26, 2021 **WO No:** 39868

Start Time: 07:00 **Device:** Miovision

Full Study Heavy Vehicles

		TRAIL RD/WILLIAM MCEWEN DR									BARNSDALE RD									
		Northbound				Southbound					Eastbound				Westbound					
Time Period		LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00	07:15	1	0	2	**3**	0	0	1	**1**	**4**	1	10	0	**11**	1	11	0	**12**	**23**	**27**
07:15	07:30	0	0	3	**3**	1	0	0	**1**	**4**	0	11	0	**11**	0	8	0	**8**	**19**	**23**
07:30	07:45	0	0	0	**0**	0	0	0	**0**	**0**	0	8	0	**8**	1	14	1	**16**	**24**	**24**
07:45	08:00	0	0	2	**2**	3	0	0	**3**	**5**	0	9	0	**9**	0	6	2	**8**	**17**	**22**
08:00	08:15	2	0	4	**6**	0	0	0	**0**	**6**	0	11	0	**11**	2	10	2	**14**	**25**	**31**
08:15	08:30	0	0	2	**2**	0	0	0	**0**	**2**	0	17	1	**18**	2	12	0	**14**	**32**	**34**
08:30	08:45	0	3	0	**3**	0	0	0	**0**	**3**	0	10	0	**10**	2	6	2	**10**	**20**	**23**
08:45	09:00	0	1	0	**1**	0	0	0	**0**	**1**	0	8	1	**9**	0	8	1	**9**	**18**	**19**
09:00	09:15	0	0	1	**1**	1	0	0	**1**	**2**	0	6	0	**6**	0	9	2	**11**	**17**	**19**
09:15	09:30	0	0	1	**1**	1	0	0	**1**	**2**	1	7	0	**8**	0	8	1	**9**	**17**	**19**
09:30	09:45	0	2	1	**3**	1	0	0	**1**	**4**	0	10	1	**11**	0	10	1	**11**	**22**	**26**
09:45	10:00	1	0	1	**2**	1	1	0	**2**	**4**	0	2	0	**2**	0	5	0	**5**	**7**	**11**
11:30	11:45	0	0	1	**1**	0	0	0	**0**	**1**	0	5	0	**5**	1	9	1	**11**	**16**	**17**
12:00	12:15	0	0	0	**0**	0	0	0	**0**	**0**	0	5	0	**5**	0	4	0	**4**	**9**	**9**
17:45	18:00	0	0	0	**0**	3	0	0	**3**	**3**	0	7	0	**7**	0	4	1	**5**	**12**	**15**
17:30	17:45	0	0	0	**0**	1	0	1	**2**	**2**	0	3	0	**3**	3	7	1	**11**	**14**	**16**
11:45	12:00	1	0	0	**1**	1	0	0	**1**	**2**	0	9	0	**9**	1	9	1	**11**	**20**	**22**
12:15	12:30	0	0	0	**0**	4	0	2	**6**	**6**	0	8	0	**8**	0	7	0	**7**	**15**	**21**
12:30	12:45	0	0	0	**0**	1	0	0	**1**	**1**	2	10	0	**12**	1	14	4	**19**	**31**	**32**
12:45	13:00	1	1	2	**4**	1	0	0	**1**	**5**	0	13	0	**13**	1	4	1	**6**	**19**	**24**
13:00	13:15	0	0	1	**1**	3	1	1	**5**	**6**	0	5	0	**5**	0	9	0	**9**	**14**	**20**
13:15	13:30	0	1	0	**1**	0	0	0	**0**	**1**	0	5	0	**5**	2	8	1	**11**	**16**	**17**
15:00	15:15	0	0	2	**2**	0	1	0	**1**	**3**	0	9	0	**9**	2	8	1	**11**	**20**	**23**
15:15	15:30	0	0	0	**0**	0	0	0	**0**	**0**	0	8	1	**9**	4	8	0	**12**	**21**	**21**
15:30	15:45	0	0	3	**3**	1	0	0	**1**	**4**	0	10	0	**10**	5	12	2	**19**	**29**	**33**
16:15	16:30	0	1	0	**1**	2	0	0	**2**	**3**	0	9	1	**10**	2	13	0	**15**	**25**	**28**
16:45	17:00	0	0	0	**0**	0	0	0	**0**	**0**	0	9	0	**9**	4	11	0	**15**	**24**	**24**
17:00	17:15	0	0	2	**2**	2	0	0	**2**	**4**	0	3	0	**3**	10	16	0	**26**	**29**	**33**
17:15	17:30	0	0	0	**0**	1	0	0	**1**	**1**	0	9	0	**9**	5	13	1	**19**	**28**	**29**
15:45	16:00	0	0	3	**3**	0	0	0	**0**	**3**	0	11	0	**11**	3	10	1	**14**	**25**	**28**
16:00	16:15	1	0	1	**2**	2	1	0	**3**	**5**	0	7	1	**8**	1	16	0	**17**	**25**	**30**
16:30	16:45	0	0	1	**1**	0	0	0	**0**	**1**	0	4	0	**4**	4	19	2	**25**	**29**	**30**
Total:	None	7	9	33	**49**	30	4	5	**39**	**88**	4	258	6	**268**	57	308	29	**394**	**662**	**750**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BARNSDALE RD @ TRAIL RD/WILLIAM MCEWEN DR

Survey Date: Monday, July 26, 2021 **WO No:** 39868

Start Time: 07:00 **Device:** Miovision

Full Study 15 Minute U-Turn Total

		TRAIL RD/WILLIAM MCEWEN DR		BARNSDALE RD		
Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	0
07:15	07:30	0	0	0	0	0
07:30	07:45	0	0	0	0	0
07:45	08:00	0	0	0	0	0
08:00	08:15	0	0	0	0	0
08:15	08:30	0	0	0	0	0
08:30	08:45	0	0	0	0	0
08:45	09:00	0	0	0	0	0
09:00	09:15	0	0	0	0	0
09:15	09:30	0	0	0	0	0
09:30	09:45	0	0	0	0	0
09:45	10:00	0	0	0	0	0
11:30	11:45	0	0	0	0	0
12:00	12:15	0	0	0	1	1
17:45	18:00	0	0	0	0	0
17:30	17:45	0	0	0	0	0
11:45	12:00	0	0	0	0	0
12:15	12:30	0	0	0	0	0
12:30	12:45	0	0	0	0	0
12:45	13:00	0	0	0	0	0
13:00	13:15	0	0	0	0	0
13:15	13:30	0	0	0	0	0
15:00	15:15	0	0	0	0	0
15:15	15:30	0	0	0	0	0
15:30	15:45	0	0	0	0	0
16:15	16:30	0	0	0	0	0
16:45	17:00	0	0	0	0	0
17:00	17:15	0	0	0	0	0
17:15	17:30	0	0	0	0	0
15:45	16:00	0	0	0	0	0
16:00	16:15	0	0	0	0	0
16:30	16:45	0	0	0	0	0
Total		0	0	0	1	1

Appendix G

Synchro Intersection Worksheets – Existing Conditions

CGH TRANSPORTATION

Intersection	
Int Delay, s/veh	10.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	31	398	113	21	213	89
Future Vol, veh/h	31	398	113	21	213	89
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	10	9	10	10	17	13
Mvmt Flow	34	442	126	23	237	99

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	711	138	0	0	149	0
Stage 1	138	-	-	-	-	-
Stage 2	573	-	-	-	-	-
Critical Hdwy	6.5	6.29	-	-	4.27	-
Critical Hdwy Stg 1	5.5	-	-	-	-	-
Critical Hdwy Stg 2	5.5	-	-	-	-	-
Follow-up Hdwy	3.59	3.381	-	-	2.353	-
Pot Cap-1 Maneuver	388	892	-	-	1346	-
Stage 1	869	-	-	-	-	-
Stage 2	549	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	316	892	-	-	1346	-
Mov Cap-2 Maneuver	316	-	-	-	-	-
Stage 1	869	-	-	-	-	-
Stage 2	447	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.3	0	5.8
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	788	1346	-
HCM Lane V/C Ratio	-	-	0.605	0.176	-
HCM Control Delay (s)	-	-	16.3	8.2	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	4.2	0.6	-

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	73	170	6	9	307	52	3	1	1	63	2	91
Future Vol, veh/h	73	170	6	9	307	52	3	1	1	63	2	91
Conflicting Peds, #/hr	6	0	0	0	0	6	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	37.5	-	-	37.5	-	-	30	-	-	30	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	11	5	50	2	3	13	67	2	2	6	100	7
Mvmt Flow	81	189	7	10	341	58	3	1	1	70	2	101

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	405	0	0	196	0	0	797	780	193	752	754	376
Stage 1	-	-	-	-	-	-	355	355	-	396	396	-
Stage 2	-	-	-	-	-	-	442	425	-	356	358	-
Critical Hdwy	4.21	-	-	4.12	-	-	7.77	6.52	6.22	7.16	7.5	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	6.77	5.52	-	6.16	6.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.77	5.52	-	6.16	6.5	-
Follow-up Hdwy	2.299	-	-	2.218	-	-	4.103	4.018	3.318	3.554	4.9	3.363
Pot Cap-1 Maneuver	1107	-	-	1377	-	-	239	327	849	322	244	659
Stage 1	-	-	-	-	-	-	547	630	-	621	465	-
Stage 2	-	-	-	-	-	-	486	586	-	653	486	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1102	-	-	1377	-	-	188	299	849	299	223	656
Mov Cap-2 Maneuver	-	-	-	-	-	-	188	299	-	299	223	-
Stage 1	-	-	-	-	-	-	507	583	-	573	459	-
Stage 2	-	-	-	-	-	-	406	579	-	603	450	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.5	0.2	20	15.4
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	188	442	1102	-	-	1377	-	-	299	630
HCM Lane V/C Ratio	0.018	0.005	0.074	-	-	0.007	-	-	0.234	0.164
HCM Control Delay (s)	24.5	13.2	8.5	-	-	7.6	-	-	20.7	11.8
HCM Lane LOS	C	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.1	0	0.2	-	-	0	-	-	0.9	0.6

Intersection	
Int Delay, s/veh	3.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	90	161	142	99	66	50
Future Vol, veh/h	90	161	142	99	66	50
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	3	3	2	2	4
Mvmt Flow	100	179	158	110	73	56

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	268	0	-	0	592	213
Stage 1	-	-	-	-	213	-
Stage 2	-	-	-	-	379	-
Critical Hdwy	4.12	-	-	-	6.42	6.24
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.336
Pot Cap-1 Maneuver	1296	-	-	-	469	822
Stage 1	-	-	-	-	823	-
Stage 2	-	-	-	-	692	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1296	-	-	-	429	822
Mov Cap-2 Maneuver	-	-	-	-	429	-
Stage 1	-	-	-	-	752	-
Stage 2	-	-	-	-	692	-

Approach	EB	WB	SB
HCM Control Delay, s	2.9	0	13.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1296	-	-	-	540
HCM Lane V/C Ratio	0.077	-	-	-	0.239
HCM Control Delay (s)	8	0	-	-	13.7
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.9

MOVEMENT SUMMARY

Site: 101 [Cambrian and Greenbank Existing AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Greenbank Road															
1	L2	All MCs	67	3.0	67	3.0	0.793	26.7	LOS D	9.6	68.8	0.89	1.12	1.90	25.6
2	T1	All MCs	300	2.0	300	2.0	0.793	26.5	LOS D	9.6	68.8	0.89	1.12	1.90	27.7
3	R2	All MCs	152	3.0	152	3.0	0.793	26.7	LOS D	9.6	68.8	0.89	1.12	1.90	23.1
Approach			519	2.4	519	2.4	0.793	26.6	LOS D	9.6	68.8	0.89	1.12	1.90	26.1
East: Cambrian Road															
4	L2	All MCs	113	8.0	113	8.0	0.605	17.0	LOS C	4.3	32.7	0.73	0.83	1.22	27.1
5	T1	All MCs	218	11.0	218	11.0	0.605	17.4	LOS C	4.3	32.7	0.73	0.83	1.22	30.1
6	R2	All MCs	43	3.0	43	3.0	0.605	16.4	LOS C	4.3	32.7	0.73	0.83	1.22	31.6
Approach			374	9.2	374	9.2	0.605	17.1	LOS C	4.3	32.7	0.73	0.83	1.22	29.4
North: Greenbank Road															
7	L2	All MCs	51	7.0	51	7.0	0.477	12.1	LOS B	2.9	20.6	0.62	0.58	0.83	34.8
8	T1	All MCs	200	3.0	200	3.0	0.477	11.7	LOS B	2.9	20.6	0.62	0.58	0.83	37.0
9	R2	All MCs	94	2.0	94	2.0	0.477	11.6	LOS B	2.9	20.6	0.62	0.58	0.83	37.5
Approach			346	3.3	346	3.3	0.477	11.7	LOS B	2.9	20.6	0.62	0.58	0.83	36.8
West: Cambrian Road															
10	L2	All MCs	143	4.0	143	4.0	0.697	18.1	LOS C	8.0	58.1	0.77	0.89	1.41	32.5
11	T1	All MCs	319	3.0	319	3.0	0.697	18.0	LOS C	8.0	58.1	0.77	0.89	1.41	29.6
12	R2	All MCs	60	13.0	60	13.0	0.697	19.1	LOS C	8.0	58.1	0.77	0.89	1.41	29.5
Approach			522	4.4	522	4.4	0.697	18.2	LOS C	8.0	58.1	0.77	0.89	1.41	30.5
All Vehicles			1761	4.6	1761	4.6	0.793	19.2	LOS C	9.6	68.8	0.77	0.89	1.40	30.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SIDRA INTERSECTION 9.1 | Copyright © 2000-2023 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: CGH TRANSPORTATION | Licence: NETWORK / FLOATING | Processed: Monday, April 29, 2024 9:51:46 AM
Project: C:\Users\MichelleChen\CGH TRANSPORTATION\CGH Working - Documents\Projects\2023-126 Minto S-1 Expansion Lands\DATA\Sidra\S-1.sip9

Intersection	
Intersection Delay, s/veh	22
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	43	157	13	4	137	101	10	67	1	310	113	40
Future Vol, veh/h	43	157	13	4	137	101	10	67	1	310	113	40
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	7	2	8	2	6	3	10	6	2	2	4	2
Mvmt Flow	48	174	14	4	152	112	11	74	1	344	126	44
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	14.3	14.2	11.2	31.4
HCM LOS	B	B	B	D

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	13%	20%	2%	67%
Vol Thru, %	86%	74%	57%	24%
Vol Right, %	1%	6%	42%	9%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	78	213	242	463
LT Vol	10	43	4	310
Through Vol	67	157	137	113
RT Vol	1	13	101	40
Lane Flow Rate	87	237	269	514
Geometry Grp	1	1	1	1
Degree of Util (X)	0.164	0.425	0.455	0.834
Departure Headway (Hd)	6.796	6.471	6.088	5.839
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	527	556	592	622
Service Time	4.853	4.524	4.138	3.839
HCM Lane V/C Ratio	0.165	0.426	0.454	0.826
HCM Control Delay	11.2	14.3	14.2	31.4
HCM Lane LOS	B	B	B	D
HCM 95th-tile Q	0.6	2.1	2.4	8.9

MOVEMENT SUMMARY

Site: 101 [Prince of Wales and Barnsdale Existing AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Prince of Wales Drive															
1	L2	All MCs	3	2.0	3	2.0	0.760	24.4	LOS C	8.0	58.2	0.86	1.06	1.74	29.7
2	T1	All MCs	462	4.0	462	4.0	0.760	24.7	LOS C	8.0	58.2	0.86	1.06	1.74	30.1
3	R2	All MCs	14	8.0	14	8.0	0.760	25.3	LOS D	8.0	58.2	0.86	1.06	1.74	25.7
Approach			480	4.1	480	4.1	0.760	24.7	LOS C	8.0	58.2	0.86	1.06	1.74	30.0
East: Barnsdale Road															
4	L2	All MCs	13	2.0	13	2.0	0.212	11.6	LOS B	0.7	4.9	0.66	0.66	0.66	34.3
5	T1	All MCs	77	2.0	77	2.0	0.212	11.6	LOS B	0.7	4.9	0.66	0.66	0.66	38.1
6	R2	All MCs	1	2.0	1	2.0	0.212	11.6	LOS B	0.7	4.9	0.66	0.66	0.66	38.2
Approach			91	2.0	91	2.0	0.212	11.6	LOS B	0.7	4.9	0.66	0.66	0.66	37.6
North: Prince of Wales Drive															
7	L2	All MCs	3	33.0	3	33.0	0.457	10.2	LOS B	2.5	18.6	0.33	0.15	0.33	34.4
8	T1	All MCs	267	5.0	267	5.0	0.457	8.6	LOS A	2.5	18.6	0.33	0.15	0.33	41.5
9	R2	All MCs	187	5.0	187	5.0	0.457	8.6	LOS A	2.5	18.6	0.33	0.15	0.33	45.2
Approach			457	5.2	457	5.2	0.457	8.6	LOS A	2.5	18.6	0.33	0.15	0.33	43.0
West: Barnsdale Road															
10	L2	All MCs	458	2.0	458	2.0	0.643	14.7	LOS B	7.1	50.3	0.68	0.63	1.09	36.1
11	T1	All MCs	76	2.0	76	2.0	0.643	14.7	LOS B	7.1	50.3	0.68	0.63	1.09	31.8
12	R2	All MCs	2	2.0	2	2.0	0.643	14.7	LOS B	7.1	50.3	0.68	0.63	1.09	33.8
Approach			536	2.0	536	2.0	0.643	14.7	LOS B	7.1	50.3	0.68	0.63	1.09	35.5
All Vehicles			1563	3.6	1563	3.6	0.760	15.8	LOS C	8.0	58.2	0.63	0.62	1.04	35.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Intersection	
Int Delay, s/veh	4.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	39	108	160	37	67	90
Future Vol, veh/h	39	108	160	37	67	90
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	5	12	8	11	15	6
Mvmt Flow	43	120	178	41	74	100

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	447	199	0	0	219	0
Stage 1	199	-	-	-	-	-
Stage 2	248	-	-	-	-	-
Critical Hdwy	6.45	6.32	-	-	4.25	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.408	-	-	2.335	-
Pot Cap-1 Maneuver	564	817	-	-	1277	-
Stage 1	827	-	-	-	-	-
Stage 2	786	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	530	817	-	-	1277	-
Mov Cap-2 Maneuver	530	-	-	-	-	-
Stage 1	827	-	-	-	-	-
Stage 2	738	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.5	0	3.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	714	1277	-
HCM Lane V/C Ratio	-	-	0.229	0.058	-
HCM Control Delay (s)	-	-	11.5	8	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	0.9	0.2	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	126	2	12	121	7	3	5	22	3	2	1
Future Vol, veh/h	1	126	2	12	121	7	3	5	22	3	2	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	37	50	50	28	86	67	60	36	100	2	2
Mvmt Flow	1	140	2	13	134	8	3	6	24	3	2	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	142	0	0	142	0	0	309	311	141	322	308	138
Stage 1	-	-	-	-	-	-	143	143	-	164	164	-
Stage 2	-	-	-	-	-	-	166	168	-	158	144	-
Critical Hdwy	4.12	-	-	4.6	-	-	7.77	7.1	6.56	8.1	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.77	6.1	-	7.1	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.77	6.1	-	7.1	5.52	-
Follow-up Hdwy	2.218	-	-	2.65	-	-	4.103	4.54	3.624	4.4	4.018	3.318
Pot Cap-1 Maneuver	1441	-	-	1193	-	-	534	519	824	480	606	910
Stage 1	-	-	-	-	-	-	727	680	-	653	762	-
Stage 2	-	-	-	-	-	-	705	662	-	659	778	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1441	-	-	1193	-	-	527	512	824	457	598	910
Mov Cap-2 Maneuver	-	-	-	-	-	-	527	512	-	457	598	-
Stage 1	-	-	-	-	-	-	726	679	-	652	753	-
Stage 2	-	-	-	-	-	-	694	654	-	634	777	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.7	10.3	11.7
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	712	1441	-	-	1193	-	-	545
HCM Lane V/C Ratio	0.047	0.001	-	-	0.011	-	-	0.012
HCM Control Delay (s)	10.3	7.5	0	-	8.1	0	-	11.7
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	15

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	46	345	127	40	386	97
Future Vol, veh/h	46	345	127	40	386	97
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	4	7	3	8	6	2
Mvmt Flow	51	383	141	44	429	108

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1129	163	0	0	185	0
Stage 1	163	-	-	-	-	-
Stage 2	966	-	-	-	-	-
Critical Hdwy	6.44	6.27	-	-	4.16	-
Critical Hdwy Stg 1	5.44	-	-	-	-	-
Critical Hdwy Stg 2	5.44	-	-	-	-	-
Follow-up Hdwy	3.536	3.363	-	-	2.254	-
Pot Cap-1 Maneuver	224	869	-	-	1366	-
Stage 1	861	-	-	-	-	-
Stage 2	366	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	149	869	-	-	1366	-
Mov Cap-2 Maneuver	149	-	-	-	-	-
Stage 1	861	-	-	-	-	-
Stage 2	244	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	31.1	0	7.1
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	554	1366	-
HCM Lane V/C Ratio	-	-	0.784	0.314	-
HCM Control Delay (s)	-	-	31.1	8.8	0
HCM Lane LOS	-	-	D	A	A
HCM 95th %tile Q(veh)	-	-	7.3	1.4	-

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	80	286	0	0	236	73	10	0	8	72	2	68
Future Vol, veh/h	80	286	0	0	236	73	10	0	8	72	2	68
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	37.5	-	-	37.5	-	-	30	-	-	30	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	2	2	2	3	4	10	2	2	2	2	3
Mvmt Flow	89	318	0	0	262	81	11	0	9	80	2	76

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	343	0	0	318	0	0	838	839	318	804	799	303
Stage 1	-	-	-	-	-	-	496	496	-	303	303	-
Stage 2	-	-	-	-	-	-	342	343	-	501	496	-
Critical Hdwy	4.13	-	-	4.12	-	-	7.2	6.52	6.22	7.12	6.52	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	6.2	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.2	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.227	-	-	2.218	-	-	3.59	4.018	3.318	3.518	4.018	3.327
Pot Cap-1 Maneuver	1210	-	-	1242	-	-	277	302	723	301	319	734
Stage 1	-	-	-	-	-	-	541	545	-	706	664	-
Stage 2	-	-	-	-	-	-	657	637	-	552	545	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1210	-	-	1242	-	-	233	280	723	281	295	734
Mov Cap-2 Maneuver	-	-	-	-	-	-	233	280	-	281	295	-
Stage 1	-	-	-	-	-	-	501	505	-	654	664	-
Stage 2	-	-	-	-	-	-	587	637	-	505	505	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.8	0	16.2	16.8
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	233	723	1210	-	-	1242	-	-	281	704
HCM Lane V/C Ratio	0.048	0.012	0.073	-	-	-	-	-	0.285	0.11
HCM Control Delay (s)	21.2	10	8.2	-	-	0	-	-	22.8	10.7
HCM Lane LOS	C	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	0.1	0	0.2	-	-	0	-	-	1.1	0.4

Intersection	
Int Delay, s/veh	5.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	64	187	209	107	122	103
Future Vol, veh/h	64	187	209	107	122	103
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	5	5	2	3	6
Mvmt Flow	71	208	232	119	136	114

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	351	0	-	0	642	292
Stage 1	-	-	-	-	292	-
Stage 2	-	-	-	-	350	-
Critical Hdwy	4.12	-	-	-	6.43	6.26
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.218	-	-	-	3.527	3.354
Pot Cap-1 Maneuver	1208	-	-	-	437	738
Stage 1	-	-	-	-	756	-
Stage 2	-	-	-	-	711	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1208	-	-	-	408	738
Mov Cap-2 Maneuver	-	-	-	-	408	-
Stage 1	-	-	-	-	706	-
Stage 2	-	-	-	-	711	-

Approach	EB	WB	SB
HCM Control Delay, s	2.1	0	18.5
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1208	-	-	-	513
HCM Lane V/C Ratio	0.059	-	-	-	0.487
HCM Control Delay (s)	8.2	0	-	-	18.5
HCM Lane LOS	A	A	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	2.6

MOVEMENT SUMMARY

Site: 101 [Cambrian and Greenbank Existing PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Greenbank Road															
1	L2	All MCs	60	2.0	60	2.0	0.776	25.2	LOS D	8.9	63.5	0.87	1.08	1.80	26.2
2	T1	All MCs	317	2.0	317	2.0	0.776	25.2	LOS D	8.9	63.5	0.87	1.08	1.80	28.4
3	R2	All MCs	131	3.0	131	3.0	0.776	25.3	LOS D	8.9	63.5	0.87	1.08	1.80	23.8
Approach			508	2.3	508	2.3	0.776	25.2	LOS D	8.9	63.5	0.87	1.08	1.80	27.0
East: Cambrian Road															
4	L2	All MCs	130	2.0	130	2.0	0.792	27.3	LOS D	9.1	64.7	0.88	1.19	1.91	22.5
5	T1	All MCs	306	2.0	306	2.0	0.792	27.3	LOS D	9.1	64.7	0.88	1.19	1.91	25.3
6	R2	All MCs	62	2.0	62	2.0	0.792	27.3	LOS D	9.1	64.7	0.88	1.19	1.91	26.6
Approach			498	2.0	498	2.0	0.792	27.3	LOS D	9.1	64.7	0.88	1.19	1.91	24.8
North: Greenbank Road															
7	L2	All MCs	69	2.0	69	2.0	0.883	35.4	LOS E	15.0	106.6	0.99	1.38	2.50	23.3
8	T1	All MCs	364	2.0	364	2.0	0.883	35.4	LOS E	15.0	106.6	0.99	1.38	2.50	24.1
9	R2	All MCs	160	2.0	160	2.0	0.883	35.4	LOS E	15.0	106.6	0.99	1.38	2.50	25.7
Approach			593	2.0	593	2.0	0.883	35.4	LOS E	15.0	106.6	0.99	1.38	2.50	24.5
West: Cambrian Road															
10	L2	All MCs	184	2.0	184	2.0	0.821	30.1	LOS D	10.0	71.7	0.91	1.26	2.05	27.0
11	T1	All MCs	266	2.0	266	2.0	0.821	30.1	LOS D	10.0	71.7	0.91	1.26	2.05	24.0
12	R2	All MCs	58	13.0	58	13.0	0.821	31.9	LOS D	10.0	71.7	0.91	1.26	2.05	24.0
Approach			508	3.3	508	3.3	0.821	30.3	LOS D	10.0	71.7	0.91	1.26	2.05	25.2
All Vehicles			2107	2.4	2107	2.4	0.883	29.8	LOS D	15.0	106.6	0.92	1.23	2.08	25.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Intersection	
Intersection Delay, s/veh	37.1
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	59	185	21	0	191	270	10	106	3	169	150	69
Future Vol, veh/h	59	185	21	0	191	270	10	106	3	169	150	69
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles, %	2	5	10	2	3	2	2	2	2	4	2	2
Mvmt Flow	66	206	23	0	212	300	11	118	3	188	167	77
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	21.4	49.9	14.9	39.3
HCM LOS	C	E	B	E

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	8%	22%	0%	44%
Vol Thru, %	89%	70%	41%	39%
Vol Right, %	3%	8%	59%	18%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	119	265	461	388
LT Vol	10	59	0	169
Through Vol	106	185	191	150
RT Vol	3	21	270	69
Lane Flow Rate	132	294	512	431
Geometry Grp	1	1	1	1
Degree of Util (X)	0.305	0.606	0.935	0.853
Departure Headway (Hd)	8.313	7.414	6.568	7.127
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	435	483	548	504
Service Time	6.313	5.506	4.643	5.204
HCM Lane V/C Ratio	0.303	0.609	0.934	0.855
HCM Control Delay	14.9	21.4	49.9	39.3
HCM Lane LOS	B	C	E	E
HCM 95th-tile Q	1.3	4	11.8	8.9

MOVEMENT SUMMARY

Site: 101 [Prince of Wales and Barnsdale Existing PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Prince of Wales Drive															
1	L2	All MCs	8	2.0	8	2.0	0.392	9.9	LOS A	1.8	13.1	0.57	0.48	0.63	40.9
2	T1	All MCs	276	2.0	276	2.0	0.392	9.9	LOS A	1.8	13.1	0.57	0.48	0.63	41.0
3	R2	All MCs	4	25.0	4	25.0	0.392	12.3	LOS B	1.8	13.1	0.57	0.48	0.63	35.1
Approach			288	2.4	288	2.4	0.392	9.9	LOS A	1.8	13.1	0.57	0.48	0.63	40.9
East: Barnsdale Road															
4	L2	All MCs	8	2.0	8	2.0	0.157	7.7	LOS A	0.5	3.9	0.54	0.49	0.54	38.6
5	T1	All MCs	87	2.0	87	2.0	0.157	7.7	LOS A	0.5	3.9	0.54	0.49	0.54	42.4
6	R2	All MCs	2	2.0	2	2.0	0.157	7.7	LOS A	0.5	3.9	0.54	0.49	0.54	42.3
Approach			97	2.0	97	2.0	0.157	7.7	LOS A	0.5	3.9	0.54	0.49	0.54	42.2
North: Prince of Wales Drive															
7	L2	All MCs	3	2.0	3	2.0	0.959	33.5	LOS D	48.1	342.6	1.00	1.19	1.72	22.9
8	T1	All MCs	531	2.0	531	2.0	0.959	33.5	LOS D	48.1	342.6	1.00	1.19	1.72	25.4
9	R2	All MCs	431	2.0	431	2.0	0.959	33.5	LOS D	48.1	342.6	1.00	1.19	1.72	28.6
Approach			966	2.0	966	2.0	0.959	33.5	LOS D	48.1	342.6	1.00	1.19	1.72	26.9
West: Barnsdale Road															
10	L2	All MCs	293	5.0	293	5.0	0.645	18.6	LOS C	4.9	36.1	0.76	0.82	1.30	33.8
11	T1	All MCs	104	7.0	104	7.0	0.645	18.9	LOS C	4.9	36.1	0.76	0.82	1.30	29.8
12	R2	All MCs	2	2.0	2	2.0	0.645	18.2	LOS C	4.9	36.1	0.76	0.82	1.30	31.6
Approach			400	5.5	400	5.5	0.645	18.7	LOS C	4.9	36.1	0.76	0.82	1.30	32.8
All Vehicles			1750	2.9	1750	2.9	0.959	24.8	LOS C	48.1	342.6	0.85	0.95	1.38	30.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Intersection	
Int Delay, s/veh	5.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	74	121	125	38	97	165
Future Vol, veh/h	74	121	125	38	97	165
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	7	7	5	2	9	4
Mvmt Flow	82	134	139	42	108	183

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	559	160	0	0	181	0
Stage 1	160	-	-	-	-	-
Stage 2	399	-	-	-	-	-
Critical Hdwy	6.47	6.27	-	-	4.19	-
Critical Hdwy Stg 1	5.47	-	-	-	-	-
Critical Hdwy Stg 2	5.47	-	-	-	-	-
Follow-up Hdwy	3.563	3.363	-	-	2.281	-
Pot Cap-1 Maneuver	482	872	-	-	1353	-
Stage 1	857	-	-	-	-	-
Stage 2	667	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	439	872	-	-	1353	-
Mov Cap-2 Maneuver	439	-	-	-	-	-
Stage 1	857	-	-	-	-	-
Stage 2	608	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	13.6	0	2.9
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	635	1353	-
HCM Lane V/C Ratio	-	-	0.341	0.08	-
HCM Control Delay (s)	-	-	13.6	7.9	0
HCM Lane LOS	-	-	B	A	A
HCM 95th %tile Q(veh)	-	-	1.5	0.3	-

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	155	1	51	202	6	3	0	20	7	1	0
Future Vol, veh/h	0	155	1	51	202	6	3	0	20	7	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	16	2	45	29	50	2	2	15	43	2	2
Mvmt Flow	0	172	1	57	224	7	3	0	22	8	1	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	231	0	0	173	0	0	515	518	173	526	515	228
Stage 1	-	-	-	-	-	-	173	173	-	342	342	-
Stage 2	-	-	-	-	-	-	342	345	-	184	173	-
Critical Hdwy	4.12	-	-	4.55	-	-	7.12	6.52	6.35	7.53	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.53	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.53	5.52	-
Follow-up Hdwy	2.218	-	-	2.605	-	-	3.518	4.018	3.435	3.887	4.018	3.318
Pot Cap-1 Maneuver	1337	-	-	1182	-	-	470	462	838	404	464	811
Stage 1	-	-	-	-	-	-	829	756	-	596	638	-
Stage 2	-	-	-	-	-	-	673	636	-	731	756	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1337	-	-	1182	-	-	449	437	838	377	438	811
Mov Cap-2 Maneuver	-	-	-	-	-	-	449	437	-	377	438	-
Stage 1	-	-	-	-	-	-	829	756	-	596	603	-
Stage 2	-	-	-	-	-	-	635	601	-	712	756	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	1.6	9.9	14.6
HCM LOS			A	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	753	1337	-	-	1182	-	-	384
HCM Lane V/C Ratio	0.034	-	-	-	0.048	-	-	0.023
HCM Control Delay (s)	9.9	0	-	-	8.2	0	-	14.6
HCM Lane LOS	A	A	-	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0.2	-	-	0.1

Appendix H

Collision Data

CGH TRANSPORTATION

Accident Date	Accident Year	Accident Time	Location	Environment Condition	Light	Traffic Control	Traffic Control Condition	Classification Of Accident	Initial Impact Type	Road Surface Condition	# Vehicles	# Motorcycles	# Bicycles	# Pedestrians
5/5/2018	2018	9:15	BORRISOKANE RD btwn BARNSDALE RD & CAMBRIAN RD (__3ZA1T5)	06 - Strong wind	01 - Daylight	10 - No control	0	03 - P.D. only	07 - SMV other	02 - Wet	0	0	0	0
2/27/2020	2020	15:55	BORRISOKANE RD btwn BARNSDALE RD & CAMBRIAN RD (__3ZA1T5)	03 - Snow	01 - Daylight	10 - No control	0	03 - P.D. only	01 - Approaching	04 - Slush	0	0	0	0
6/24/2021	2021	23:40	BORRISOKANE RD btwn BARNSDALE RD & CAMBRIAN RD (__3ZA1T5)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
9/29/2021	2021	0:15	BORRISOKANE RD btwn BARNSDALE RD & CAMBRIAN RD (__3ZA1T5)	01 - Clear	07 - Dark	10 - No control	0	02 - Non-fatal injury	07 - SMV other	01 - Dry	0	0	0	0
10/5/2021	2021	4:43	BORRISOKANE RD btwn BARNSDALE RD & CAMBRIAN RD (__3ZA1T5)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	07 - SMV other	01 - Dry	0	0	0	0
8/17/2022	2022	18:38	BORRISOKANE RD btwn BARNSDALE RD & CAMBRIAN RD (__3ZA1T5)	01 - Clear	01 - Daylight	10 - No control	0	02 - Non-fatal injury	07 - SMV other	01 - Dry	0	0	0	0
5/21/2019	2019	10:31	BARNSDALE RD btwn GREENBANK RD & VIEWBANK RD (__3ZA1N0)	01 - Clear	01 - Daylight	10 - No control	0	03 - P.D. only	07 - SMV other	01 - Dry	0	0	0	0
11/3/2020	2020	18:45	BARNSDALE RD btwn GREENBANK RD & VIEWBANK RD (__3ZA1N0)	01 - Clear	07 - Dark	10 - No control	0	03 - P.D. only	07 - SMV other	02 - Wet	0	0	0	0
10/11/2019	2019	13:49	BARNSDALE RD W @ CEDARVIEW RD W (0001066)	01 - Clear	01 - Daylight	02 - Stop sign	0	02 - Non-fatal injury	05 - Turning movement	01 - Dry	0	0	0	0
12/31/2019	2019	16:43	BARNSDALE RD W @ CEDARVIEW RD W (0001066)	03 - Snow	05 - Dusk	02 - Stop sign	0	03 - P.D. only	04 - Sideswipe	03 - Loose snow	0	0	0	0
1/10/2018	2018	12:13	BARNSDALE RD E @ CEDARVIEW RD E (0001077)	01 - Clear	01 - Daylight	02 - Stop sign	0	02 - Non-fatal injury	02 - Angle	01 - Dry	0	0	0	0
4/8/2018	2018	0:20	BARNSDALE RD E @ CEDARVIEW RD E (0001077)	01 - Clear	07 - Dark	02 - Stop sign	0	02 - Non-fatal injury	02 - Angle	01 - Dry	0	0	0	0
10/25/2019	2019	15:10	BARNSDALE RD E @ CEDARVIEW RD E (0001077)	01 - Clear	01 - Daylight	02 - Stop sign	0	03 - P.D. only	02 - Angle	01 - Dry	0	0	0	0
7/13/2020	2020	18:41	BARNSDALE RD E @ CEDARVIEW RD E (0001077)	01 - Clear	01 - Daylight	02 - Stop sign	0	02 - Non-fatal injury	02 - Angle	01 - Dry	0	0	0	0
10/11/2019	2019	13:49	BARNSDALE RD W @ CEDARVIEW RD W (0001066)	01 - Clear	01 - Daylight	02 - Stop sign	0	02 - Non-fatal injury	05 - Turning movement	01 - Dry	0	0	0	0
12/31/2019	2019	16:43	BARNSDALE RD W @ CEDARVIEW RD W (0001066)	03 - Snow	05 - Dusk	02 - Stop sign	0	03 - P.D. only	04 - Sideswipe	03 - Loose snow	0	0	0	0
6/26/2018	2018	11:51	BORRISOKANE RD @ CAMBRIAN RD (0001571)	01 - Clear	01 - Daylight	02 - Stop sign	0	02 - Non-fatal injury	07 - SMV other	08 - Loose sand or gravel	0	1	0	0
1/7/2020	2020	22:24	BORRISOKANE RD @ CAMBRIAN RD (0001571)	03 - Snow	07 - Dark	02 - Stop sign	0	02 - Non-fatal injury	03 - Rear end	02 - Wet	0	0	0	0
1/10/2020	2020	17:16	BORRISOKANE RD @ CAMBRIAN RD (0001571)	02 - Rain	05 - Dusk	02 - Stop sign	0	02 - Non-fatal injury	02 - Angle	02 - Wet	0	0	0	0
2/1/2020	2020	13:49	BORRISOKANE RD @ CAMBRIAN RD (0001571)	01 - Clear	01 - Daylight	02 - Stop sign	0	02 - Non-fatal injury	03 - Rear end	02 - Wet	0	0	0	0
10/14/2020	2020	18:25	BORRISOKANE RD @ CAMBRIAN RD (0001571)	01 - Clear	05 - Dusk	02 - Stop sign	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
12/24/2020	2020	12:45	BORRISOKANE RD @ CAMBRIAN RD (0001571)	01 - Clear	01 - Daylight	02 - Stop sign	0	03 - P.D. only	05 - Turning movement	02 - Wet	0	0	0	0
12/17/2021	2021	22:47	BORRISOKANE RD @ CAMBRIAN RD (0001571)	01 - Clear	07 - Dark	02 - Stop sign	0	03 - P.D. only	01 - Approaching	01 - Dry	0	0	0	0
7/3/2022	2022	10:49	BORRISOKANE RD @ CAMBRIAN RD (0001571)	01 - Clear	01 - Daylight	02 - Stop sign	0	02 - Non-fatal injury	03 - Rear end	01 - Dry	0	0	0	0
7/25/2022	2022	18:12	BORRISOKANE RD @ CAMBRIAN RD (0001571)	01 - Clear	01 - Daylight	02 - Stop sign	0	03 - P.D. only	04 - Sideswipe	01 - Dry	0	0	0	0
12/12/2018	2018	11:00	BARNSDALE RD @ GREENBANK RD (0001069)	01 - Clear	01 - Daylight	02 - Stop sign	0	03 - P.D. only	02 - Angle	01 - Dry	0	0	0	0
10/15/2019	2019	16:27	BARNSDALE RD @ GREENBANK RD (0001069)	01 - Clear	01 - Daylight	02 - Stop sign	0	03 - P.D. only	03 - Rear end	01 - Dry	0	0	0	0
11/7/2019	2019	8:00	BARNSDALE RD @ GREENBANK RD (0001069)	03 - Snow	01 - Daylight	02 - Stop sign	0	03 - P.D. only	03 - Rear end	06 - Ice	0	0	0	0
3/4/2021	2021	6:39	BARNSDALE RD @ GREENBANK RD (0001069)	01 - Clear	01 - Daylight	02 - Stop sign	0	03 - P.D. only	02 - Angle	01 - Dry	0	0	0	0
12/7/2021	2021	14:30	BARNSDALE RD @ GREENBANK RD (0001069)	01 - Clear	01 - Daylight	02 - Stop sign	0	03 - P.D. only	02 - Angle	01 - Dry	0	0	0	0
9/6/2022	2022	19:00	BARNSDALE RD @ GREENBANK RD (0001069)	01 - Clear	05 - Dusk	02 - Stop sign	0	03 - P.D. only	02 - Angle	01 - Dry	0	0	0	0

Appendix I

Signal Warrant Calculation Sheets

Borrisokane Road/Highway 416 @Barnsdale Road
2031 Future Background

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	746	155%	155%	Yes
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	244	204%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	502	105%	105%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	161	323%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

Borrisokane Road/Highway 416 @Barnsdale Road
2036 Future Background

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	796	166%	166%	Yes
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	213	178%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	583	121%	121%	Yes
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	199	398%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

Trail Road/Highway 416 @Barnsdale Road
2031 Future Background

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	459	76%	76%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	175	146%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	284	47%	33%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	17	33%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

Trail Road/Highway 416 @Barnsdale Road
2036 Future Background

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	481	80%	80%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	197	164%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	284	47%	33%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	17	33%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

Trail Road/Highway 416 @Barnsdale Road
2031 Future Total

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	533	89%	89%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	240	200%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	293	49%	33%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	17	33%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

Trail Road/Highway 416 @Barnsdale Road
2036 Future Total

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	555	93%	93%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	262	218%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	294	49%	33%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	17	33%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

Greenbank Road @Barnsdale Road
2031 Future Background

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	704	147%	147%	Yes
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	394	328%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	310	65%	65%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	187	374%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

Greenbank Road @Barnsdale Road
2036 Future Background

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	739	154%	154%	Yes
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	457	380%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	282	59%	59%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	232	464%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

Haiku Street @Borrisokane Road
2031 Future Background

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	402	84%	63%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	76	63%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	351	73%	43%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	21	43%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

Haiku Street @Borrisokane Road
2036 Future Background

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	345	72%	63%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	76	63%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	294	61%	43%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	21	43%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

Haiku Street @Borrisokane Road
2031 Future Total

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	411	86%	63%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	76	63%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	361	75%	43%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	21	43%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

Haiku Street @Borrisokane Road
2036 Future Total

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	354	74%	63%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	76	63%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	304	63%	43%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	21	43%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

Cambrian Road @Elevation Road
2031 Future Background

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	835	116%	116%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	268	158%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	567	79%	79%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	174	232%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

Cambrian Road @Elevation Road
2036 Future Background

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	534	74%	74%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	168	99%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	366	51%	51%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	102	136%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

Cambrian Road @Elevation Road
2031 Future Total

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	871	121%	121%	Yes
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	286	168%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	586	81%	81%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	186	247%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

Cambrian Road @Elevation Road
2036 Future Total

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	550	76%	76%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	174	102%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	376	52%	52%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	108	144%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

Kilbirnie Road @Borrisokane Road
2031 Future Total-Sensitivity

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	553	115%	115%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	186	155%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	429	89%	89%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	116	231%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

Kilbirnie Road @Borrisokane Road
2036 Future Total-Sensitivity

Justification #7

Justification	Description	Minimum Requirement 1 Lane Highway		Minimum Requirement 2 or More Lanes		Compliance Sectional		Compliance Entire %	Signal
		Free Flow	Restr. Flow	Free Flow	Restr. Flow	Numerical	%		
1. Minimum Vehicular Volume	A. Vehicle volume, all approaches (average hour)	480	720	600	900	444	92%	92%	No
	B. Vehicle volume, along minor streets (average hour)	120	170	120	170	114	95%		
2. Delay to Cross Traffic	A. Vehicle volumes, major street (average hour)	480	720	600	900	368	77%	77%	No
	B. Combined vehicle and pedestrian volume crossing artery from minor streets (average hour)	50	75	50	75	66	132%		

Notes
1. Refer to OTM Book 12, pg 92, Mar 2012
2. Lowest section percentage governs justification
3. Average hourly volumes estimated from peak hour volumes, AHV = PM/2 or (AM + PM) / 4, including amplifcation factors
4. T-intersection factor corrected, applies only to 1B
5. Correction to 2B, as per MTO and City of Ottawa, for '2 or More Lanes' has been applied

Appendix J

All-Way Stop-Controlled Warrants

CGH TRANSPORTATION

Warrants for AWSC on Collector Roads and Rural Arterial Roads (Trail Road/Highway 416 at Barnsdale Road)-FB2031

Volume Criteria		
Major Street 2-Way Hourly Volume (per 8-hr period)	Minor Street 2-Way Hourly Volume (per 8-hr period)	Minor Street Pedestrian 2-Way Hourly Volume (per 8-hr period)
3654	2450	0
Control Required		
Total Vehicle Volume	YES	
Minor Street Volume & Pedestrian Volume	YES	
	3-Way Stop	4-Way Stop
Vehicle Split	YES	YES

Warrants for AWSC on Collector Roads and Rural Arterial Roads (Trail Road/Highway 416 at Barnsdale Road)-FB2036

Volume Criteria		
Major Street 2-Way Hourly Volume (per 8-hr period)	Minor Street 2-Way Hourly Volume (per 8-hr period)	Minor Street Pedestrian 2-Way Hourly Volume (per 8-hr period)
3661	2739	0
Control Required		
Total Vehicle Volume	YES	
Minor Street Volume & Pedestrian Volume	YES	
	3-Way Stop	4-Way Stop
Vehicle Split	YES	YES

Appendix K

Left Turn Warrants Calculation Sheets

Barnsdale Road at Borrisokane Road/Highway 416

Existing

Design Speed 90 km/h — Yes

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing
AM	94	161	0	0	142	103	0	0	0	73	0	56	56.6%	129	0
PM	61	187	0	0	209	102	0	0	0	130	0	109	54.4%	239	0

Future Background 2031

Design Speed 90 km/h — Yes

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing
AM	255	236	32	192	144	117	27	35	15	76	177	80	22.8%	333	77
PM	217	354	17	127	210	106	27	48	16	143	195	138	30.0%	476	91

Future Background 2036

Design Speed 90 km/h — Yes

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing
AM	219	300	32	331	145	117	27	35	15	76	105	80	29.1%	261	77
PM	151	479	17	222	211	106	27	48	18	143	141	138	33.9%	422	93

Future Total 2031

Design Speed 90 km/h — Yes

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing
AM	318	290	32	332	158	125	27	39	21	78	190	82	22.3%	350	87
PM	246	472	17	218	219	108	27	49	29	150	246	145	27.7%	541	105

Future Total 2036

Design Speed 90 km/h — Yes

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing
AM	282	354	32	471	159	125	27	39	21	78	118	82	28.1%	278	87
PM	180	597	17	313	220	108	27	49	31	150	192	145	30.8%	487	107

Future Total 2031- Sensitivity

Design Speed 90 km/h — Yes

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing
AM	397	254	32	234	158	125	27	39	21	78	371	82	14.7%	531	87
PM	403	393	17	154	219	108	27	49	29	150	370	145	22.6%	665	105

Future Total 2036- Sensitivity

Design Speed 90 km/h — Yes

	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing
AM	326	317	32	375	159	125	27	39	21	78	229	82	20.1%	389	87
PM	273	520	17	248	220	108	27	49	31	150	267	145	26.7%	562	107

Existing

Design Speed — Yes

70 km/h	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing
AM	94	161	0	0	142	103	0	0	0	73	0	56	56.6%	129	0
PM	61	187	0	0	209	102	0	0	0	130	0	109	54.4%	239	0

Future Background 2031

Design Speed — Yes

70 km/h	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing
AM	255	236	32	192	144	117	27	35	15	76	177	80	22.8%	333	77
PM	217	354	17	127	210	106	27	48	16	143	195	138	30.0%	476	91

Future Background 2036

Design Speed — Yes

70 km/h	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing
AM	219	300	32	331	145	117	27	35	15	76	105	80	29.1%	261	77
PM	151	479	17	222	211	106	27	48	18	143	141	138	33.9%	422	93

Future Total 2031

Design Speed — Yes

70 km/h	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing
AM	318	290	32	332	158	125	27	39	21	78	190	82	22.3%	350	87
PM	246	472	17	218	219	108	27	49	29	150	246	145	27.7%	541	105

Future Total 2036

Design Speed — Yes

70 km/h	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing
AM	282	354	32	471	159	125	27	39	21	78	118	82	28.1%	278	87
PM	180	597	17	313	220	108	27	49	31	150	192	145	30.8%	487	107

Future Total 2031- Sensitivity

Design Speed — Yes

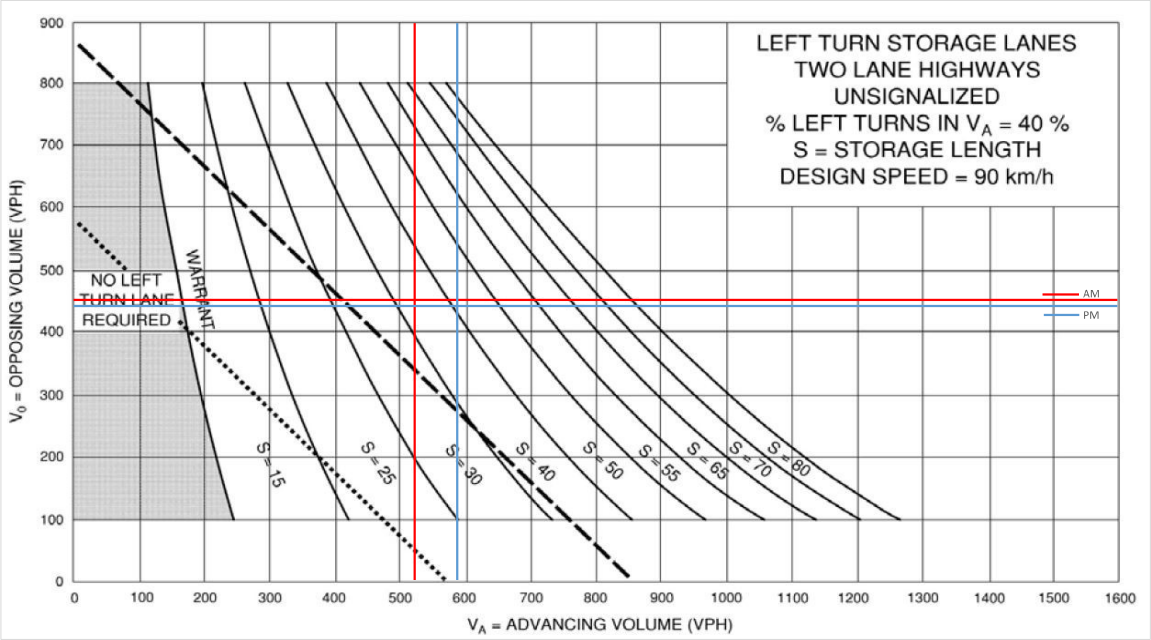
70 km/h	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing
AM	397	254	32	234	158	125	27	39	21	78	371	82	14.7%	531	87
PM	403	393	17	154	219	108	27	49	29	150	370	145	22.6%	665	105

Future Total 2036- Sensitivity

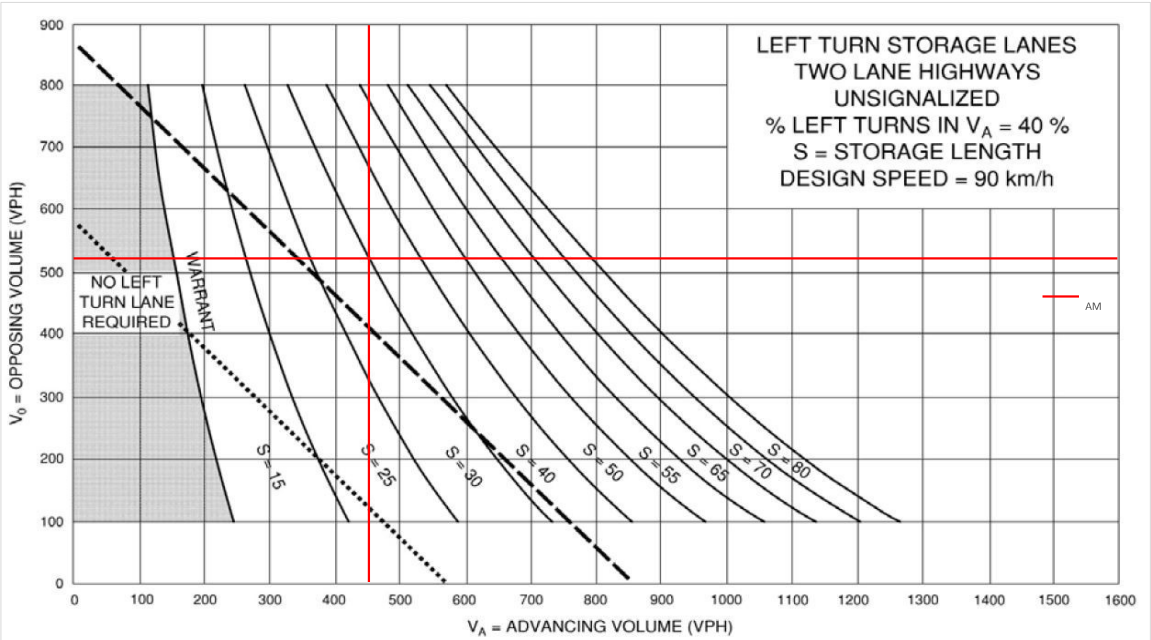
Design Speed — Yes

70 km/h	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing
AM	326	317	32	375	159	125	27	39	21	78	229	82	20.1%	389	87
PM	273	520	17	248	220	108	27	49	31	150	267	145	26.7%	562	107

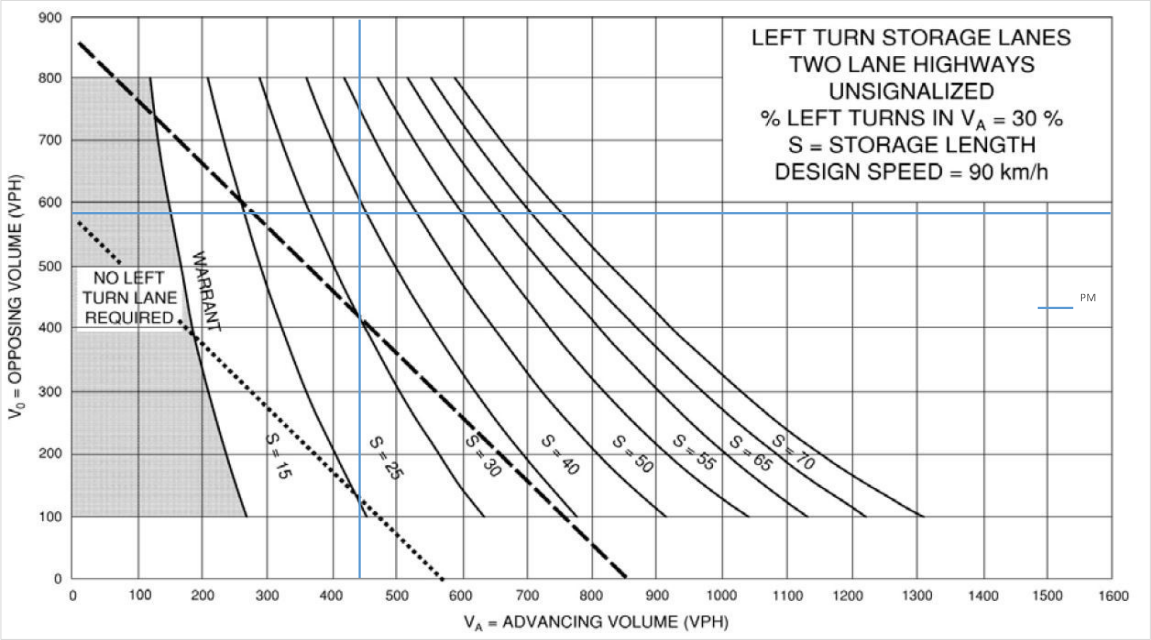
Future Background 2031 - Eastbound Left



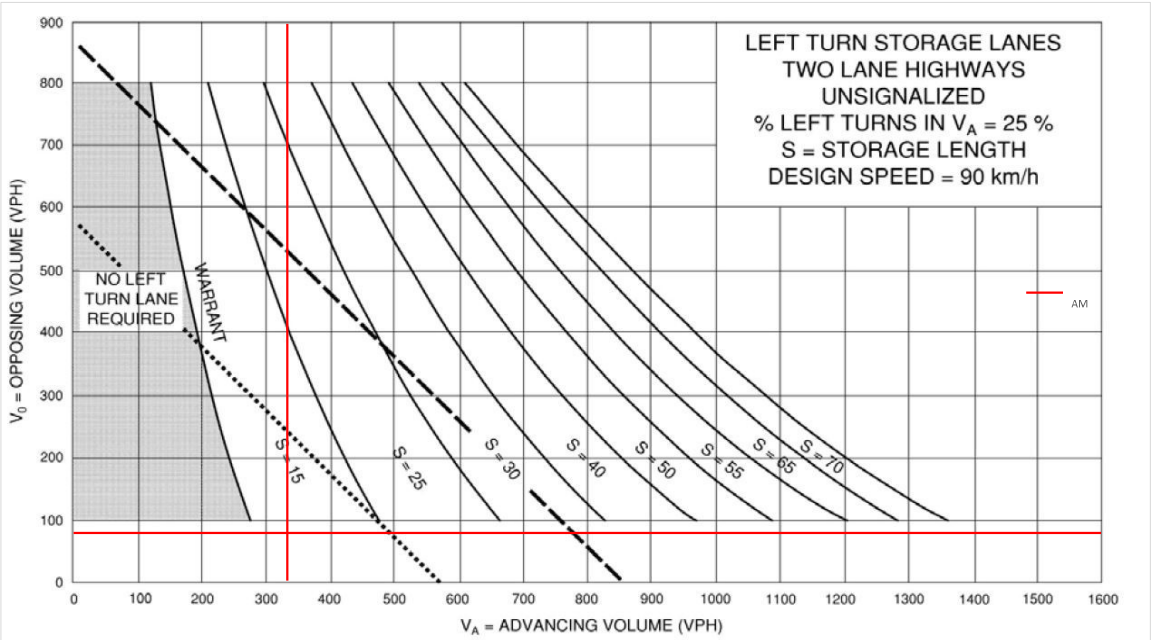
Future Background 2031 - Westbound Left



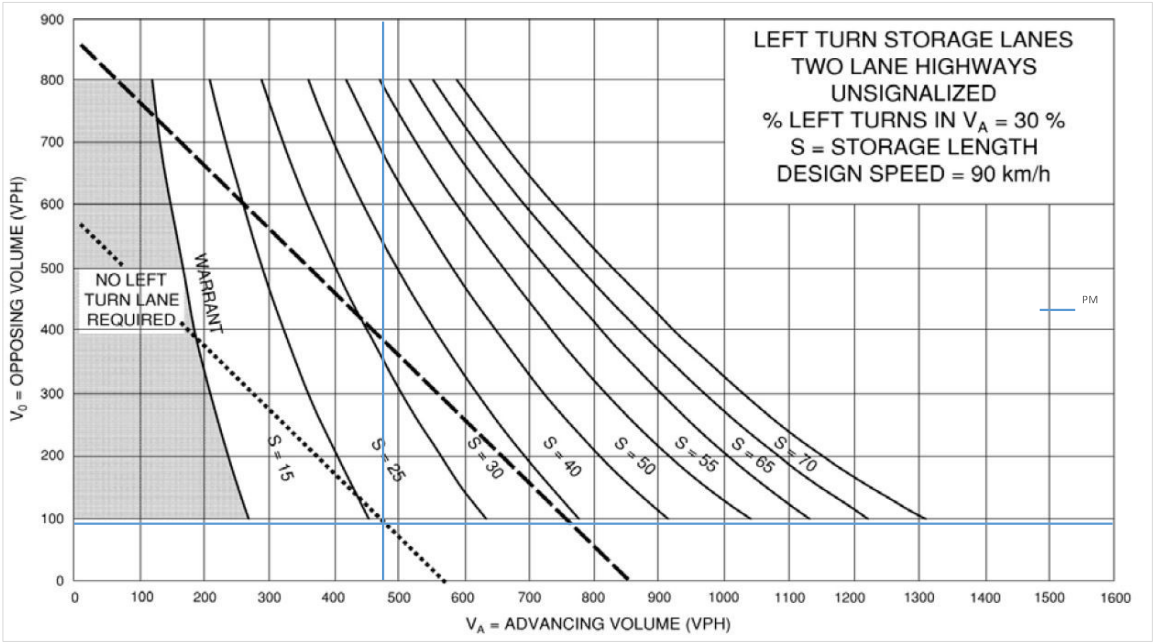
Future Background 2031 - Westbound Left



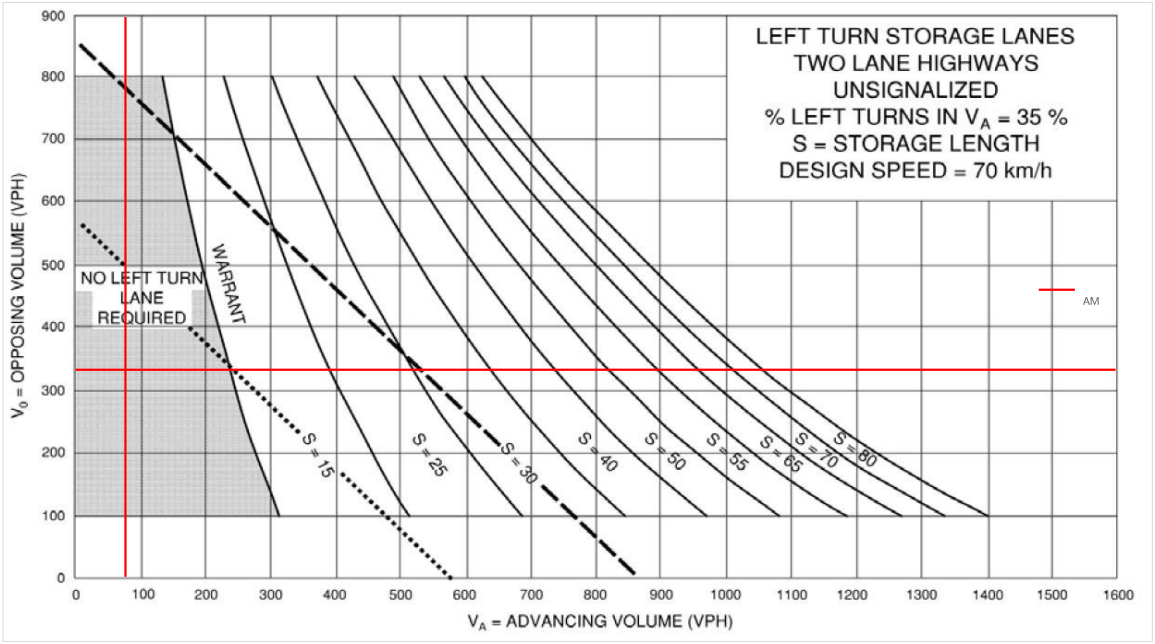
Future Background 2031 - Southbound Left



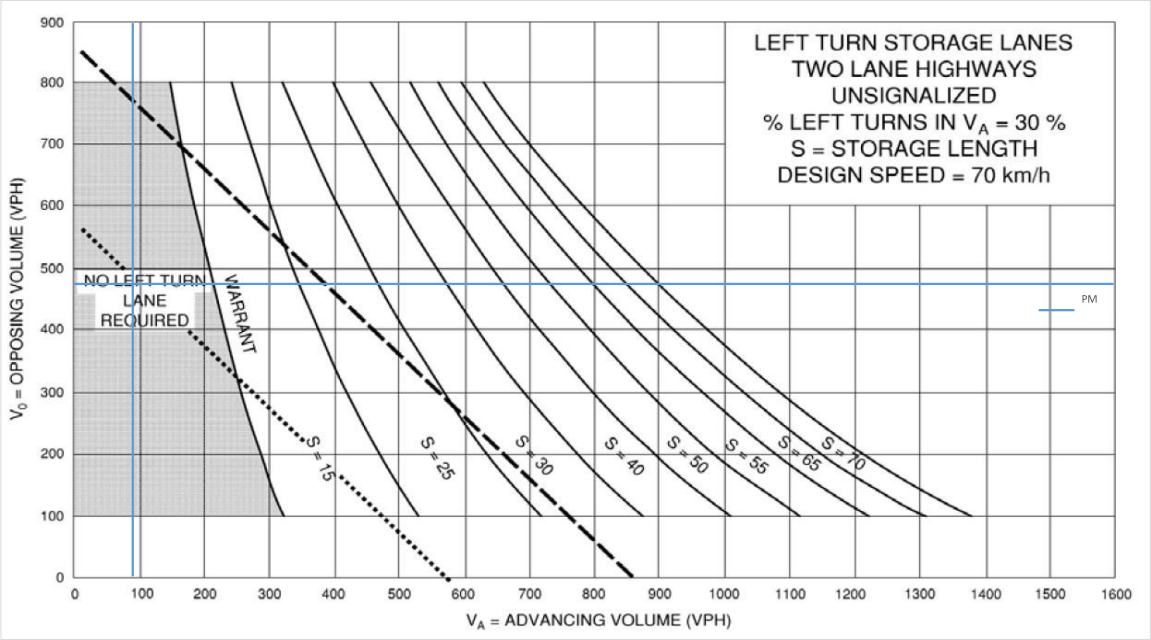
Future Background 2031 - Southbound Left



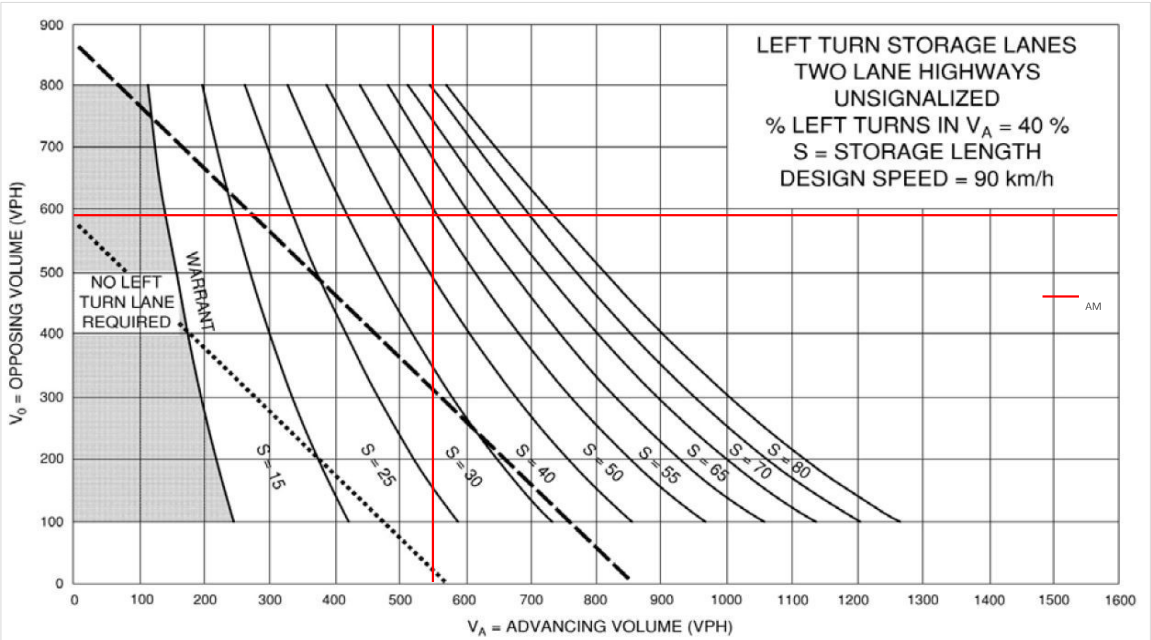
Future Background 2031 - Northbound Left



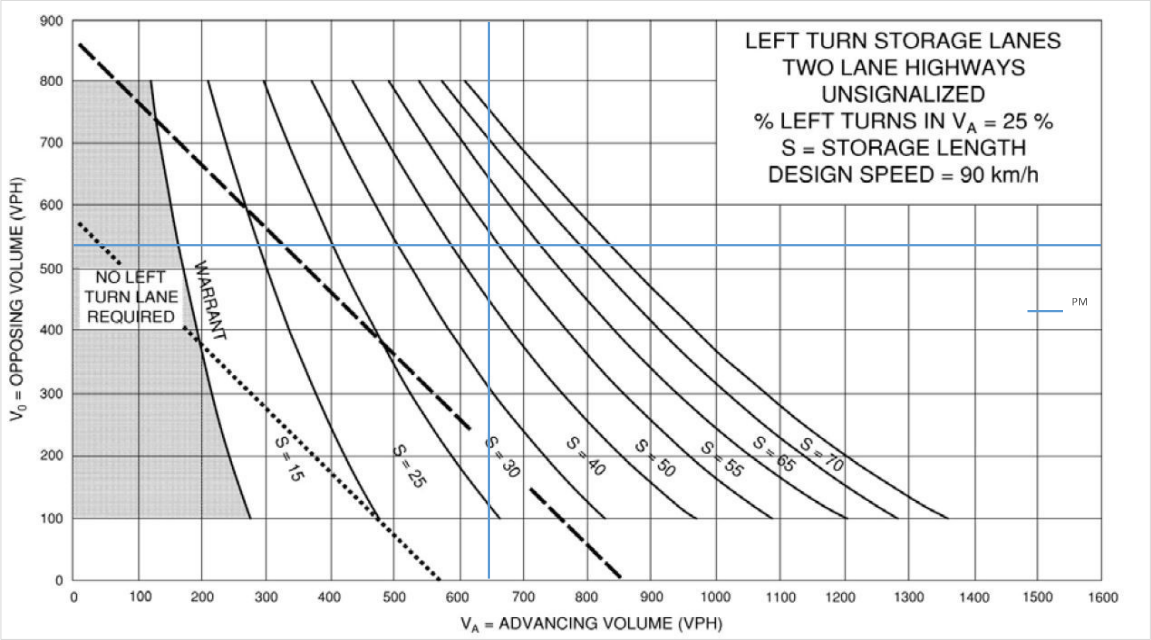
Future Background 2031 - Northbound Left



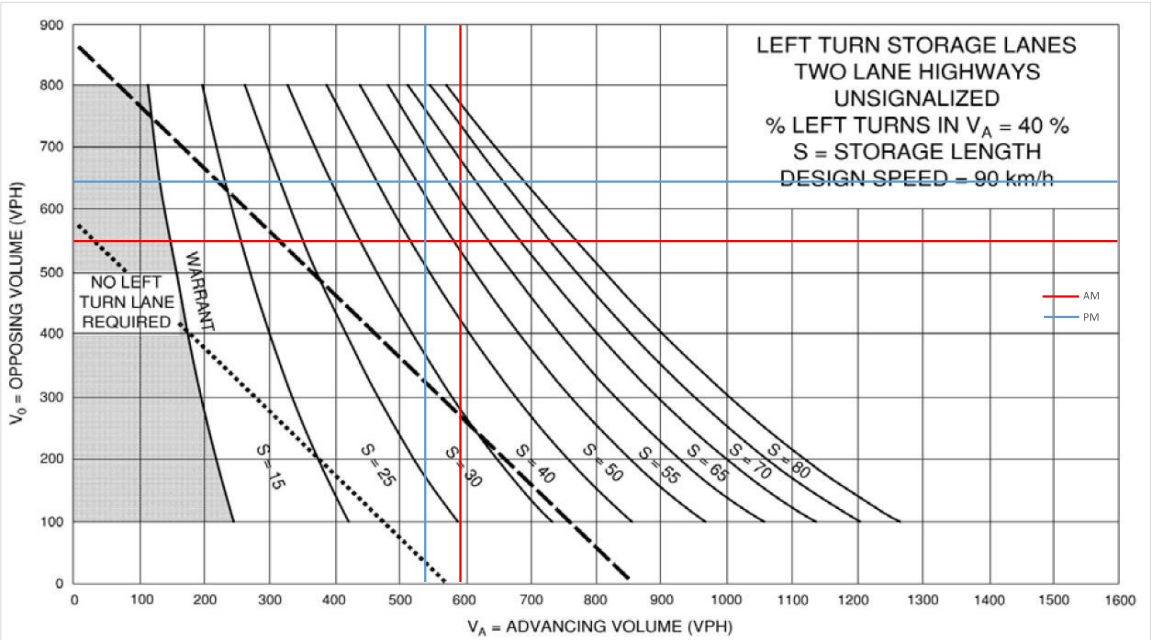
Future Background 2036 - Eastbound Left



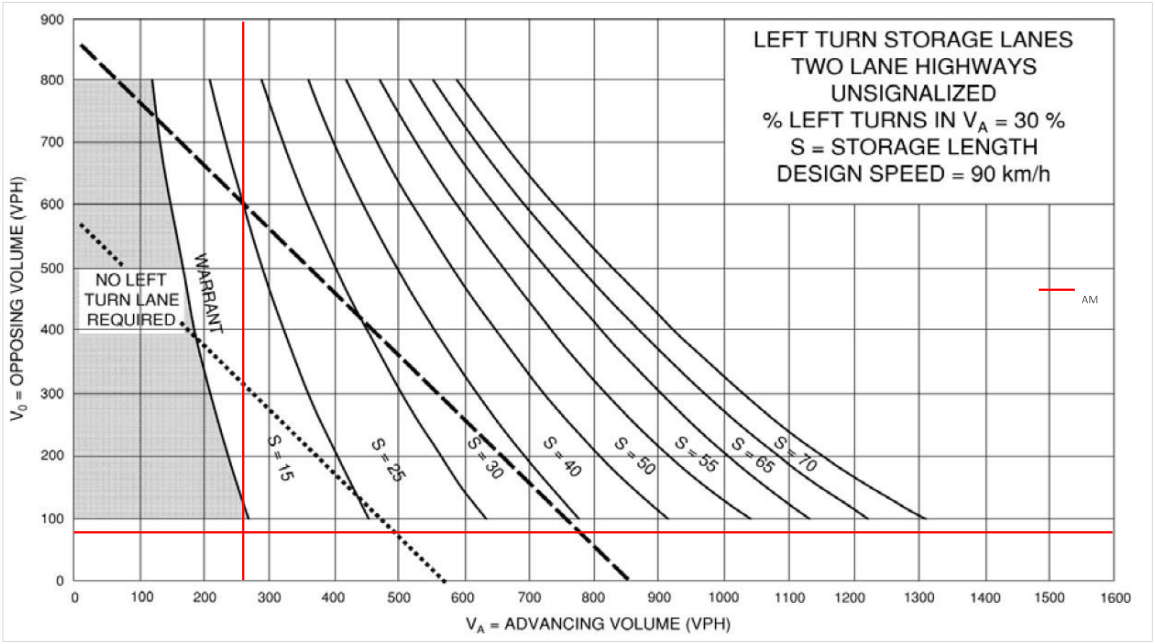
Future Background 2036 - Eastbound Left



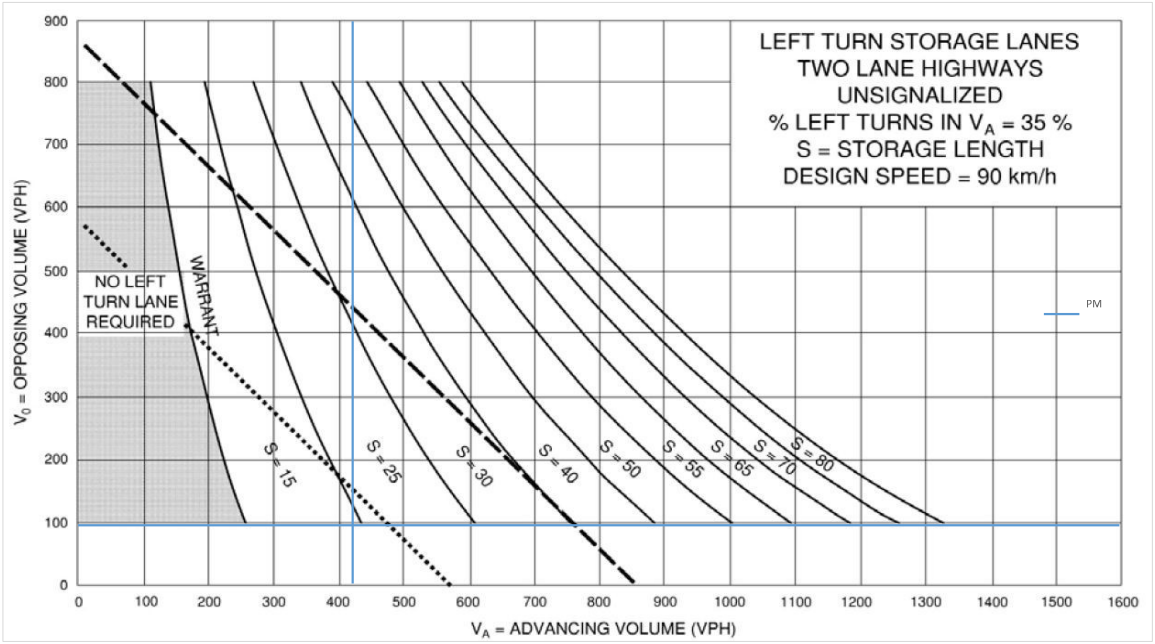
Future Background 2036 - Westbound Left



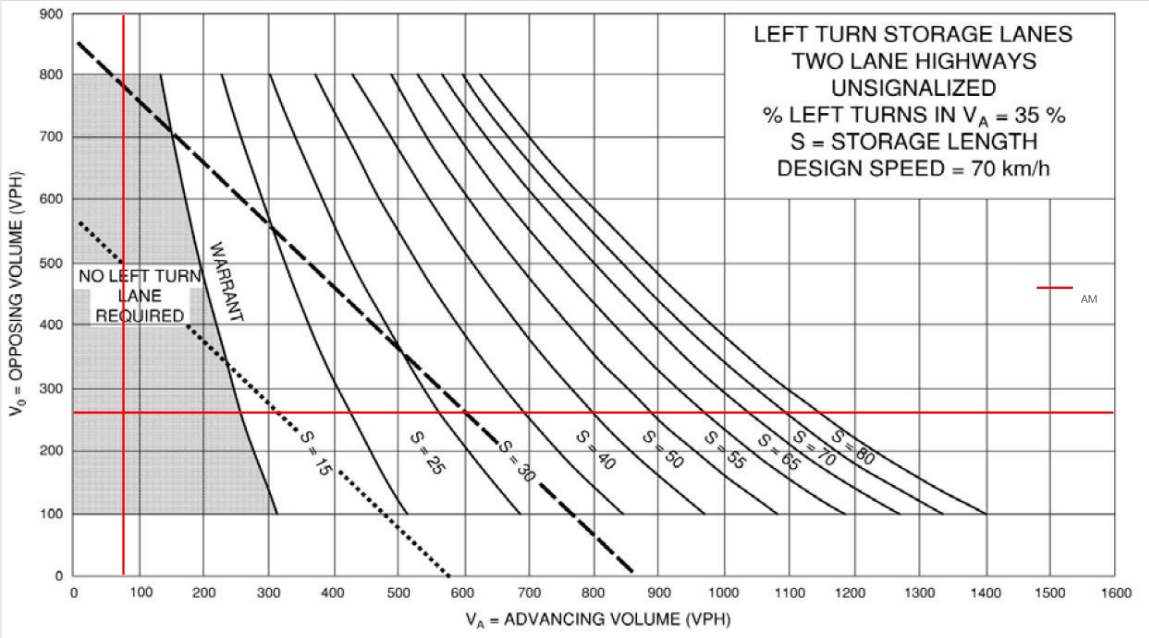
Future Background 2036 - Southbound Left



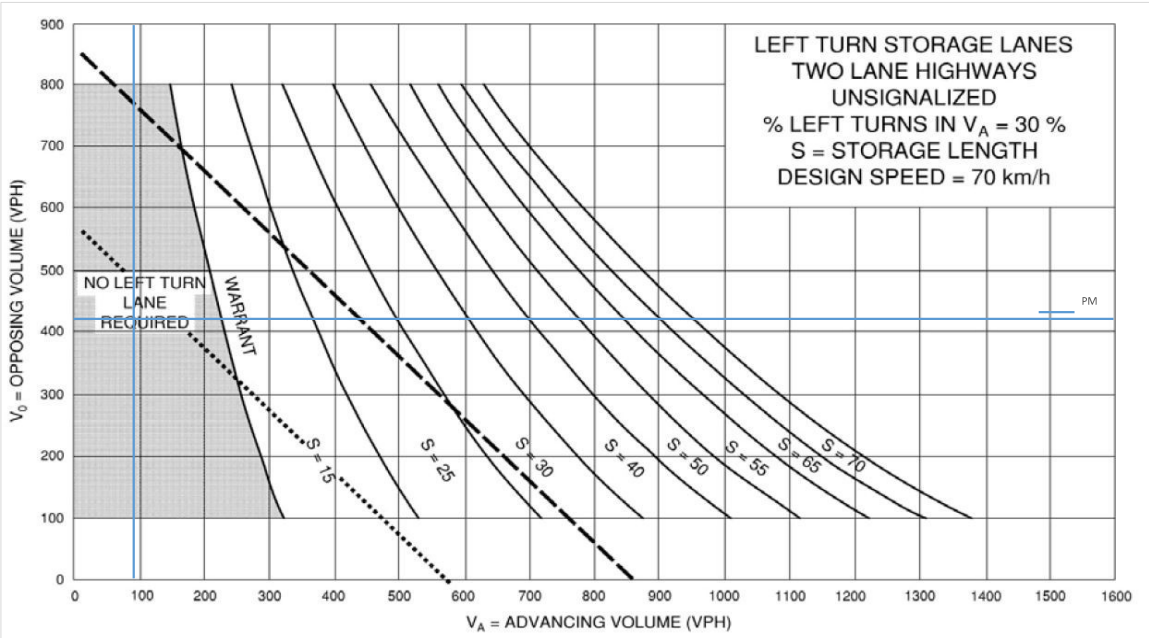
Future Background 2036 - Southbound Left



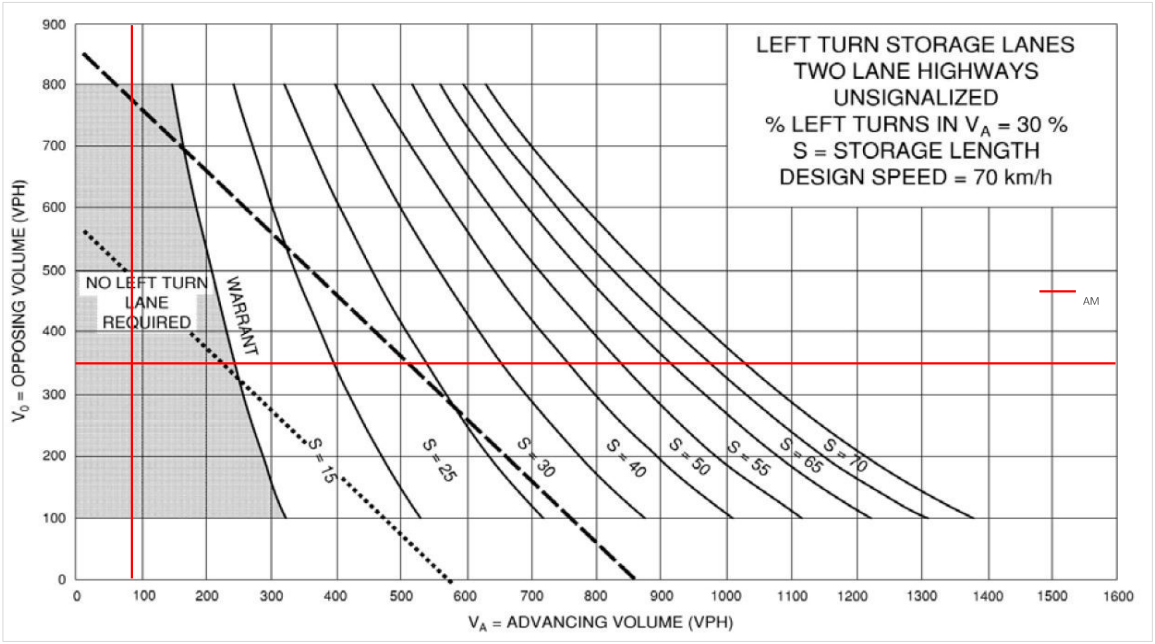
Future Background 2036 - Northbound Left



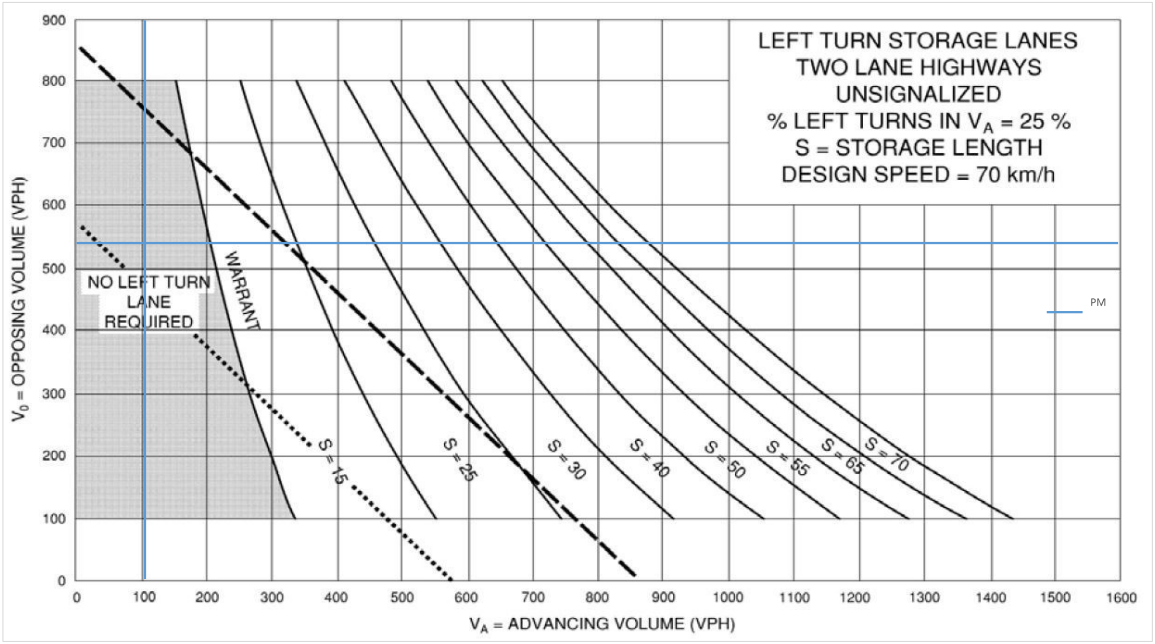
Future Background 2036 - Northbound Left



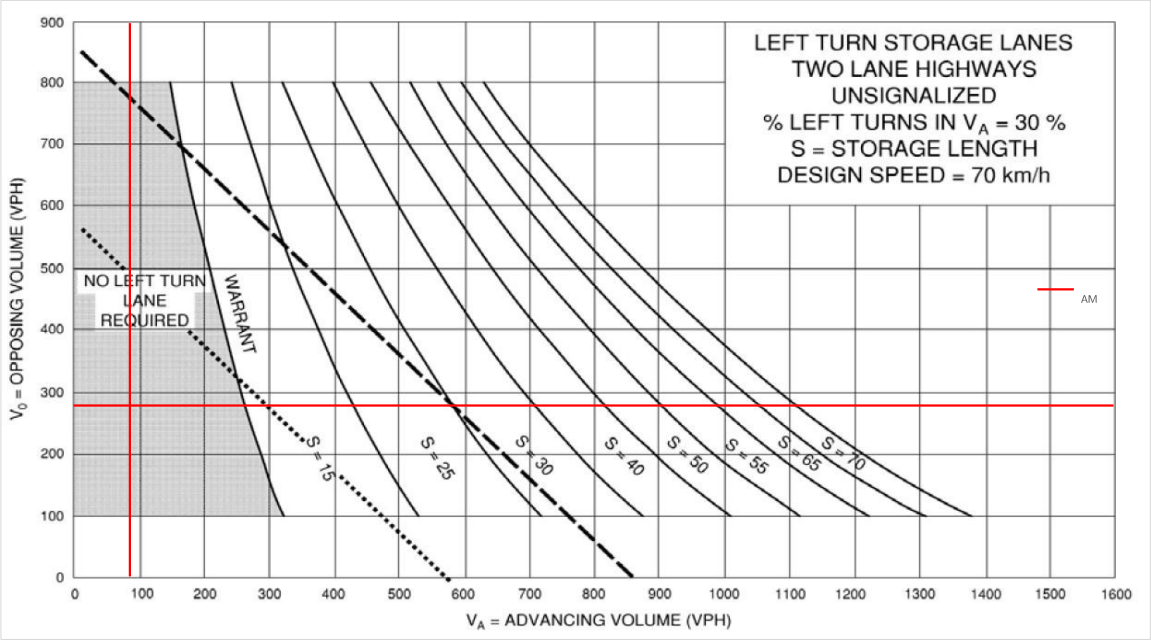
Future Total 2031 - Northbound Left



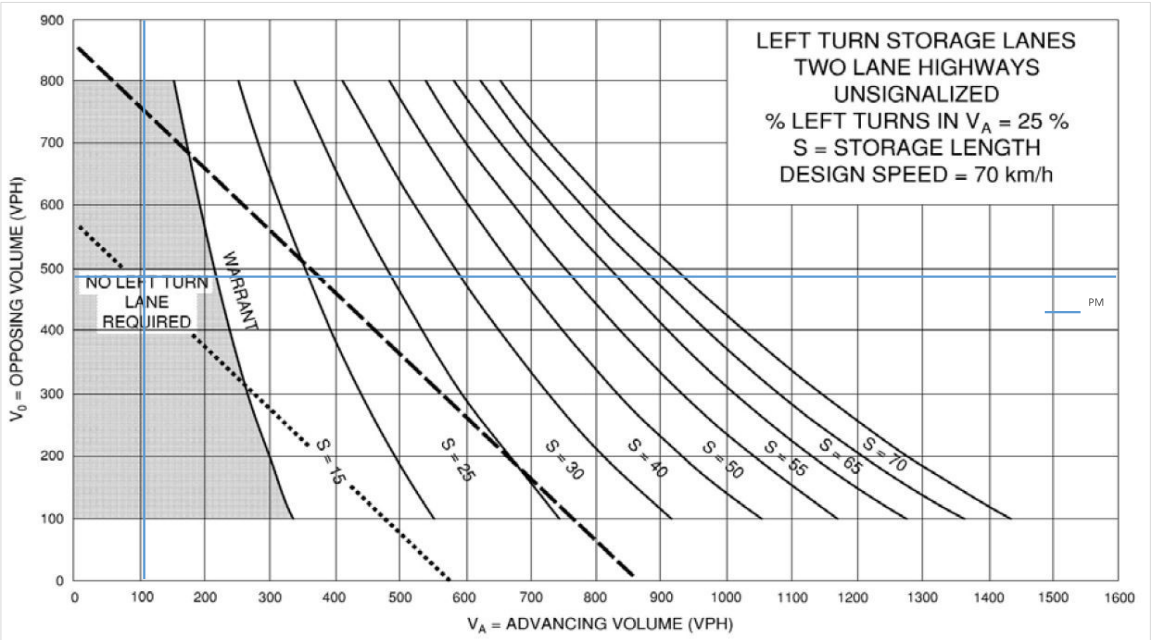
Future Total 2031 - Northbound Left



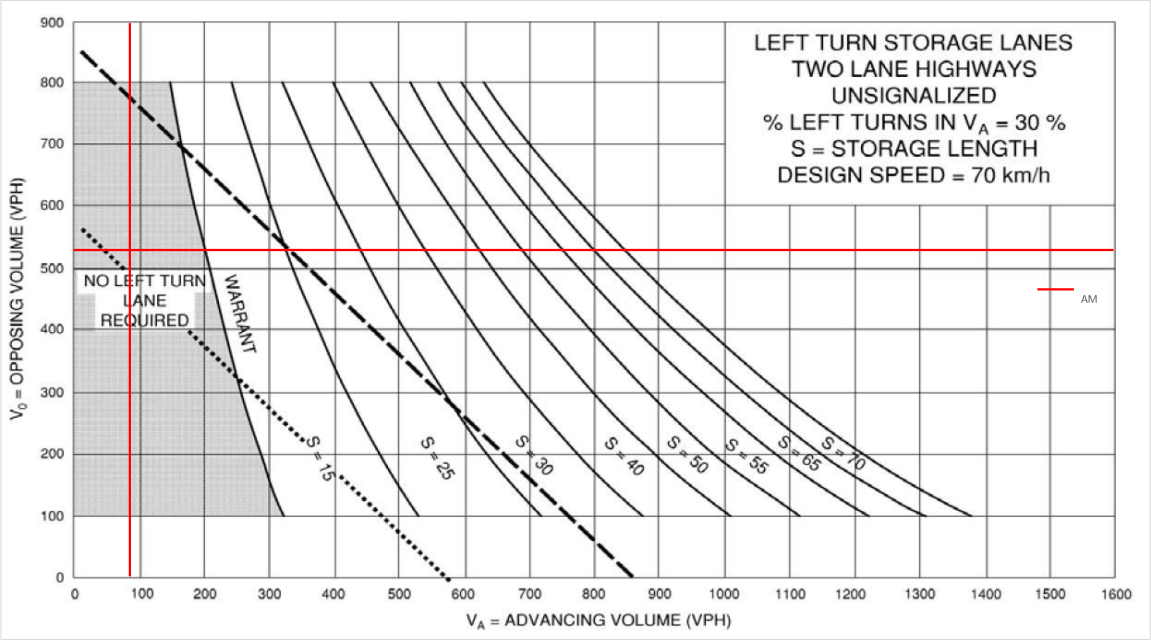
Future Total 2036 - Northbound Left



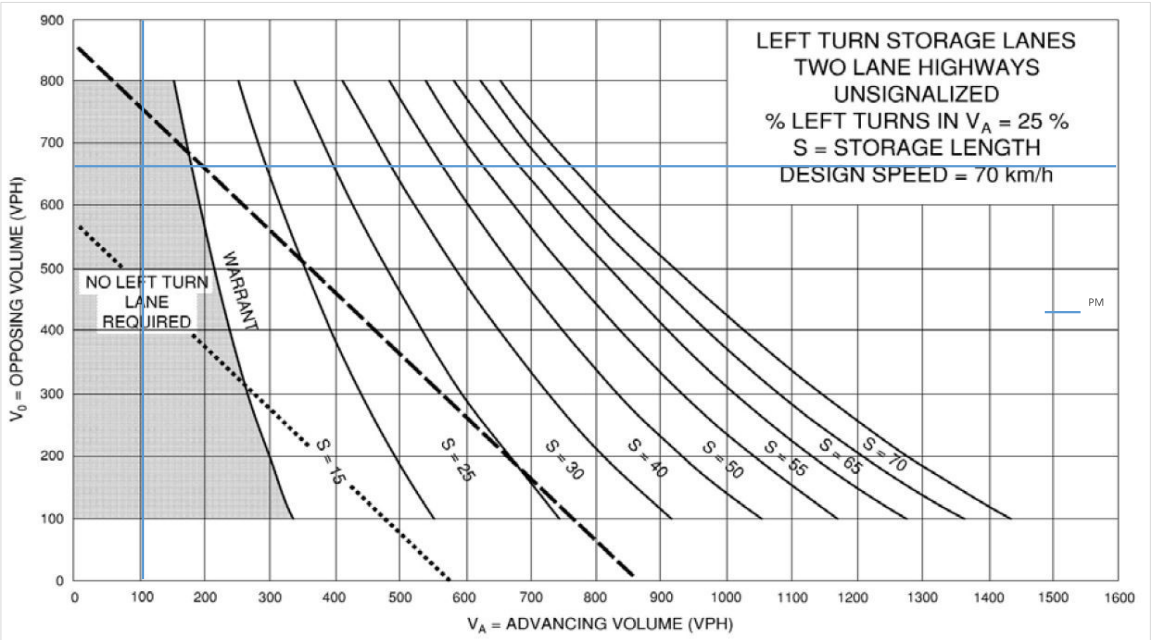
Future Total 2036 - Northbound Left



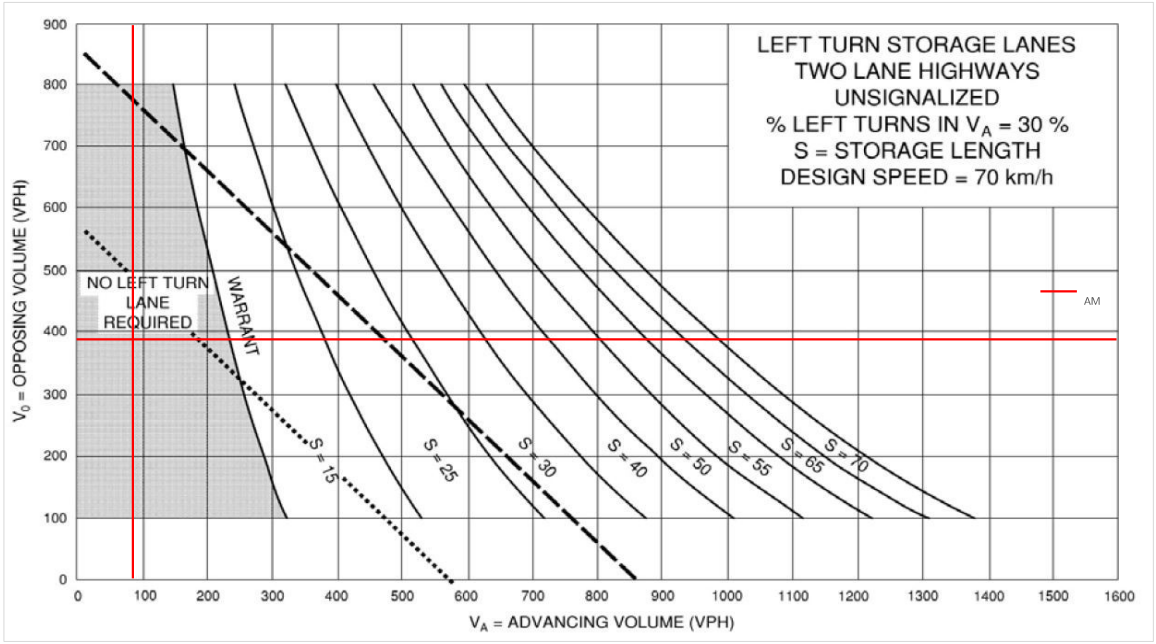
Future Total 2031- Sensitivity - Northbound Left



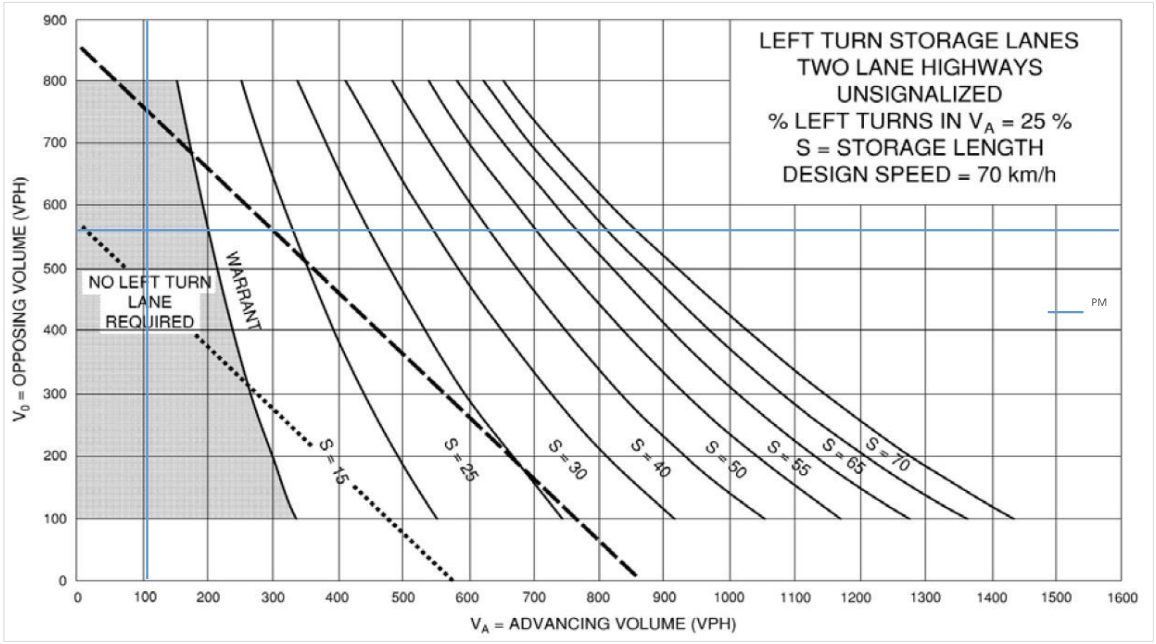
Future Total 2031- Sensitivity - Northbound Left



Future Total 2036- Sensitivity - Northbound Left



Future Total 2036- Sensitivity - Northbound Left



Barnsdale Road at Trail Road/Highway 416

Existing

Design Speed

90 km/h	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing
AM	1	213	2	17	171	10	3	5	37	5	2	1	0.5%	216	198
PM	0	211	1	63	248	7	3	0	27	10	1	0	0.0%	212	318

Future Background 2031

Design Speed

90 km/h	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing
AM	1	244	24	63	174	15	12	0	274	5	2	1	0.4%	269	252
PM	0	219	18	102	267	7	36	0	359	10	1	0	0.0%	237	376

Future Background 2036

Design Speed

90 km/h	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing
AM	1	244	24	64	174	15	12	0	302	5	2	1	0.4%	269	253
PM	0	219	18	103	267	7	36	0	418	10	1	0	0.0%	237	377

Future Total 2031

Design Speed

90 km/h	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing
AM	1	248	24	78	175	15	12	0	387	5	2	1	0.4%	273	268
PM	0	220	18	115	271	7	36	0	506	10	1	0	0.0%	238	393

Future Total 2036

Design Speed

90 km/h	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing
AM	1	248	24	79	175	15	12	0	415	5	2	1	0.4%	273	269
PM	0	220	18	116	271	7	36	0	565	10	1	0	0.0%	238	394

Existing

Design Speed																	
70 km/h		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing	
	AM	1	213	2	17	171	10	3	5	37	5	2	1	6.7%	45	8	
	PM	0	211	1	63	248	7	3	0	27	10	1	0	10.0%	30	11	

Future Background 2031

Design Speed																	
70 km/h		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing	
	AM	1	244	24	63	174	15	12	0	274	5	2	1	4.2%	286	8	
	PM	0	219	18	102	267	7	36	0	359	10	1	0	9.1%	395	11	

Future Background 2036

Design Speed																	
70 km/h		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing	
	AM	1	244	24	64	174	15	12	0	302	5	2	1	3.8%	314	8	
	PM	0	219	18	103	267	7	36	0	418	10	1	0	7.9%	454	11	

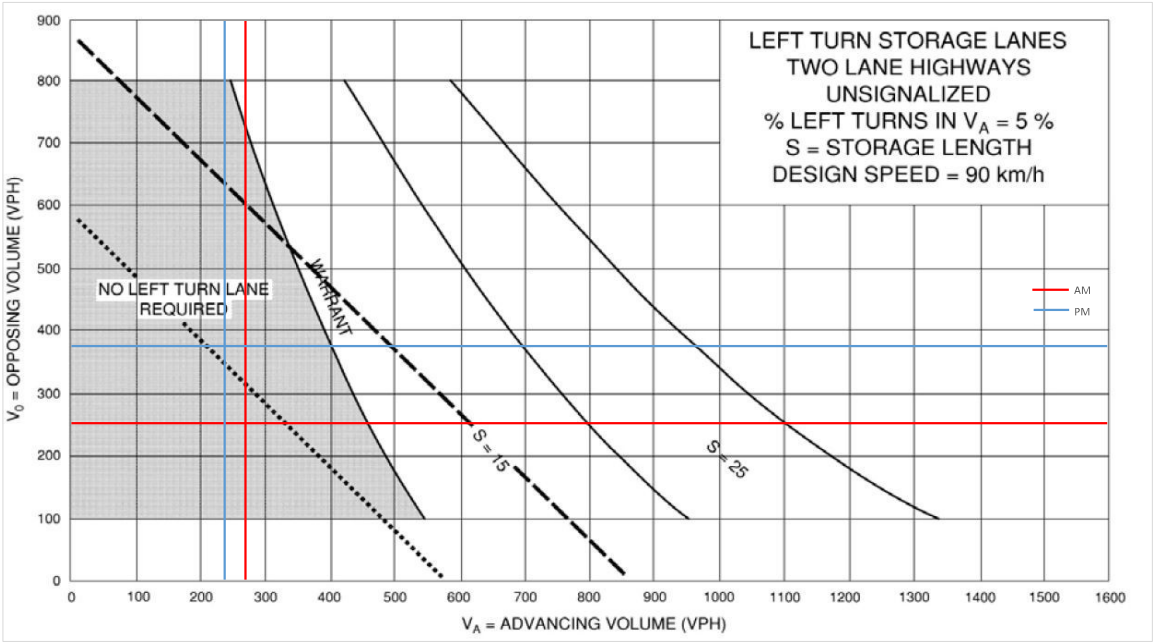
Future Total 2031

Design Speed																	
70 km/h		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing	
	AM	1	248	24	78	175	15	12	0	387	5	2	1	3.0%	399	8	
	PM	0	220	18	115	271	7	36	0	506	10	1	0	6.6%	542	11	

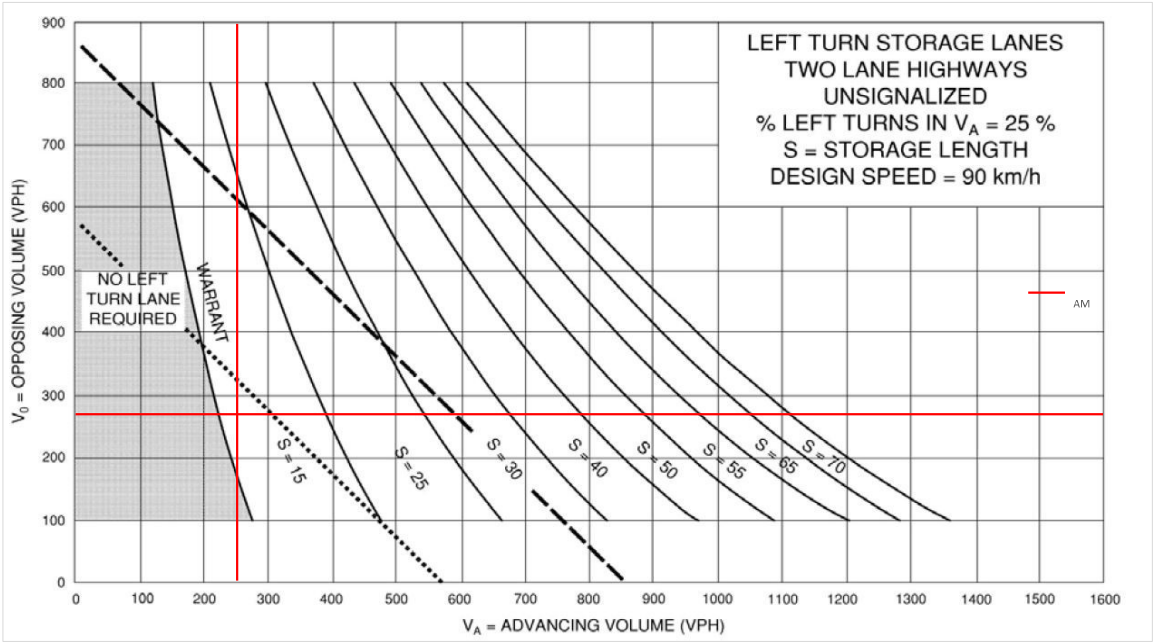
Future Total 2036

Design Speed																	
70 km/h		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing	
	AM	1	248	24	79	175	15	12	0	415	5	2	1	2.8%	427	8	
	PM	0	220	18	116	271	7	36	0	565	10	1	0	6.0%	601	11	

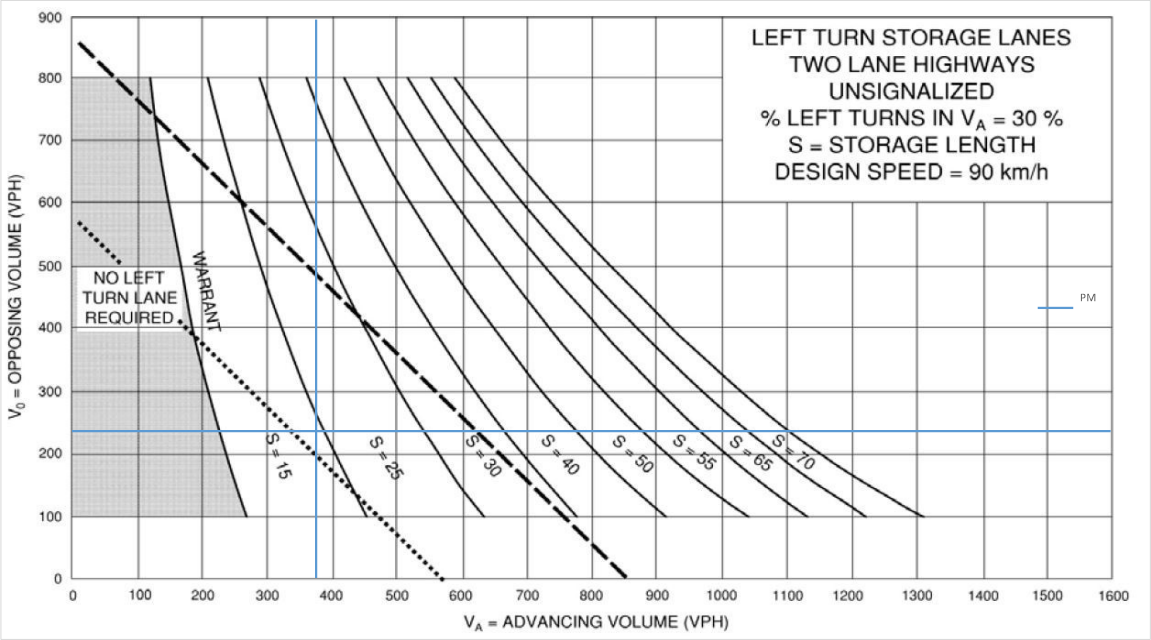
Future Background 2031 - Eastbound Left



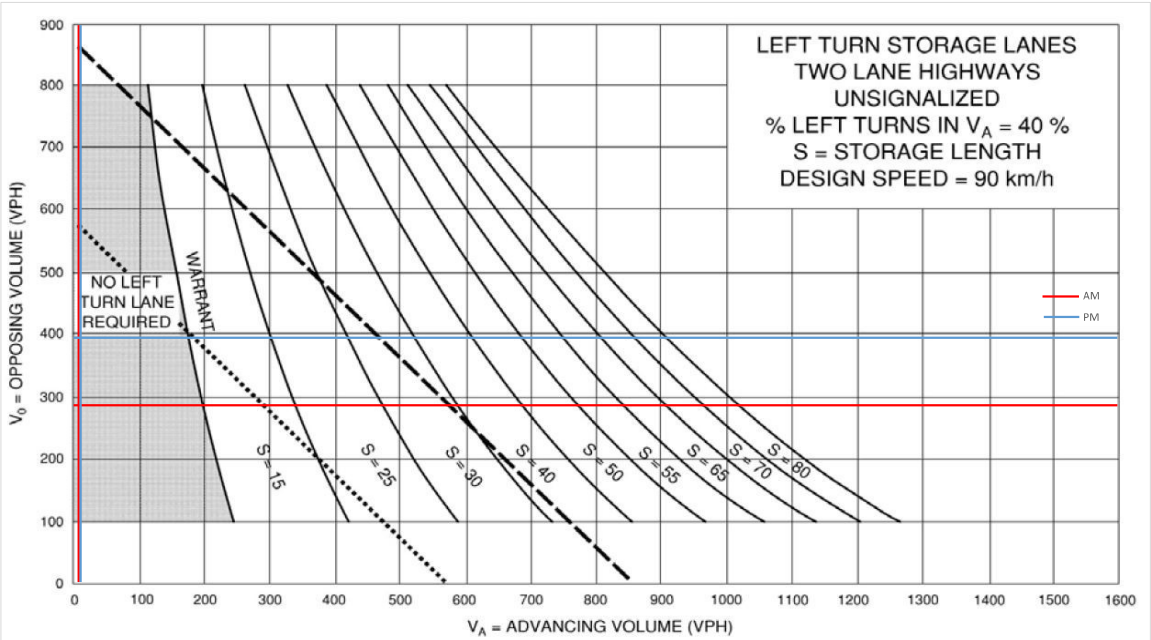
Future Background 2031 - Westbound Left



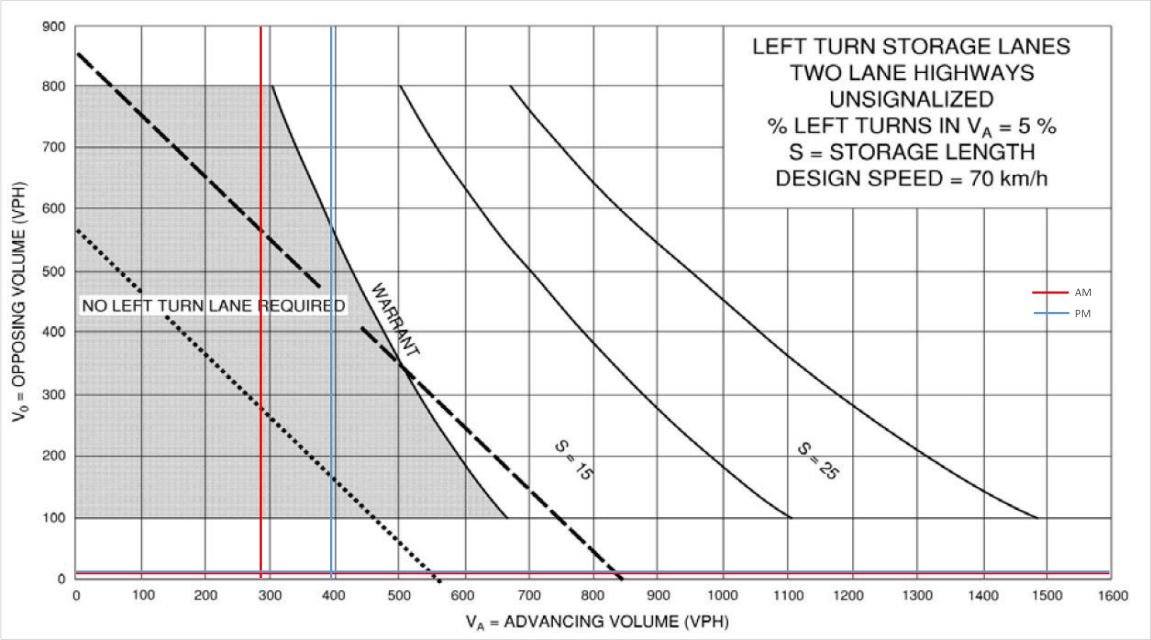
Future Background 2031 - Westbound Left



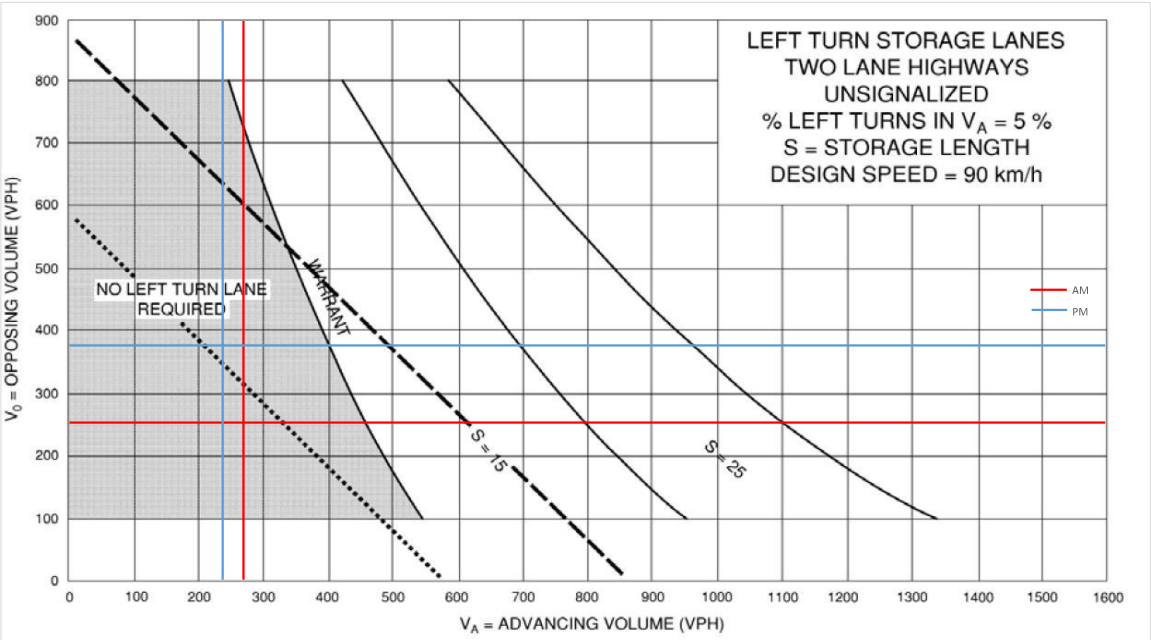
Future Background 2031 - Southbound Left



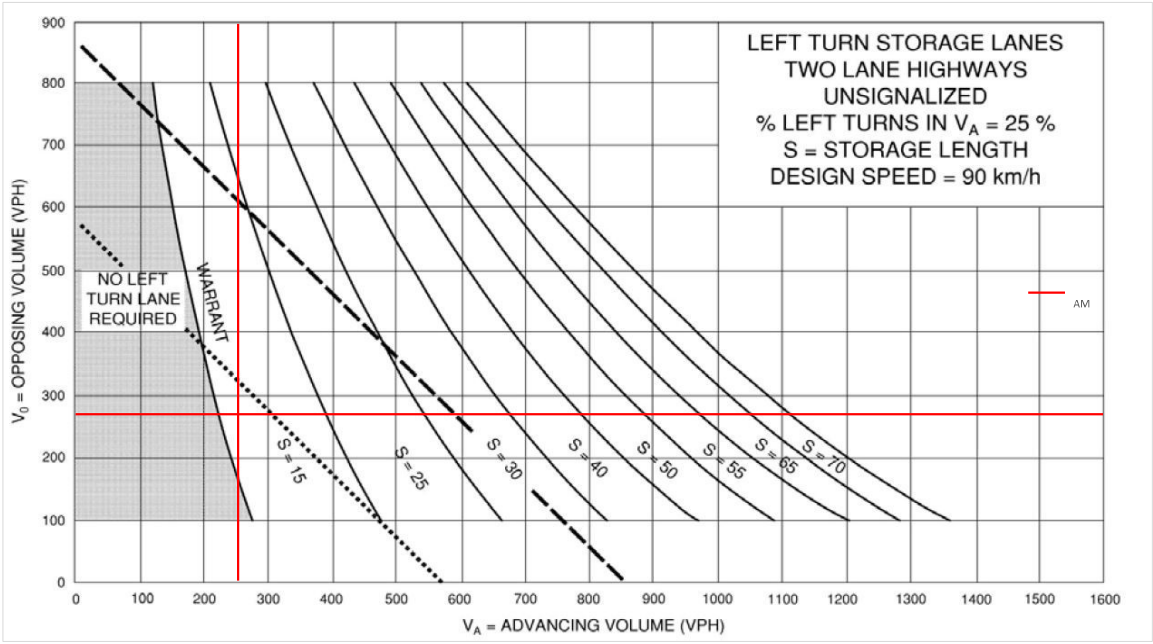
Future Background 2031 - Northbound Left



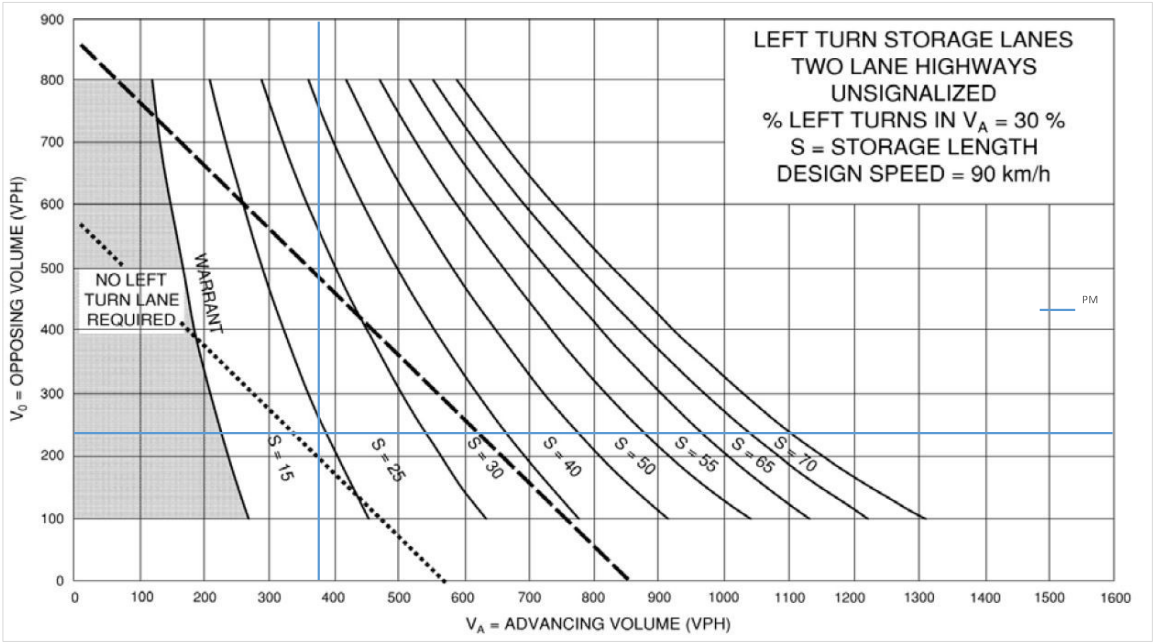
Future Background 2036 - Eastbound Left



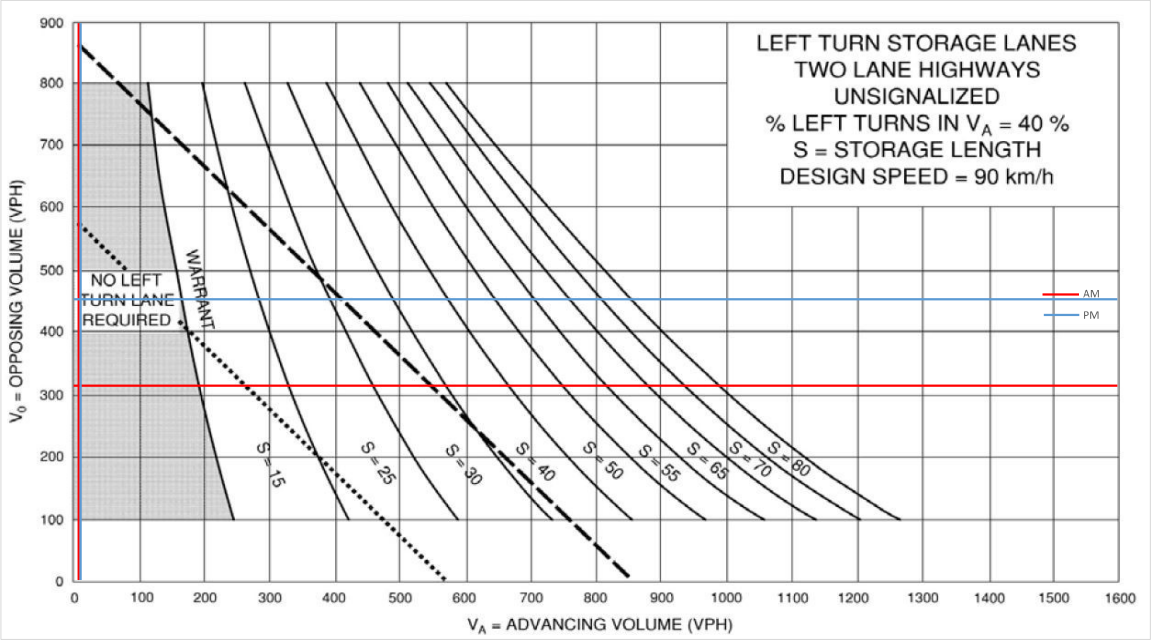
Future Background 2036 - Westbound Left



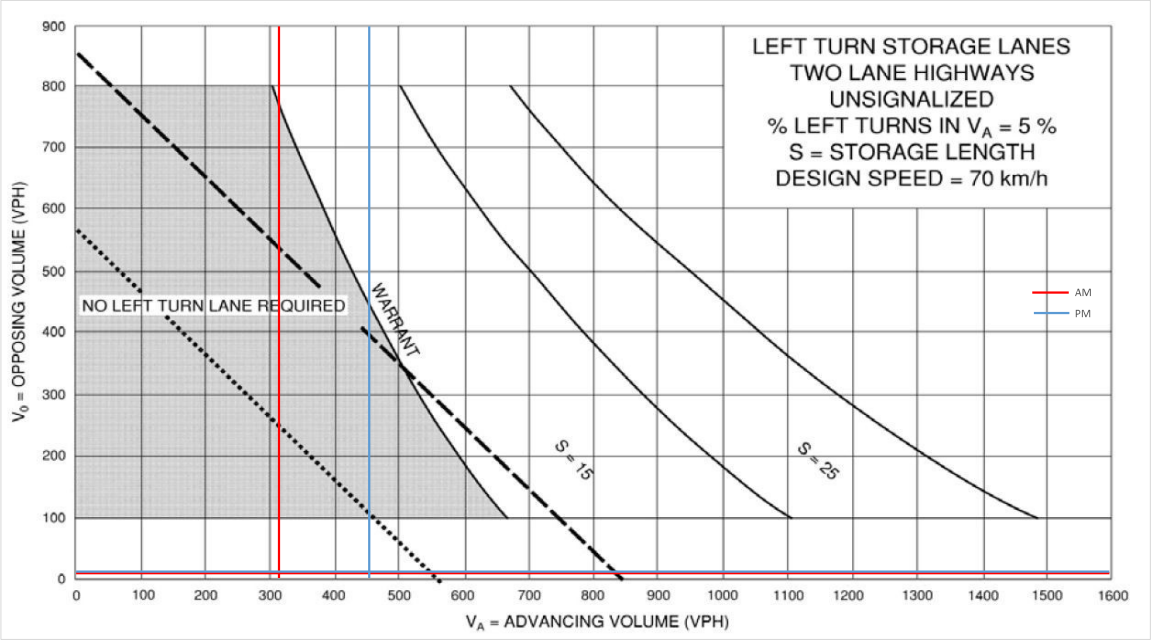
Future Background 2036 - Westbound Left



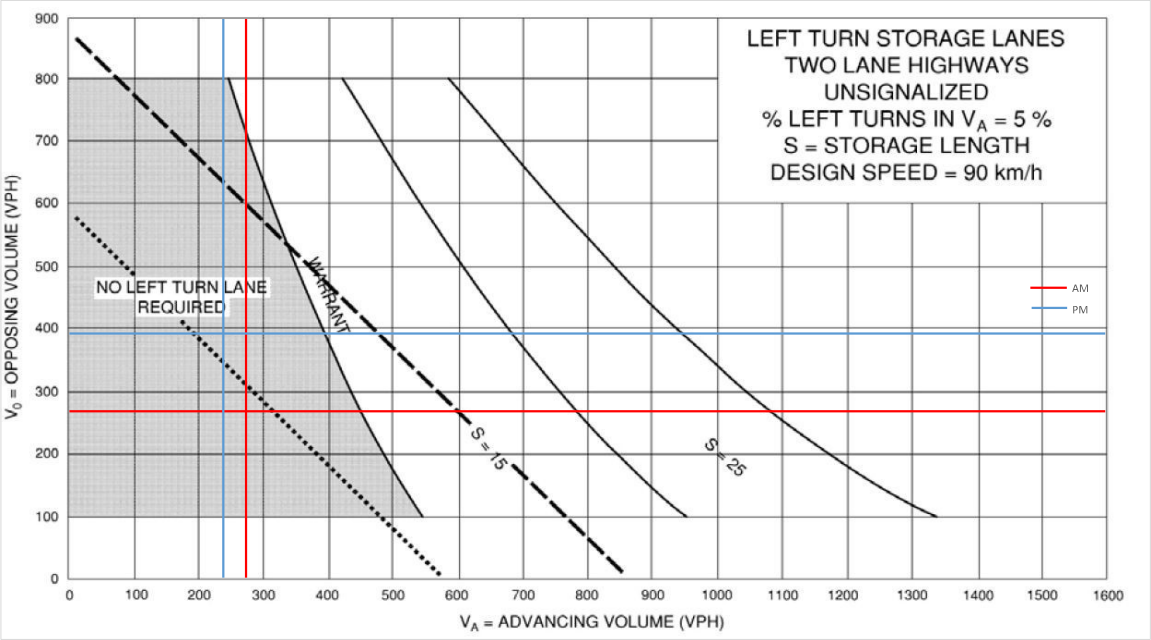
Future Background 2036 - Southbound Left



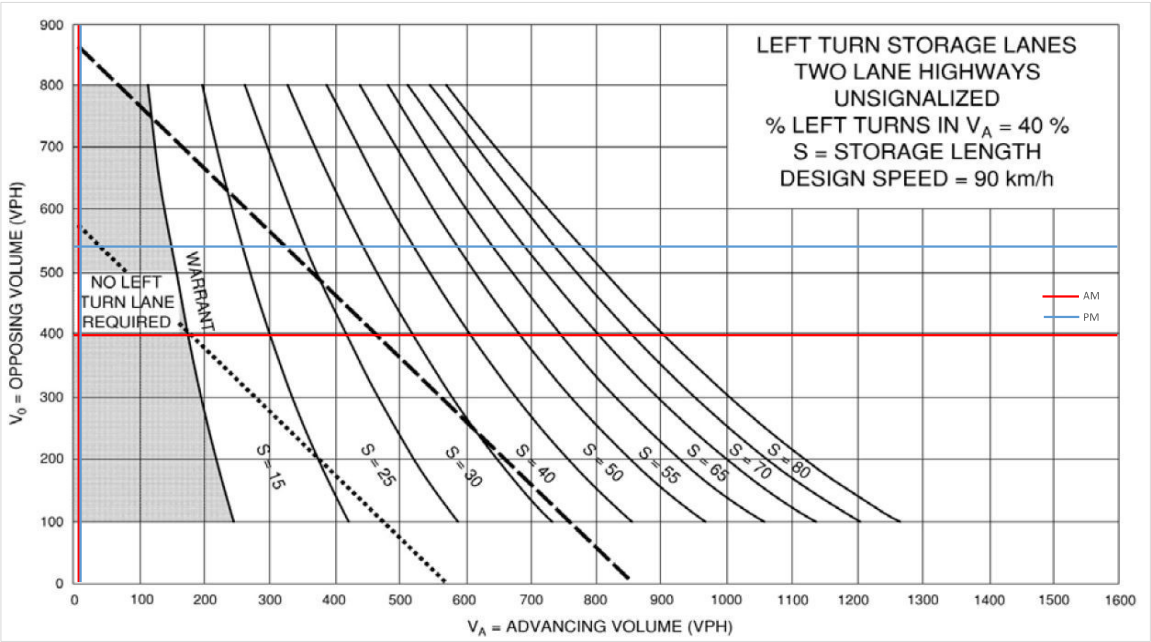
Future Background 2036 - Northbound Left



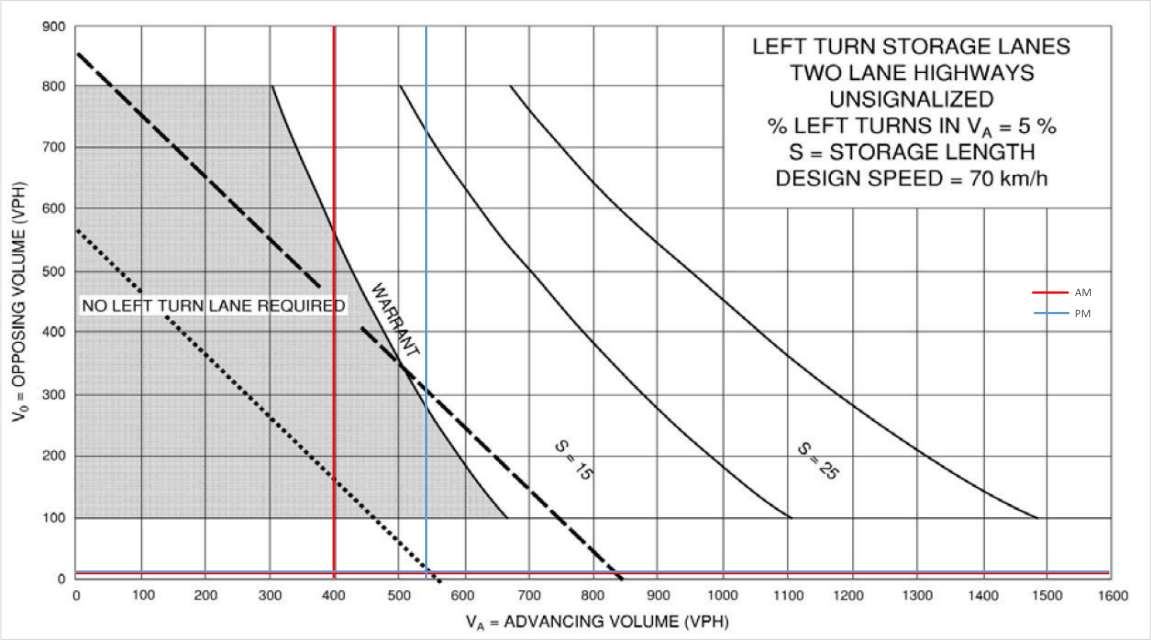
Future Total 2031 - Eastbound Left



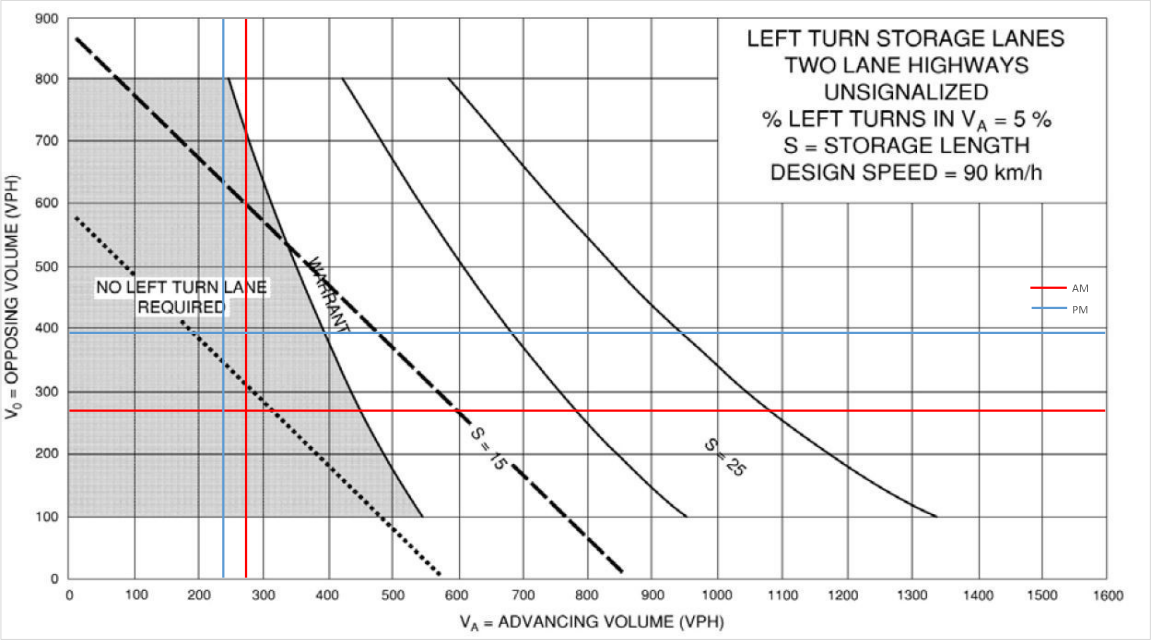
Future Total 2031 - Southbound Left



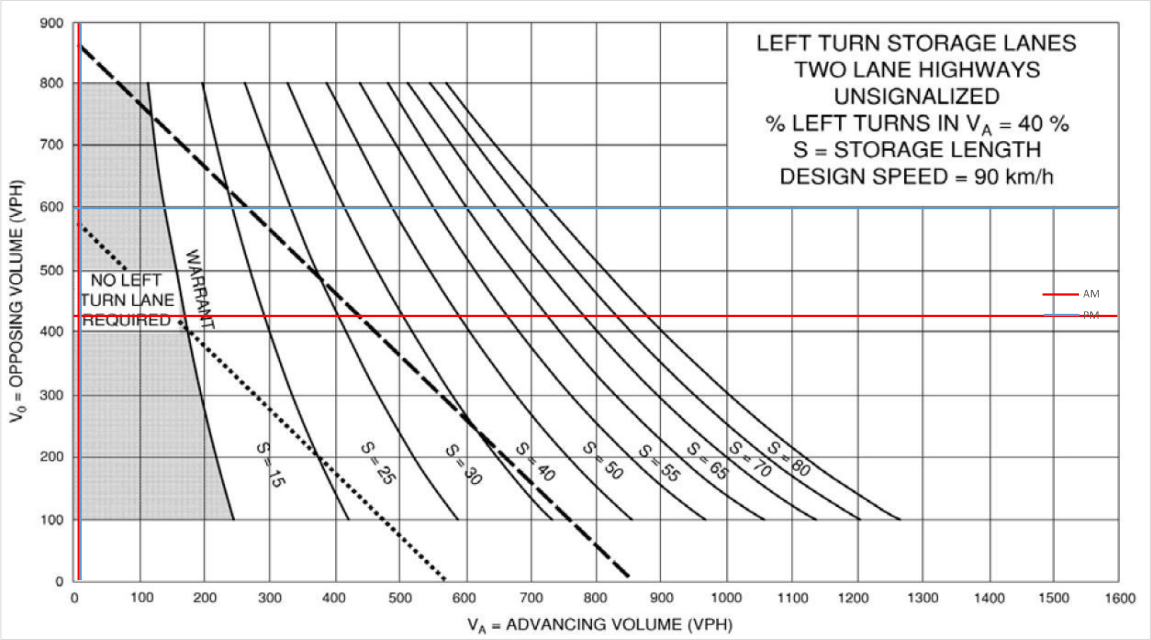
Future Total 2031 - Northbound Left



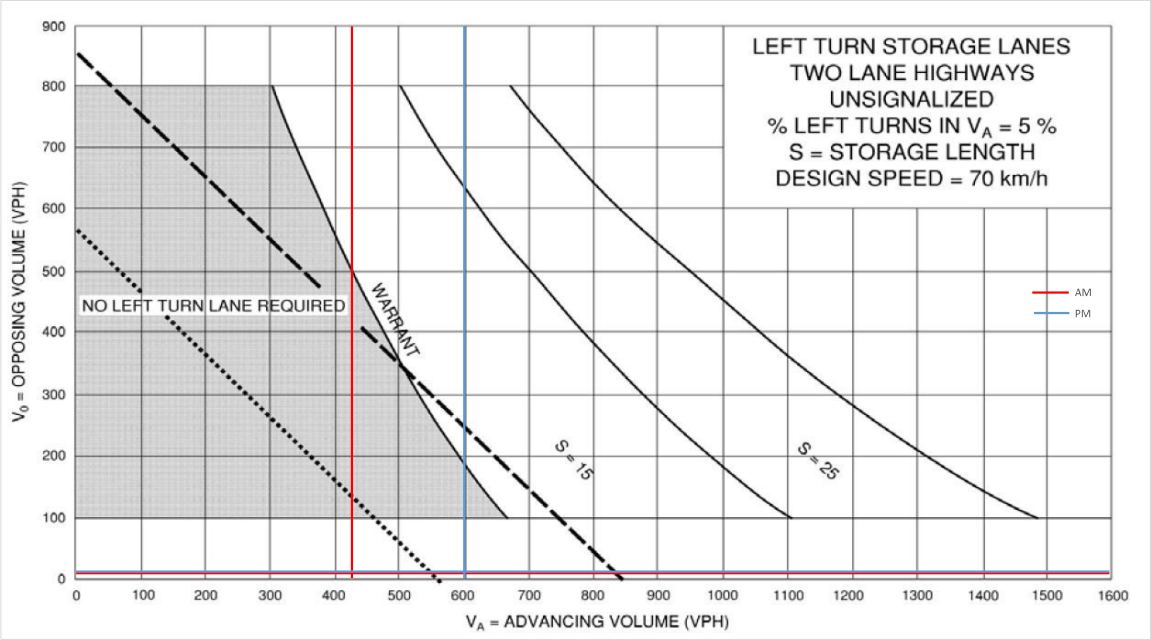
Future Total 2036 - Eastbound Left



Future Total 2036 - Southbound Left



Future Total 2036 - Northbound Left



Barnsdale Road at Greenbank Road

Existing

Design Speed

90 km/h	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing
AM	43	157	13	4	137	101	10	67	1	310	113	40	20.2%	213	242
PM	59	185	21	0	191	270	10	106	3	169	150	69	22.3%	265	461

Future Background 2031

Design Speed

90 km/h	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing
AM	101	191	13	4	233	88	10	76	1	276	132	151	33.1%	305	325
PM	165	274	21	0	245	239	10	123	3	150	162	147	35.9%	460	484

Future Background 2036

Design Speed

90 km/h	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing
AM	82	246	23	4	347	35	10	79	1	247	126	151	23.4%	351	386
PM	153	373	40	0	342	181	10	126	3	104	146	126	27.0%	566	523

Future Total 2031

Design Speed

90 km/h	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing
AM	161	193	13	4	241	100	10	76	1	304	132	305	43.9%	367	345
PM	297	281	21	0	247	265	10	123	3	168	162	247	49.6%	599	512

Future Total 2036

Design Speed

90 km/h	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing
AM	82	262	23	4	361	41	10	79	1	261	126	151	22.3%	367	406
PM	153	389	40	0	357	194	10	126	3	113	146	126	26.3%	582	551

Existing

Design Speed												Yes						
70 km/h		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing		
	AM	43	157	13	4	137	101	10	67	1	310	113	40	67.0%	463	78		
	PM	59	185	21	0	191	270	10	106	3	169	150	69	43.6%	388	119		

Future Background 2031

Design Speed												Yes						
70 km/h		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing		
	AM	101	191	13	4	233	88	10	76	1	276	132	151	49.4%	559	87		
	PM	165	274	21	0	245	239	10	123	3	150	162	147	32.7%	459	136		

Future Background 2036

Design Speed												Yes						
70 km/h		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing		
	AM	82	246	23	4	347	35	10	79	1	247	126	151	47.1%	524	90		
	PM	153	373	40	0	342	181	10	126	3	104	146	126	27.7%	376	139		

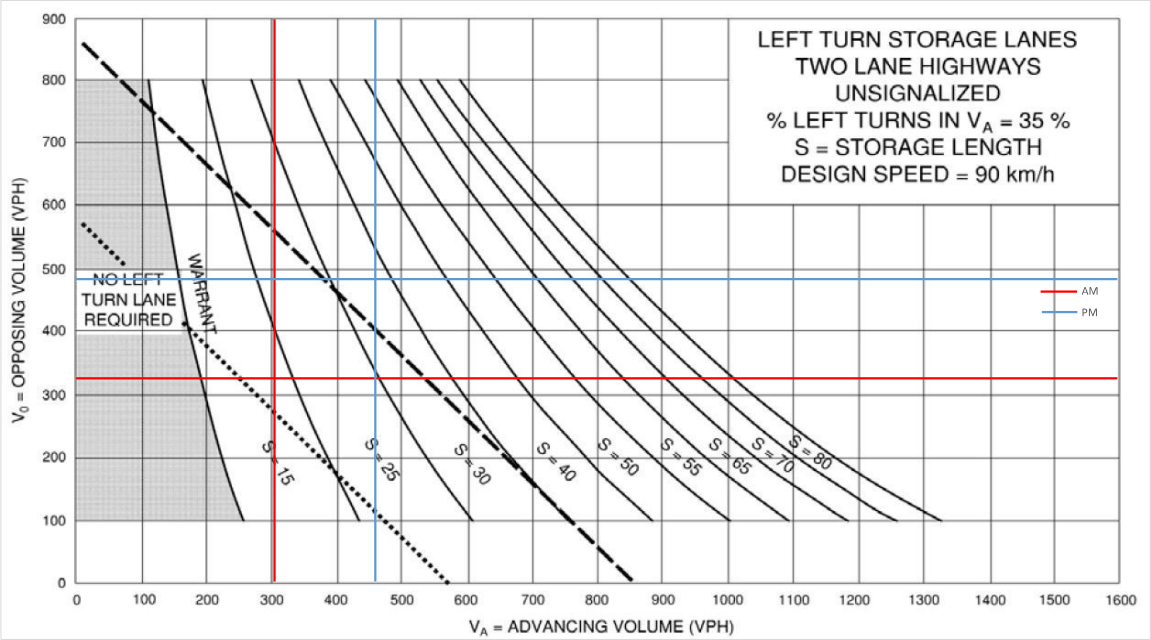
Future Total 2031

Design Speed												Yes						
70 km/h		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing		
	AM	161	193	13	4	241	100	10	76	1	304	132	305	41.0%	741	87		
	PM	297	281	21	0	247	265	10	123	3	168	162	247	29.1%	577	136		

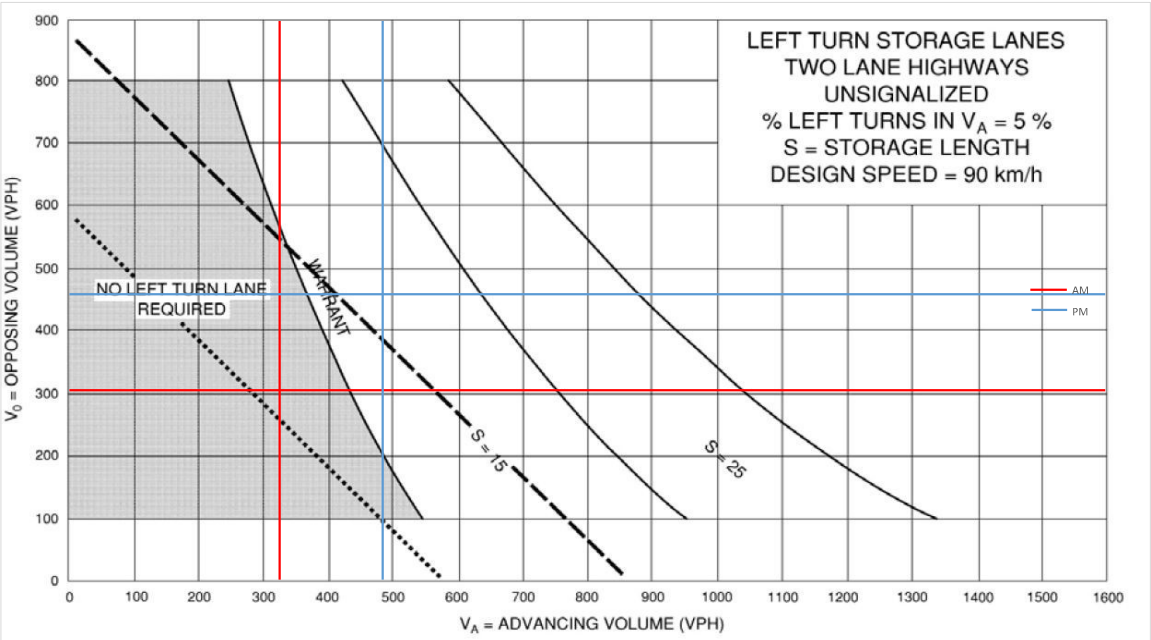
Future Total 2036

Design Speed												Yes						
70 km/h		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing		
	AM	82	262	23	4	361	41	10	79	1	261	126	151	48.5%	538	90		
	PM	153	389	40	0	357	194	10	126	3	113	146	126	29.4%	385	139		

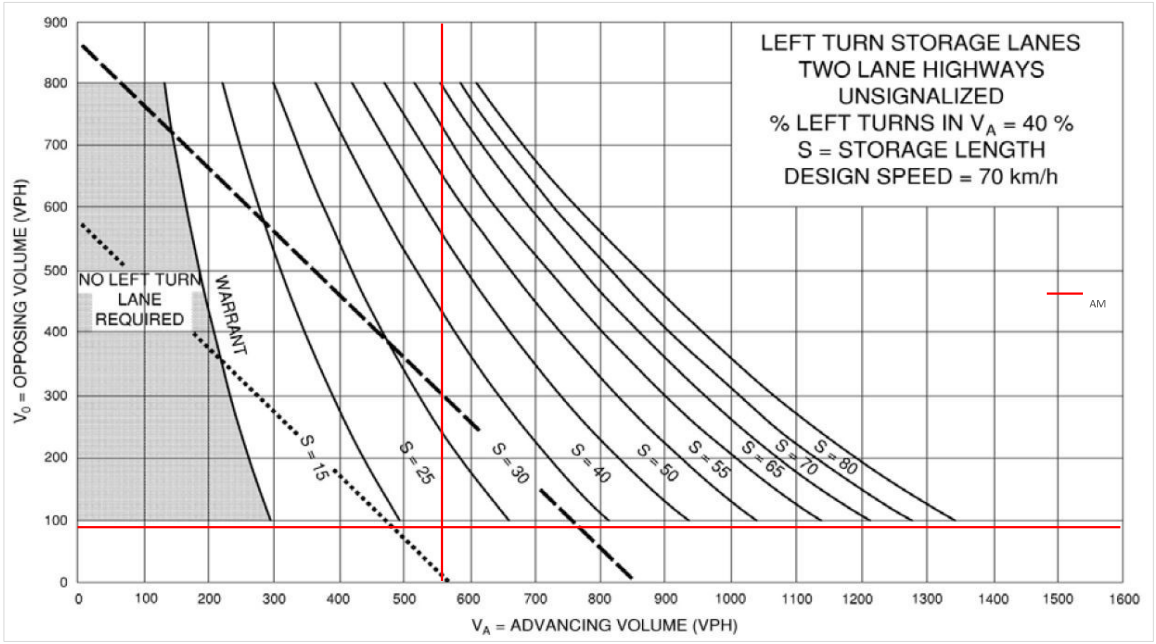
Future Background 2031 - Eastbound Left



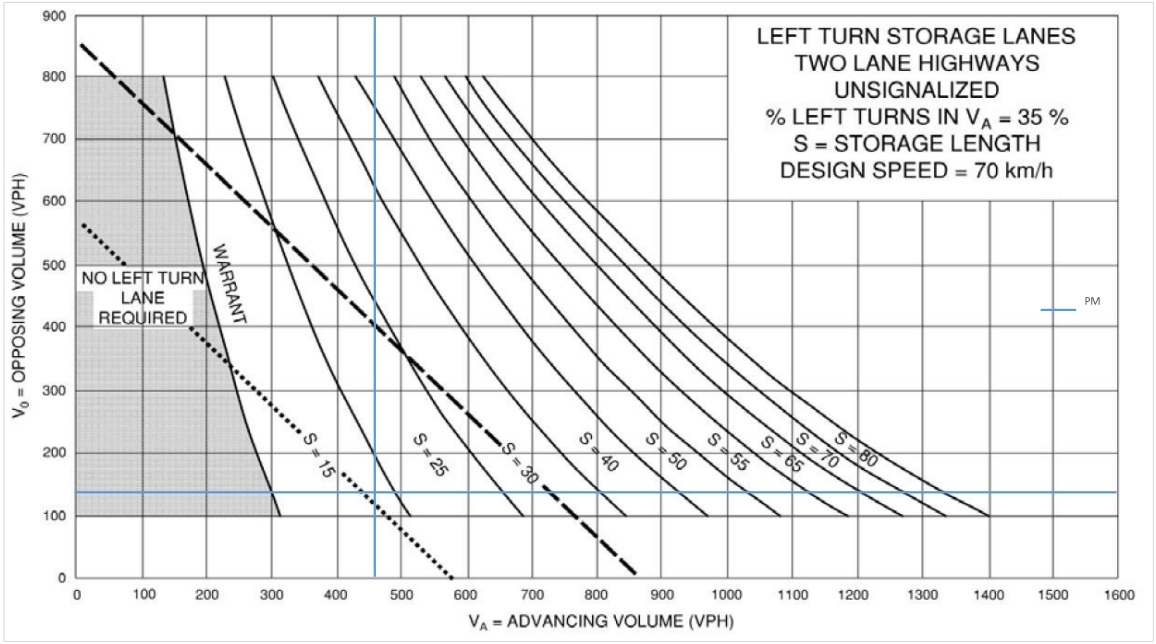
Future Background 2031 - Westbound Left



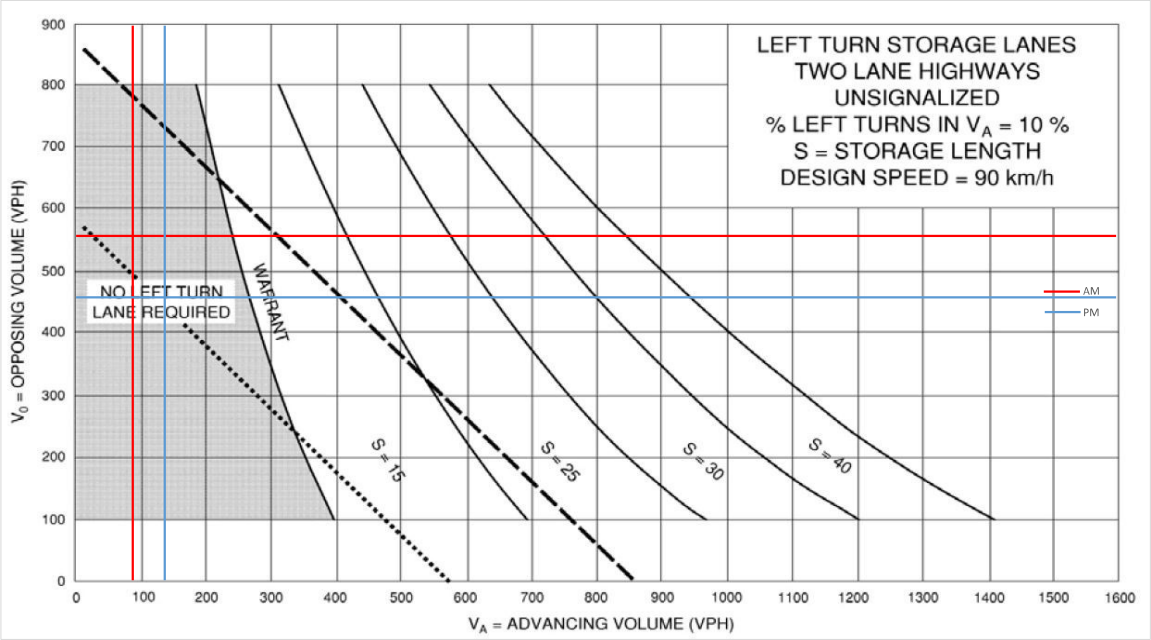
Future Background 2031 - Southbound Left



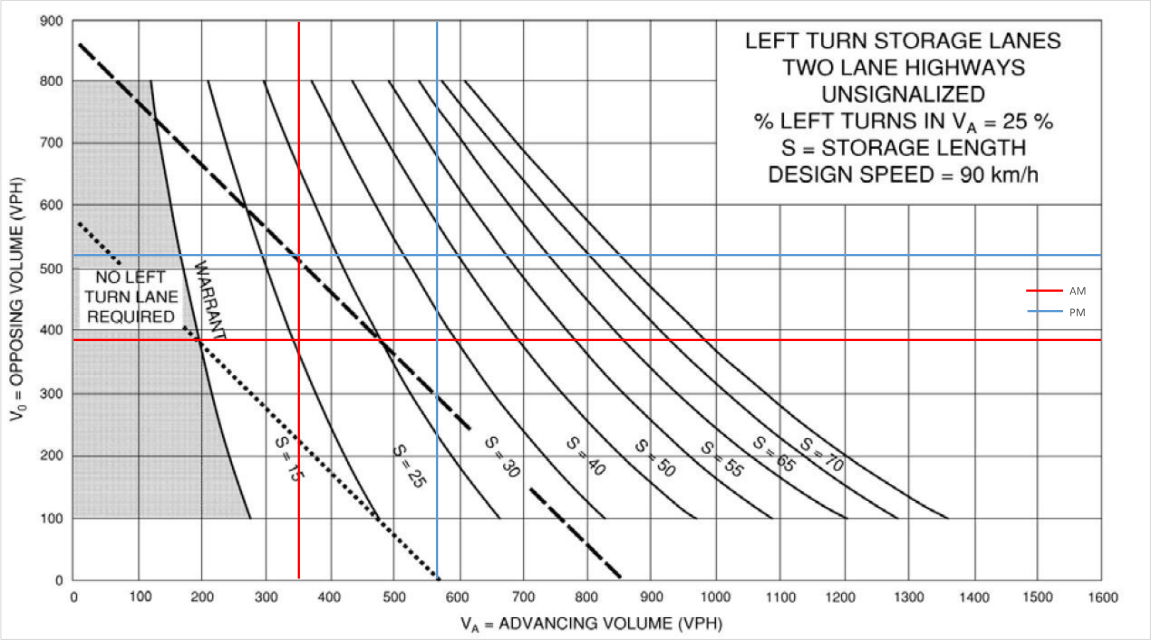
Future Background 2031 - Southbound Left



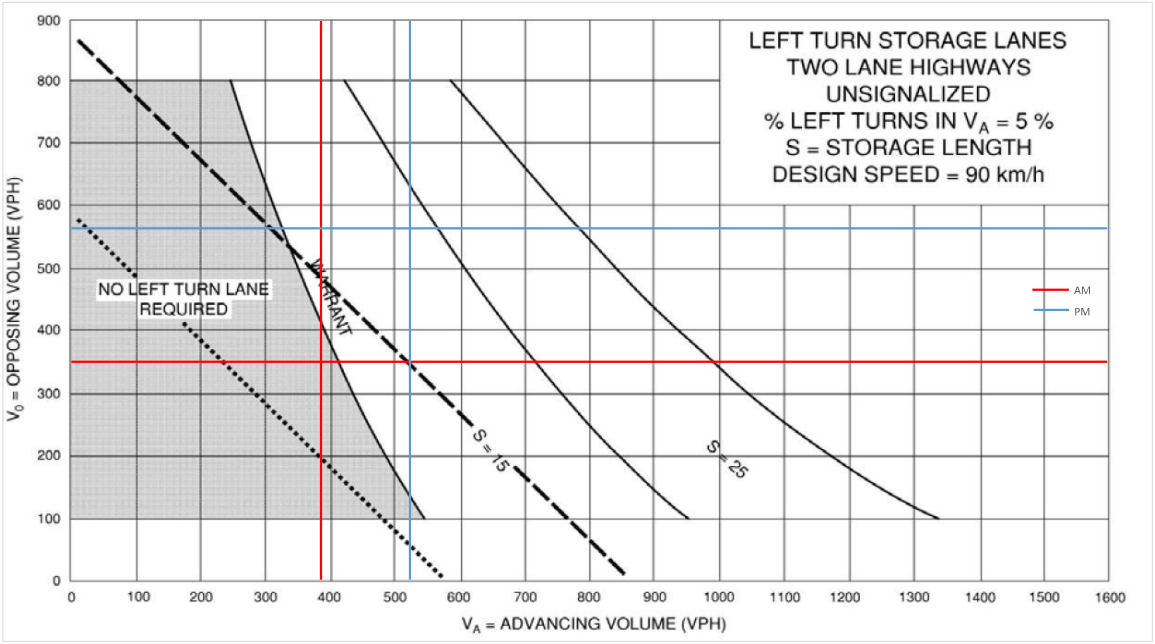
Future Background 2031 - Northbound Left



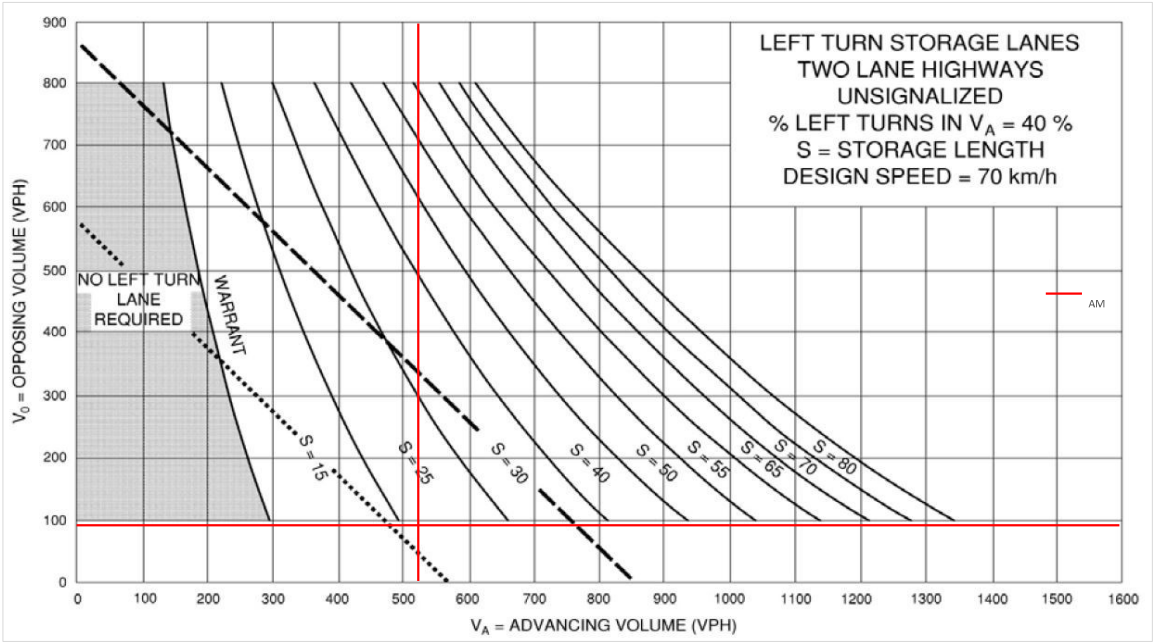
Future Background 2036 - Eastbound Left



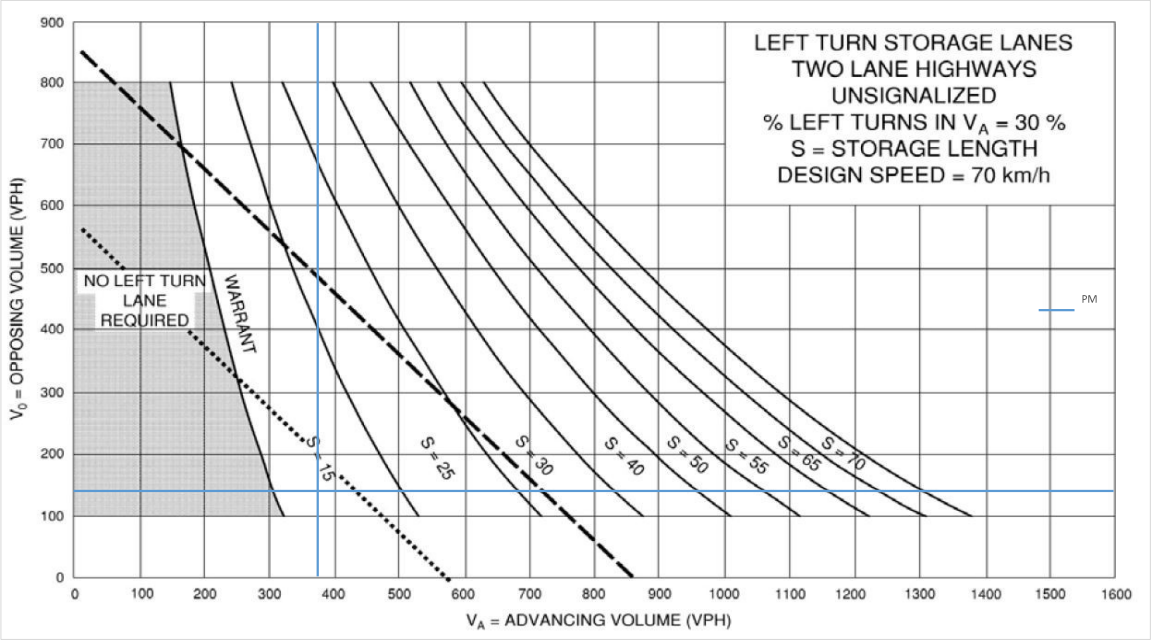
Future Background 2036 - Westbound Left



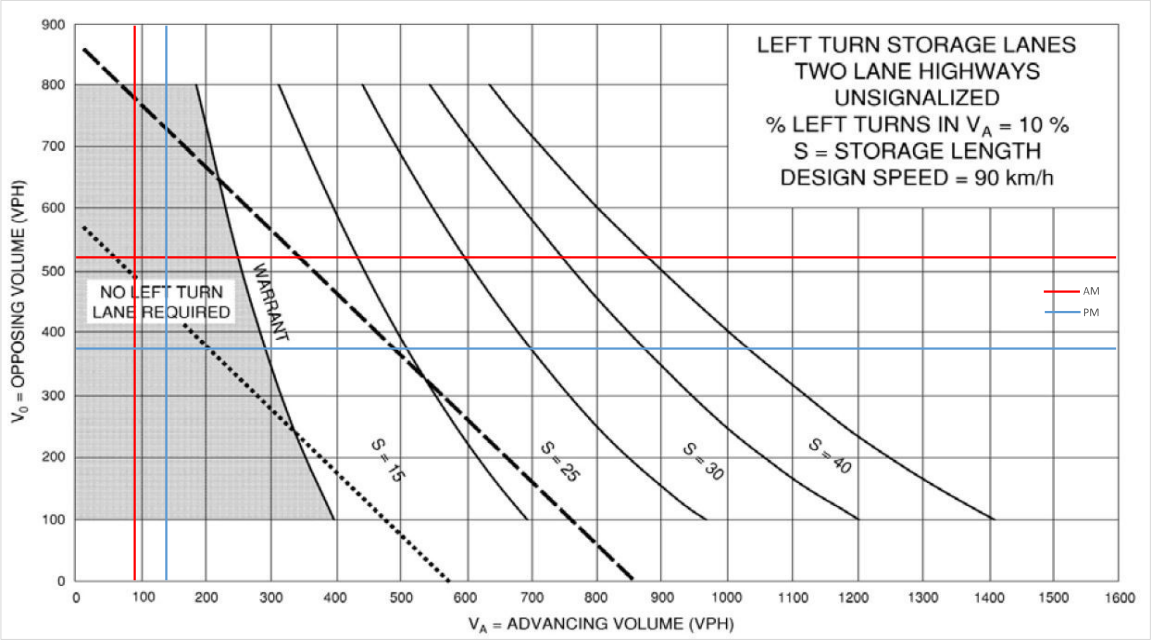
Future Background 2036 - Southbound Left



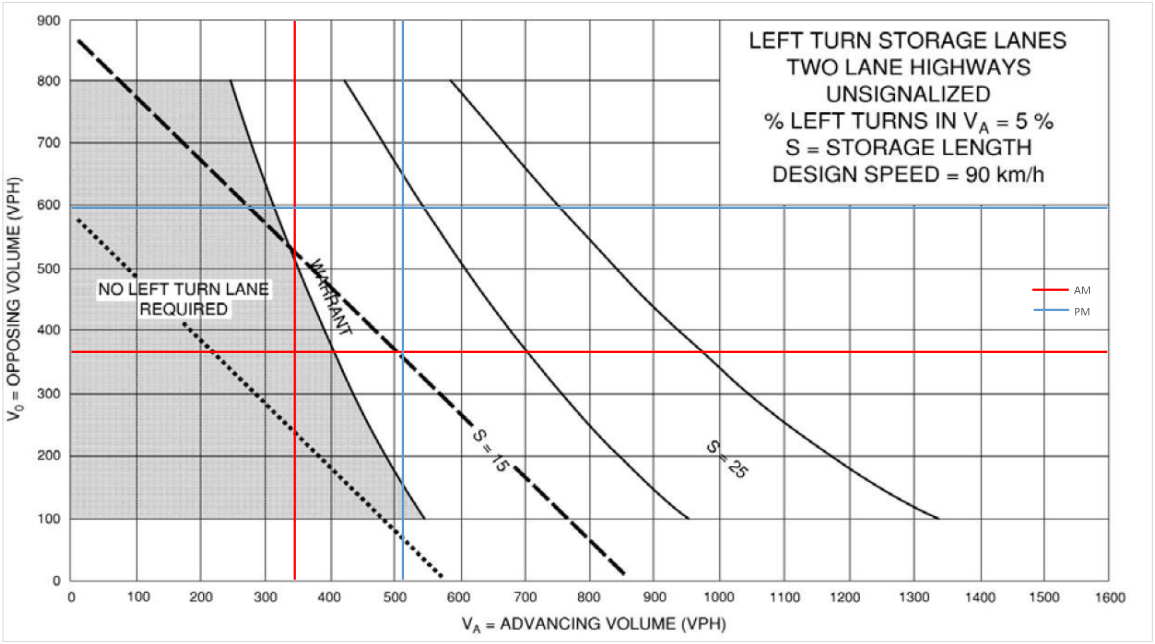
Future Background 2036 - Southbound Left



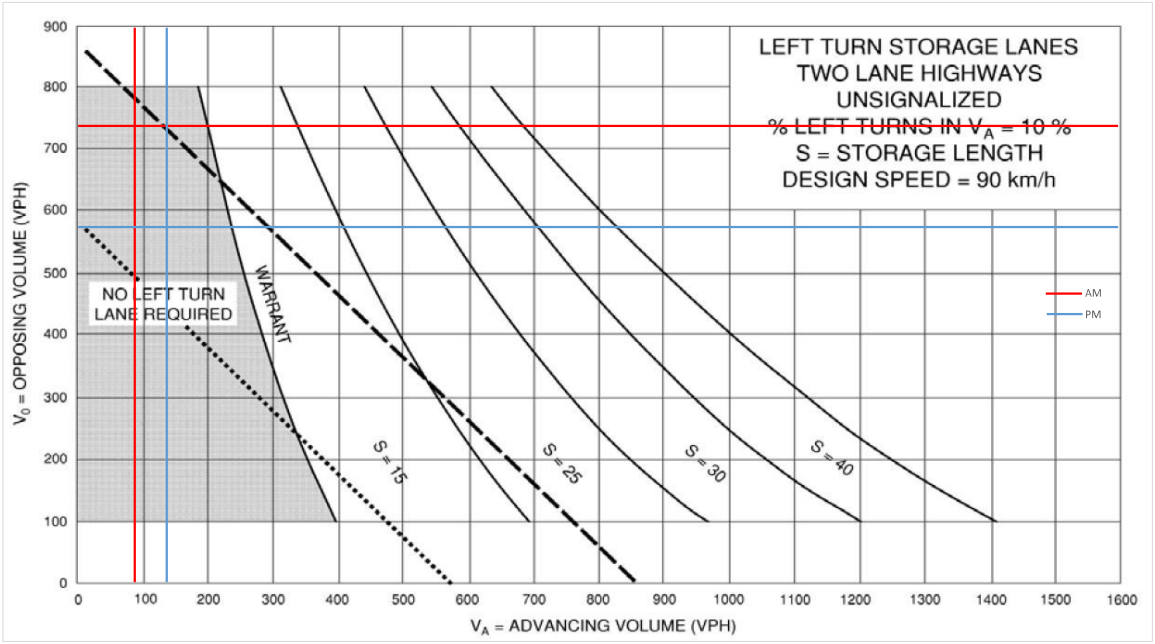
Future Background 2036 - Northbound Left



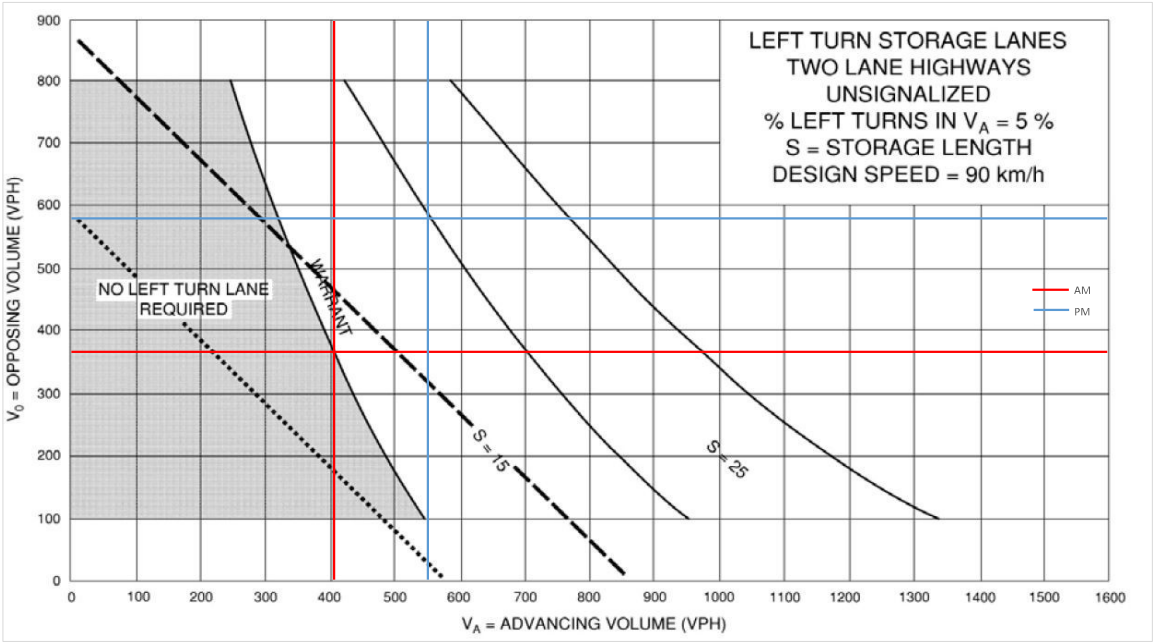
Future Total 2031 - Westbound Left



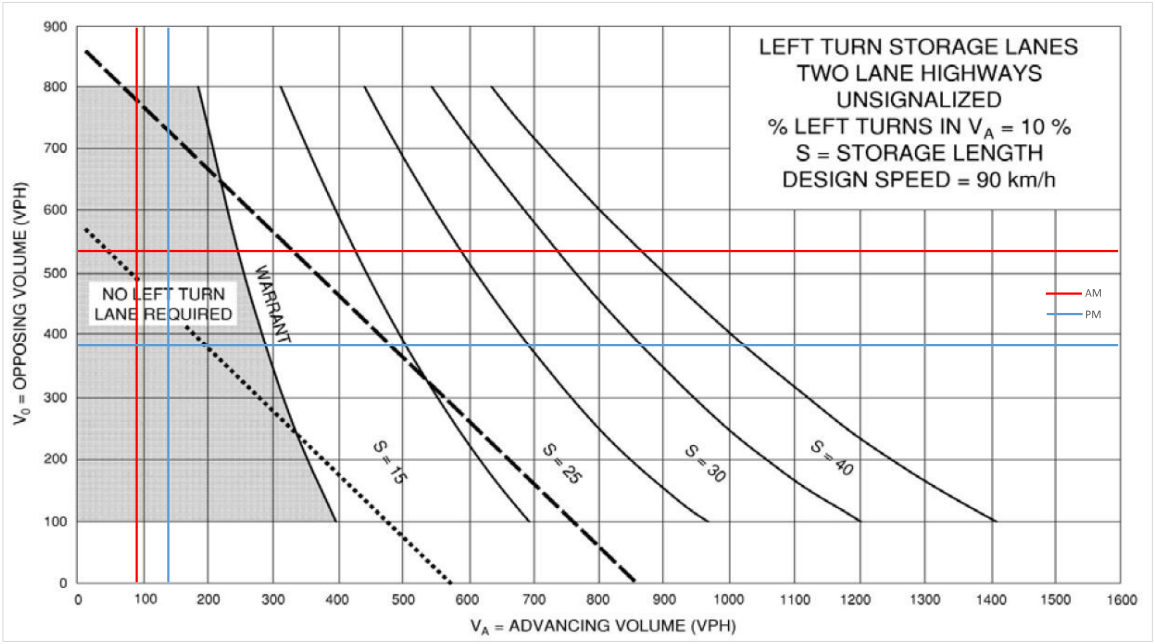
Future Total 2031 - Northbound Left



Future Total 2036 - Westbound Left



Future Total 2036 - Northbound Left



Kilbirnie Road at Borrisokane Road

Future Total 2031

Design Speed											Yes					
90 km/h	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing	
AM	0	0	0	274	0	20	0	364	128	11	240	0	4.4%	251	492	
PM	0	0	0	188	0	15	0	286	255	18	412	0	4.2%	430	541	

Future Total 2036

Design Speed											Yes					
90 km/h	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing	
AM	0	0	0	156	0	24	0	350	71	11	216	0	4.8%	227	421	
PM	0	0	0	107	0	17	0	263	148	22	390	0	5.3%	412	411	

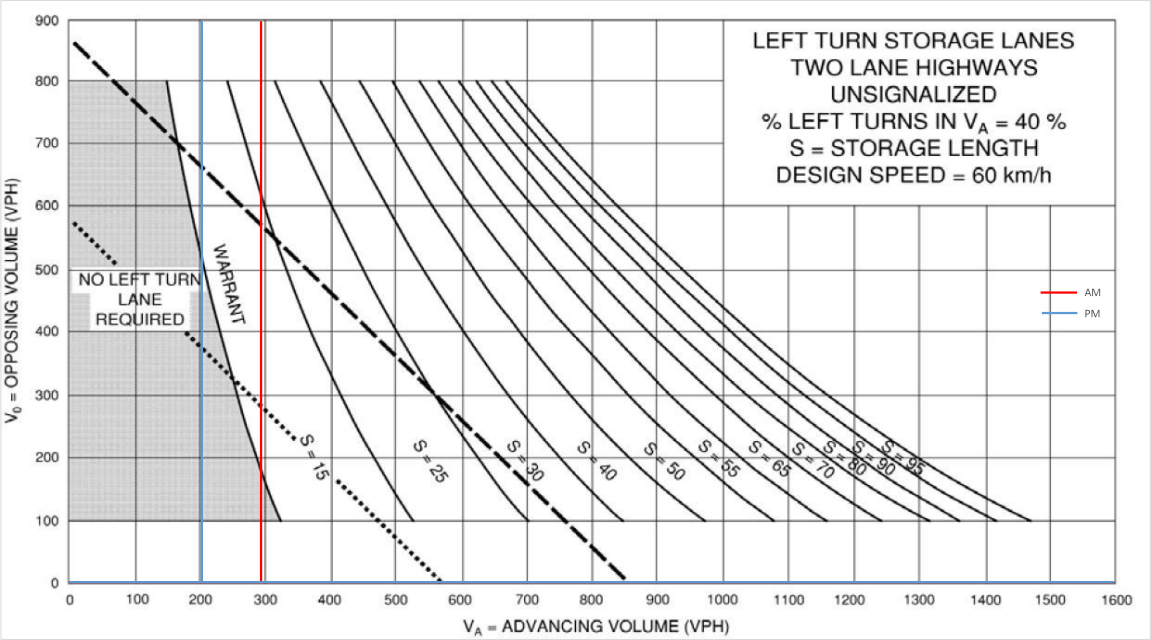
Future Total 2031

Design Speed											Yes					
60 km/h	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing	
AM	0	0	0	274	0	20	0	364	128	11	240	0	4.4%	251	492	
PM	0	0	0	188	0	15	0	286	255	18	412	0	4.2%	430	541	

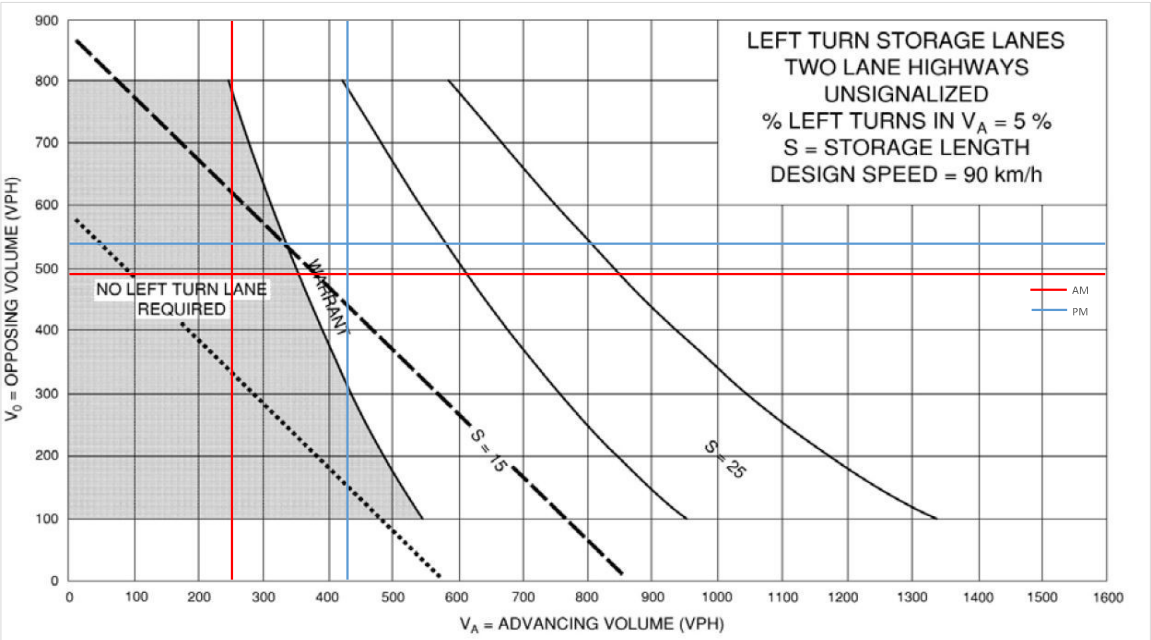
Future Total 2036

Design Speed											Yes					
60 km/h	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	%Left Turn	Volume Advancing	Volume Opposing	
AM	0	0	0	156	0	24	0	350	71	11	216	0	4.8%	227	421	
PM	0	0	0	107	0	17	0	263	148	22	390	0	5.3%	412	411	

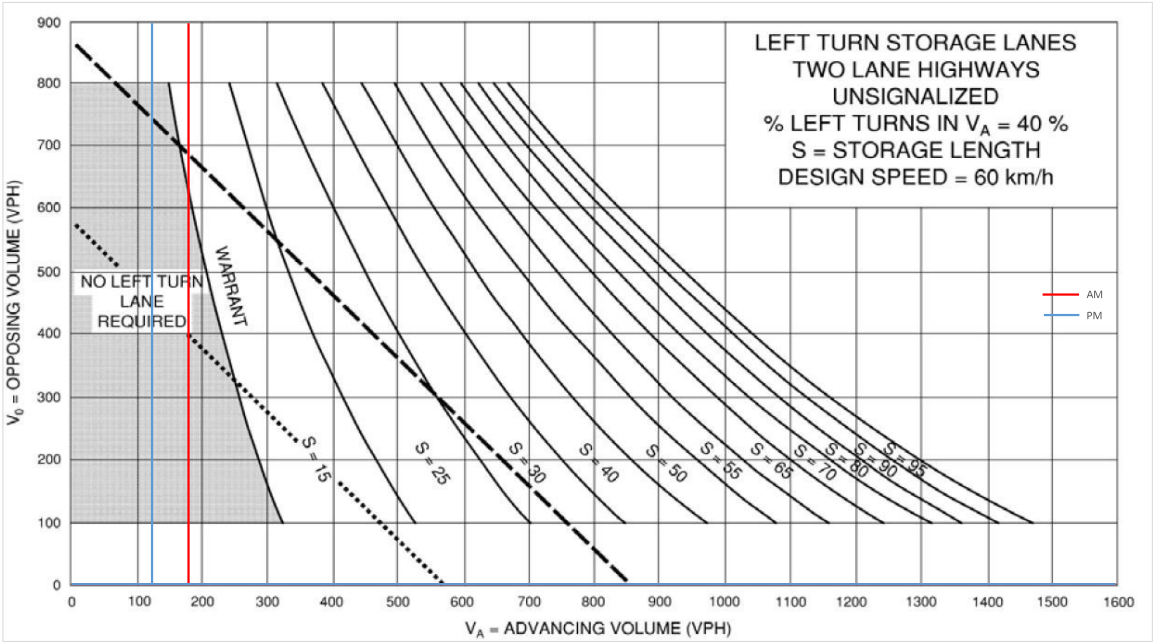
Future Total 2031 - Westbound Left



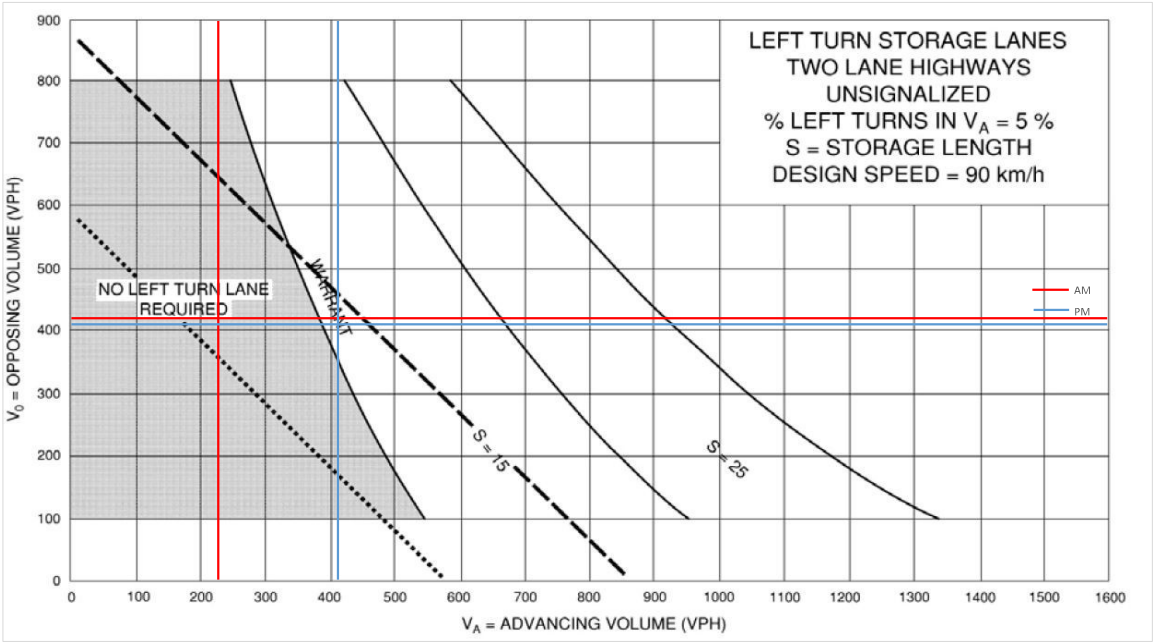
Future Total 2031 - Southbound Left



Future Total 2036 - Westbound Left



Future Total 2036 - Southbound Left



Appendix L

Synchro and Sidra Worksheets – 2031 Future Background Horizon

MOVEMENT SUMMARY

Site: 101 [Borrisokane Road at Cambrian Road FB2031 AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Borrisokane															
2	T1	All MCs	201	10.0	201	10.0	0.411	9.1	LOS A	1.8	13.9	0.55	0.66	0.57	61.2
3	R2	All MCs	104	10.0	104	10.0	0.411	8.6	LOS A	1.8	13.9	0.55	0.66	0.57	58.0
Approach			305	10.0	305	10.0	0.411	8.9	LOS A	1.8	13.9	0.55	0.66	0.57	60.0
East: Cambrian															
4	L2	All MCs	212	10.0	212	10.0	0.908	21.6	LOS C	18.2	137.7	1.00	0.92	1.46	49.9
6	R2	All MCs	570	9.0	570	9.0	0.908	16.4	LOS C	18.2	137.7	1.00	0.92	1.46	50.7
Approach			782	9.3	782	9.3	0.908	17.8	LOS C	18.2	137.7	1.00	0.92	1.46	50.4
North: Borrisokane															
7	L2	All MCs	318	17.0	318	17.0	0.573	13.9	LOS B	3.5	28.1	0.57	0.67	0.62	53.1
8	T1	All MCs	150	13.0	150	13.0	0.573	9.1	LOS A	3.5	28.1	0.57	0.67	0.62	57.7
Approach			468	15.7	468	15.7	0.573	12.3	LOS B	3.5	28.1	0.57	0.67	0.62	54.5
All Vehicles			1555	11.4	1555	11.4	0.908	14.4	LOS B	18.2	137.7	0.78	0.80	1.03	53.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Borrisokane Road at Cambrian Road FB2031 PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

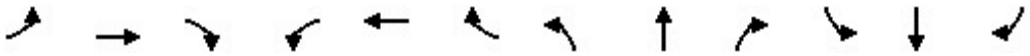
New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Borrisokane															
2	T1	All MCs	194	3.0	194	3.0	0.635	13.0	LOS B	4.0	29.4	0.75	0.87	1.03	59.1
3	R2	All MCs	206	8.0	206	8.0	0.635	12.9	LOS B	4.0	29.4	0.75	0.87	1.03	55.1
Approach			400	5.6	400	5.6	0.635	12.9	LOS B	4.0	29.4	0.75	0.87	1.03	57.0
East: Cambrian															
4	L2	All MCs	180	4.0	180	4.0	0.735	13.9	LOS B	7.4	54.6	0.73	0.66	0.84	57.0
6	R2	All MCs	475	7.0	475	7.0	0.735	8.9	LOS A	7.4	54.6	0.73	0.66	0.84	56.9
Approach			655	6.2	655	6.2	0.735	10.3	LOS B	7.4	54.6	0.73	0.66	0.84	56.9
North: Borrisokane															
7	L2	All MCs	516	6.0	516	6.0	0.787	15.6	LOS C	9.6	69.8	0.81	0.67	0.94	54.2
8	T1	All MCs	201	2.0	201	2.0	0.787	10.8	LOS B	9.6	69.8	0.81	0.67	0.94	58.5
Approach			717	4.9	717	4.9	0.787	14.2	LOS B	9.6	69.8	0.81	0.67	0.94	55.4
All Vehicles			1772	5.5	1772	5.5	0.787	12.5	LOS B	9.6	69.8	0.77	0.71	0.92	56.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	77	218	128	53	414	84	261	14	90	104	5	105
Future Volume (vph)	77	218	128	53	414	84	261	14	90	104	5	105
Satd. Flow (prot)	1523	1383	0	1658	1658	0	1013	1518	0	1595	1371	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1523	1383	0	1658	1658	0	1013	1518	0	1595	1371	0
Lane Group Flow (vph)	77	346	0	53	498	0	261	104	0	104	110	0
Sign Control		Free			Free			Stop			Stop	

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

Intersection	
Int Delay, s/veh	121.2

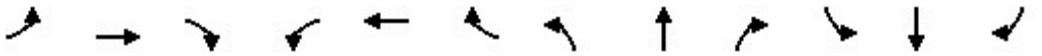
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	77	218	128	53	414	84	261	14	90	104	5	105
Future Vol, veh/h	77	218	128	53	414	84	261	14	90	104	5	105
Conflicting Peds, #/hr	6	0	0	0	0	6	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	37.5	-	-	37.5	-	-	30	-	-	30	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	11	5	50	2	3	13	67	2	2	6	100	7
Mvmt Flow	77	218	128	53	414	84	261	14	90	104	5	105

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	504	0	0	346	0	0	1053	1046	282	1056	1068	462
Stage 1	-	-	-	-	-	-	436	436	-	568	568	-
Stage 2	-	-	-	-	-	-	617	610	-	488	500	-
Critical Hdwy	4.21	-	-	4.12	-	-	7.77	6.52	6.22	7.16	7.5	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	6.77	5.52	-	6.16	6.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.77	5.52	-	6.16	6.5	-
Follow-up Hdwy	2.299	-	-	2.218	-	-	4.103	4.018	3.318	3.554	4.9	3.363
Pot Cap-1 Maneuver	1016	-	-	1213	-	-	~ 155	228	757	200	151	589
Stage 1	-	-	-	-	-	-	490	580	-	501	378	-
Stage 2	-	-	-	-	-	-	383	485	-	554	411	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1011	-	-	1213	-	-	~ 113	200	757	151	133	586
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 113	200	-	151	133	-
Stage 1	-	-	-	-	-	-	453	536	-	461	359	-
Stage 2	-	-	-	-	-	-	296	461	-	439	380	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.6	0.8	$ 488.4	41.1
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	113	551	1011	-	-	1213	-	-	151	507
HCM Lane V/C Ratio	2.31	0.189	0.076	-	-	0.044	-	-	0.689	0.217
HCM Control Delay (s)	$ 677.9	13	8.9	-	-	8.1	-	-	69.7	14.1
HCM Lane LOS	F	B	A	-	-	A	-	-	F	B
HCM 95th %tile Q(veh)	22.8	0.7	0.2	-	-	0.1	-	-	4	0.8

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



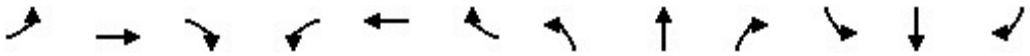
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	255	236	32	192	144	117	27	35	15	76	177	80
Future Volume (vph)	255	236	32	192	144	117	27	35	15	76	177	80
Satd. Flow (prot)	0	1682	0	0	1644	0	0	1671	0	0	1652	0
Flt Permitted		0.646			0.653			0.785			0.899	
Satd. Flow (perm)	0	1113	0	0	1096	0	0	1334	0	0	1502	0
Satd. Flow (RTOR)		7			38			15			21	
Lane Group Flow (vph)	0	523	0	0	453	0	0	77	0	0	333	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	25.8	25.8		25.8	25.8		25.2	25.2		25.2	25.2	
Total Split (s)	49.0	49.0		49.0	49.0		26.0	26.0		26.0	26.0	
Total Split (%)	65.3%	65.3%		65.3%	65.3%		34.7%	34.7%		34.7%	34.7%	
Yellow Time (s)	5.1	5.1		5.1	5.1		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.7	1.7		1.7	1.7		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.8			6.8			6.2			6.2	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Act Effct Green (s)		42.4			42.4			18.2			18.2	
Actuated g/C Ratio		0.58			0.58			0.25			0.25	
v/c Ratio		0.81			0.70			0.23			0.86	
Control Delay		25.7			17.9			20.2			48.1	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		25.7			17.9			20.2			48.1	
LOS		C			B			C			D	
Approach Delay		25.7			17.9			20.2			48.1	
Approach LOS		C			B			C			D	
Queue Length 50th (m)		55.0			39.2			6.8			41.3	
Queue Length 95th (m)		#117.6			76.6			16.8			#82.5	
Internal Link Dist (m)		543.4			1759.4			562.8			300.3	
Turn Bay Length (m)												
Base Capacity (vph)		644			647			370			419	
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		0.81			0.70			0.21			0.79	

Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 73.6
Natural Cycle: 75
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.86

Intersection Signal Delay: 28.3 Intersection LOS: C
Intersection Capacity Utilization 74.1% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Hwy 416/Borrisokane & Barnsdale





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	191	13	4	233	88	10	76	1	276	132	151
Future Volume (vph)	101	191	13	4	233	88	10	76	1	276	132	151
Satd. Flow (prot)	0	1675	0	0	1629	0	0	1659	0	0	1634	0
Flt Permitted		0.984			0.999			0.994			0.976	
Satd. Flow (perm)	0	1675	0	0	1629	0	0	1659	0	0	1634	0
Lane Group Flow (vph)	0	305	0	0	325	0	0	87	0	0	559	0
Sign Control		Stop			Stop			Stop			Stop	

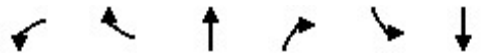
Intersection Summary	
Control Type: Unsignalized	
Intersection Capacity Utilization 86.0%	ICU Level of Service E
Analysis Period (min) 15	

Intersection	
Intersection Delay, s/veh	34.5
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	101	191	13	4	233	88	10	76	1	276	132	151
Future Vol, veh/h	101	191	13	4	233	88	10	76	1	276	132	151
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	7	2	8	2	6	3	10	6	2	2	4	2
Mvmt Flow	101	191	13	4	233	88	10	76	1	276	132	151
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	20	19.7	12.7	54.5
HCM LOS	C	C	B	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	11%	33%	1%	49%
Vol Thru, %	87%	63%	72%	24%
Vol Right, %	1%	4%	27%	27%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	87	305	325	559
LT Vol	10	101	4	276
Through Vol	76	191	233	132
RT Vol	1	13	88	151
Lane Flow Rate	87	305	325	559
Geometry Grp	1	1	1	1
Degree of Util (X)	0.19	0.595	0.606	0.966
Departure Headway (Hd)	7.842	7.023	6.715	6.224
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	460	509	533	581
Service Time	5.842	5.12	4.81	4.299
HCM Lane V/C Ratio	0.189	0.599	0.61	0.962
HCM Control Delay	12.7	20	19.7	54.5
HCM Lane LOS	B	C	C	F
HCM 95th-tile Q	0.7	3.8	4	13.2



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	10	37	261	49	62	304
Future Volume (vph)	10	37	261	49	62	304
Satd. Flow (prot)	1424	0	1606	0	1470	1679
Flt Permitted	0.989				0.950	
Satd. Flow (perm)	1424	0	1606	0	1470	1679
Lane Group Flow (vph)	47	0	310	0	62	304
Sign Control	Stop		Free			Free

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 34.6%		ICU Level of Service A	
Analysis Period (min) 15			

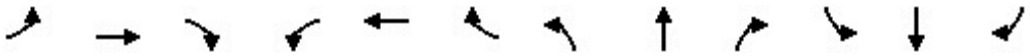
Intersection	
Int Delay, s/veh	1.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	37	261	49	62	304
Future Vol, veh/h	10	37	261	49	62	304
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	45	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	5	12	8	11	15	6
Mvmt Flow	10	37	261	49	62	304

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	714	286	0	0	310	0
Stage 1	286	-	-	-	-	-
Stage 2	428	-	-	-	-	-
Critical Hdwy	6.45	6.32	-	-	4.25	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.408	-	-	2.335	-
Pot Cap-1 Maneuver	393	730	-	-	1180	-
Stage 1	756	-	-	-	-	-
Stage 2	651	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	372	730	-	-	1180	-
Mov Cap-2 Maneuver	372	-	-	-	-	-
Stage 1	756	-	-	-	-	-
Stage 2	616	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.4	0	1.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	606	1180	-
HCM Lane V/C Ratio	-	-	0.078	0.053	-
HCM Control Delay (s)	-	-	11.4	8.2	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.3	0.2	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	244	24	63	174	15	12	0	274	5	2	1
Future Volume (vph)	1	244	24	63	174	15	12	0	274	5	2	1
Satd. Flow (prot)	0	1274	0	0	1274	0	0	1127	0	0	1040	0
Flt Permitted					0.988			0.998			0.970	
Satd. Flow (perm)	0	1274	0	0	1274	0	0	1127	0	0	1040	0
Lane Group Flow (vph)	0	269	0	0	252	0	0	286	0	0	8	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 57.9%		ICU Level of Service B	
Analysis Period (min) 15			

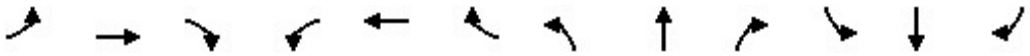
Intersection	
Int Delay, s/veh	5.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	1	244	24	63	174	15	12	0	274	5	2	1
Future Vol, veh/h	1	244	24	63	174	15	12	0	274	5	2	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	37	50	50	28	86	67	60	36	100	2	2
Mvmt Flow	1	244	24	63	174	15	12	0	274	5	2	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	189	0	0	268	0	0	567	573	256	703	578	182
Stage 1	-	-	-	-	-	-	258	258	-	308	308	-
Stage 2	-	-	-	-	-	-	309	315	-	395	270	-
Critical Hdwy	4.12	-	-	4.6	-	-	7.77	7.1	6.56	8.1	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.77	6.1	-	7.1	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.77	6.1	-	7.1	5.52	-
Follow-up Hdwy	2.218	-	-	2.65	-	-	4.103	4.54	3.624	4.4	4.018	3.318
Pot Cap-1 Maneuver	1385	-	-	1063	-	-	350	360	707	251	427	861
Stage 1	-	-	-	-	-	-	623	600	-	535	660	-
Stage 2	-	-	-	-	-	-	582	563	-	473	686	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1385	-	-	1063	-	-	330	336	707	146	398	861
Mov Cap-2 Maneuver	-	-	-	-	-	-	330	336	-	146	398	-
Stage 1	-	-	-	-	-	-	622	599	-	534	616	-
Stage 2	-	-	-	-	-	-	541	526	-	289	685	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	2.2	14.2	23.9
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	675	1385	-	-	1063	-	-	198
HCM Lane V/C Ratio	0.424	0.001	-	-	0.059	-	-	0.04
HCM Control Delay (s)	14.2	7.6	0	-	8.6	0	-	23.9
HCM Lane LOS	B	A	A	-	A	A	-	C
HCM 95th %tile Q(veh)	2.1	0	-	-	0.2	-	-	0.1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	9	10	8	5	93	10	76	16	66	42	10
Future Volume (vph)	10	9	10	8	5	93	10	76	16	66	42	10
Satd. Flow (prot)	0	1635	0	0	1533	0	0	1700	0	0	1679	0
Flt Permitted		0.983			0.996			0.995			0.973	
Satd. Flow (perm)	0	1635	0	0	1533	0	0	1700	0	0	1679	0
Lane Group Flow (vph)	0	29	0	0	106	0	0	102	0	0	118	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 27.2%		ICU Level of Service A	
Analysis Period (min) 15			

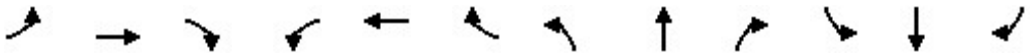
Intersection	
Int Delay, s/veh	5.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	9	10	8	5	93	10	76	16	66	42	10
Future Vol, veh/h	10	9	10	8	5	93	10	76	16	66	42	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	9	10	8	5	93	10	76	16	66	42	10

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	332	291	47	293	288	84	52	0	0	92	0	0
Stage 1	179	179	-	104	104	-	-	-	-	-	-	-
Stage 2	153	112	-	189	184	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	621	619	1022	659	622	975	1554	-	-	1503	-	-
Stage 1	823	751	-	902	809	-	-	-	-	-	-	-
Stage 2	849	803	-	813	747	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	536	587	1022	619	590	975	1554	-	-	1503	-	-
Mov Cap-2 Maneuver	536	587	-	619	590	-	-	-	-	-	-	-
Stage 1	817	717	-	896	803	-	-	-	-	-	-	-
Stage 2	758	797	-	759	713	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.7	9.5	0.7	4.2
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1554	-	-	662	908	1503	-	-
HCM Lane V/C Ratio	0.006	-	-	0.044	0.117	0.044	-	-
HCM Control Delay (s)	7.3	0	-	10.7	9.5	7.5	0	-
HCM Lane LOS	A	A	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.4	0.1	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	94	390	238	88	368	114	194	7	79	116	5	93
Future Volume (vph)	94	390	238	88	368	114	194	7	79	116	5	93
Satd. Flow (prot)	1523	1375	0	1658	1630	0	1013	1504	0	1595	1367	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1523	1375	0	1658	1630	0	1013	1504	0	1595	1367	0
Lane Group Flow (vph)	94	628	0	88	482	0	194	86	0	116	98	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 70.1%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	132.8

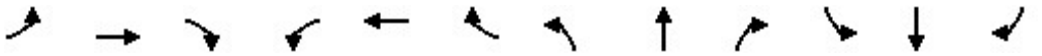
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	94	390	238	88	368	114	194	7	79	116	5	93
Future Vol, veh/h	94	390	238	88	368	114	194	7	79	116	5	93
Conflicting Peds, #/hr	6	0	0	0	0	6	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	37.5	-	-	37.5	-	-	30	-	-	30	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	11	5	50	2	3	13	67	2	2	6	100	7
Mvmt Flow	94	390	238	88	368	114	194	7	79	116	5	93

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	488	0	0	628	0	0	1347	1361	509	1347	1423	431
Stage 1	-	-	-	-	-	-	697	697	-	607	607	-
Stage 2	-	-	-	-	-	-	650	664	-	740	816	-
Critical Hdwy	4.21	-	-	4.12	-	-	7.77	6.52	6.22	7.16	7.5	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	6.77	5.52	-	6.16	6.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.77	5.52	-	6.16	6.5	-
Follow-up Hdwy	2.299	-	-	2.218	-	-	4.103	4.018	3.318	3.554	4.9	3.363
Pot Cap-1 Maneuver	1030	-	-	954	-	-	~ 94	148	564	126	86	614
Stage 1	-	-	-	-	-	-	343	443	-	477	361	-
Stage 2	-	-	-	-	-	-	366	458	-	402	279	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1025	-	-	954	-	-	~ 65	121	564	~ 89	71	611
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 65	121	-	~ 89	71	-
Stage 1	-	-	-	-	-	-	311	402	-	431	326	-
Stage 2	-	-	-	-	-	-	277	414	-	309	253	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.2	1.4	$ 718.5	160.1
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	65	435	1025	-	-	954	-	-	89	440
HCM Lane V/C Ratio	2.985	0.198	0.092	-	-	0.092	-	-	1.303	0.223
HCM Control Delay (s)	$ 1030.2	15.3	8.9	-	-	9.2	-	-	282.2	15.5
HCM Lane LOS	F	C	A	-	-	A	-	-	F	C
HCM 95th %tile Q(veh)	19.8	0.7	0.3	-	-	0.3	-	-	8.5	0.8

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	217	354	17	127	210	106	27	48	16	143	195	138
Future Volume (vph)	217	354	17	127	210	106	27	48	16	143	195	138
Satd. Flow (prot)	0	1697	0	0	1658	0	0	1678	0	0	1630	0
Flt Permitted		0.691			0.709			0.813			0.866	
Satd. Flow (perm)	0	1194	0	0	1192	0	0	1385	0	0	1433	0
Satd. Flow (RTOR)		3			26			13			24	
Lane Group Flow (vph)	0	588	0	0	443	0	0	91	0	0	476	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	25.8	25.8		25.8	25.8		25.2	25.2		25.2	25.2	
Total Split (s)	54.0	54.0		54.0	54.0		36.0	36.0		36.0	36.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Yellow Time (s)	5.1	5.1		5.1	5.1		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.7	1.7		1.7	1.7		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.8			6.8			6.2			6.2	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Act Effct Green (s)		47.2			47.2			29.8			29.8	
Actuated g/C Ratio		0.52			0.52			0.33			0.33	
v/c Ratio		0.94			0.70			0.19			0.97	
Control Delay		45.7			22.1			19.7			64.4	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		45.7			22.1			19.7			64.4	
LOS		D			C			B			E	
Approach Delay		45.7			22.1			19.7			64.4	
Approach LOS		D			C			B			E	
Queue Length 50th (m)		89.6			51.1			9.5			77.0	
Queue Length 95th (m)		#161.5			87.9			20.5			#139.0	
Internal Link Dist (m)		543.4			1759.4			562.8			300.3	
Turn Bay Length (m)												
Base Capacity (vph)		627			637			467			490	
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		0.94			0.70			0.19			0.97	

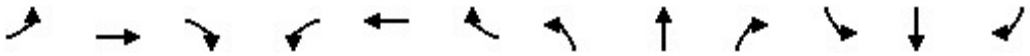
Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.97

Intersection Signal Delay: 43.3	Intersection LOS: D
Intersection Capacity Utilization 94.7%	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: 3: Hwy 416/Borrisokane & Barnsdale





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	165	274	21	0	245	239	10	123	3	150	162	147
Future Volume (vph)	165	274	21	0	245	239	10	123	3	150	162	147
Satd. Flow (prot)	0	1670	0	0	1589	0	0	1664	0	0	1632	0
Flt Permitted		0.982						0.996			0.984	
Satd. Flow (perm)	0	1670	0	0	1589	0	0	1664	0	0	1632	0
Lane Group Flow (vph)	0	460	0	0	484	0	0	136	0	0	459	0
Sign Control		Stop			Stop			Stop			Stop	

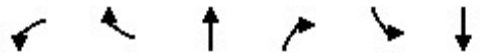
Intersection Summary	
Control Type: Unsignalized	
Intersection Capacity Utilization 103.6%	ICU Level of Service G
Analysis Period (min) 15	

Intersection	
Intersection Delay, s/veh	72.6
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	165	274	21	0	245	239	10	123	3	150	162	147
Future Vol, veh/h	165	274	21	0	245	239	10	123	3	150	162	147
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	7	2	8	2	6	3	10	6	2	2	4	2
Mvmt Flow	165	274	21	0	245	239	10	123	3	150	162	147
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	82	81.6	18.9	69.7
HCM LOS	F	F	C	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	7%	36%	0%	33%
Vol Thru, %	90%	60%	51%	35%
Vol Right, %	2%	5%	49%	32%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	136	460	484	459
LT Vol	10	165	0	150
Through Vol	123	274	245	162
RT Vol	3	21	239	147
Lane Flow Rate	136	460	484	459
Geometry Grp	1	1	1	1
Degree of Util (X)	0.368	1.035	1.04	0.992
Departure Headway (Hd)	10.149	8.33	7.95	8.146
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	356	437	460	450
Service Time	8.149	6.33	5.95	6.146
HCM Lane V/C Ratio	0.382	1.053	1.052	1.02
HCM Control Delay	18.9	82	81.6	69.7
HCM Lane LOS	C	F	F	F
HCM 95th-tile Q	1.6	13.9	14.5	12.6



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	75	80	324	20	62	322
Future Volume (vph)	75	80	324	20	62	322
Satd. Flow (prot)	1488	0	1632	0	1470	1679
Flt Permitted	0.976				0.950	
Satd. Flow (perm)	1488	0	1632	0	1470	1679
Lane Group Flow (vph)	155	0	344	0	62	322
Sign Control	Stop		Free			Free

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

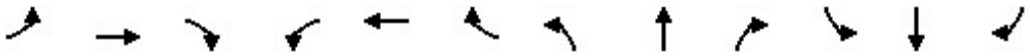
Intersection	
Int Delay, s/veh	3.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	75	80	324	20	62	322
Future Vol, veh/h	75	80	324	20	62	322
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	45	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	5	12	8	11	15	6
Mvmt Flow	75	80	324	20	62	322

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	780	334	0	0	344	0
Stage 1	334	-	-	-	-	-
Stage 2	446	-	-	-	-	-
Critical Hdwy	6.45	6.32	-	-	4.25	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.408	-	-	2.335	-
Pot Cap-1 Maneuver	360	685	-	-	1146	-
Stage 1	719	-	-	-	-	-
Stage 2	639	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	341	685	-	-	1146	-
Mov Cap-2 Maneuver	341	-	-	-	-	-
Stage 1	719	-	-	-	-	-
Stage 2	604	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.8	0	1.3
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	460	1146	-
HCM Lane V/C Ratio	-	-	0.337	0.054	-
HCM Control Delay (s)	-	-	16.8	8.3	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	1.5	0.2	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	219	18	102	267	7	36	0	359	10	1	0
Future Volume (vph)	0	219	18	102	267	7	36	0	359	10	1	0
Satd. Flow (prot)	0	1277	0	0	1297	0	0	1119	0	0	891	0
Flt Permitted					0.987			0.995			0.957	
Satd. Flow (perm)	0	1277	0	0	1297	0	0	1119	0	0	891	0
Lane Group Flow (vph)	0	237	0	0	376	0	0	395	0	0	11	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 69.2%		ICU Level of Service C	
Analysis Period (min) 15			

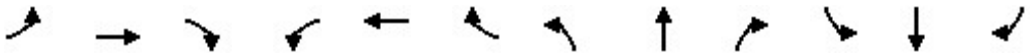
Intersection	
Int Delay, s/veh	9.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	219	18	102	267	7	36	0	359	10	1	0
Future Vol, veh/h	0	219	18	102	267	7	36	0	359	10	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	37	50	50	28	86	67	60	36	100	2	2
Mvmt Flow	0	219	18	102	267	7	36	0	359	10	1	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	274	0	0	237	0	0	703	706	228	883	712	271
Stage 1	-	-	-	-	-	-	228	228	-	475	475	-
Stage 2	-	-	-	-	-	-	475	478	-	408	237	-
Critical Hdwy	4.12	-	-	4.6	-	-	7.77	7.1	6.56	8.1	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.77	6.1	-	7.1	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.77	6.1	-	7.1	5.52	-
Follow-up Hdwy	2.218	-	-	2.65	-	-	4.103	4.54	3.624	4.4	4.018	3.318
Pot Cap-1 Maneuver	1289	-	-	1094	-	-	280	298	734	183	358	768
Stage 1	-	-	-	-	-	-	649	620	-	423	557	-
Stage 2	-	-	-	-	-	-	465	470	-	465	709	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1289	-	-	1094	-	-	256	265	734	86	319	768
Mov Cap-2 Maneuver	-	-	-	-	-	-	256	265	-	86	319	-
Stage 1	-	-	-	-	-	-	649	620	-	423	496	-
Stage 2	-	-	-	-	-	-	413	418	-	238	709	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	2.3	20	49.4
HCM LOS			C	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	627	1289	-	-	1094	-	-	92
HCM Lane V/C Ratio	0.63	-	-	-	0.093	-	-	0.12
HCM Control Delay (s)	20	0	-	-	8.6	0	-	49.4
HCM Lane LOS	C	A	-	-	A	A	-	E
HCM 95th %tile Q(veh)	4.4	0	-	-	0.3	-	-	0.4



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	7	10	15	8	96	10	58	12	80	70	10
Future Volume (vph)	10	7	10	15	8	96	10	58	12	80	70	10
Satd. Flow (prot)	0	1628	0	0	1546	0	0	1700	0	0	1690	0
Flt Permitted		0.982			0.994			0.994			0.976	
Satd. Flow (perm)	0	1628	0	0	1546	0	0	1700	0	0	1690	0
Lane Group Flow (vph)	0	27	0	0	119	0	0	80	0	0	160	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 30.5%		ICU Level of Service A	
Analysis Period (min) 15			

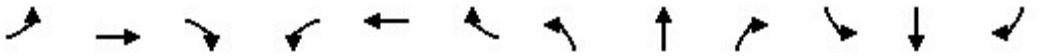
Intersection	
Int Delay, s/veh	5.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	10	7	10	15	8	96	10	58	12	80	70	10
Future Vol, veh/h	10	7	10	15	8	96	10	58	12	80	70	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	7	10	15	8	96	10	58	12	80	70	10

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	371	325	75	328	324	64	80	0	0	70	0	0
Stage 1	235	235	-	84	84	-	-	-	-	-	-	-
Stage 2	136	90	-	244	240	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	586	593	986	625	594	1000	1518	-	-	1531	-	-
Stage 1	768	710	-	924	825	-	-	-	-	-	-	-
Stage 2	867	820	-	760	707	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	499	556	986	584	557	1000	1518	-	-	1531	-	-
Mov Cap-2 Maneuver	499	556	-	584	557	-	-	-	-	-	-	-
Stage 1	763	671	-	918	819	-	-	-	-	-	-	-
Stage 2	771	814	-	703	668	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11	9.8	0.9	3.7
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1518	-	-	631	875	1531	-	-
HCM Lane V/C Ratio	0.007	-	-	0.043	0.136	0.052	-	-
HCM Control Delay (s)	7.4	0	-	11	9.8	7.5	0	-
HCM Lane LOS	A	A	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.5	0.2	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	191	13	4	233	88	10	76	1	276	132	151
Future Volume (vph)	101	191	13	4	233	88	10	76	1	276	132	151
Satd. Flow (prot)	1580	1721	0	0	1629	0	0	1659	0	1658	1591	0
Flt Permitted	0.950				0.999			0.994		0.950		
Satd. Flow (perm)	1580	1721	0	0	1629	0	0	1659	0	1658	1591	0
Lane Group Flow (vph)	101	204	0	0	325	0	0	87	0	276	283	0
Sign Control		Stop			Stop			Stop			Stop	

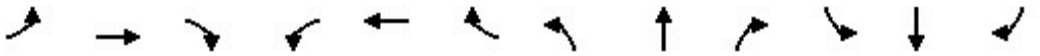
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 63.1%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	17.3
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	101	191	13	4	233	88	10	76	1	276	132	151
Future Vol, veh/h	101	191	13	4	233	88	10	76	1	276	132	151
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	7	2	8	2	6	3	10	6	2	2	4	2
Mvmt Flow	101	191	13	4	233	88	10	76	1	276	132	151
Number of Lanes	1	1	0	0	1	0	0	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	2
HCM Control Delay	14.1	21	13	17.6
HCM LOS	B	C	B	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	11%	100%	0%	1%	100%	0%
Vol Thru, %	87%	0%	94%	72%	0%	47%
Vol Right, %	1%	0%	6%	27%	0%	53%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	87	101	204	325	276	283
LT Vol	10	101	0	4	276	0
Through Vol	76	0	191	233	0	132
RT Vol	1	0	13	88	0	151
Lane Flow Rate	87	101	204	325	276	283
Geometry Grp	4b	5	5	4b	5	5
Degree of Util (X)	0.194	0.22	0.407	0.628	0.565	0.514
Departure Headway (Hd)	8.03	7.828	7.183	6.953	7.373	6.534
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	446	459	502	523	491	555
Service Time	6.085	5.57	4.925	4.962	5.11	4.253
HCM Lane V/C Ratio	0.195	0.22	0.406	0.621	0.562	0.51
HCM Control Delay	13	12.8	14.8	21	19.3	16
HCM Lane LOS	B	B	B	C	C	C
HCM 95th-tile Q	0.7	0.8	2	4.3	3.4	2.9



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	244	24	63	174	15	12	0	274	5	2	1
Future Volume (vph)	1	244	24	63	174	15	12	0	274	5	2	1
Satd. Flow (prot)	0	1274	0	1127	1326	0	0	1013	1113	0	1040	0
Flt Permitted				0.950				0.950			0.970	
Satd. Flow (perm)	0	1274	0	1127	1326	0	0	1013	1113	0	1040	0
Lane Group Flow (vph)	0	269	0	63	189	0	0	12	274	0	8	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 46.4%		ICU Level of Service A	
Analysis Period (min) 15			

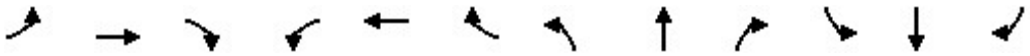
Intersection	
Int Delay, s/veh	5.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	244	24	63	174	15	12	0	274	5	2	1
Future Vol, veh/h	1	244	24	63	174	15	12	0	274	5	2	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	25	-	-	-	-	40	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	37	50	50	28	86	67	60	36	100	2	2
Mvmt Flow	1	244	24	63	174	15	12	0	274	5	2	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	189	0	0	268	0	0	567	573	256	703	578	182
Stage 1	-	-	-	-	-	-	258	258	-	308	308	-
Stage 2	-	-	-	-	-	-	309	315	-	395	270	-
Critical Hdwy	4.12	-	-	4.6	-	-	7.77	7.1	6.56	8.1	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.77	6.1	-	7.1	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.77	6.1	-	7.1	5.52	-
Follow-up Hdwy	2.218	-	-	2.65	-	-	4.103	4.54	3.624	4.4	4.018	3.318
Pot Cap-1 Maneuver	1385	-	-	1063	-	-	350	360	707	251	427	861
Stage 1	-	-	-	-	-	-	623	600	-	535	660	-
Stage 2	-	-	-	-	-	-	582	563	-	473	686	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1385	-	-	1063	-	-	332	338	707	147	401	861
Mov Cap-2 Maneuver	-	-	-	-	-	-	332	338	-	147	401	-
Stage 1	-	-	-	-	-	-	622	599	-	534	621	-
Stage 2	-	-	-	-	-	-	545	530	-	289	685	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	2.2	13.4	23.8
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	332	707	1385	-	-	1063	-	-	199
HCM Lane V/C Ratio	0.036	0.388	0.001	-	-	0.059	-	-	0.04
HCM Control Delay (s)	16.3	13.3	7.6	0	-	8.6	-	-	23.8
HCM Lane LOS	C	B	A	A	-	A	-	-	C
HCM 95th %tile Q(veh)	0.1	1.8	0	-	-	0.2	-	-	0.1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	165	274	21	0	245	239	10	123	3	150	162	147
Future Volume (vph)	165	274	21	0	245	239	10	123	3	150	162	147
Satd. Flow (prot)	1580	1719	0	0	1589	0	0	1664	0	1658	1605	0
Flt Permitted	0.950							0.996		0.950		
Satd. Flow (perm)	1580	1719	0	0	1589	0	0	1664	0	1658	1605	0
Lane Group Flow (vph)	165	295	0	0	484	0	0	136	0	150	309	0
Sign Control		Stop			Stop			Stop			Stop	

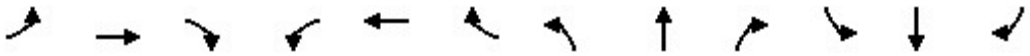
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 85.2%		ICU Level of Service E	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	37.8
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	165	274	21	0	245	239	10	123	3	150	162	147
Future Vol, veh/h	165	274	21	0	245	239	10	123	3	150	162	147
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	7	2	8	2	6	3	10	6	2	2	4	2
Mvmt Flow	165	274	21	0	245	239	10	123	3	150	162	147
Number of Lanes	1	1	0	0	1	0	0	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	2
HCM Control Delay	21.7	73.1	17.7	22.6
HCM LOS	C	F	C	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	7%	100%	0%	0%	100%	0%
Vol Thru, %	90%	0%	93%	51%	0%	52%
Vol Right, %	2%	0%	7%	49%	0%	48%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	136	165	295	484	150	309
LT Vol	10	165	0	0	150	0
Through Vol	123	0	274	245	0	162
RT Vol	3	0	21	239	0	147
Lane Flow Rate	136	165	295	484	150	309
Geometry Grp	4b	5	5	4b	5	5
Degree of Util (X)	0.352	0.393	0.649	1.015	0.358	0.675
Departure Headway (Hd)	9.6	8.582	7.926	7.55	8.782	7.862
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	377	417	454	479	413	457
Service Time	7.6	6.381	5.725	5.632	6.482	5.655
HCM Lane V/C Ratio	0.361	0.396	0.65	1.01	0.363	0.676
HCM Control Delay	17.7	16.9	24.4	73.1	16.3	25.6
HCM Lane LOS	C	C	C	F	C	D
HCM 95th-tile Q	1.6	1.8	4.5	13.8	1.6	4.9



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	219	18	102	267	7	36	0	359	10	1	0
Future Volume (vph)	0	219	18	102	267	7	36	0	359	10	1	0
Satd. Flow (prot)	0	1277	0	1127	1369	0	0	1013	1113	0	891	0
Flt Permitted				0.950				0.950			0.957	
Satd. Flow (perm)	0	1277	0	1127	1369	0	0	1013	1113	0	891	0
Lane Group Flow (vph)	0	237	0	102	274	0	0	36	359	0	11	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 50.1%		ICU Level of Service A	
Analysis Period (min) 15			

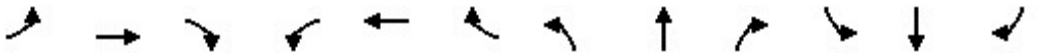
Intersection	
Int Delay, s/veh	7.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	219	18	102	267	7	36	0	359	10	1	0
Future Vol, veh/h	0	219	18	102	267	7	36	0	359	10	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	25	-	-	-	-	40	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	37	50	50	28	86	67	60	36	100	2	2
Mvmt Flow	0	219	18	102	267	7	36	0	359	10	1	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	274	0	0	237	0	0	703	706	228	883	712	271
Stage 1	-	-	-	-	-	-	228	228	-	475	475	-
Stage 2	-	-	-	-	-	-	475	478	-	408	237	-
Critical Hdwy	4.12	-	-	4.6	-	-	7.77	7.1	6.56	8.1	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.77	6.1	-	7.1	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.77	6.1	-	7.1	5.52	-
Follow-up Hdwy	2.218	-	-	2.65	-	-	4.103	4.54	3.624	4.4	4.018	3.318
Pot Cap-1 Maneuver	1289	-	-	1094	-	-	280	298	734	183	358	768
Stage 1	-	-	-	-	-	-	649	620	-	423	557	-
Stage 2	-	-	-	-	-	-	465	470	-	465	709	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1289	-	-	1094	-	-	259	270	734	87	325	768
Mov Cap-2 Maneuver	-	-	-	-	-	-	259	270	-	87	325	-
Stage 1	-	-	-	-	-	-	649	620	-	423	505	-
Stage 2	-	-	-	-	-	-	421	426	-	238	709	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	2.3	15.1	48.8
HCM LOS			C	E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	259	734	1289	-	-	1094	-	-	93
HCM Lane V/C Ratio	0.139	0.489	-	-	-	0.093	-	-	0.118
HCM Control Delay (s)	21.1	14.5	0	-	-	8.6	-	-	48.8
HCM Lane LOS	C	B	A	-	-	A	-	-	E
HCM 95th %tile Q(veh)	0.5	2.7	0	-	-	0.3	-	-	0.4



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	255	236	32	192	144	117	27	35	15	76	177	80
Future Volume (vph)	255	236	32	192	144	117	27	35	15	76	177	80
Satd. Flow (prot)	0	1682	0	0	1644	0	0	1671	0	1658	1640	0
Flt Permitted		0.646			0.651			0.745		0.707		
Satd. Flow (perm)	0	1113	0	0	1093	0	0	1266	0	1234	1640	0
Satd. Flow (RTOR)		5			29			14			27	
Lane Group Flow (vph)	0	523	0	0	453	0	0	77	0	76	257	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	25.8	25.8		25.8	25.8		35.2	35.2		25.2	25.2	
Total Split (s)	54.0	54.0		54.0	54.0		36.0	36.0		36.0	36.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Yellow Time (s)	5.1	5.1		5.1	5.1		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.7	1.7		1.7	1.7		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0		0.0	0.0	
Total Lost Time (s)		6.8			6.8			6.2		6.2	6.2	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Act Effct Green (s)		48.2			48.2			16.1		16.1	16.1	
Actuated g/C Ratio		0.62			0.62			0.21		0.21	0.21	
v/c Ratio		0.75			0.65			0.28		0.30	0.71	
Control Delay		20.9			15.7			23.6		27.9	36.1	
Queue Delay		0.0			0.0			0.0		0.0	0.0	
Total Delay		20.9			15.7			23.6		27.9	36.1	
LOS		C			B			C		C	D	
Approach Delay		20.9			15.7			23.6			34.3	
Approach LOS		C			B			C			C	
Queue Length 50th (m)		47.2			34.4			7.6		9.3	30.8	
Queue Length 95th (m)		#127.5			85.6			18.2		20.0	53.5	
Internal Link Dist (m)		543.4			1759.4			562.8			300.3	
Turn Bay Length (m)										40.0		
Base Capacity (vph)		695			692			497		476	649	
Starvation Cap Reductn		0			0			0		0	0	
Spillback Cap Reductn		0			0			0		0	0	
Storage Cap Reductn		0			0			0		0	0	
Reduced v/c Ratio		0.75			0.65			0.15		0.16	0.40	

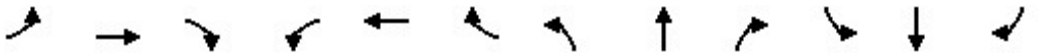
Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 77.3
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.75

Intersection Signal Delay: 22.5	Intersection LOS: C
Intersection Capacity Utilization 80.1%	ICU Level of Service D
Analysis Period (min) 15	

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

Splits and Phases: 3: Hwy 416/Borrisokane & Barnsdale





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	217	354	17	127	210	106	27	48	16	143	195	138
Future Volume (vph)	217	354	17	127	210	106	27	48	16	143	195	138
Satd. Flow (prot)	0	1697	0	0	1658	0	0	1678	0	1658	1606	0
Flt Permitted		0.705			0.725			0.664		0.771		
Satd. Flow (perm)	0	1218	0	0	1219	0	0	1131	0	1345	1606	0
Satd. Flow (RTOR)		3			29			12			40	
Lane Group Flow (vph)	0	588	0	0	443	0	0	91	0	143	333	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	25.8	25.8		25.8	25.8		25.2	25.2		25.2	25.2	
Total Split (s)	58.0	58.0		58.0	58.0		32.0	32.0		32.0	32.0	
Total Split (%)	64.4%	64.4%		64.4%	64.4%		35.6%	35.6%		35.6%	35.6%	
Yellow Time (s)	5.1	5.1		5.1	5.1		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.7	1.7		1.7	1.7		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0		0.0	0.0	
Total Lost Time (s)		6.8			6.8			6.2		6.2	6.2	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Act Effct Green (s)		51.4			51.4			20.0		20.0	20.0	
Actuated g/C Ratio		0.61			0.61			0.24		0.24	0.24	
v/c Ratio		0.79			0.59			0.33		0.45	0.81	
Control Delay		24.0			14.4			26.2		31.9	42.7	
Queue Delay		0.0			0.0			0.0		0.0	0.0	
Total Delay		24.0			14.4			26.2		31.9	42.7	
LOS		C			B			C		C	D	
Approach Delay		24.0			14.4			26.2			39.5	
Approach LOS		C			B			C			D	
Queue Length 50th (m)		66.4			37.6			10.4		19.7	44.7	
Queue Length 95th (m)		#148.8			76.2			22.8		35.9	74.2	
Internal Link Dist (m)		543.4			1759.4			562.8			300.3	
Turn Bay Length (m)										40.0		
Base Capacity (vph)		743			753			355		412	520	
Starvation Cap Reductn		0			0			0		0	0	
Spillback Cap Reductn		0			0			0		0	0	
Storage Cap Reductn		0			0			0		0	0	
Reduced v/c Ratio		0.79			0.59			0.26		0.35	0.64	

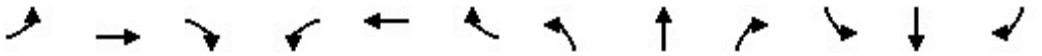
Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 84.4
Natural Cycle: 70
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.81

Intersection Signal Delay: 26.1	Intersection LOS: C
Intersection Capacity Utilization 89.4%	ICU Level of Service E
Analysis Period (min) 15	

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

Splits and Phases: 3: Hwy 416/Borrisokane & Barnsdale





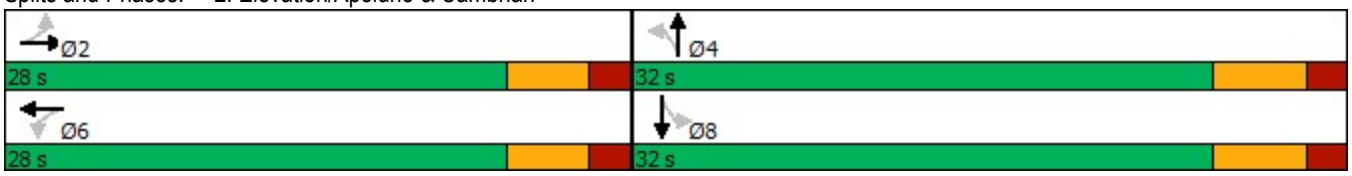
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	77	218	128	53	414	84	261	14	90	104	5	105
Future Volume (vph)	77	218	128	53	414	84	261	14	90	104	5	105
Satd. Flow (prot)	1523	1383	0	1658	1649	0	1013	1518	0	1595	1371	0
Flt Permitted	0.306			0.485			0.686			0.690		
Satd. Flow (perm)	489	1383	0	846	1649	0	731	1518	0	1159	1371	0
Satd. Flow (RTOR)		56			19			90			105	
Lane Group Flow (vph)	77	346	0	53	498	0	261	104	0	104	110	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	24.6	24.6		24.6	24.6		28.1	28.1		28.1	28.1	
Total Split (s)	28.0	28.0		28.0	28.0		32.0	32.0		32.0	32.0	
Total Split (%)	46.7%	46.7%		46.7%	46.7%		53.3%	53.3%		53.3%	53.3%	
Yellow Time (s)	3.7	3.7		3.7	3.7		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.9	1.9		1.9	1.9		1.9	1.9		1.9	1.9	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.6	5.6		5.6	5.6		6.1	6.1		6.1	6.1	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Act Effct Green (s)	20.7	20.7		20.7	20.7		22.6	22.6		22.6	22.6	
Actuated g/C Ratio	0.38	0.38		0.38	0.38		0.41	0.41		0.41	0.41	
v/c Ratio	0.42	0.63		0.17	0.79		0.87	0.15		0.22	0.18	
Control Delay	22.7	18.5		14.3	27.3		47.2	4.2		12.1	3.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	22.7	18.5		14.3	27.3		47.2	4.2		12.1	3.7	
LOS	C	B		B	C		D	A		B	A	
Approach Delay		19.2			26.0			34.9			7.8	
Approach LOS		B			C			C			A	
Queue Length 50th (m)	6.1	24.9		3.8	45.4		24.1	0.8		6.8	0.3	
Queue Length 95th (m)	17.4	49.4		10.3	#91.5		#62.1	7.8		15.3	7.5	
Internal Link Dist (m)		524.9			573.6			253.1			160.5	
Turn Bay Length (m)	37.5			37.5			30.0			30.0		
Base Capacity (vph)	201	602		348	690		348	770		552	708	
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	0.38	0.57		0.15	0.72		0.75	0.14		0.19	0.16	

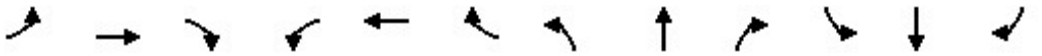
Intersection Summary
Cycle Length: 60
Actuated Cycle Length: 55.2
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.87

Intersection Signal Delay: 23.8	Intersection LOS: C
Intersection Capacity Utilization 73.2%	ICU Level of Service D
Analysis Period (min) 15	

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

Splits and Phases: 2: Elevation/Apolune & Cambrian



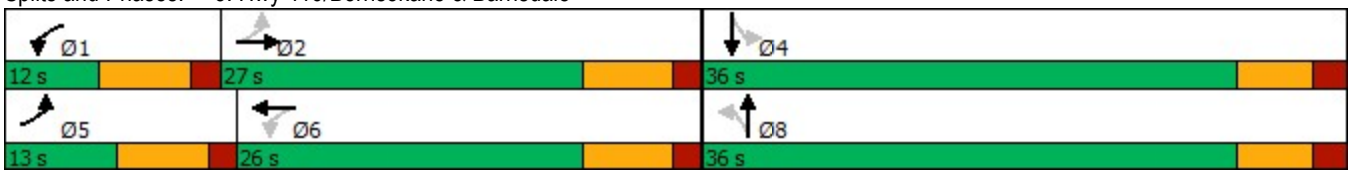


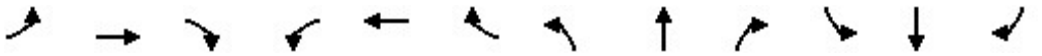
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	255	236	32	192	144	117	27	35	15	76	177	80
Future Volume (vph)	255	236	32	192	144	117	27	35	15	76	177	80
Satd. Flow (prot)	1658	1699	0	1658	1619	0	0	1671	0	1658	1640	0
Flt Permitted	0.569			0.594				0.812		0.707		
Satd. Flow (perm)	993	1699	0	1037	1619	0	0	1380	0	1234	1640	0
Satd. Flow (RTOR)		9			52			15			36	
Lane Group Flow (vph)	255	268	0	192	261	0	0	77	0	76	257	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	11.7	25.8		11.7	25.8		35.2	35.2		25.2	25.2	
Total Split (s)	13.0	27.0		12.0	26.0		36.0	36.0		36.0	36.0	
Total Split (%)	17.3%	36.0%		16.0%	34.7%		48.0%	48.0%		48.0%	48.0%	
Yellow Time (s)	5.1	5.1		5.1	5.1		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.6	1.7		1.6	1.7		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0		0.0	0.0	
Total Lost Time (s)	6.7	6.8		6.7	6.8			6.2		6.2	6.2	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	Max		None	Max		None	None		None	None	
Act Effct Green (s)	26.7	20.3		24.7	19.3			13.6		13.6	13.6	
Actuated g/C Ratio	0.45	0.34		0.42	0.33			0.23		0.23	0.23	
v/c Ratio	0.49	0.46		0.39	0.46			0.23		0.27	0.63	
Control Delay	12.7	18.5		11.5	16.5			16.9		20.7	24.8	
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	
Total Delay	12.7	18.5		11.5	16.5			16.9		20.7	24.8	
LOS	B	B		B	B			B		C	C	
Approach Delay		15.6			14.4			16.9			23.9	
Approach LOS		B			B			B			C	
Queue Length 50th (m)	12.7	20.7		9.2	16.8			5.4		6.7	21.2	
Queue Length 95th (m)	29.9	44.4		22.6	39.4			14.2		15.8	40.5	
Internal Link Dist (m)		543.4			1759.4			562.8			300.3	
Turn Bay Length (m)	60.0			45.0						40.0		
Base Capacity (vph)	520	589		490	564			707		625	849	
Starvation Cap Reductn	0	0		0	0			0		0	0	
Spillback Cap Reductn	0	0		0	0			0		0	0	
Storage Cap Reductn	0	0		0	0			0		0	0	
Reduced v/c Ratio	0.49	0.46		0.39	0.46			0.11		0.12	0.30	

Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 59
Natural Cycle: 75
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.63

Intersection Signal Delay: 17.3	Intersection LOS: B
Intersection Capacity Utilization 75.4%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 3: Hwy 416/Borrisokane & Barnsdale



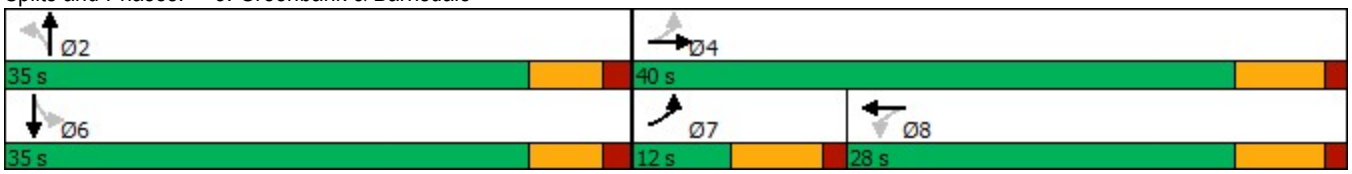


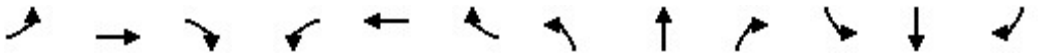
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	191	13	4	233	88	10	76	1	276	132	151
Future Volume (vph)	101	191	13	4	233	88	10	76	1	276	132	151
Satd. Flow (prot)	1580	1721	0	0	1629	0	0	1659	0	1658	1591	0
Flt Permitted	0.293				0.995			0.959		0.701		
Satd. Flow (perm)	487	1721	0	0	1622	0	0	1601	0	1221	1591	0
Satd. Flow (RTOR)		6			25			1			90	
Lane Group Flow (vph)	101	204	0	0	325	0	0	87	0	276	283	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	11.5	24.4		24.4	24.4		23.8	23.8		23.8	23.8	
Total Split (s)	12.0	40.0		28.0	28.0		35.0	35.0		35.0	35.0	
Total Split (%)	16.0%	53.3%		37.3%	37.3%		46.7%	46.7%		46.7%	46.7%	
Yellow Time (s)	5.1	5.1		5.1	5.1		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.4	1.3		1.3	1.3		1.6	1.6		1.6	1.6	
Lost Time Adjust (s)	0.0	0.0			0.0			0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.4			6.4			5.8		5.8	5.8	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)	26.0	26.1			17.0			29.8		29.8	29.8	
Actuated g/C Ratio	0.38	0.38			0.25			0.44		0.44	0.44	
v/c Ratio	0.37	0.31			0.77			0.12		0.52	0.38	
Control Delay	16.6	14.6			35.4			14.8		21.0	12.3	
Queue Delay	0.0	0.0			0.0			0.0		0.0	0.0	
Total Delay	16.6	14.6			35.4			14.8		21.0	12.3	
LOS	B	B			D			B		C	B	
Approach Delay		15.3			35.4			14.8			16.6	
Approach LOS		B			D			B			B	
Queue Length 50th (m)	8.1	16.8			37.1			7.1		27.6	17.0	
Queue Length 95th (m)	16.6	29.9			63.6			16.3		53.7	37.3	
Internal Link Dist (m)		1759.4			1181.9			632.6			239.9	
Turn Bay Length (m)	40.0									65.0		
Base Capacity (vph)	274	866			540			698		532	744	
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	0.37	0.24			0.60			0.12		0.52	0.38	

Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 68.3
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.77

Intersection Signal Delay: 21.0	Intersection LOS: C
Intersection Capacity Utilization 68.6%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 5: Greenbank & Barnsdale





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	244	24	63	174	15	12	0	274	5	2	1
Future Volume (vph)	1	244	24	63	174	15	12	0	274	5	2	1
Satd. Flow (prot)	0	1274	0	0	1274	0	0	1127	0	0	1040	0
Flt Permitted					0.988			0.998			0.970	
Satd. Flow (perm)	0	1274	0	0	1274	0	0	1127	0	0	1040	0
Lane Group Flow (vph)	0	269	0	0	252	0	0	286	0	0	8	0
Sign Control		Stop			Stop			Stop			Stop	

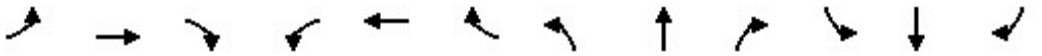
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 57.9%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	13.2
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	244	24	63	174	15	12	0	274	5	2	1
Future Vol, veh/h	1	244	24	63	174	15	12	0	274	5	2	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	37	50	50	28	86	67	60	36	100	2	2
Mvmt Flow	1	244	24	63	174	15	12	0	274	5	2	1
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	11.7	13.7	14.3	11
HCM LOS	B	B	B	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	4%	0%	25%	62%
Vol Thru, %	0%	91%	69%	25%
Vol Right, %	96%	9%	6%	12%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	286	269	252	8
LT Vol	12	1	63	5
Through Vol	0	244	174	2
RT Vol	274	24	15	1
Lane Flow Rate	286	269	252	8
Geometry Grp	1	1	1	1
Degree of Util (X)	0.474	0.393	0.428	0.017
Departure Headway (Hd)	5.966	5.258	6.116	7.768
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	603	686	590	461
Service Time	3.997	3.289	4.147	5.819
HCM Lane V/C Ratio	0.474	0.392	0.427	0.017
HCM Control Delay	14.3	11.7	13.7	11
HCM Lane LOS	B	B	B	B
HCM 95th-tile Q	2.5	1.9	2.1	0.1



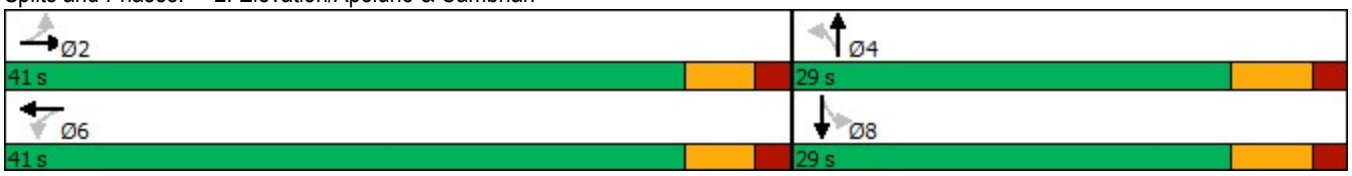
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	94	390	238	88	368	114	194	7	79	116	5	93
Future Volume (vph)	94	390	238	88	368	114	194	7	79	116	5	93
Satd. Flow (prot)	1523	1375	0	1658	1618	0	1013	1504	0	1595	1367	0
Flt Permitted	0.399			0.278			0.694			0.701		
Satd. Flow (perm)	637	1375	0	485	1618	0	740	1504	0	1177	1367	0
Satd. Flow (RTOR)		63			32			79			93	
Lane Group Flow (vph)	94	628	0	88	482	0	194	86	0	116	98	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	24.6	24.6		24.6	24.6		28.1	28.1		28.1	28.1	
Total Split (s)	41.0	41.0		41.0	41.0		29.0	29.0		29.0	29.0	
Total Split (%)	58.6%	58.6%		58.6%	58.6%		41.4%	41.4%		41.4%	41.4%	
Yellow Time (s)	3.7	3.7		3.7	3.7		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.9	1.9		1.9	1.9		1.9	1.9		1.9	1.9	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.6	5.6		5.6	5.6		6.1	6.1		6.1	6.1	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Act Effct Green (s)	32.8	32.8		32.8	32.8		20.0	20.0		20.0	20.0	
Actuated g/C Ratio	0.51	0.51		0.51	0.51		0.31	0.31		0.31	0.31	
v/c Ratio	0.29	0.86		0.36	0.58		0.85	0.17		0.32	0.20	
Control Delay	13.1	28.1		15.7	14.2		55.5	6.2		20.3	6.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	13.1	28.1		15.7	14.2		55.5	6.2		20.3	6.0	
LOS	B	C		B	B		E	A		C	A	
Approach Delay		26.1			14.4			40.3			13.8	
Approach LOS		C			B			D			B	
Queue Length 50th (m)	6.7	61.4		6.5	38.2		22.8	0.6		11.2	0.5	
Queue Length 95th (m)	16.0	#127.0		17.1	64.6		#56.1	9.0		23.3	9.5	
Internal Link Dist (m)		524.9			573.6			253.1			160.5	
Turn Bay Length (m)	37.5			37.5			30.0			30.0		
Base Capacity (vph)	353	791		269	912		265	590		422	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	0.27	0.79		0.33	0.53		0.73	0.15		0.27	0.18	

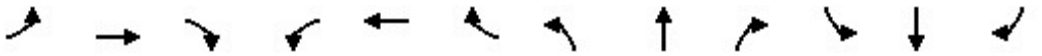
Intersection Summary
Cycle Length: 70
Actuated Cycle Length: 64.6
Natural Cycle: 70
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.86

Intersection Signal Delay: 23.1	Intersection LOS: C
Intersection Capacity Utilization 77.8%	ICU Level of Service D
Analysis Period (min) 15	

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

Splits and Phases: 2: Elevation/Apolune & Cambrian





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	217	354	17	127	210	106	27	48	16	143	195	138
Future Volume (vph)	217	354	17	127	210	106	27	48	16	143	195	138
Satd. Flow (prot)	1658	1717	0	1658	1647	0	0	1678	0	1658	1606	0
Flt Permitted	0.433			0.541				0.690		0.778		
Satd. Flow (perm)	756	1717	0	944	1647	0	0	1175	0	1358	1606	0
Satd. Flow (RTOR)		3			29			13			42	
Lane Group Flow (vph)	217	371	0	127	316	0	0	91	0	143	333	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	11.7	25.8		11.7	25.8		25.2	25.2		25.2	25.2	
Total Split (s)	20.0	41.0		14.0	35.0		35.0	35.0		35.0	35.0	
Total Split (%)	22.2%	45.6%		15.6%	38.9%		38.9%	38.9%		38.9%	38.9%	
Yellow Time (s)	5.1	5.1		5.1	5.1		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.6	1.7		1.6	1.7		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0		0.0	0.0	
Total Lost Time (s)	6.7	6.8		6.7	6.8			6.2		6.2	6.2	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	Max		None	Max		None	None		None	None	
Act Effct Green (s)	45.3	36.6		37.2	30.1			19.8		19.8	19.8	
Actuated g/C Ratio	0.56	0.46		0.46	0.37			0.25		0.25	0.25	
v/c Ratio	0.40	0.47		0.25	0.50			0.30		0.43	0.78	
Control Delay	11.3	20.4		10.9	22.7			24.0		29.4	37.6	
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	
Total Delay	11.3	20.4		10.9	22.7			24.0		29.4	37.6	
LOS	B	C		B	C			C		C	D	
Approach Delay		17.1			19.3			24.0			35.2	
Approach LOS		B			B			C			D	
Queue Length 50th (m)	14.2	40.6		7.8	32.7			9.8		18.6	42.1	
Queue Length 95th (m)	31.4	76.7		19.1	68.1			21.4		34.0	70.0	
Internal Link Dist (m)		543.4			1759.4			562.8			300.3	
Turn Bay Length (m)	60.0			45.0						40.0		
Base Capacity (vph)	592	783		507	635			433		492	608	
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	0.37	0.47		0.25	0.50			0.21		0.29	0.55	

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 80.3
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.78

Intersection Signal Delay: 23.5 Intersection LOS: C
Intersection Capacity Utilization 77.0% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 3: Hwy 416/Borrisokane & Barnsdale



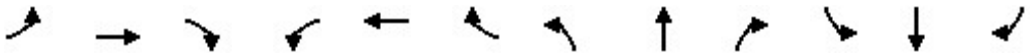
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	165	274	21	0	245	239	10	123	3	150	162	147
Future Volume (vph)	165	274	21	0	245	239	10	123	3	150	162	147
Satd. Flow (prot)	1580	1719	0	0	1589	0	0	1663	0	1658	1605	0
Flt Permitted	0.188							0.967		0.721		
Satd. Flow (perm)	313	1719	0	0	1589	0	0	1615	0	1256	1605	0
Satd. Flow (RTOR)		8			73			2			62	
Lane Group Flow (vph)	165	295	0	0	484	0	0	136	0	150	309	0
Turn Type	pm+pt	NA			NA		Perm	NA		Perm	NA	
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	11.5	24.4		24.4	24.4		23.8	23.8		23.8	23.8	
Total Split (s)	14.0	47.0		33.0	33.0		28.0	28.0		28.0	28.0	
Total Split (%)	18.7%	62.7%		44.0%	44.0%		37.3%	37.3%		37.3%	37.3%	
Yellow Time (s)	5.1	5.1		5.1	5.1		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.4	1.3		1.3	1.3		1.6	1.6		1.6	1.6	
Lost Time Adjust (s)	0.0	0.0			0.0			0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.4			6.4			5.8		5.8	5.8	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)	36.6	36.7			22.7			22.3		22.3	22.3	
Actuated g/C Ratio	0.51	0.52			0.32			0.31		0.31	0.31	
v/c Ratio	0.56	0.33			0.87			0.27		0.38	0.57	
Control Delay	16.9	10.8			37.4			21.2		24.0	21.9	
Queue Delay	0.0	0.0			0.0			0.0		0.0	0.0	
Total Delay	16.9	10.8			37.4			21.2		24.0	21.9	
LOS	B	B			D			C		C	C	
Approach Delay		13.0			37.4			21.2			22.6	
Approach LOS		B			D			C			C	
Queue Length 50th (m)	11.1	20.7			51.7			14.1		16.5	28.6	
Queue Length 95th (m)	20.5	34.8			#100.0			27.9		32.6	53.7	
Internal Link Dist (m)		1759.4			1181.9			632.6			239.9	
Turn Bay Length (m)	40.0									65.0		
Base Capacity (vph)	294	987			641			507		393	545	
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	0.56	0.30			0.76			0.27		0.38	0.57	

Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 71.2
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.87

Intersection Signal Delay: 24.2 Intersection LOS: C
Intersection Capacity Utilization 99.4% 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: 5: Greenbank & Barnsdale





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	219	18	102	267	7	36	0	359	10	1	0
Future Volume (vph)	0	219	18	102	267	7	36	0	359	10	1	0
Satd. Flow (prot)	0	1277	0	0	1297	0	0	1119	0	0	891	0
Flt Permitted					0.987			0.995			0.957	
Satd. Flow (perm)	0	1277	0	0	1297	0	0	1119	0	0	891	0
Lane Group Flow (vph)	0	237	0	0	376	0	0	395	0	0	11	0
Sign Control		Stop			Stop			Stop			Stop	

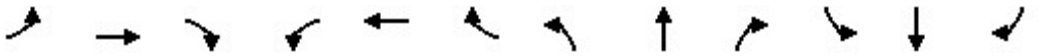
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 69.2%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	21.9
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	219	18	102	267	7	36	0	359	10	1	0
Future Vol, veh/h	0	219	18	102	267	7	36	0	359	10	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	37	50	50	28	86	67	60	36	100	2	2
Mvmt Flow	0	219	18	102	267	7	36	0	359	10	1	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	14.9	24	24.4	12.3
HCM LOS	B	C	C	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	9%	0%	27%	91%
Vol Thru, %	0%	92%	71%	9%
Vol Right, %	91%	8%	2%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	395	237	376	11
LT Vol	36	0	102	10
Through Vol	0	219	267	1
RT Vol	359	18	7	0
Lane Flow Rate	395	237	376	11
Geometry Grp	1	1	1	1
Degree of Util (X)	0.715	0.439	0.699	0.028
Departure Headway (Hd)	6.513	6.67	6.69	9.016
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	553	536	538	399
Service Time	4.588	4.761	4.769	7.016
HCM Lane V/C Ratio	0.714	0.442	0.699	0.028
HCM Control Delay	24.4	14.9	24	12.3
HCM Lane LOS	C	B	C	B
HCM 95th-tile Q	5.8	2.2	5.5	0.1

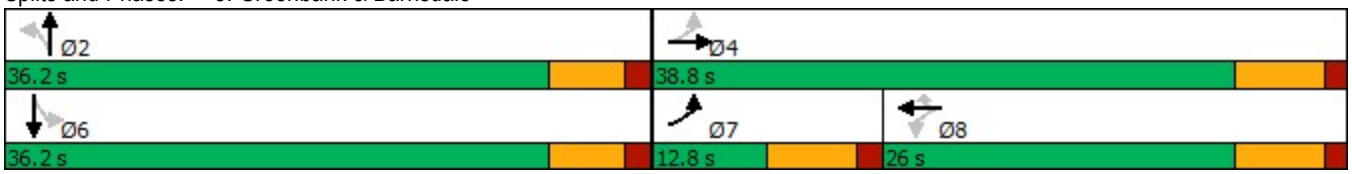


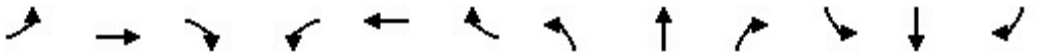
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	191	13	4	233	88	10	76	1	276	132	151
Future Volume (vph)	101	191	13	4	233	88	10	76	1	276	132	151
Satd. Flow (prot)	1580	1721	0	0	1679	1469	0	1659	0	1658	1591	0
Flt Permitted	0.372				0.993			0.960		0.701		
Satd. Flow (perm)	619	1721	0	0	1669	1469	0	1602	0	1221	1591	0
Satd. Flow (RTOR)		6				135		1			92	
Lane Group Flow (vph)	101	204	0	0	237	88	0	87	0	276	283	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	7	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	11.5	24.4		24.4	24.4	24.4	23.8	23.8		23.8	23.8	
Total Split (s)	12.8	38.8		26.0	26.0	26.0	36.2	36.2		36.2	36.2	
Total Split (%)	17.1%	51.7%		34.7%	34.7%	34.7%	48.3%	48.3%		48.3%	48.3%	
Yellow Time (s)	5.1	5.1		5.1	5.1	5.1	4.2	4.2		4.2	4.2	
All-Red Time (s)	1.4	1.3		1.3	1.3	1.3	1.6	1.6		1.6	1.6	
Lost Time Adjust (s)	0.0	0.0			0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.4			6.4	6.4		5.8		5.8	5.8	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Recall Mode	None	None		None	None	None	Max	Max		Max	Max	
Act Effct Green (s)	24.4	24.5			14.8	14.8		30.9		30.9	30.9	
Actuated g/C Ratio	0.36	0.36			0.22	0.22		0.46		0.46	0.46	
v/c Ratio	0.32	0.33			0.65	0.21		0.12		0.50	0.37	
Control Delay	16.5	15.8			34.0	2.8		13.6		19.2	11.2	
Queue Delay	0.0	0.0			0.0	0.0		0.0		0.0	0.0	
Total Delay	16.5	15.8			34.0	2.8		13.6		19.2	11.2	
LOS	B	B			C	A		B		B	B	
Approach Delay		16.0			25.5			13.6			15.1	
Approach LOS		B			C			B			B	
Queue Length 50th (m)	8.4	17.3			28.8	0.0		6.5		25.6	15.6	
Queue Length 95th (m)	17.2	30.9			49.8	4.4		15.8		52.1	35.9	
Internal Link Dist (m)		1759.4			1181.9			632.6			239.9	
Turn Bay Length (m)	40.0					15.0				65.0		
Base Capacity (vph)	313	838			490	527		730		556	775	
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	0.32	0.24			0.48	0.17		0.12		0.50	0.37	

Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 67.8
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.65

Intersection Signal Delay: 17.9 | Intersection LOS: B
Intersection Capacity Utilization 62.9% | ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 5: Greenbank & Barnsdale





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	244	24	63	174	15	12	0	274	5	2	1
Future Volume (vph)	1	244	24	63	174	15	12	0	274	5	2	1
Satd. Flow (prot)	0	1274	0	1127	1326	0	0	1013	1113	0	1040	0
Flt Permitted				0.950				0.950			0.970	
Satd. Flow (perm)	0	1274	0	1127	1326	0	0	1013	1113	0	1040	0
Lane Group Flow (vph)	0	269	0	63	189	0	0	12	274	0	8	0
Sign Control		Stop			Stop			Stop			Stop	

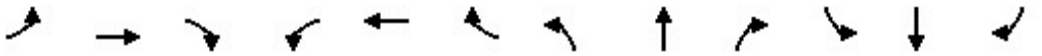
Intersection Summary	
Control Type: Unsignalized	
Intersection Capacity Utilization 46.4%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Intersection Delay, s/veh	13.4
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	244	24	63	174	15	12	0	274	5	2	1
Future Vol, veh/h	1	244	24	63	174	15	12	0	274	5	2	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	37	50	50	28	86	67	60	36	100	2	2
Mvmt Flow	1	244	24	63	174	15	12	0	274	5	2	1
Number of Lanes	0	1	0	1	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	1
HCM Control Delay	13.5	11.9	14.8	11.7
HCM LOS	B	B	B	B

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	100%	0%	0%	100%	0%	62%
Vol Thru, %	0%	0%	91%	0%	92%	25%
Vol Right, %	0%	100%	9%	0%	8%	12%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	12	274	269	63	189	8
LT Vol	12	0	1	63	0	5
Through Vol	0	0	244	0	174	2
RT Vol	0	274	24	0	15	1
Lane Flow Rate	12	274	269	63	189	8
Geometry Grp	5	5	4b	5	5	4b
Degree of Util (X)	0.026	0.486	0.441	0.127	0.331	0.019
Departure Headway (Hd)	7.718	6.383	5.904	7.252	6.311	8.49
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	465	564	611	495	571	421
Service Time	5.452	4.116	3.937	4.987	4.046	6.544
HCM Lane V/C Ratio	0.026	0.486	0.44	0.127	0.331	0.019
HCM Control Delay	10.7	15	13.5	11	12.2	11.7
HCM Lane LOS	B	B	B	B	B	B
HCM 95th-tile Q	0.1	2.6	2.2	0.4	1.4	0.1

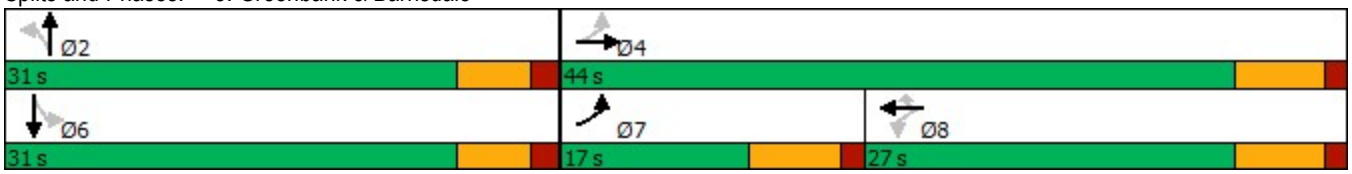


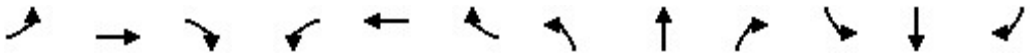
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	165	274	21	0	245	239	10	123	3	150	162	147
Future Volume (vph)	165	274	21	0	245	239	10	123	3	150	162	147
Satd. Flow (prot)	1580	1719	0	0	1679	1469	0	1663	0	1658	1605	0
Flt Permitted	0.367							0.970		0.734		
Satd. Flow (perm)	611	1719	0	0	1679	1469	0	1620	0	1279	1605	0
Satd. Flow (RTOR)		7				192		2			66	
Lane Group Flow (vph)	165	295	0	0	245	239	0	136	0	150	309	0
Turn Type	pm+pt	NA			NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	7	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	11.5	24.4		24.4	24.4	24.4	23.8	23.8		23.8	23.8	
Total Split (s)	17.0	44.0		27.0	27.0	27.0	31.0	31.0		31.0	31.0	
Total Split (%)	22.7%	58.7%		36.0%	36.0%	36.0%	41.3%	41.3%		41.3%	41.3%	
Yellow Time (s)	5.1	5.1		5.1	5.1	5.1	4.2	4.2		4.2	4.2	
All-Red Time (s)	1.4	1.3		1.3	1.3	1.3	1.6	1.6		1.6	1.6	
Lost Time Adjust (s)	0.0	0.0			0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.4			6.4	6.4		5.8		5.8	5.8	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Recall Mode	None	None		None	None	None	Max	Max		Max	Max	
Act Effct Green (s)	31.1	31.2			15.0	15.0		25.3		25.3	25.3	
Actuated g/C Ratio	0.45	0.45			0.22	0.22		0.37		0.37	0.37	
v/c Ratio	0.40	0.38			0.67	0.51		0.23		0.32	0.49	
Control Delay	14.2	13.4			34.3	10.3		17.5		19.5	17.2	
Queue Delay	0.0	0.0			0.0	0.0		0.0		0.0	0.0	
Total Delay	14.2	13.4			34.3	10.3		17.5		19.5	17.2	
LOS	B	B			C	B		B		B	B	
Approach Delay		13.7			22.5			17.5			17.9	
Approach LOS		B			C			B			B	
Queue Length 50th (m)	12.3	23.0			29.3	5.0		11.8		13.7	23.3	
Queue Length 95th (m)	22.6	38.7			50.3	21.7		26.1		30.3	49.6	
Internal Link Dist (m)		1759.4			1181.9			632.6			239.9	
Turn Bay Length (m)	40.0					15.0				65.0		
Base Capacity (vph)	424	947			505	576		597		470	632	
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	0.39	0.31			0.49	0.41		0.23		0.32	0.49	

Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 68.8
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.67

Intersection Signal Delay: 18.1 Intersection LOS: B
Intersection Capacity Utilization 84.0% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 5: Greenbank & Barnsdale





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	219	18	102	267	7	36	0	359	10	1	0
Future Volume (vph)	0	219	18	102	267	7	36	0	359	10	1	0
Satd. Flow (prot)	0	1277	0	1127	1369	0	0	1013	1113	0	891	0
Flt Permitted				0.950				0.950			0.957	
Satd. Flow (perm)	0	1277	0	1127	1369	0	0	1013	1113	0	891	0
Lane Group Flow (vph)	0	237	0	102	274	0	0	36	359	0	11	0
Sign Control		Stop			Stop			Stop			Stop	

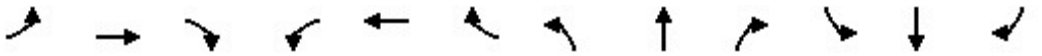
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 50.1%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	18.3
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	219	18	102	267	7	36	0	359	10	1	0
Future Vol, veh/h	0	219	18	102	267	7	36	0	359	10	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	37	50	50	28	86	67	60	36	100	2	2
Mvmt Flow	0	219	18	102	267	7	36	0	359	10	1	0
Number of Lanes	0	1	0	1	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	1
HCM Control Delay	16.6	15.8	21.9	12.8
HCM LOS	C	C	C	B

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	100%	0%	0%	100%	0%	91%
Vol Thru, %	0%	0%	92%	0%	97%	9%
Vol Right, %	0%	100%	8%	0%	3%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	36	359	237	102	274	11
LT Vol	36	0	0	102	0	10
Through Vol	0	0	219	0	267	1
RT Vol	0	359	18	0	7	0
Lane Flow Rate	36	359	237	102	274	11
Geometry Grp	5	5	4b	5	5	4b
Degree of Util (X)	0.082	0.679	0.474	0.22	0.522	0.029
Departure Headway (Hd)	8.153	6.812	7.198	7.77	6.863	9.544
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	439	528	500	461	523	377
Service Time	5.914	4.572	5.265	5.537	4.63	7.544
HCM Lane V/C Ratio	0.082	0.68	0.474	0.221	0.524	0.029
HCM Control Delay	11.6	22.9	16.6	12.7	16.9	12.8
HCM Lane LOS	B	C	C	B	C	B
HCM 95th-tile Q	0.3	5.1	2.5	0.8	3	0.1



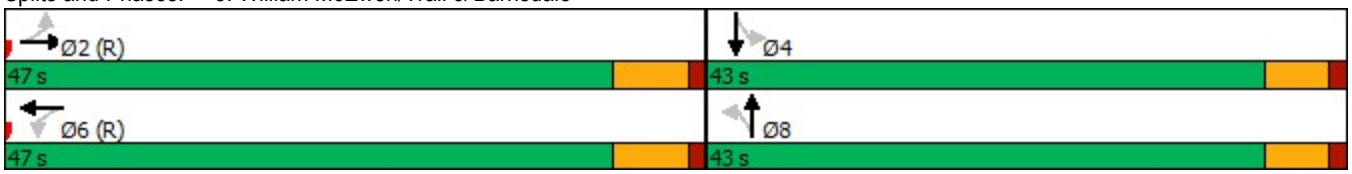
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	244	24	63	174	15	12	0	274	5	2	1
Future Volume (vph)	1	244	24	63	174	15	12	0	274	5	2	1
Satd. Flow (prot)	0	1272	0	0	1274	0	0	1127	0	0	1040	0
Flt Permitted		0.999			0.867			0.988			0.586	
Satd. Flow (perm)	0	1270	0	0	1118	0	0	1116	0	0	628	0
Satd. Flow (RTOR)		7			5			274			1	
Lane Group Flow (vph)	0	269	0	0	252	0	0	286	0	0	8	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	35.3	35.3		35.3	35.3		37.6	37.6		37.6	37.6	
Total Split (s)	47.0	47.0		47.0	47.0		43.0	43.0		43.0	43.0	
Total Split (%)	52.2%	52.2%		52.2%	52.2%		47.8%	47.8%		47.8%	47.8%	
Yellow Time (s)	5.1	5.1		5.1	5.1		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.2	1.2		1.2	1.2		1.4	1.4		1.4	1.4	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.3			6.3			5.6			5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		65.3			65.3			12.8			12.8	
Actuated g/C Ratio		0.73			0.73			0.14			0.14	
v/c Ratio		0.29			0.31			0.73			0.09	
Control Delay		5.9			6.1			16.5			30.9	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		5.9			6.1			16.5			30.9	
LOS		A			A			B			C	
Approach Delay		5.9			6.1			16.5			30.9	
Approach LOS		A			A			B			C	
Queue Length 50th (m)		11.1			6.1			1.9			1.1	
Queue Length 95th (m)		32.6			36.9			24.4			4.5	
Internal Link Dist (m)		615.4			543.4			486.4			581.6	
Turn Bay Length (m)												
Base Capacity (vph)		923			812			623			261	
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		0.29			0.31			0.46			0.03	

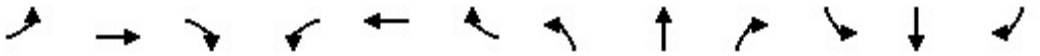
Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 15 (17%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 9.9	Intersection LOS: A
Intersection Capacity Utilization 63.1%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 8: William McEwen/Trail & Barnsdale





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	219	18	102	267	7	36	0	349	10	1	0
Future Volume (vph)	0	219	18	102	267	7	36	0	349	10	1	0
Satd. Flow (prot)	0	1275	0	0	1297	0	0	1120	0	0	891	0
Flt Permitted					0.841			0.974			0.769	
Satd. Flow (perm)	0	1275	0	0	1105	0	0	1096	0	0	716	0
Satd. Flow (RTOR)		5			1			349				
Lane Group Flow (vph)	0	237	0	0	376	0	0	385	0	0	11	0
Turn Type		NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	35.3	35.3		35.3	35.3		37.6	37.6		37.6	37.6	
Total Split (s)	36.0	36.0		36.0	36.0		54.0	54.0		54.0	54.0	
Total Split (%)	40.0%	40.0%		40.0%	40.0%		60.0%	60.0%		60.0%	60.0%	
Yellow Time (s)	5.1	5.1		5.1	5.1		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.2	1.2		1.2	1.2		1.4	1.4		1.4	1.4	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.3			6.3			5.6			5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Min	C-Min		C-Min	C-Min	
Act Effct Green (s)		45.3			45.3			32.8			32.8	
Actuated g/C Ratio		0.50			0.50			0.36			0.36	
v/c Ratio		0.37			0.68			0.62			0.04	
Control Delay		16.5			21.8			8.4			17.9	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		16.5			21.8			8.4			17.9	
LOS		B			C			A			B	
Approach Delay		16.5			21.8			8.4			17.9	
Approach LOS		B			C			A			B	
Queue Length 50th (m)		25.6			54.1			3.7			1.1	
Queue Length 95th (m)		38.0			70.6			30.7			4.9	
Internal Link Dist (m)		615.4			543.4			486.4			581.6	
Turn Bay Length (m)												
Base Capacity (vph)		643			555			750			385	
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		0.37			0.68			0.51			0.03	

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 16 (18%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.68

Intersection Signal Delay: 15.4	Intersection LOS: B
Intersection Capacity Utilization 73.7%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 8: William McEwen/Trail & Barnsdale



MOVEMENT SUMMARY

Site: 101 [Prince of Wales and Barnsdale FB2031 AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Prince of Wales Drive															
1	L2	All MCs	4	2.0	4	2.0	0.780	26.4	LOS D	8.4	60.8	0.87	1.10	1.83	28.6
2	T1	All MCs	462	4.0	462	4.0	0.780	26.7	LOS D	8.4	60.8	0.87	1.10	1.83	29.0
3	R2	All MCs	14	8.0	14	8.0	0.780	27.3	LOS D	8.4	60.8	0.87	1.10	1.83	24.7
Approach			481	4.1	481	4.1	0.780	26.7	LOS D	8.4	60.8	0.87	1.10	1.83	28.9
East: Barnsdale Road															
4	L2	All MCs	13	2.0	13	2.0	0.224	12.1	LOS B	0.7	5.2	0.67	0.67	0.67	33.9
5	T1	All MCs	80	2.0	80	2.0	0.224	12.1	LOS B	0.7	5.2	0.67	0.67	0.67	37.7
6	R2	All MCs	1	2.0	1	2.0	0.224	12.1	LOS B	0.7	5.2	0.67	0.67	0.67	37.8
Approach			94	2.0	94	2.0	0.224	12.1	LOS B	0.7	5.2	0.67	0.67	0.67	37.2
North: Prince of Wales Drive															
7	L2	All MCs	3	33.0	3	33.0	0.503	11.0	LOS B	3.0	22.0	0.36	0.17	0.36	33.8
8	T1	All MCs	267	5.0	267	5.0	0.503	9.4	LOS A	3.0	22.0	0.36	0.17	0.36	40.6
9	R2	All MCs	230	5.0	230	5.0	0.503	9.4	LOS A	3.0	22.0	0.36	0.17	0.36	44.3
Approach			500	5.2	500	5.2	0.503	9.4	LOS A	3.0	22.0	0.36	0.17	0.36	42.3
West: Barnsdale Road															
10	L2	All MCs	479	2.0	479	2.0	0.674	15.8	LOS C	8.2	58.5	0.72	0.68	1.20	35.4
11	T1	All MCs	77	2.0	77	2.0	0.674	15.8	LOS C	8.2	58.5	0.72	0.68	1.20	31.1
12	R2	All MCs	6	2.0	6	2.0	0.674	15.8	LOS C	8.2	58.5	0.72	0.68	1.20	33.1
Approach			561	2.0	561	2.0	0.674	15.8	LOS C	8.2	58.5	0.72	0.68	1.20	34.8
All Vehicles			1637	3.6	1637	3.6	0.780	16.8	LOS C	8.4	60.8	0.65	0.65	1.10	34.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Prince of Wales and Barnsdale FB2031 PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Prince of Wales Drive															
1	L2	All MCs	11	2.0	11	2.0	0.419	10.8	LOS B	2.1	15.1	0.61	0.55	0.74	39.8
2	T1	All MCs	276	2.0	276	2.0	0.419	10.8	LOS B	2.1	15.1	0.61	0.55	0.74	40.0
3	R2	All MCs	4	25.0	4	25.0	0.419	13.6	LOS B	2.1	15.1	0.61	0.55	0.74	34.1
Approach			291	2.4	291	2.4	0.419	10.9	LOS B	2.1	15.1	0.61	0.55	0.74	39.9
East: Barnsdale Road															
4	L2	All MCs	8	2.0	8	2.0	0.168	8.2	LOS A	0.6	4.1	0.56	0.52	0.56	38.0
5	T1	All MCs	88	2.0	88	2.0	0.168	8.2	LOS A	0.6	4.1	0.56	0.52	0.56	41.9
6	R2	All MCs	2	2.0	2	2.0	0.168	8.2	LOS A	0.6	4.1	0.56	0.52	0.56	41.8
Approach			98	2.0	98	2.0	0.168	8.2	LOS A	0.6	4.1	0.56	0.52	0.56	41.6
North: Prince of Wales Drive															
7	L2	All MCs	3	2.0	3	2.0	0.987	38.9	LOS E	60.0	427.1	1.00	1.50	1.94	21.3
8	T1	All MCs	531	2.0	531	2.0	0.987	38.9	LOS E	60.0	427.1	1.00	1.50	1.94	23.4
9	R2	All MCs	456	2.0	456	2.0	0.987	38.9	LOS E	60.0	427.1	1.00	1.50	1.94	26.5
Approach			990	2.0	990	2.0	0.987	38.9	LOS E	60.0	427.1	1.00	1.50	1.94	24.9
West: Barnsdale Road															
10	L2	All MCs	342	5.0	342	5.0	0.732	23.2	LOS C	6.9	50.5	0.83	0.94	1.59	31.4
11	T1	All MCs	108	7.0	108	7.0	0.732	23.5	LOS C	6.9	50.5	0.83	0.94	1.59	27.5
12	R2	All MCs	4	2.0	4	2.0	0.732	22.8	LOS C	6.9	50.5	0.83	0.94	1.59	29.1
Approach			454	5.4	454	5.4	0.732	23.3	LOS C	6.9	50.5	0.83	0.94	1.59	30.5
All Vehicles			1833	2.9	1833	2.9	0.987	28.9	LOS D	60.0	427.1	0.87	1.16	1.59	28.4

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Prince of Wales and Barnsdale FB2031 AM - SBR (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Prince of Wales Drive															
1	L2	All MCs	4	2.0	4	2.0	0.780	26.4	LOS D	8.4	60.8	0.87	1.10	1.83	28.6
2	T1	All MCs	462	4.0	462	4.0	0.780	26.7	LOS D	8.4	60.8	0.87	1.10	1.83	29.0
3	R2	All MCs	14	8.0	14	8.0	0.780	27.3	LOS D	8.4	60.8	0.87	1.10	1.83	24.7
Approach			481	4.1	481	4.1	0.780	26.7	LOS D	8.4	60.8	0.87	1.10	1.83	28.9
East: Barnsdale Road															
4	L2	All MCs	13	2.0	13	2.0	0.224	12.1	LOS B	0.7	5.2	0.67	0.67	0.67	33.9
5	T1	All MCs	80	2.0	80	2.0	0.224	12.1	LOS B	0.7	5.2	0.67	0.67	0.67	37.7
6	R2	All MCs	1	2.0	1	2.0	0.224	12.1	LOS B	0.7	5.2	0.67	0.67	0.67	37.8
Approach			94	2.0	94	2.0	0.224	12.1	LOS B	0.7	5.2	0.67	0.67	0.67	37.2
North: Prince of Wales Drive															
7	L2	All MCs	3	33.0	3	33.0	0.430	9.8	LOS A	2.3	16.7	0.32	0.15	0.32	34.8
8	T1	All MCs	267	5.0	267	5.0	0.430	8.2	LOS A	2.3	16.7	0.32	0.15	0.32	42.0
9	R2	All MCs	230	5.0	230	5.0	0.430	7.2	LOS A	2.3	16.7	0.33	0.18	0.33	46.6
Approach			500	5.2	500	5.2	0.430	7.8	LOS A	2.3	16.7	0.33	0.17	0.33	44.1
West: Barnsdale Road															
10	L2	All MCs	479	2.0	479	2.0	0.674	15.8	LOS C	8.2	58.5	0.72	0.68	1.20	35.4
11	T1	All MCs	77	2.0	77	2.0	0.674	15.8	LOS C	8.2	58.5	0.72	0.68	1.20	31.1
12	R2	All MCs	6	2.0	6	2.0	0.674	15.8	LOS C	8.2	58.5	0.72	0.68	1.20	33.1
Approach			561	2.0	561	2.0	0.674	15.8	LOS C	8.2	58.5	0.72	0.68	1.20	34.8
All Vehicles			1637	3.6	1637	3.6	0.780	16.3	LOS C	8.4	60.8	0.64	0.65	1.09	35.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Prince of Wales and Barnsdale FB2031 PM - SBR (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Prince of Wales Drive															
1	L2	All MCs	11	2.0	11	2.0	0.419	10.8	LOS B	2.1	15.1	0.61	0.55	0.74	39.8
2	T1	All MCs	276	2.0	276	2.0	0.419	10.8	LOS B	2.1	15.1	0.61	0.55	0.74	40.0
3	R2	All MCs	4	25.0	4	25.0	0.419	13.6	LOS B	2.1	15.1	0.61	0.55	0.74	34.1
Approach			291	2.4	291	2.4	0.419	10.9	LOS B	2.1	15.1	0.61	0.55	0.74	39.9
East: Barnsdale Road															
4	L2	All MCs	8	2.0	8	2.0	0.168	8.2	LOS A	0.6	4.1	0.56	0.52	0.56	38.0
5	T1	All MCs	88	2.0	88	2.0	0.168	8.2	LOS A	0.6	4.1	0.56	0.52	0.56	41.9
6	R2	All MCs	2	2.0	2	2.0	0.168	8.2	LOS A	0.6	4.1	0.56	0.52	0.56	41.8
Approach			98	2.0	98	2.0	0.168	8.2	LOS A	0.6	4.1	0.56	0.52	0.56	41.6
North: Prince of Wales Drive															
7	L2	All MCs	3	2.0	3	2.0	0.864	22.8	LOS C	23.8	169.2	0.93	0.67	1.27	27.0
8	T1	All MCs	531	2.0	531	2.0	0.864	22.8	LOS C	23.8	169.2	0.93	0.67	1.27	30.6
9	R2	All MCs	456	2.0	456	2.0	0.864	18.5	LOS C	23.8	169.2	0.81	0.60	1.06	36.8
Approach			990	2.0	990	2.0	0.864	20.8	LOS C	23.8	169.2	0.87	0.64	1.17	33.4
West: Barnsdale Road															
10	L2	All MCs	342	5.0	342	5.0	0.732	23.2	LOS C	6.9	50.8	0.83	0.94	1.60	31.4
11	T1	All MCs	108	7.0	108	7.0	0.732	23.5	LOS C	6.9	50.8	0.83	0.94	1.60	27.5
12	R2	All MCs	4	2.0	4	2.0	0.732	22.8	LOS C	6.9	50.8	0.83	0.94	1.60	29.1
Approach			454	5.4	454	5.4	0.732	23.2	LOS C	6.9	50.8	0.83	0.94	1.60	30.5
All Vehicles			1833	2.9	1833	2.9	0.864	19.2	LOS C	23.8	169.2	0.80	0.70	1.18	33.7

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Appendix M

Synchro and Sidra Worksheets – 2036 Future Background Horizon

CGH TRANSPORTATION

MOVEMENT SUMMARY

Site: 101 [Borrisokane Road at Cambrian Road FB2036 AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Borrisokane															
2	T1	All MCs	202	10.0	202	10.0	0.320	7.8	LOS A	1.3	10.1	0.42	0.58	0.42	62.0
3	R2	All MCs	68	10.0	68	10.0	0.320	7.3	LOS A	1.3	10.1	0.42	0.58	0.42	58.7
Approach			270	10.0	270	10.0	0.320	7.7	LOS A	1.3	10.1	0.42	0.58	0.42	61.1
East: Cambrian															
4	L2	All MCs	140	10.0	140	10.0	0.578	12.5	LOS B	3.7	28.0	0.57	0.63	0.60	56.8
6	R2	All MCs	357	9.0	357	9.0	0.578	7.4	LOS A	3.7	28.0	0.57	0.63	0.60	57.8
Approach			497	9.3	497	9.3	0.578	8.8	LOS A	3.7	28.0	0.57	0.63	0.60	57.5
North: Borrisokane															
7	L2	All MCs	207	17.0	207	17.0	0.405	12.2	LOS B	1.9	15.0	0.38	0.61	0.38	54.5
8	T1	All MCs	154	13.0	154	13.0	0.405	7.5	LOS A	1.9	15.0	0.38	0.61	0.38	59.3
Approach			361	15.3	361	15.3	0.405	10.2	LOS B	1.9	15.0	0.38	0.61	0.38	56.5
All Vehicles			1128	11.4	1128	11.4	0.578	9.0	LOS A	3.7	28.0	0.47	0.61	0.49	58.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: 101 [Borrisokane Road at Cambrian Road FB2036 PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Borrisokane															
2	T1	All MCs	198	3.0	198	3.0	0.432	8.7	LOS A	2.1	15.0	0.55	0.66	0.57	63.1
3	R2	All MCs	140	8.0	140	8.0	0.432	8.4	LOS A	2.1	15.0	0.55	0.66	0.57	58.6
Approach			338	5.1	338	5.1	0.432	8.6	LOS A	2.1	15.0	0.55	0.66	0.57	61.2
East: Cambrian															
4	L2	All MCs	126	4.0	126	4.0	0.482	11.5	LOS B	2.5	18.7	0.48	0.61	0.48	58.9
6	R2	All MCs	302	7.0	302	7.0	0.482	6.5	LOS A	2.5	18.7	0.48	0.61	0.48	58.8
Approach			428	6.1	428	6.1	0.482	8.0	LOS A	2.5	18.7	0.48	0.61	0.48	58.8
North: Borrisokane															
7	L2	All MCs	319	6.0	319	6.0	0.540	12.0	LOS B	3.3	24.3	0.44	0.60	0.44	56.9
8	T1	All MCs	203	2.0	203	2.0	0.540	7.3	LOS A	3.3	24.3	0.44	0.60	0.44	61.6
Approach			522	4.4	522	4.4	0.540	10.2	LOS B	3.3	24.3	0.44	0.60	0.44	58.7
All Vehicles			1288	5.2	1288	5.2	0.540	9.0	LOS A	3.3	24.3	0.48	0.62	0.49	59.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	74	138	63	28	270	72	126	14	27	76	5	100
Future Volume (vph)	74	138	63	28	270	72	126	14	27	76	5	100
Satd. Flow (prot)	1523	1424	0	1658	1639	0	1013	1572	0	1595	1369	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1523	1424	0	1658	1639	0	1013	1572	0	1595	1369	0
Lane Group Flow (vph)	74	201	0	28	342	0	126	41	0	76	105	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 48.1%		ICU Level of Service A	
Analysis Period (min) 15			

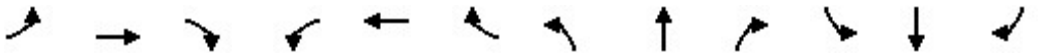
Intersection	
Int Delay, s/veh	9.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	74	138	63	28	270	72	126	14	27	76	5	100
Future Vol, veh/h	74	138	63	28	270	72	126	14	27	76	5	100
Conflicting Peds, #/hr	6	0	0	0	0	6	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	37.5	-	-	37.5	-	-	30	-	-	30	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	11	5	50	2	3	13	67	2	2	6	100	7
Mvmt Flow	74	138	63	28	270	72	126	14	27	76	5	100

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	348	0	0	201	0	0	733	722	170	706	717	312
Stage 1	-	-	-	-	-	-	318	318	-	368	368	-
Stage 2	-	-	-	-	-	-	415	404	-	338	349	-
Critical Hdwy	4.21	-	-	4.12	-	-	7.77	6.52	6.22	7.16	7.5	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	6.77	5.52	-	6.16	6.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.77	5.52	-	6.16	6.5	-
Follow-up Hdwy	2.299	-	-	2.218	-	-	4.103	4.018	3.318	3.554	4.9	3.363
Pot Cap-1 Maneuver	1162	-	-	1371	-	-	266	353	874	345	258	717
Stage 1	-	-	-	-	-	-	575	654	-	644	481	-
Stage 2	-	-	-	-	-	-	505	599	-	668	491	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1157	-	-	1371	-	-	211	322	874	302	236	714
Mov Cap-2 Maneuver	-	-	-	-	-	-	211	322	-	302	236	-
Stage 1	-	-	-	-	-	-	538	612	-	600	469	-
Stage 2	-	-	-	-	-	-	421	584	-	592	460	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.2	0.6	36.6	15.5
HCM LOS			E	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	211	551	1157	-	-	1371	-	-	302	651
HCM Lane V/C Ratio	0.597	0.074	0.064	-	-	0.02	-	-	0.252	0.161
HCM Control Delay (s)	44.6	12.1	8.3	-	-	7.7	-	-	20.9	11.6
HCM Lane LOS	E	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	3.4	0.2	0.2	-	-	0.1	-	-	1	0.6



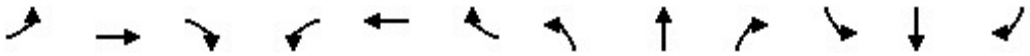
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	219	300	32	331	145	117	27	35	15	76	105	80
Future Volume (vph)	219	300	32	331	145	117	27	35	15	76	105	80
Satd. Flow (prot)	0	1689	0	0	1648	0	0	1671	0	0	1626	0
Flt Permitted		0.641			0.570			0.769			0.880	
Satd. Flow (perm)	0	1104	0	0	966	0	0	1307	0	0	1451	0
Satd. Flow (RTOR)		7			27			12			23	
Lane Group Flow (vph)	0	551	0	0	593	0	0	77	0	0	261	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	25.8	25.8		25.8	25.8		25.2	25.2		25.2	25.2	
Total Split (s)	64.5	64.5		64.5	64.5		25.5	25.5		25.5	25.5	
Total Split (%)	71.7%	71.7%		71.7%	71.7%		28.3%	28.3%		28.3%	28.3%	
Yellow Time (s)	5.1	5.1		5.1	5.1		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.7	1.7		1.7	1.7		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.8			6.8			6.2			6.2	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Act Effct Green (s)		58.6			58.6			17.7			17.7	
Actuated g/C Ratio		0.66			0.66			0.20			0.20	
v/c Ratio		0.76			0.92			0.29			0.86	
Control Delay		19.6			36.9			28.7			57.6	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		19.6			36.9			28.7			57.6	
LOS		B			D			C			E	
Approach Delay		19.6			36.9			28.7			57.6	
Approach LOS		B			D			C			E	
Queue Length 50th (m)		60.2			80.6			9.4			39.3	
Queue Length 95th (m)		#115.0			#161.5			21.3			#77.5	
Internal Link Dist (m)		543.4			978.4			562.8			300.3	
Turn Bay Length (m)												
Base Capacity (vph)		727			643			291			331	
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		0.76			0.92			0.26			0.79	

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 89.3
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.92

Intersection Signal Delay: 33.7 Intersection LOS: C
Intersection Capacity Utilization 82.3% 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: 3: Hwy 416/Borrisokane & Barnsdale





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	82	246	23	4	347	35	10	79	1	247	126	151
Future Volume (vph)	82	246	23	4	347	35	10	79	1	247	126	151
Satd. Flow (prot)	0	1683	0	0	1662	0	0	1660	0	0	1631	0
Flt Permitted		0.988			0.999			0.994			0.977	
Satd. Flow (perm)	0	1683	0	0	1662	0	0	1660	0	0	1631	0
Lane Group Flow (vph)	0	351	0	0	386	0	0	90	0	0	524	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 89.5%		ICU Level of Service E	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	40.1
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	82	246	23	4	347	35	10	79	1	247	126	151
Future Vol, veh/h	82	246	23	4	347	35	10	79	1	247	126	151
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	7	2	8	2	6	3	10	6	2	2	4	2
Mvmt Flow	82	246	23	4	347	35	10	79	1	247	126	151
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	27	29.9	13.9	61
HCM LOS	D	D	B	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	11%	23%	1%	47%
Vol Thru, %	88%	70%	90%	24%
Vol Right, %	1%	7%	9%	29%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	90	351	386	524
LT Vol	10	82	4	247
Through Vol	79	246	347	126
RT Vol	1	23	35	151
Lane Flow Rate	90	351	386	524
Geometry Grp	1	1	1	1
Degree of Util (X)	0.212	0.717	0.765	0.983
Departure Headway (Hd)	8.49	7.352	7.131	6.752
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	420	491	506	534
Service Time	6.589	5.418	5.194	4.805
HCM Lane V/C Ratio	0.214	0.715	0.763	0.981
HCM Control Delay	13.9	27	29.9	61
HCM Lane LOS	B	D	D	F
HCM 95th-tile Q	0.8	5.7	6.7	13.4



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	10	37	225	49	62	232
Future Volume (vph)	10	37	225	49	62	232
Satd. Flow (prot)	1424	0	1601	0	1470	1679
Flt Permitted	0.989				0.950	
Satd. Flow (perm)	1424	0	1601	0	1470	1679
Lane Group Flow (vph)	47	0	274	0	62	232
Sign Control	Stop		Free			Free

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 32.6%		ICU Level of Service A	
Analysis Period (min) 15			

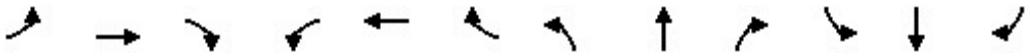
Intersection	
Int Delay, s/veh	1.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	37	225	49	62	232
Future Vol, veh/h	10	37	225	49	62	232
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	45	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	5	12	8	11	15	6
Mvmt Flow	10	37	225	49	62	232

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	606	250	0	0	274	0
Stage 1	250	-	-	-	-	-
Stage 2	356	-	-	-	-	-
Critical Hdwy	6.45	6.32	-	-	4.25	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.408	-	-	2.335	-
Pot Cap-1 Maneuver	455	765	-	-	1218	-
Stage 1	785	-	-	-	-	-
Stage 2	702	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	432	765	-	-	1218	-
Mov Cap-2 Maneuver	432	-	-	-	-	-
Stage 1	785	-	-	-	-	-
Stage 2	666	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.9	0	1.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	657	1218	-
HCM Lane V/C Ratio	-	-	0.072	0.051	-
HCM Control Delay (s)	-	-	10.9	8.1	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0.2	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	1	244	24	64	174	15	12	0	302	5	2	1
Future Volume (vph)	1	244	24	64	174	15	12	0	302	5	2	1
Satd. Flow (prot)	0	1274	0	0	1273	0	0	1127	0	0	1040	0
Flt Permitted					0.988			0.998			0.970	
Satd. Flow (perm)	0	1274	0	0	1273	0	0	1127	0	0	1040	0
Lane Group Flow (vph)	0	269	0	0	253	0	0	314	0	0	8	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 59.8%	ICU Level of Service B	
Analysis Period (min) 15		

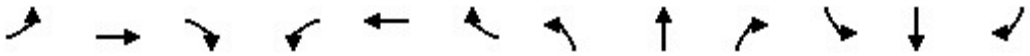
Intersection	
Int Delay, s/veh	6.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	1	244	24	64	174	15	12	0	302	5	2	1
Future Vol, veh/h	1	244	24	64	174	15	12	0	302	5	2	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	37	50	50	28	86	67	60	36	100	2	2
Mvmt Flow	1	244	24	64	174	15	12	0	302	5	2	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	189	0	0	268	0	0	569	575	256	719	580	182
Stage 1	-	-	-	-	-	-	258	258	-	310	310	-
Stage 2	-	-	-	-	-	-	311	317	-	409	270	-
Critical Hdwy	4.12	-	-	4.6	-	-	7.77	7.1	6.56	8.1	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.77	6.1	-	7.1	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.77	6.1	-	7.1	5.52	-
Follow-up Hdwy	2.218	-	-	2.65	-	-	4.103	4.54	3.624	4.4	4.018	3.318
Pot Cap-1 Maneuver	1385	-	-	1063	-	-	349	359	707	244	426	861
Stage 1	-	-	-	-	-	-	623	600	-	533	659	-
Stage 2	-	-	-	-	-	-	581	562	-	464	686	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1385	-	-	1063	-	-	329	335	707	132	397	861
Mov Cap-2 Maneuver	-	-	-	-	-	-	329	335	-	132	397	-
Stage 1	-	-	-	-	-	-	622	599	-	532	615	-
Stage 2	-	-	-	-	-	-	540	524	-	266	685	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	2.2	14.8	25.8
HCM LOS			B	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	677	1385	-	-	1063	-	-	181
HCM Lane V/C Ratio	0.464	0.001	-	-	0.06	-	-	0.044
HCM Control Delay (s)	14.8	7.6	0	-	8.6	0	-	25.8
HCM Lane LOS	B	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	2.5	0	-	-	0.2	-	-	0.1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	9	10	10	5	101	10	33	20	152	29	10
Future Volume (vph)	10	9	10	10	5	101	10	33	20	152	29	10
Satd. Flow (prot)	0	1635	0	0	1533	0	0	1657	0	0	1667	0
Flt Permitted		0.983			0.996			0.992			0.962	
Satd. Flow (perm)	0	1635	0	0	1533	0	0	1657	0	0	1667	0
Lane Group Flow (vph)	0	29	0	0	116	0	0	63	0	0	191	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 32.2%		ICU Level of Service A	
Analysis Period (min) 15			

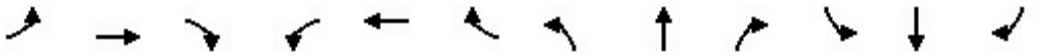
Intersection	
Int Delay, s/veh	6.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	10	9	10	10	5	101	10	33	20	152	29	10
Future Vol, veh/h	10	9	10	10	5	101	10	33	20	152	29	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	9	10	10	5	101	10	33	20	152	29	10

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	454	411	34	411	406	43	39	0	0	53	0	0
Stage 1	338	338	-	63	63	-	-	-	-	-	-	-
Stage 2	116	73	-	348	343	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	516	531	1039	551	534	1027	1571	-	-	1553	-	-
Stage 1	676	641	-	948	842	-	-	-	-	-	-	-
Stage 2	889	834	-	668	637	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	424	475	1039	494	477	1027	1571	-	-	1553	-	-
Mov Cap-2 Maneuver	424	475	-	494	477	-	-	-	-	-	-	-
Stage 1	671	577	-	941	836	-	-	-	-	-	-	-
Stage 2	791	828	-	586	573	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.8	9.6	1.2	6
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1571	-	-	556	899	1553	-	-
HCM Lane V/C Ratio	0.006	-	-	0.052	0.129	0.098	-	-
HCM Control Delay (s)	7.3	0	-	11.8	9.6	7.6	0	-
HCM Lane LOS	A	A	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.4	0.3	-	-



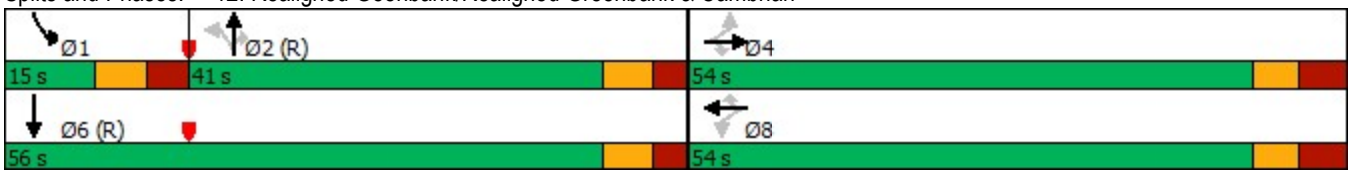
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	226	10	32	337	119	15	428	35	78	255	13
Future Volume (vph)	7	226	10	32	337	119	15	428	35	78	255	13
Satd. Flow (prot)	1658	3316	1483	1658	3316	1483	1658	3316	1483	3216	3285	0
Flt Permitted	0.522			0.611			0.587			0.950		
Satd. Flow (perm)	905	3316	1455	1061	3316	1450	1006	3316	1452	3188	3285	0
Satd. Flow (RTOR)			116			119			123		6	
Lane Group Flow (vph)	7	226	10	32	337	119	15	428	35	78	268	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Prot	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4		4	8		8	2		2			
Detector Phase	4	4	4	8	8	8	2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	52.8	52.8	52.8	52.8	52.8	52.8	38.1	38.1	38.1	12.6	38.1	
Total Split (s)	54.0	54.0	54.0	54.0	54.0	54.0	41.0	41.0	41.0	15.0	56.0	
Total Split (%)	49.1%	49.1%	49.1%	49.1%	49.1%	49.1%	37.3%	37.3%	37.3%	13.6%	50.9%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	4.2	4.2	4.2	4.2	4.2	
All-Red Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	2.9	2.9	2.9	3.4	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)	7.8	7.8	7.8	7.8	7.8	7.8	7.1	7.1	7.1	7.6	7.1	
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	None	C-Max	
Act Effct Green (s)	26.7	26.7	26.7	26.7	26.7	26.7	55.8	55.8	55.8	7.6	68.4	
Actuated g/C Ratio	0.24	0.24	0.24	0.24	0.24	0.24	0.51	0.51	0.51	0.07	0.62	
v/c Ratio	0.03	0.28	0.02	0.12	0.42	0.27	0.03	0.25	0.04	0.35	0.13	
Control Delay	22.9	32.3	0.1	27.2	34.8	5.3	18.3	15.2	1.1	53.0	11.6	
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	22.9	32.3	0.1	27.2	34.8	5.3	18.3	15.2	1.1	53.0	11.6	
LOS	C	C	A	C	C	A	B	B	A	D	B	
Approach Delay		30.7			27.1			14.2			20.9	
Approach LOS		C			C			B			C	
Queue Length 50th (m)	1.3	23.5	0.0	6.1	36.3	0.0	0.7	15.6	0.1	8.3	8.1	
Queue Length 95th (m)	3.7	24.0	0.0	10.3	34.9	10.7	6.5	44.2	1.6	15.7	25.3	
Internal Link Dist (m)		399.7			554.5			777.1			190.3	
Turn Bay Length (m)	60.0		65.0	60.0		65.0	85.0		160.0	70.0		
Base Capacity (vph)	380	1392	678	445	1392	678	510	1683	797	233	2044	
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	0.02	0.16	0.01	0.07	0.24	0.18	0.03	0.25	0.04	0.33	0.13	

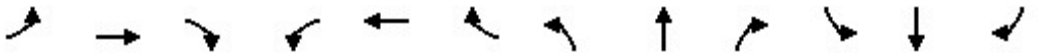
Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green, Master Intersection
Natural Cycle: 105
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.42

Intersection Signal Delay: 22.3	Intersection LOS: C
Intersection Capacity Utilization 79.2%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 12: Realigned Geenbank/Realigned Greenbank & Cambrian





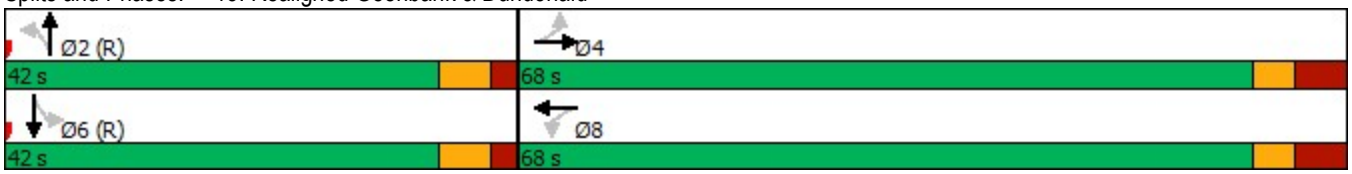
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	153	25	33	10	29	82	17	249	10	56	157	76
Future Volume (vph)	153	25	33	10	29	82	17	249	10	56	157	76
Satd. Flow (prot)	1658	1582	0	1658	1533	0	1658	3291	0	1658	3117	0
Flt Permitted	0.685			0.719			0.607			0.592		
Satd. Flow (perm)	1191	1582	0	1250	1533	0	1048	3291	0	1022	3117	0
Satd. Flow (RTOR)		33			82			4			76	
Lane Group Flow (vph)	153	58	0	10	111	0	17	259	0	56	233	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	46.8	46.8		46.8	46.8		24.4	24.4		24.4	24.4	
Total Split (s)	68.0	68.0		68.0	68.0		42.0	42.0		42.0	42.0	
Total Split (%)	61.8%	61.8%		61.8%	61.8%		38.2%	38.2%		38.2%	38.2%	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.2	4.2		4.2	4.2	
All-Red Time (s)	4.5	4.5		4.5	4.5		2.2	2.2		2.2	2.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.8	7.8		7.8	7.8		6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)	22.1	22.1		22.1	22.1		73.7	73.7		73.7	73.7	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.67	0.67		0.67	0.67	
v/c Ratio	0.64	0.17		0.04	0.30		0.02	0.12		0.08	0.11	
Control Delay	51.5	17.7		29.4	12.6		13.4	10.4		16.2	10.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	51.5	17.7		29.4	12.6		13.4	10.4		16.2	10.8	
LOS	D	B		C	B		B	B		B	B	
Approach Delay		42.2			14.0			10.6			11.8	
Approach LOS		D			B			B			B	
Queue Length 50th (m)	30.2	4.3		1.8	5.2		1.2	9.5		3.1	4.4	
Queue Length 95th (m)	38.8	11.5		5.1	15.8		8.5	33.7		17.0	21.7	
Internal Link Dist (m)		406.6			523.4			466.1			777.1	
Turn Bay Length (m)	45.0			40.0			45.0			60.0		
Base Capacity (vph)	651	880		684	876		702	2206		684	2113	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.24	0.07		0.01	0.13		0.02	0.12		0.08	0.11	

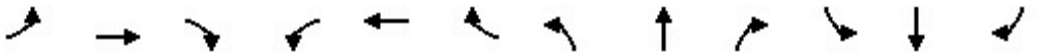
Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.64

Intersection Signal Delay: 18.9	Intersection LOS: B
Intersection Capacity Utilization 58.7%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 13: Realigned Geenbank & Dundonald





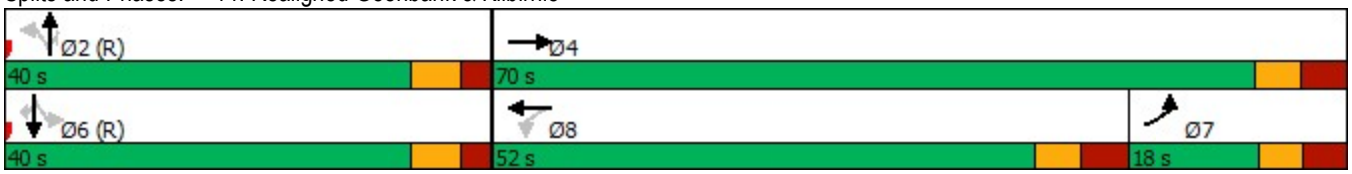
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	51	4	23	10	2	79	11	136	10	52	107	31
Future Volume (vph)	51	4	23	10	2	79	11	136	10	52	107	31
Satd. Flow (prot)	3216	1501	0	1658	1467	0	1658	3316	1483	1658	3316	1483
Flt Permitted	0.950			0.740			0.684			0.666		
Satd. Flow (perm)	3197	1501	0	1286	1467	0	1181	3316	1436	1151	3316	1436
Satd. Flow (RTOR)		23			79				123			123
Lane Group Flow (vph)	51	27	0	10	81	0	11	136	10	52	107	31
Turn Type	Prot	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	7	4			8			2			6	
Permitted Phases				8			2		2	6		6
Detector Phase	7	4		8	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	12.4	48.7		48.7	48.7		29.8	29.8	29.8	29.8	29.8	29.8
Total Split (s)	18.0	70.0		52.0	52.0		40.0	40.0	40.0	40.0	40.0	40.0
Total Split (%)	16.4%	63.6%		47.3%	47.3%		36.4%	36.4%	36.4%	36.4%	36.4%	36.4%
Yellow Time (s)	3.7	3.7		3.7	3.7		4.2	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	3.7	4.0		4.0	4.0		2.6	2.6	2.6	2.6	2.6	2.6
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)	7.4	7.7		7.7	7.7		6.8	6.8	6.8	6.8	6.8	6.8
Lead/Lag	Lag			Lead	Lead							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	7.1	28.2		16.2	16.2		72.2	72.2	72.2	72.2	72.2	72.2
Actuated g/C Ratio	0.06	0.26		0.15	0.15		0.66	0.66	0.66	0.66	0.66	0.66
v/c Ratio	0.25	0.07		0.05	0.29		0.01	0.06	0.01	0.07	0.05	0.03
Control Delay	51.2	9.5		34.1	9.9		9.2	6.9	0.1	16.5	14.1	3.0
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.2	9.5		34.1	9.9		9.2	6.9	0.1	16.5	14.1	3.0
LOS	D	A		C	A		A	A	A	B	B	A
Approach Delay		36.8			12.5			6.7			12.9	
Approach LOS		D			B			A			B	
Queue Length 50th (m)	5.4	0.7		2.0	0.4		0.4	2.5	0.0	4.8	5.1	0.0
Queue Length 95th (m)	11.3	4.6		4.9	9.8		3.2	10.2	0.0	19.1	16.8	1.5
Internal Link Dist (m)		474.8			483.3			501.2			466.1	
Turn Bay Length (m)	30.0			40.0			45.0		85.0	65.0		80.0
Base Capacity (vph)	309	860		517	637		775	2177	985	755	2177	985
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	0.17	0.03		0.02	0.13		0.01	0.06	0.01	0.07	0.05	0.03

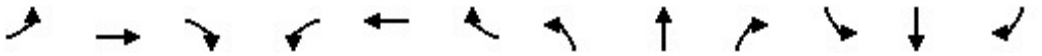
Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 37 (34%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.29

Intersection Signal Delay: 14.6	Intersection LOS: B
Intersection Capacity Utilization 57.5%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 14: Realigned Geenbank & Kilbirnie





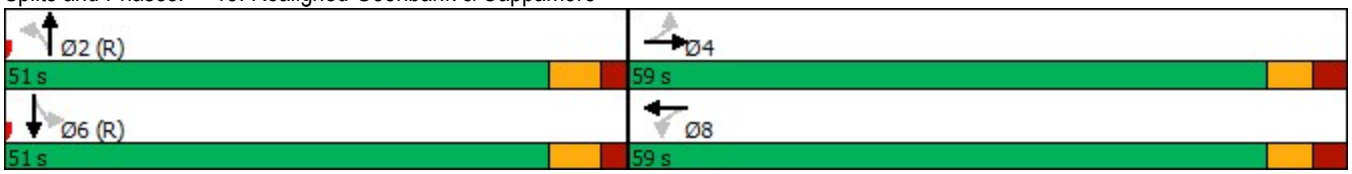
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	47	6	5	28	32	3	105	2	17	106	7
Future Volume (vph)	10	47	6	5	28	32	3	105	2	17	106	7
Satd. Flow (prot)	1658	1712	0	1658	1590	0	1658	3304	0	1658	3279	0
Flt Permitted	0.718			0.722			0.681			0.684		
Satd. Flow (perm)	1246	1712	0	1253	1590	0	1172	3304	0	1177	3279	0
Satd. Flow (RTOR)		6			32			2			7	
Lane Group Flow (vph)	10	53	0	5	60	0	3	107	0	17	113	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	32.7	32.7		32.7	32.7		23.4	23.4		23.4	23.4	
Total Split (s)	59.0	59.0		59.0	59.0		51.0	51.0		51.0	51.0	
Total Split (%)	53.6%	53.6%		53.6%	53.6%		46.4%	46.4%		46.4%	46.4%	
Yellow Time (s)	3.7	3.7		3.7	3.7		4.2	4.2		4.2	4.2	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.2	2.2		2.2	2.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.7	6.7		6.7	6.7		6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)	13.2	13.2		13.2	13.2		88.3	88.3		88.3	88.3	
Actuated g/C Ratio	0.12	0.12		0.12	0.12		0.80	0.80		0.80	0.80	
v/c Ratio	0.07	0.25		0.03	0.28		0.00	0.04		0.02	0.04	
Control Delay	42.1	41.9		39.0	25.8		2.3	1.7		2.7	2.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	42.1	41.9		39.0	25.8		2.3	1.7		2.7	2.1	
LOS	D	D		D	C		A	A		A	A	
Approach Delay		42.0			26.8			1.8			2.2	
Approach LOS		D			C			A			A	
Queue Length 50th (m)	1.9	9.7		1.0	5.7		0.0	0.9		0.4	1.4	
Queue Length 95th (m)	6.3	18.6		3.9	15.4		0.7	5.7		2.3	4.3	
Internal Link Dist (m)		431.8			441.9			239.7			501.2	
Turn Bay Length (m)	30.0			30.0			55.0			55.0		
Base Capacity (vph)	592	817		595	772		940	2653		944	2633	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.02	0.06		0.01	0.08		0.00	0.04		0.02	0.04	

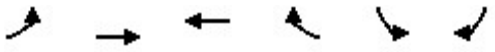
Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 28 (25%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.28

Intersection Signal Delay: 13.2	Intersection LOS: B
Intersection Capacity Utilization 35.5%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 15: Realigned Geenbank & Cappamore





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	57	313	455	53	39	80
Future Volume (vph)	57	313	455	53	39	80
Satd. Flow (prot)	1658	1745	1745	1483	1658	1483
Flt Permitted	0.281				0.950	
Satd. Flow (perm)	490	1745	1745	1483	1658	1483
Satd. Flow (RTOR)				53		80
Lane Group Flow (vph)	57	313	455	53	39	80
Turn Type	Perm	NA	NA	Perm	Perm	Perm
Protected Phases		4	8			
Permitted Phases	4			8	6	6
Detector Phase	4	4	8	8	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	5.0
Minimum Split (s)	32.2	32.2	32.2	32.2	11.5	11.5
Total Split (s)	80.0	80.0	80.0	80.0	30.0	30.0
Total Split (%)	72.7%	72.7%	72.7%	72.7%	27.3%	27.3%
Yellow Time (s)	5.1	5.1	5.1	5.1	4.2	4.2
All-Red Time (s)	2.1	2.1	2.1	2.1	2.3	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.2	7.2	7.2	7.2	6.5	6.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	C-Max	C-Max
Act Effct Green (s)	38.6	38.6	38.6	38.6	57.7	57.7
Actuated g/C Ratio	0.35	0.35	0.35	0.35	0.52	0.52
v/c Ratio	0.33	0.51	0.74	0.10	0.04	0.10
Control Delay	28.6	29.9	38.1	5.2	16.5	8.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.6	29.9	38.1	5.2	16.5	8.2
LOS	C	C	D	A	B	A
Approach Delay		29.7	34.7		10.9	
Approach LOS		C	C		B	
Queue Length 50th (m)	9.0	52.9	85.4	0.0	3.8	0.0
Queue Length 95th (m)	16.5	62.7	97.7	6.5	11.4	7.6
Internal Link Dist (m)		978.4	757.0		239.7	
Turn Bay Length (m)	105.0			135.0		
Base Capacity (vph)	324	1154	1154	999	869	815
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	0.18	0.27	0.39	0.05	0.04	0.10

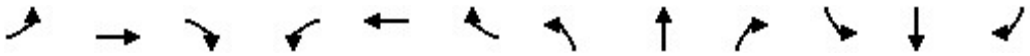
Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 59 (54%), Referenced to phase 2: and 6:SBL, Start of Green
Natural Cycle: 45
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 30.0	Intersection LOS: C
Intersection Capacity Utilization 55.2%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 16: Barnsdale & Realigned Geenbank





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	89	258	111	27	241	93	98	7	36	88	5	90
Future Volume (vph)	89	258	111	27	241	93	98	7	36	88	5	90
Satd. Flow (prot)	1523	1434	0	1658	1612	0	1013	1525	0	1595	1365	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1523	1434	0	1658	1612	0	1013	1525	0	1595	1365	0
Lane Group Flow (vph)	89	369	0	27	334	0	98	43	0	88	95	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 47.2%		ICU Level of Service A	
Analysis Period (min) 15			

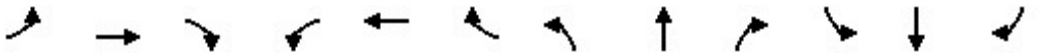
Intersection	
Int Delay, s/veh	9.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	89	258	111	27	241	93	98	7	36	88	5	90
Future Vol, veh/h	89	258	111	27	241	93	98	7	36	88	5	90
Conflicting Peds, #/hr	6	0	0	0	0	6	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	37.5	-	-	37.5	-	-	30	-	-	30	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	11	5	50	2	3	13	67	2	2	6	100	7
Mvmt Flow	89	258	111	27	241	93	98	7	36	88	5	90

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	340	0	0	369	0	0	881	886	314	861	895	294
Stage 1	-	-	-	-	-	-	492	492	-	348	348	-
Stage 2	-	-	-	-	-	-	389	394	-	513	547	-
Critical Hdwy	4.21	-	-	4.12	-	-	7.77	6.52	6.22	7.16	7.5	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	6.77	5.52	-	6.16	6.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.77	5.52	-	6.16	6.5	-
Follow-up Hdwy	2.299	-	-	2.218	-	-	4.103	4.018	3.318	3.554	4.9	3.363
Pot Cap-1 Maneuver	1171	-	-	1190	-	-	208	284	726	271	197	734
Stage 1	-	-	-	-	-	-	454	548	-	660	492	-
Stage 2	-	-	-	-	-	-	523	605	-	537	388	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1166	-	-	1190	-	-	165	255	726	232	177	731
Mov Cap-2 Maneuver	-	-	-	-	-	-	165	255	-	232	177	-
Stage 1	-	-	-	-	-	-	419	506	-	607	478	-
Stage 2	-	-	-	-	-	-	444	588	-	465	359	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.6	0.6	41.5	20.4
HCM LOS			E	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	165	558	1166	-	-	1190	-	-	232	628
HCM Lane V/C Ratio	0.594	0.077	0.076	-	-	0.023	-	-	0.379	0.151
HCM Control Delay (s)	54.5	12	8.3	-	-	8.1	-	-	29.7	11.8
HCM Lane LOS	F	B	A	-	-	A	-	-	D	B
HCM 95th %tile Q(veh)	3.2	0.2	0.2	-	-	0.1	-	-	1.7	0.5



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	151	479	17	222	211	106	27	48	18	143	141	138
Future Volume (vph)	151	479	17	222	211	106	27	48	18	143	141	138
Satd. Flow (prot)	0	1705	0	0	1658	0	0	1676	0	0	1616	0
Flt Permitted		0.761			0.579			0.818			0.856	
Satd. Flow (perm)	0	1313	0	0	979	0	0	1390	0	0	1407	0
Satd. Flow (RTOR)		2			22			14			28	
Lane Group Flow (vph)	0	647	0	0	539	0	0	93	0	0	422	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	25.8	25.8		25.8	25.8		25.2	25.2		25.2	25.2	
Total Split (s)	57.0	57.0		57.0	57.0		33.0	33.0		33.0	33.0	
Total Split (%)	63.3%	63.3%		63.3%	63.3%		36.7%	36.7%		36.7%	36.7%	
Yellow Time (s)	5.1	5.1		5.1	5.1		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.7	1.7		1.7	1.7		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.8			6.8			6.2			6.2	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Act Effct Green (s)		50.2			50.2			26.7			26.7	
Actuated g/C Ratio		0.56			0.56			0.30			0.30	
v/c Ratio		0.88			0.97			0.22			0.97	
Control Delay		33.5			52.5			21.8			66.4	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		33.5			52.5			21.8			66.4	
LOS		C			D			C			E	
Approach Delay		33.5			52.5			21.8			66.4	
Approach LOS		C			D			C			E	
Queue Length 50th (m)		90.7			81.6			10.1			67.4	
Queue Length 95th (m)		#165.7			#153.8			21.9			#125.5	
Internal Link Dist (m)		543.4			978.4			562.8			300.3	
Turn Bay Length (m)												
Base Capacity (vph)		734			556			423			438	
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		0.88			0.97			0.22			0.96	

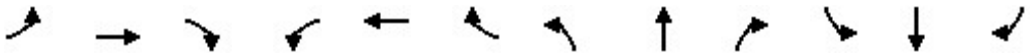
Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 89.9
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.97

Intersection Signal Delay: 47.0	Intersection LOS: D
Intersection Capacity Utilization 97.1%	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: 3: Hwy 416/Borrisokane & Barnsdale





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	153	373	40	0	342	181	10	126	3	104	146	126
Future Volume (vph)	153	373	40	0	342	181	10	126	3	104	146	126
Satd. Flow (prot)	0	1676	0	0	1616	0	0	1664	0	0	1631	0
Flt Permitted		0.987						0.996			0.986	
Satd. Flow (perm)	0	1676	0	0	1616	0	0	1664	0	0	1631	0
Lane Group Flow (vph)	0	566	0	0	523	0	0	139	0	0	376	0
Sign Control		Stop			Stop			Stop			Stop	

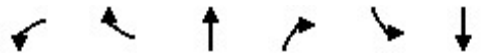
Intersection Summary	
Control Type: Unsignalized	
Intersection Capacity Utilization 106.5%	ICU Level of Service G
Analysis Period (min) 15	

Intersection	
Intersection Delay, s/veh	84.9
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	153	373	40	0	342	181	10	126	3	104	146	126
Future Vol, veh/h	153	373	40	0	342	181	10	126	3	104	146	126
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	7	2	8	2	6	3	10	6	2	2	4	2
Mvmt Flow	153	373	40	0	342	181	10	126	3	104	146	126
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	129.8	87.1	18.5	38.9
HCM LOS	F	F	C	E

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	7%	27%	0%	28%
Vol Thru, %	91%	66%	65%	39%
Vol Right, %	2%	7%	35%	34%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	139	566	523	376
LT Vol	10	153	0	104
Through Vol	126	373	342	146
RT Vol	3	40	181	126
Lane Flow Rate	139	566	523	376
Geometry Grp	1	1	1	1
Degree of Util (X)	0.356	1.186	1.061	0.813
Departure Headway (Hd)	10.067	7.846	7.803	8.393
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	360	470	471	436
Service Time	8.067	5.846	5.803	6.393
HCM Lane V/C Ratio	0.386	1.204	1.11	0.862
HCM Control Delay	18.5	129.8	87.1	38.9
HCM Lane LOS	C	F	F	E
HCM 95th-tile Q	1.6	20.6	15.4	7.5



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	75	80	258	20	62	268
Future Volume (vph)	75	80	258	20	62	268
Satd. Flow (prot)	1488	0	1628	0	1470	1679
Flt Permitted	0.976				0.950	
Satd. Flow (perm)	1488	0	1628	0	1470	1679
Lane Group Flow (vph)	155	0	278	0	62	268
Sign Control	Stop		Free			Free

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 38.8%		ICU Level of Service A	
Analysis Period (min) 15			

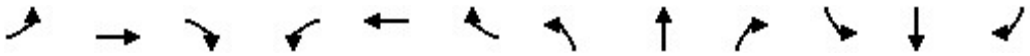
Intersection	
Int Delay, s/veh	3.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	75	80	258	20	62	268
Future Vol, veh/h	75	80	258	20	62	268
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	45	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	5	12	8	11	15	6
Mvmt Flow	75	80	258	20	62	268

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	660	268	0	0	278	0
Stage 1	268	-	-	-	-	-
Stage 2	392	-	-	-	-	-
Critical Hdwy	6.45	6.32	-	-	4.25	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.408	-	-	2.335	-
Pot Cap-1 Maneuver	423	747	-	-	1214	-
Stage 1	770	-	-	-	-	-
Stage 2	676	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	401	747	-	-	1214	-
Mov Cap-2 Maneuver	401	-	-	-	-	-
Stage 1	770	-	-	-	-	-
Stage 2	642	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.7	0	1.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	527	1214	-
HCM Lane V/C Ratio	-	-	0.294	0.051	-
HCM Control Delay (s)	-	-	14.7	8.1	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	1.2	0.2	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	219	18	103	267	7	36	0	418	10	1	0
Future Volume (vph)	0	219	18	103	267	7	36	0	418	10	1	0
Satd. Flow (prot)	0	1277	0	0	1297	0	0	1122	0	0	891	0
Flt Permitted					0.987			0.996			0.957	
Satd. Flow (perm)	0	1277	0	0	1297	0	0	1122	0	0	891	0
Lane Group Flow (vph)	0	237	0	0	377	0	0	454	0	0	11	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 73.0%		ICU Level of Service D	
Analysis Period (min) 15			

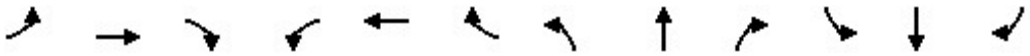
Intersection	
Int Delay, s/veh	11.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	219	18	103	267	7	36	0	418	10	1	0
Future Vol, veh/h	0	219	18	103	267	7	36	0	418	10	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	37	50	50	28	86	67	60	36	100	2	2
Mvmt Flow	0	219	18	103	267	7	36	0	418	10	1	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	274	0	0	237	0	0	705	708	228	914	714	271
Stage 1	-	-	-	-	-	-	228	228	-	477	477	-
Stage 2	-	-	-	-	-	-	477	480	-	437	237	-
Critical Hdwy	4.12	-	-	4.6	-	-	7.77	7.1	6.56	8.1	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.77	6.1	-	7.1	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.77	6.1	-	7.1	5.52	-
Follow-up Hdwy	2.218	-	-	2.65	-	-	4.103	4.54	3.624	4.4	4.018	3.318
Pot Cap-1 Maneuver	1289	-	-	1094	-	-	279	297	734	174	357	768
Stage 1	-	-	-	-	-	-	649	620	-	421	556	-
Stage 2	-	-	-	-	-	-	464	469	-	446	709	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1289	-	-	1094	-	-	255	264	734	69	317	768
Mov Cap-2 Maneuver	-	-	-	-	-	-	255	264	-	69	317	-
Stage 1	-	-	-	-	-	-	649	620	-	421	494	-
Stage 2	-	-	-	-	-	-	412	417	-	192	709	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	2.4	23.2	62
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	639	1289	-	-	1094	-	-	74
HCM Lane V/C Ratio	0.71	-	-	-	0.094	-	-	0.149
HCM Control Delay (s)	23.2	0	-	-	8.6	0	-	62
HCM Lane LOS	C	A	-	-	A	A	-	F
HCM 95th %tile Q(veh)	5.9	0	-	-	0.3	-	-	0.5



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	7	10	20	8	165	10	31	15	108	39	10
Future Volume (vph)	10	7	10	20	8	165	10	31	15	108	39	10
Satd. Flow (prot)	0	1628	0	0	1537	0	0	1667	0	0	1672	0
Flt Permitted		0.982			0.995			0.991			0.967	
Satd. Flow (perm)	0	1628	0	0	1537	0	0	1667	0	0	1672	0
Lane Group Flow (vph)	0	27	0	0	193	0	0	56	0	0	157	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 35.4%		ICU Level of Service A	
Analysis Period (min) 15			

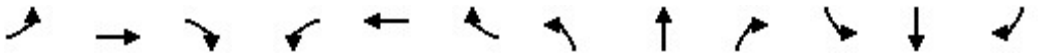
Intersection	
Int Delay, s/veh	7.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	10	7	10	20	8	165	10	31	15	108	39	10
Future Vol, veh/h	10	7	10	20	8	165	10	31	15	108	39	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	7	10	20	8	165	10	31	15	108	39	10

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	405	326	44	328	324	39	49	0	0	46	0	0
Stage 1	260	260	-	59	59	-	-	-	-	-	-	-
Stage 2	145	66	-	269	265	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	556	592	1026	625	594	1033	1558	-	-	1562	-	-
Stage 1	745	693	-	953	846	-	-	-	-	-	-	-
Stage 2	858	840	-	737	689	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	435	546	1026	577	548	1033	1558	-	-	1562	-	-
Mov Cap-2 Maneuver	435	546	-	577	548	-	-	-	-	-	-	-
Stage 1	740	644	-	946	840	-	-	-	-	-	-	-
Stage 2	709	834	-	671	640	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.4	9.9	1.3	5.1
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1558	-	-	593	923	1562	-	-
HCM Lane V/C Ratio	0.006	-	-	0.046	0.209	0.069	-	-
HCM Control Delay (s)	7.3	0	-	11.4	9.9	7.5	0	-
HCM Lane LOS	A	A	-	B	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.8	0.2	-	-



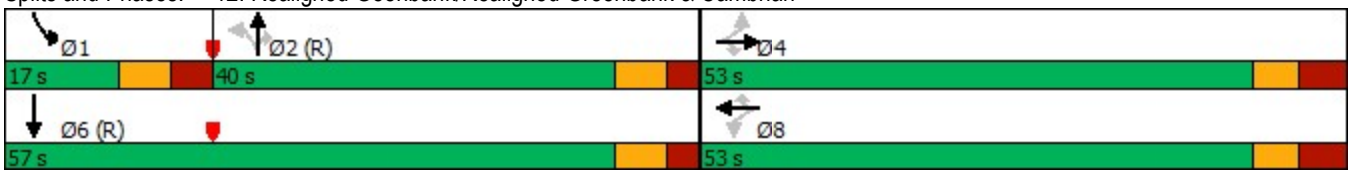
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	370	10	65	332	104	13	394	24	132	473	9
Future Volume (vph)	15	370	10	65	332	104	13	394	24	132	473	9
Satd. Flow (prot)	1658	3316	1483	1658	3316	1483	1658	3316	1483	3216	3303	0
Flt Permitted	0.529			0.488			0.477			0.950		
Satd. Flow (perm)	917	3316	1455	848	3316	1450	821	3316	1452	3187	3303	0
Satd. Flow (RTOR)			116						123		2	
Lane Group Flow (vph)	15	370	10	65	332	104	13	394	24	132	482	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Prot	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4		4	8		8	2		2			
Detector Phase	4	4	4	8	8	8	2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	52.8	52.8	52.8	52.8	52.8	52.8	38.1	38.1	38.1	12.6	38.1	
Total Split (s)	53.0	53.0	53.0	53.0	53.0	53.0	40.0	40.0	40.0	17.0	57.0	
Total Split (%)	48.2%	48.2%	48.2%	48.2%	48.2%	48.2%	36.4%	36.4%	36.4%	15.5%	51.8%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	4.2	4.2	4.2	4.2	4.2	
All-Red Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	2.9	2.9	2.9	3.4	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)	7.8	7.8	7.8	7.8	7.8	7.8	7.1	7.1	7.1	7.6	7.1	
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	None	C-Max	
Act Effct Green (s)	27.3	27.3	27.3	27.3	27.3	27.3	51.2	51.2	51.2	8.9	67.8	
Actuated g/C Ratio	0.25	0.25	0.25	0.25	0.25	0.25	0.47	0.47	0.47	0.08	0.62	
v/c Ratio	0.07	0.45	0.02	0.31	0.40	0.29	0.03	0.26	0.03	0.51	0.24	
Control Delay	24.5	35.0	0.1	32.8	34.1	31.8	21.2	19.5	0.8	55.3	12.6	
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	24.5	35.0	0.1	32.8	34.1	31.8	21.2	19.5	0.8	55.3	12.6	
LOS	C	D	A	C	C	C	C	B	A	E	B	
Approach Delay		33.7			33.5			18.5			21.7	
Approach LOS		C			C			B			C	
Queue Length 50th (m)	2.8	39.8	0.0	12.8	35.3	20.4	1.2	19.2	0.1	14.1	16.6	
Queue Length 95th (m)	6.1	38.2	0.0	18.6	34.4	25.6	5.1	34.3	0.0	23.8	45.5	
Internal Link Dist (m)		399.7			554.5			777.1			190.3	
Turn Bay Length (m)	60.0		65.0	60.0		65.0	85.0		160.0	70.0		
Base Capacity (vph)	376	1362	666	348	1362	595	382	1544	742	279	2035	
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	0.04	0.27	0.02	0.19	0.24	0.17	0.03	0.26	0.03	0.47	0.24	

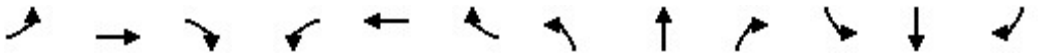
Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green, Master Intersection
Natural Cycle: 105
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.51

Intersection Signal Delay: 26.5	Intersection LOS: C
Intersection Capacity Utilization 87.4%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 12: Realigned Geenbank/Realigned Greenbank & Cambrian





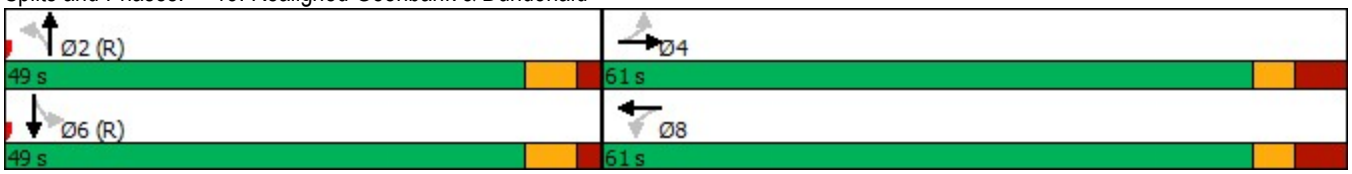
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	112	12	24	10	45	81	32	240	10	102	292	148
Future Volume (vph)	112	12	24	10	45	81	32	240	10	102	292	148
Satd. Flow (prot)	1658	1554	0	1658	1561	0	1658	3291	0	1658	3113	0
Flt Permitted	0.676			0.734			0.497			0.597		
Satd. Flow (perm)	1175	1554	0	1276	1561	0	861	3291	0	1031	3113	0
Satd. Flow (RTOR)		24			81			4			94	
Lane Group Flow (vph)	112	36	0	10	126	0	32	250	0	102	440	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	46.8	46.8		46.8	46.8		24.4	24.4		24.4	24.4	
Total Split (s)	61.0	61.0		61.0	61.0		49.0	49.0		49.0	49.0	
Total Split (%)	55.5%	55.5%		55.5%	55.5%		44.5%	44.5%		44.5%	44.5%	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.2	4.2		4.2	4.2	
All-Red Time (s)	4.5	4.5		4.5	4.5		2.2	2.2		2.2	2.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.8	7.8		7.8	7.8		6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)	19.4	19.4		19.4	19.4		76.4	76.4		76.4	76.4	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.69	0.69		0.69	0.69	
v/c Ratio	0.54	0.12		0.04	0.37		0.05	0.11		0.14	0.20	
Control Delay	46.8	15.4		31.2	16.8		7.8	6.6		4.5	2.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	46.8	15.4		31.2	16.8		7.8	6.6		4.5	2.7	
LOS	D	B		C	B		A	A		A	A	
Approach Delay		39.2			17.8			6.7			3.1	
Approach LOS		D			B			A			A	
Queue Length 50th (m)	23.7	2.4		1.9	8.6		2.0	9.0		4.0	1.8	
Queue Length 95th (m)	33.2	9.3		5.1	19.2		8.3	20.1		6.9	3.9	
Internal Link Dist (m)		406.6			523.4			466.1			777.1	
Turn Bay Length (m)	45.0			40.0			45.0			60.0		
Base Capacity (vph)	568	763		617	796		597	2285		715	2189	
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	0.20	0.05		0.02	0.16		0.05	0.11		0.14	0.20	

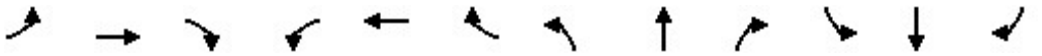
Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 32 (29%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.54

Intersection Signal Delay: 10.6	Intersection LOS: B
Intersection Capacity Utilization 67.4%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 13: Realigned Geenbank & Dundonald





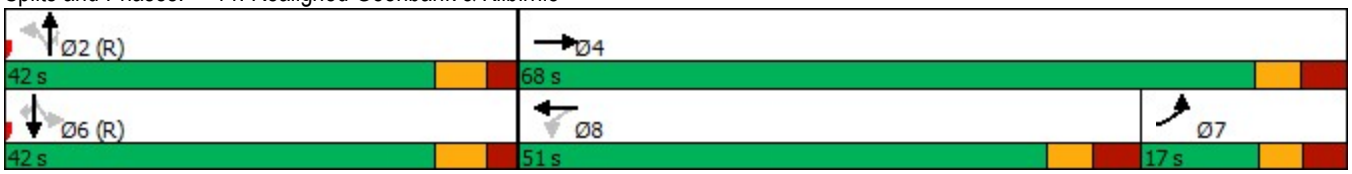
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	43	1	17	10	1	79	22	150	10	94	163	59
Future Volume (vph)	43	1	17	10	1	79	22	150	10	94	163	59
Satd. Flow (prot)	3216	1475	0	1658	1463	0	1658	3316	1483	1658	3316	1483
Flt Permitted	0.950			0.746			0.649			0.657		
Satd. Flow (perm)	3197	1475	0	1297	1463	0	1122	3316	1436	1135	3316	1436
Satd. Flow (RTOR)		17			79				123			123
Lane Group Flow (vph)	43	18	0	10	80	0	22	150	10	94	163	59
Turn Type	Prot	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	7	4			8			2			6	
Permitted Phases				8			2		2	6		6
Detector Phase	7	4		8	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	12.4	48.7		48.7	48.7		29.8	29.8	29.8	29.8	29.8	29.8
Total Split (s)	17.0	68.0		51.0	51.0		42.0	42.0	42.0	42.0	42.0	42.0
Total Split (%)	15.5%	61.8%		46.4%	46.4%		38.2%	38.2%	38.2%	38.2%	38.2%	38.2%
Yellow Time (s)	3.7	3.7		3.7	3.7		4.2	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	3.7	4.0		4.0	4.0		2.6	2.6	2.6	2.6	2.6	2.6
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)	7.4	7.7		7.7	7.7		6.8	6.8	6.8	6.8	6.8	6.8
Lead/Lag	Lag			Lead	Lead							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	6.9	25.2		16.2	16.2		75.2	75.2	75.2	75.2	75.2	75.2
Actuated g/C Ratio	0.06	0.23		0.15	0.15		0.68	0.68	0.68	0.68	0.68	0.68
v/c Ratio	0.21	0.05		0.05	0.28		0.03	0.07	0.01	0.12	0.07	0.06
Control Delay	51.0	9.2		34.0	9.7		11.3	8.8	0.0	9.1	8.0	0.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.0	9.2		34.0	9.7		11.3	8.8	0.0	9.1	8.0	0.2
LOS	D	A		C	A		B	A	A	A	A	A
Approach Delay		38.6			12.4			8.6			6.9	
Approach LOS		D			B			A			A	
Queue Length 50th (m)	4.5	0.2		2.0	0.2		1.2	4.2	0.0	5.7	5.1	0.0
Queue Length 95th (m)	10.1	3.6		4.9	9.7		5.0	10.6	0.0	13.0	10.2	0.0
Internal Link Dist (m)		485.7			483.3			501.2			466.1	
Turn Bay Length (m)	30.0			40.0			45.0		85.0	65.0		80.0
Base Capacity (vph)	280	816		510	623		767	2266	1020	775	2266	1020
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	0.15	0.02		0.02	0.13		0.03	0.07	0.01	0.12	0.07	0.06

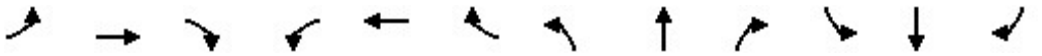
Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 44 (40%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.28

Intersection Signal Delay: 11.1	Intersection LOS: B
Intersection Capacity Utilization 57.5%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 14: Realigned Geenbank & Kilbirnie





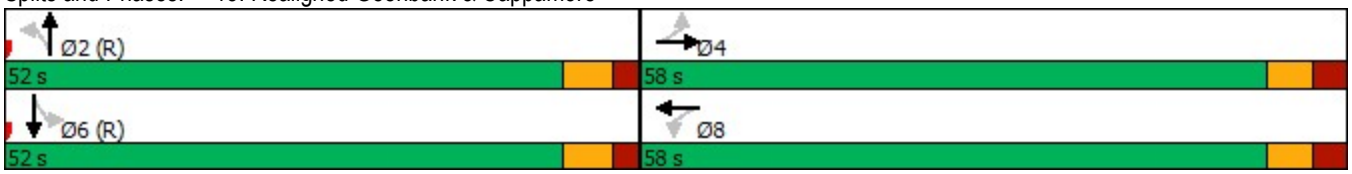
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	45	5	3	56	27	6	135	4	34	134	12
Future Volume (vph)	10	45	5	3	56	27	6	135	4	34	134	12
Satd. Flow (prot)	1658	1716	0	1658	1650	0	1658	3299	0	1658	3266	0
Flt Permitted	0.703			0.724			0.659			0.664		
Satd. Flow (perm)	1220	1716	0	1256	1650	0	1135	3299	0	1143	3266	0
Satd. Flow (RTOR)		5			27			3			10	
Lane Group Flow (vph)	10	50	0	3	83	0	6	139	0	34	146	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	32.7	32.7		32.7	32.7		23.4	23.4		23.4	23.4	
Total Split (s)	58.0	58.0		58.0	58.0		52.0	52.0		52.0	52.0	
Total Split (%)	52.7%	52.7%		52.7%	52.7%		47.3%	47.3%		47.3%	47.3%	
Yellow Time (s)	3.7	3.7		3.7	3.7		4.2	4.2		4.2	4.2	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.2	2.2		2.2	2.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.7	6.7		6.7	6.7		6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)	13.4	13.4		13.4	13.4		88.1	88.1		88.1	88.1	
Actuated g/C Ratio	0.12	0.12		0.12	0.12		0.80	0.80		0.80	0.80	
v/c Ratio	0.07	0.23		0.02	0.37		0.01	0.05		0.04	0.06	
Control Delay	40.9	40.1		37.7	33.9		2.7	2.0		2.1	1.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	40.9	40.1		37.7	33.9		2.7	2.0		2.1	1.5	
LOS	D	D		D	C		A	A		A	A	
Approach Delay		40.3			34.0			2.0			1.6	
Approach LOS		D			C			A			A	
Queue Length 50th (m)	1.9	8.9		0.6	11.5		0.1	1.0		0.5	1.0	
Queue Length 95th (m)	5.7	16.3		2.8	22.3		1.7	9.1		1.9	2.5	
Internal Link Dist (m)		431.8			441.9			239.7			501.2	
Turn Bay Length (m)	30.0			30.0			55.0			55.0		
Base Capacity (vph)	568	802		585	783		909	2643		915	2618	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.02	0.06		0.01	0.11		0.01	0.05		0.04	0.06	

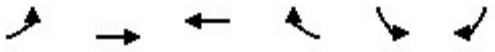
Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 67 (61%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.37

Intersection Signal Delay: 12.6	Intersection LOS: B
Intersection Capacity Utilization 49.1%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 15: Realigned Geenbank & Cappamore





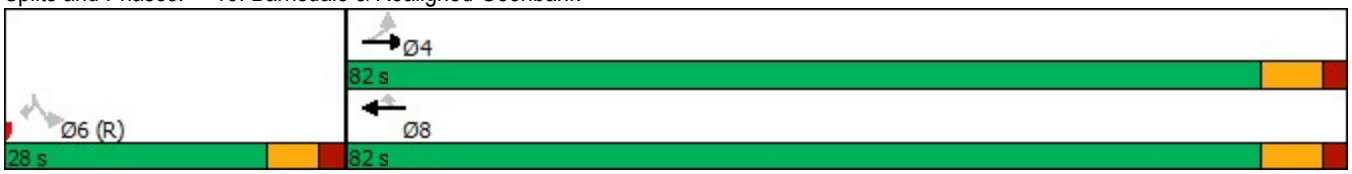
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	87	501	420	58	65	77
Future Volume (vph)	87	501	420	58	65	77
Satd. Flow (prot)	1658	1745	1745	1483	1658	1483
Flt Permitted	0.357				0.950	
Satd. Flow (perm)	623	1745	1745	1483	1658	1483
Satd. Flow (RTOR)				58		77
Lane Group Flow (vph)	87	501	420	58	65	77
Turn Type	Perm	NA	NA	Perm	Perm	Perm
Protected Phases		4	8			
Permitted Phases	4			8	6	6
Detector Phase	4	4	8	8	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	5.0
Minimum Split (s)	32.2	32.2	32.2	32.2	11.5	11.5
Total Split (s)	82.0	82.0	82.0	82.0	28.0	28.0
Total Split (%)	74.5%	74.5%	74.5%	74.5%	25.5%	25.5%
Yellow Time (s)	5.1	5.1	5.1	5.1	4.2	4.2
All-Red Time (s)	2.1	2.1	2.1	2.1	2.3	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.2	7.2	7.2	7.2	6.5	6.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	C-Max	C-Max
Act Effct Green (s)	42.8	42.8	42.8	42.8	53.5	53.5
Actuated g/C Ratio	0.39	0.39	0.39	0.39	0.49	0.49
v/c Ratio	0.36	0.74	0.62	0.09	0.08	0.10
Control Delay	25.5	34.7	30.0	4.2	12.8	2.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.5	34.7	30.0	4.2	12.8	2.8
LOS	C	C	C	A	B	A
Approach Delay		33.3	26.8		7.4	
Approach LOS		C	C		A	
Queue Length 50th (m)	13.1	91.2	71.8	0.0	6.2	0.0
Queue Length 95th (m)	20.8	99.8	79.5	6.1	8.7	2.4
Internal Link Dist (m)		978.4	757.0		239.7	
Turn Bay Length (m)	105.0			135.0		
Base Capacity (vph)	423	1186	1186	1027	806	760
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	0.21	0.42	0.35	0.06	0.08	0.10

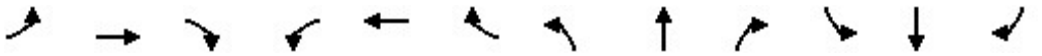
Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 97 (88%), Referenced to phase 2: and 6:SBL, Start of Green
Natural Cycle: 45
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 27.7	Intersection LOS: C
Intersection Capacity Utilization 53.3%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 16: Barnsdale & Realigned Geenbank





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	219	300	32	331	145	117	27	35	15	76	105	80
Future Volume (vph)	219	300	32	331	145	117	27	35	15	76	105	80
Satd. Flow (prot)	0	1689	0	0	1648	0	0	1671	0	1658	1598	0
Flt Permitted		0.639			0.572			0.751		0.809		
Satd. Flow (perm)	0	1100	0	0	969	0	0	1276	0	1412	1598	0
Satd. Flow (RTOR)		7			27			12			39	
Lane Group Flow (vph)	0	551	0	0	593	0	0	77	0	76	185	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	25.8	25.8		25.8	25.8		25.2	25.2		25.2	25.2	
Total Split (s)	64.0	64.0		64.0	64.0		26.0	26.0		26.0	26.0	
Total Split (%)	71.1%	71.1%		71.1%	71.1%		28.9%	28.9%		28.9%	28.9%	
Yellow Time (s)	5.1	5.1		5.1	5.1		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.7	1.7		1.7	1.7		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0		0.0	0.0	
Total Lost Time (s)		6.8			6.8			6.2		6.2	6.2	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Act Effct Green (s)		60.2			60.2			13.8		13.8	13.8	
Actuated g/C Ratio		0.69			0.69			0.16		0.16	0.16	
v/c Ratio		0.72			0.87			0.36		0.34	0.65	
Control Delay		16.5			28.4			31.3		35.2	37.0	
Queue Delay		0.0			0.0			0.0		0.0	0.0	
Total Delay		16.5			28.4			31.3		35.2	37.0	
LOS		B			C			C		D	D	
Approach Delay		16.5			28.4			31.3			36.4	
Approach LOS		B			C			C			D	
Queue Length 50th (m)		46.0			60.9			9.3		10.9	21.8	
Queue Length 95th (m)		#121.9			#161.8			21.2		22.8	41.8	
Internal Link Dist (m)		543.4			978.4			562.8			300.3	
Turn Bay Length (m)										40.0		
Base Capacity (vph)		762			678			300		322	395	
Starvation Cap Reductn		0			0			0		0	0	
Spillback Cap Reductn		0			0			0		0	0	
Storage Cap Reductn		0			0			0		0	0	
Reduced v/c Ratio		0.72			0.87			0.26		0.24	0.47	

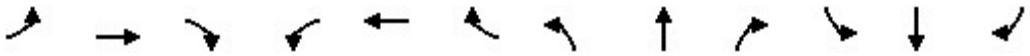
Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 87
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.87

Intersection Signal Delay: 25.5	Intersection LOS: C
Intersection Capacity Utilization 87.8%	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: 3: Hwy 416/Borrisokane & Barnsdale





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	82	246	23	4	347	35	10	79	1	247	126	151
Future Volume (vph)	82	246	23	4	347	35	10	79	1	247	126	151
Satd. Flow (prot)	1580	1714	0	0	1662	0	0	1660	0	1658	1588	0
Flt Permitted	0.950				0.999			0.994		0.950		
Satd. Flow (perm)	1580	1714	0	0	1662	0	0	1660	0	1658	1588	0
Lane Group Flow (vph)	82	269	0	0	386	0	0	90	0	247	277	0
Sign Control		Stop			Stop			Stop			Stop	

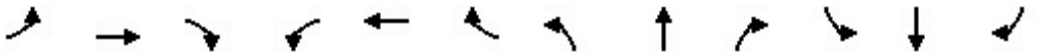
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 68.0%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	21.2
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	82	246	23	4	347	35	10	79	1	247	126	151
Future Vol, veh/h	82	246	23	4	347	35	10	79	1	247	126	151
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	7	2	8	2	6	3	10	6	2	2	4	2
Mvmt Flow	82	246	23	4	347	35	10	79	1	247	126	151
Number of Lanes	1	1	0	0	1	0	0	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	2
HCM Control Delay	17.3	30.6	14	18.2
HCM LOS	C	D	B	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	11%	100%	0%	1%	100%	0%
Vol Thru, %	88%	0%	91%	90%	0%	45%
Vol Right, %	1%	0%	9%	9%	0%	55%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	90	82	269	386	247	277
LT Vol	10	82	0	4	247	0
Through Vol	79	0	246	347	0	126
RT Vol	1	0	23	35	0	151
Lane Flow Rate	90	82	269	386	247	277
Geometry Grp	4b	5	5	4b	5	5
Degree of Util (X)	0.214	0.182	0.549	0.771	0.535	0.533
Departure Headway (Hd)	8.561	8.01	7.347	7.191	7.794	6.926
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	418	448	490	502	462	521
Service Time	6.638	5.762	5.1	5.238	5.544	4.675
HCM Lane V/C Ratio	0.215	0.183	0.549	0.769	0.535	0.532
HCM Control Delay	14	12.5	18.7	30.6	19.2	17.4
HCM Lane LOS	B	B	C	D	C	C
HCM 95th-tile Q	0.8	0.7	3.3	6.8	3.1	3.1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	244	24	64	174	15	12	0	302	5	2	1
Future Volume (vph)	1	244	24	64	174	15	12	0	302	5	2	1
Satd. Flow (prot)	0	1274	0	1127	1326	0	0	1013	1113	0	1040	0
Flt Permitted				0.950				0.950			0.970	
Satd. Flow (perm)	0	1274	0	1127	1326	0	0	1013	1113	0	1040	0
Lane Group Flow (vph)	0	269	0	64	189	0	0	12	302	0	8	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 48.2%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	6.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	244	24	64	174	15	12	0	302	5	2	1
Future Vol, veh/h	1	244	24	64	174	15	12	0	302	5	2	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	25	-	-	-	-	60	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	37	50	50	28	86	67	60	36	100	2	2
Mvmt Flow	1	244	24	64	174	15	12	0	302	5	2	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	189	0	0	268	0	0	569	575	256	719	580	182
Stage 1	-	-	-	-	-	-	258	258	-	310	310	-
Stage 2	-	-	-	-	-	-	311	317	-	409	270	-
Critical Hdwy	4.12	-	-	4.6	-	-	7.77	7.1	6.56	8.1	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.77	6.1	-	7.1	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.77	6.1	-	7.1	5.52	-
Follow-up Hdwy	2.218	-	-	2.65	-	-	4.103	4.54	3.624	4.4	4.018	3.318
Pot Cap-1 Maneuver	1385	-	-	1063	-	-	349	359	707	244	426	861
Stage 1	-	-	-	-	-	-	623	600	-	533	659	-
Stage 2	-	-	-	-	-	-	581	562	-	464	686	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1385	-	-	1063	-	-	331	337	707	133	400	861
Mov Cap-2 Maneuver	-	-	-	-	-	-	331	337	-	133	400	-
Stage 1	-	-	-	-	-	-	622	599	-	532	619	-
Stage 2	-	-	-	-	-	-	544	528	-	266	685	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	2.2	13.9	25.6
HCM LOS			B	D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	331	707	1385	-	-	1063	-	-	183
HCM Lane V/C Ratio	0.036	0.427	0.001	-	-	0.06	-	-	0.044
HCM Control Delay (s)	16.3	13.8	7.6	0	-	8.6	-	-	25.6
HCM Lane LOS	C	B	A	A	-	A	-	-	D
HCM 95th %tile Q(veh)	0.1	2.1	0	-	-	0.2	-	-	0.1

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	151	479	17	222	211	106	27	48	18	143	141	138
Future Volume (vph)	151	479	17	222	211	106	27	48	18	143	141	138
Satd. Flow (prot)	0	1705	0	0	1658	0	0	1676	0	1658	1578	0
Flt Permitted		0.770			0.599			0.632		0.762		
Satd. Flow (perm)	0	1329	0	0	1013	0	0	1074	0	1330	1578	0
Satd. Flow (RTOR)		3			27			12			50	
Lane Group Flow (vph)	0	647	0	0	539	0	0	93	0	143	279	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	25.8	25.8		25.8	25.8		25.2	25.2		25.2	25.2	
Total Split (s)	64.0	64.0		64.0	64.0		26.0	26.0		26.0	26.0	
Total Split (%)	71.1%	71.1%		71.1%	71.1%		28.9%	28.9%		28.9%	28.9%	
Yellow Time (s)	5.1	5.1		5.1	5.1		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.7	1.7		1.7	1.7		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0		0.0	0.0	
Total Lost Time (s)		6.8			6.8			6.2		6.2	6.2	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Act Effct Green (s)		57.3			57.3			16.8		16.8	16.8	
Actuated g/C Ratio		0.66			0.66			0.19		0.19	0.19	
v/c Ratio		0.74			0.80			0.43		0.56	0.81	
Control Delay		17.3			22.5			33.2		40.6	46.5	
Queue Delay		0.0			0.0			0.0		0.0	0.0	
Total Delay		17.3			22.5			33.2		40.6	46.5	
LOS		B			C			C		D	D	
Approach Delay		17.3			22.5			33.2			44.5	
Approach LOS		B			C			C			D	
Queue Length 50th (m)		68.4			58.9			11.9		21.7	36.9	
Queue Length 95th (m)		121.2			#135.2			26.1		39.7	#70.9	
Internal Link Dist (m)		543.4			978.4			562.8			300.3	
Turn Bay Length (m)										40.0		
Base Capacity (vph)		875			675			253		302	397	
Starvation Cap Reductn		0			0			0		0	0	
Spillback Cap Reductn		0			0			0		0	0	
Storage Cap Reductn		0			0			0		0	0	
Reduced v/c Ratio		0.74			0.80			0.37		0.47	0.70	

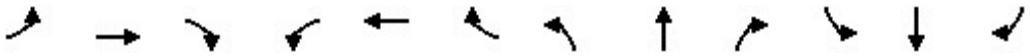
Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 87.1
Natural Cycle: 80
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.81

Intersection Signal Delay: 26.6	Intersection LOS: C
Intersection Capacity Utilization 95.0%	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: 3: Hwy 416/Borrisokane & Barnsdale





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	153	373	40	0	342	181	10	126	3	104	146	126
Future Volume (vph)	153	373	40	0	342	181	10	126	3	104	146	126
Satd. Flow (prot)	1580	1709	0	0	1616	0	0	1664	0	1658	1608	0
Flt Permitted	0.950							0.996		0.950		
Satd. Flow (perm)	1580	1709	0	0	1616	0	0	1664	0	1658	1608	0
Lane Group Flow (vph)	153	413	0	0	523	0	0	139	0	104	272	0
Sign Control		Stop			Stop			Stop			Stop	

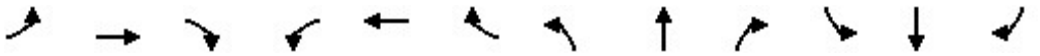
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 91.5%		ICU Level of Service F	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	53.6
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	153	373	40	0	342	181	10	126	3	104	146	126
Future Vol, veh/h	153	373	40	0	342	181	10	126	3	104	146	126
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	7	2	8	2	6	3	10	6	2	2	4	2
Mvmt Flow	153	373	40	0	342	181	10	126	3	104	146	126
Number of Lanes	1	1	0	0	1	0	0	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	2
HCM Control Delay	36.7	104.8	18.4	20.7
HCM LOS	E	F	C	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	7%	100%	0%	0%	100%	0%
Vol Thru, %	91%	0%	90%	65%	0%	54%
Vol Right, %	2%	0%	10%	35%	0%	46%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	139	153	413	523	104	272
LT Vol	10	153	0	0	104	0
Through Vol	126	0	373	342	0	146
RT Vol	3	0	40	181	0	126
Lane Flow Rate	139	153	413	523	104	272
Geometry Grp	4b	5	5	4b	5	5
Degree of Util (X)	0.361	0.351	0.871	1.117	0.253	0.603
Departure Headway (Hd)	9.917	8.602	7.927	7.69	9.174	8.352
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	366	421	458	471	394	435
Service Time	7.917	6.302	5.627	5.741	6.874	6.052
HCM Lane V/C Ratio	0.38	0.363	0.902	1.11	0.264	0.625
HCM Control Delay	18.4	15.9	44.4	104.8	15	22.9
HCM Lane LOS	C	C	E	F	B	C
HCM 95th-tile Q	1.6	1.6	9.1	17.8	1	3.9



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	219	18	103	267	7	36	0	418	10	1	0
Future Volume (vph)	0	219	18	103	267	7	36	0	418	10	1	0
Satd. Flow (prot)	0	1277	0	1127	1369	0	0	1013	1113	0	891	0
Flt Permitted				0.950				0.950			0.957	
Satd. Flow (perm)	0	1277	0	1127	1369	0	0	1013	1113	0	891	0
Lane Group Flow (vph)	0	237	0	103	274	0	0	36	418	0	11	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 54.0%		ICU Level of Service A	
Analysis Period (min) 15			

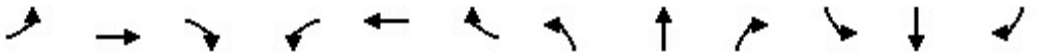
Intersection	
Int Delay, s/veh	8.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	219	18	103	267	7	36	0	418	10	1	0
Future Vol, veh/h	0	219	18	103	267	7	36	0	418	10	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	25	-	-	-	-	60	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	37	50	50	28	86	67	60	36	100	2	2
Mvmt Flow	0	219	18	103	267	7	36	0	418	10	1	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	274	0	0	237	0	0	705	708	228	914	714	271
Stage 1	-	-	-	-	-	-	228	228	-	477	477	-
Stage 2	-	-	-	-	-	-	477	480	-	437	237	-
Critical Hdwy	4.12	-	-	4.6	-	-	7.77	7.1	6.56	8.1	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.77	6.1	-	7.1	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.77	6.1	-	7.1	5.52	-
Follow-up Hdwy	2.218	-	-	2.65	-	-	4.103	4.54	3.624	4.4	4.018	3.318
Pot Cap-1 Maneuver	1289	-	-	1094	-	-	279	297	734	174	357	768
Stage 1	-	-	-	-	-	-	649	620	-	421	556	-
Stage 2	-	-	-	-	-	-	464	469	-	446	709	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1289	-	-	1094	-	-	258	269	734	69	323	768
Mov Cap-2 Maneuver	-	-	-	-	-	-	258	269	-	69	323	-
Stage 1	-	-	-	-	-	-	649	620	-	421	504	-
Stage 2	-	-	-	-	-	-	419	425	-	192	709	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	2.4	16.6	62
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	258	734	1289	-	-	1094	-	-	74
HCM Lane V/C Ratio	0.14	0.569	-	-	-	0.094	-	-	0.149
HCM Control Delay (s)	21.2	16.2	0	-	-	8.6	-	-	62
HCM Lane LOS	C	C	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	0.5	3.6	0	-	-	0.3	-	-	0.5



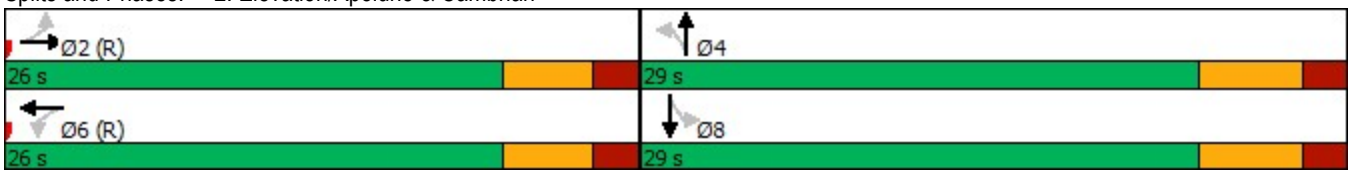
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	74	138	63	28	270	72	126	14	27	76	5	100
Future Volume (vph)	74	138	63	28	270	72	126	14	27	76	5	100
Satd. Flow (prot)	1523	1424	0	1658	1629	0	1013	1572	0	1595	1369	0
Flt Permitted	0.550			0.632			0.689			0.730		
Satd. Flow (perm)	878	1424	0	1103	1629	0	734	1572	0	1226	1369	0
Satd. Flow (RTOR)		47			28			27			100	
Lane Group Flow (vph)	74	201	0	28	342	0	126	41	0	76	105	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	24.6	24.6		24.6	24.6		28.1	28.1		28.1	28.1	
Total Split (s)	26.0	26.0		26.0	26.0		29.0	29.0		29.0	29.0	
Total Split (%)	47.3%	47.3%		47.3%	47.3%		52.7%	52.7%		52.7%	52.7%	
Yellow Time (s)	3.7	3.7		3.7	3.7		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.9	1.9		1.9	1.9		1.9	1.9		1.9	1.9	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.6	5.6		5.6	5.6		6.1	6.1		6.1	6.1	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effct Green (s)	32.3	32.3		32.3	32.3		15.4	15.4		15.4	15.4	
Actuated g/C Ratio	0.59	0.59		0.59	0.59		0.28	0.28		0.28	0.28	
v/c Ratio	0.14	0.24		0.04	0.35		0.61	0.09		0.22	0.23	
Control Delay	10.7	8.4		4.0	8.0		28.8	5.8		14.8	4.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	10.7	8.4		4.0	8.0		28.8	5.8		14.8	4.7	
LOS	B	A		A	A		C	A		B	A	
Approach Delay		9.0			7.7			23.2			8.9	
Approach LOS		A			A			C			A	
Queue Length 50th (m)	3.5	7.5		0.3	35.2		10.6	0.9		5.9	0.4	
Queue Length 95th (m)	12.5	23.5		3.3	71.7		15.3	3.5		11.2	7.1	
Internal Link Dist (m)		524.9			399.7			253.1			160.5	
Turn Bay Length (m)	37.5			37.5			30.0			30.0		
Base Capacity (vph)	515	854		647	967		305	670		510	628	
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	0.14	0.24		0.04	0.35		0.41	0.06		0.15	0.17	

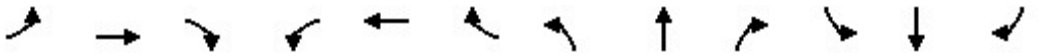
Intersection Summary
Cycle Length: 55
Actuated Cycle Length: 55
Offset: 32 (58%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 55
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.61

Intersection Signal Delay: 10.9	Intersection LOS: B
Intersection Capacity Utilization 56.5%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 2: Elevation/Apolune & Cambrian





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	219	300	32	331	145	117	27	35	15	76	105	80
Future Volume (vph)	219	300	32	331	145	117	27	35	15	76	105	80
Satd. Flow (prot)	1658	1706	0	1658	1619	0	0	1671	0	1658	1599	0
Flt Permitted	0.597			0.445				0.821		0.707		
Satd. Flow (perm)	1042	1706	0	777	1619	0	0	1395	0	1234	1599	0
Satd. Flow (RTOR)		7			60			15			50	
Lane Group Flow (vph)	219	332	0	331	262	0	0	77	0	76	185	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	11.7	25.8		11.7	25.8		25.2	25.2		25.2	25.2	
Total Split (s)	16.0	29.0		20.0	33.0		26.0	26.0		26.0	26.0	
Total Split (%)	21.3%	38.7%		26.7%	44.0%		34.7%	34.7%		34.7%	34.7%	
Yellow Time (s)	5.1	5.1		5.1	5.1		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.6	1.7		1.6	1.7		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0		0.0	0.0	
Total Lost Time (s)	6.7	6.8		6.7	6.8			6.2		6.2	6.2	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	Max		None	Max		None	None		None	None	
Act Effct Green (s)	32.5	23.8		37.4	26.2			12.1		12.1	12.1	
Actuated g/C Ratio	0.49	0.36		0.56	0.39			0.18		0.18	0.18	
v/c Ratio	0.37	0.54		0.57	0.39			0.29		0.34	0.56	
Control Delay	8.8	22.1		10.7	13.8			22.8		28.3	24.9	
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	
Total Delay	8.8	22.1		10.7	13.8			22.8		28.3	24.9	
LOS	A	C		B	B			C		C	C	
Approach Delay		16.8			12.1			22.8			25.9	
Approach LOS		B			B			C			C	
Queue Length 50th (m)	9.5	30.7		15.6	16.6			6.7		8.4	15.3	
Queue Length 95th (m)	22.5	62.7		34.8	37.8			16.9		19.0	32.6	
Internal Link Dist (m)		543.4			978.4			562.8			300.3	
Turn Bay Length (m)	55.0			80.0						40.0		
Base Capacity (vph)	604	612		638	673			425		367	510	
Starvation Cap Reductn	0	0		0	0			0		0	0	
Spillback Cap Reductn	0	0		0	0			0		0	0	
Storage Cap Reductn	0	0		0	0			0		0	0	
Reduced v/c Ratio	0.36	0.54		0.52	0.39			0.18		0.21	0.36	

Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 66.7
Natural Cycle: 65
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.57

Intersection Signal Delay: 16.8	Intersection LOS: B
Intersection Capacity Utilization 79.0%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 3: Hwy 416/Borrisokane & Barnsdale

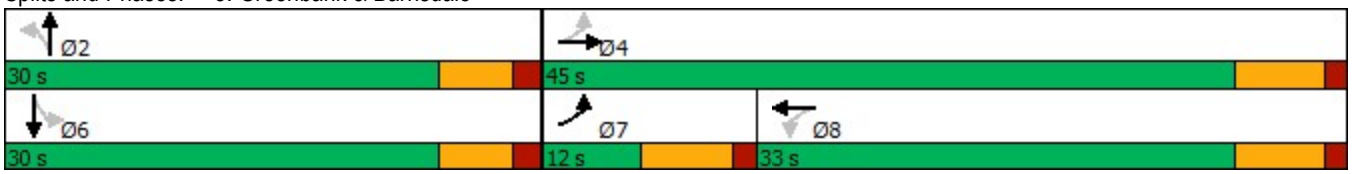


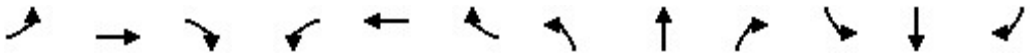
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	82	246	23	4	347	35	10	79	1	247	126	151
Future Volume (vph)	82	246	23	4	347	35	10	79	1	247	126	151
Satd. Flow (prot)	1580	1714	0	0	1662	0	0	1659	0	1658	1588	0
Flt Permitted	0.294				0.996			0.958		0.699		
Satd. Flow (perm)	489	1714	0	0	1657	0	0	1599	0	1218	1588	0
Satd. Flow (RTOR)		9			7			1			85	
Lane Group Flow (vph)	82	269	0	0	386	0	0	90	0	247	277	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	11.5	24.4		24.4	24.4		23.8	23.8		23.8	23.8	
Total Split (s)	12.0	45.0		33.0	33.0		30.0	30.0		30.0	30.0	
Total Split (%)	16.0%	60.0%		44.0%	44.0%		40.0%	40.0%		40.0%	40.0%	
Yellow Time (s)	5.1	5.1		5.1	5.1		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.4	1.3		1.3	1.3		1.6	1.6		1.6	1.6	
Lost Time Adjust (s)	0.0	0.0			0.0			0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.4			6.4			5.8		5.8	5.8	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)	28.4	28.5			19.5			24.9		24.9	24.9	
Actuated g/C Ratio	0.43	0.43			0.30			0.38		0.38	0.38	
v/c Ratio	0.27	0.36			0.78			0.15		0.54	0.43	
Control Delay	12.2	12.5			33.0			17.7		24.6	15.1	
Queue Delay	0.0	0.0			0.0			0.0		0.0	0.0	
Total Delay	12.2	12.5			33.0			17.7		24.6	15.1	
LOS	B	B			C			B		C	B	
Approach Delay		12.5			33.0			17.7			19.6	
Approach LOS		B			C			B			B	
Queue Length 50th (m)	5.6	19.7			44.1			7.7		25.4	17.9	
Queue Length 95th (m)	12.0	33.6			72.4			18.9		52.8	41.6	
Internal Link Dist (m)		757.0			1181.9			632.6			239.9	
Turn Bay Length (m)	40.0									60.0		
Base Capacity (vph)	304	1034			691			603		459	651	
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	0.27	0.26			0.56			0.15		0.54	0.43	

Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 65.9
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.78

Intersection Signal Delay: 21.4	Intersection LOS: C
Intersection Capacity Utilization 73.5%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 5: Greenbank & Barnsdale





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	244	24	64	174	15	12	0	302	5	2	1
Future Volume (vph)	1	244	24	64	174	15	12	0	302	5	2	1
Satd. Flow (prot)	0	1274	0	0	1273	0	0	1127	0	0	1040	0
Flt Permitted					0.988			0.998			0.970	
Satd. Flow (perm)	0	1274	0	0	1273	0	0	1127	0	0	1040	0
Lane Group Flow (vph)	0	269	0	0	253	0	0	314	0	0	8	0
Sign Control		Stop			Stop			Stop			Stop	

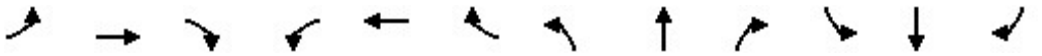
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 59.8%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	13.9
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	244	24	64	174	15	12	0	302	5	2	1
Future Vol, veh/h	1	244	24	64	174	15	12	0	302	5	2	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	37	50	50	28	86	67	60	36	100	2	2
Mvmt Flow	1	244	24	64	174	15	12	0	302	5	2	1
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	12	14	15.4	11.1
HCM LOS	B	B	C	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	4%	0%	25%	62%
Vol Thru, %	0%	91%	69%	25%
Vol Right, %	96%	9%	6%	12%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	314	269	253	8
LT Vol	12	1	64	5
Through Vol	0	244	174	2
RT Vol	302	24	15	1
Lane Flow Rate	314	269	253	8
Geometry Grp	1	1	1	1
Degree of Util (X)	0.522	0.401	0.437	0.017
Departure Headway (Hd)	5.989	5.365	6.223	7.862
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	603	670	579	455
Service Time	4.023	3.402	4.259	5.921
HCM Lane V/C Ratio	0.521	0.401	0.437	0.018
HCM Control Delay	15.4	12	14	11.1
HCM Lane LOS	C	B	B	B
HCM 95th-tile Q	3	1.9	2.2	0.1



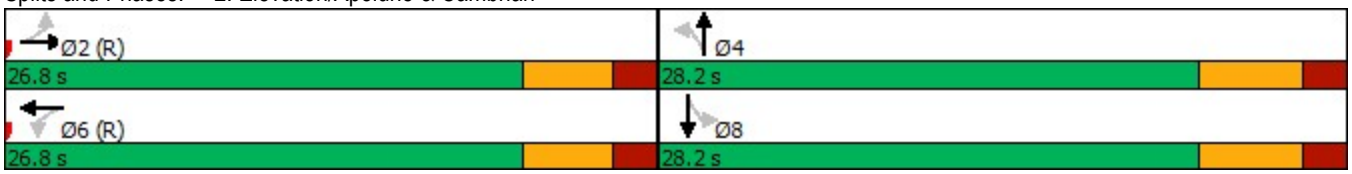
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	89	258	111	27	241	93	98	7	36	88	5	90
Future Volume (vph)	89	258	111	27	241	93	98	7	36	88	5	90
Satd. Flow (prot)	1523	1434	0	1658	1599	0	1013	1525	0	1595	1365	0
Flt Permitted	0.559			0.535			0.695			0.729		
Satd. Flow (perm)	892	1434	0	934	1599	0	741	1525	0	1224	1365	0
Satd. Flow (RTOR)		46			41			36			90	
Lane Group Flow (vph)	89	369	0	27	334	0	98	43	0	88	95	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	24.6	24.6		24.6	24.6		28.1	28.1		28.1	28.1	
Total Split (s)	26.8	26.8		26.8	26.8		28.2	28.2		28.2	28.2	
Total Split (%)	48.7%	48.7%		48.7%	48.7%		51.3%	51.3%		51.3%	51.3%	
Yellow Time (s)	3.7	3.7		3.7	3.7		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.9	1.9		1.9	1.9		1.9	1.9		1.9	1.9	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.6	5.6		5.6	5.6		6.1	6.1		6.1	6.1	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effct Green (s)	34.0	34.0		34.0	34.0		13.6	13.6		13.6	13.6	
Actuated g/C Ratio	0.62	0.62		0.62	0.62		0.25	0.25		0.25	0.25	
v/c Ratio	0.16	0.41		0.05	0.33		0.54	0.11		0.29	0.23	
Control Delay	9.3	9.5		3.3	6.5		27.5	5.4		17.8	5.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	9.3	9.5		3.3	6.5		27.5	5.4		17.8	5.6	
LOS	A	A		A	A		C	A		B	A	
Approach Delay		9.4			6.3			20.7			11.5	
Approach LOS		A			A			C			B	
Queue Length 50th (m)	3.8	16.1		0.2	35.1		9.0	0.7		7.3	0.4	
Queue Length 95th (m)	13.4	45.1		2.9	71.1		12.9	3.6		14.0	7.6	
Internal Link Dist (m)		524.9			399.7			253.1			160.5	
Turn Bay Length (m)	37.5			37.5			30.0			30.0		
Base Capacity (vph)	551	904		577	1004		297	634		491	602	
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	0.16	0.41		0.05	0.33		0.33	0.07		0.18	0.16	

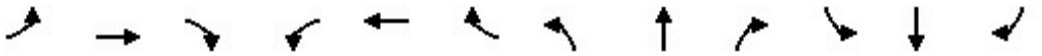
Intersection Summary
Cycle Length: 55
Actuated Cycle Length: 55
Offset: 18 (33%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 55
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.54

Intersection Signal Delay: 10.2	Intersection LOS: B
Intersection Capacity Utilization 56.6%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 2: Elevation/Apolune & Cambrian



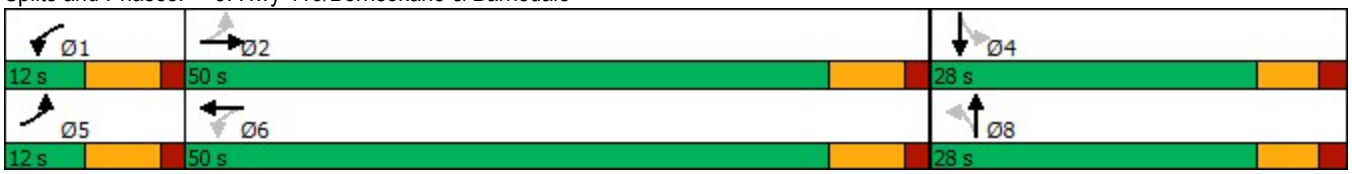


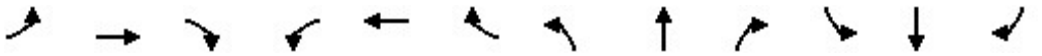
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	151	479	17	222	211	106	27	48	18	143	141	138
Future Volume (vph)	151	479	17	222	211	106	27	48	18	143	141	138
Satd. Flow (prot)	1658	1720	0	1658	1647	0	0	1676	0	1658	1579	0
Flt Permitted	0.540			0.380				0.658		0.767		
Satd. Flow (perm)	942	1720	0	663	1647	0	0	1118	0	1338	1579	0
Satd. Flow (RTOR)		3			39			13			52	
Lane Group Flow (vph)	151	496	0	222	317	0	0	93	0	143	279	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	11.7	25.8		11.7	25.8		25.2	25.2		25.2	25.2	
Total Split (s)	12.0	50.0		12.0	50.0		28.0	28.0		28.0	28.0	
Total Split (%)	13.3%	55.6%		13.3%	55.6%		31.1%	31.1%		31.1%	31.1%	
Yellow Time (s)	5.1	5.1		5.1	5.1		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.6	1.7		1.6	1.7		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0		0.0	0.0	
Total Lost Time (s)	6.7	6.8		6.7	6.8			6.2		6.2	6.2	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	Max		None	Max		None	None		None	None	
Act Effct Green (s)	48.7	43.3		48.7	43.3			16.9		16.9	16.9	
Actuated g/C Ratio	0.57	0.51		0.57	0.51			0.20		0.20	0.20	
v/c Ratio	0.26	0.57		0.50	0.37			0.40		0.54	0.79	
Control Delay	8.3	18.5		12.7	13.4			30.7		38.4	42.4	
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	
Total Delay	8.3	18.5		12.7	13.4			30.7		38.4	42.4	
LOS	A	B		B	B			C		D	D	
Approach Delay		16.1			13.1			30.7			41.0	
Approach LOS		B			B			C			D	
Queue Length 50th (m)	8.7	53.8		13.4	26.2			11.3		21.0	35.4	
Queue Length 95th (m)	17.9	90.6		25.9	48.4			24.9		38.4	62.2	
Internal Link Dist (m)		543.4			978.4			562.8			300.3	
Turn Bay Length (m)	55.0			80.0						40.0		
Base Capacity (vph)	582	874		440	855			296		343	443	
Starvation Cap Reductn	0	0		0	0			0		0	0	
Spillback Cap Reductn	0	0		0	0			0		0	0	
Storage Cap Reductn	0	0		0	0			0		0	0	
Reduced v/c Ratio	0.26	0.57		0.50	0.37			0.31		0.42	0.63	

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 85.3
Natural Cycle: 70
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.79

Intersection Signal Delay: 22.1	Intersection LOS: C
Intersection Capacity Utilization 86.7%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 3: Hwy 416/Borrisokane & Barnsdale



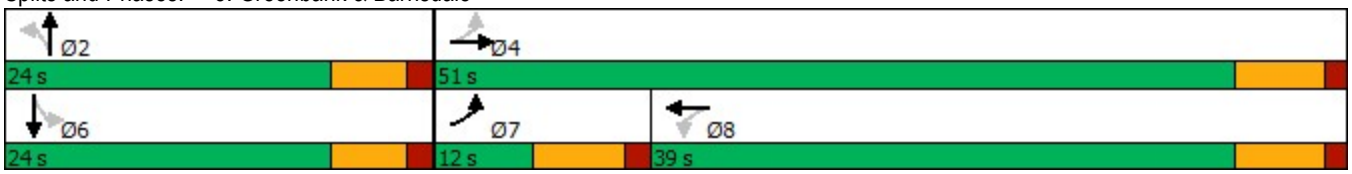


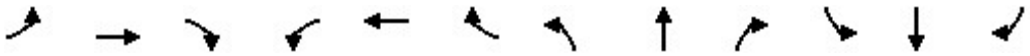
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	153	373	40	0	342	181	10	126	3	104	146	126
Future Volume (vph)	153	373	40	0	342	181	10	126	3	104	146	126
Satd. Flow (prot)	1580	1709	0	0	1616	0	0	1664	0	1658	1608	0
Flt Permitted	0.209							0.968		0.729		
Satd. Flow (perm)	348	1709	0	0	1616	0	0	1617	0	1270	1608	0
Satd. Flow (RTOR)		13			45			1			55	
Lane Group Flow (vph)	153	413	0	0	523	0	0	139	0	104	272	0
Turn Type	pm+pt	NA			NA		Perm	NA		Perm	NA	
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	11.5	24.4		24.4	24.4		23.8	23.8		23.8	23.8	
Total Split (s)	12.0	51.0		39.0	39.0		24.0	24.0		24.0	24.0	
Total Split (%)	16.0%	68.0%		52.0%	52.0%		32.0%	32.0%		32.0%	32.0%	
Yellow Time (s)	5.1	5.1		5.1	5.1		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.4	1.3		1.3	1.3		1.6	1.6		1.6	1.6	
Lost Time Adjust (s)	0.0	0.0			0.0			0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.4			6.4			5.8		5.8	5.8	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)	33.2	33.3			24.3			18.8		18.8	18.8	
Actuated g/C Ratio	0.51	0.51			0.38			0.29		0.29	0.29	
v/c Ratio	0.53	0.47			0.82			0.30		0.28	0.54	
Control Delay	14.6	10.7			28.8			23.7		24.4	22.8	
Queue Delay	0.0	0.0			0.0			0.0		0.0	0.0	
Total Delay	14.6	10.7			28.8			23.7		24.4	22.8	
LOS	B	B			C			C		C	C	
Approach Delay		11.8			28.8			23.7			23.2	
Approach LOS		B			C			C			C	
Queue Length 50th (m)	8.8	26.9			53.6			13.8		10.4	23.1	
Queue Length 95th (m)	16.5	44.3			89.2			31.0		25.2	51.0	
Internal Link Dist (m)		757.0			1181.9			632.6			239.9	
Turn Bay Length (m)	40.0									60.0		
Base Capacity (vph)	286	1220			862			470		369	506	
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	0.53	0.34			0.61			0.30		0.28	0.54	

Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 64.7
Natural Cycle: 65
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.82

Intersection Signal Delay: 21.0 | Intersection LOS: C
Intersection Capacity Utilization 105.5% | ICU Level of Service G
Analysis Period (min) 15

Splits and Phases: 5: Greenbank & Barnsdale





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	219	18	103	267	7	36	0	418	10	1	0
Future Volume (vph)	0	219	18	103	267	7	36	0	418	10	1	0
Satd. Flow (prot)	0	1277	0	0	1297	0	0	1122	0	0	891	0
Flt Permitted					0.987			0.996			0.957	
Satd. Flow (perm)	0	1277	0	0	1297	0	0	1122	0	0	891	0
Lane Group Flow (vph)	0	237	0	0	377	0	0	454	0	0	11	0
Sign Control		Stop			Stop			Stop			Stop	

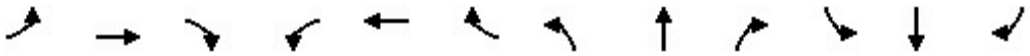
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 73.0%		ICU Level of Service D	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	27.5
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	219	18	103	267	7	36	0	418	10	1	0
Future Vol, veh/h	0	219	18	103	267	7	36	0	418	10	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	37	50	50	28	86	67	60	36	100	2	2
Mvmt Flow	0	219	18	103	267	7	36	0	418	10	1	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	16	27.3	34.1	12.6
HCM LOS	C	D	D	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	8%	0%	27%	91%
Vol Thru, %	0%	92%	71%	9%
Vol Right, %	92%	8%	2%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	454	237	377	11
LT Vol	36	0	103	10
Through Vol	0	219	267	1
RT Vol	418	18	7	0
Lane Flow Rate	454	237	377	11
Geometry Grp	1	1	1	1
Degree of Util (X)	0.828	0.464	0.738	0.028
Departure Headway (Hd)	6.682	7.052	7.045	9.311
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	545	512	516	385
Service Time	4.682	5.067	5.045	7.357
HCM Lane V/C Ratio	0.833	0.463	0.731	0.029
HCM Control Delay	34.1	16	27.3	12.6
HCM Lane LOS	D	C	D	B
HCM 95th-tile Q	8.4	2.4	6.2	0.1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	244	24	64	174	15	12	0	302	5	2	1
Future Volume (vph)	1	244	24	64	174	15	12	0	302	5	2	1
Satd. Flow (prot)	0	1274	0	1127	1326	0	0	1013	1113	0	1040	0
Flt Permitted				0.950				0.950			0.970	
Satd. Flow (perm)	0	1274	0	1127	1326	0	0	1013	1113	0	1040	0
Lane Group Flow (vph)	0	269	0	64	189	0	0	12	302	0	8	0
Sign Control		Stop			Stop			Stop			Stop	

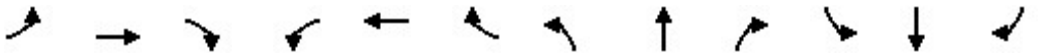
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 48.2%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	14.2
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	244	24	64	174	15	12	0	302	5	2	1
Future Vol, veh/h	1	244	24	64	174	15	12	0	302	5	2	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	37	50	50	28	86	67	60	36	100	2	2
Mvmt Flow	1	244	24	64	174	15	12	0	302	5	2	1
Number of Lanes	0	1	0	1	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	1
HCM Control Delay	13.9	12.1	16.2	11.8
HCM LOS	B	B	C	B

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	100%	0%	0%	100%	0%	62%
Vol Thru, %	0%	0%	91%	0%	92%	25%
Vol Right, %	0%	100%	9%	0%	8%	12%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	12	302	269	64	189	8
LT Vol	12	0	1	64	0	5
Through Vol	0	0	244	0	174	2
RT Vol	0	302	24	0	15	1
Lane Flow Rate	12	302	269	64	189	8
Geometry Grp	5	5	4b	5	5	4b
Degree of Util (X)	0.026	0.538	0.45	0.131	0.338	0.019
Departure Headway (Hd)	7.746	6.411	6.017	7.372	6.429	8.591
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	463	562	597	486	559	416
Service Time	5.483	4.147	4.056	5.113	4.17	6.655
HCM Lane V/C Ratio	0.026	0.537	0.451	0.132	0.338	0.019
HCM Control Delay	10.7	16.4	13.9	11.2	12.4	11.8
HCM Lane LOS	B	C	B	B	B	B
HCM 95th-tile Q	0.1	3.2	2.3	0.4	1.5	0.1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	219	18	103	267	7	36	0	418	10	1	0
Future Volume (vph)	0	219	18	103	267	7	36	0	418	10	1	0
Satd. Flow (prot)	0	1277	0	1127	1369	0	0	1013	1113	0	891	0
Flt Permitted				0.950				0.950			0.957	
Satd. Flow (perm)	0	1277	0	1127	1369	0	0	1013	1113	0	891	0
Lane Group Flow (vph)	0	237	0	103	274	0	0	36	418	0	11	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 54.0%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	22.5
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	219	18	103	267	7	36	0	418	10	1	0
Future Vol, veh/h	0	219	18	103	267	7	36	0	418	10	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	37	50	50	28	86	67	60	36	100	2	2
Mvmt Flow	0	219	18	103	267	7	36	0	418	10	1	0
Number of Lanes	0	1	0	1	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	1
HCM Control Delay	17.6	16.8	30	13.1
HCM LOS	C	C	D	B

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	100%	0%	0%	100%	0%	91%
Vol Thru, %	0%	0%	92%	0%	97%	9%
Vol Right, %	0%	100%	8%	0%	3%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	36	418	237	103	274	11
LT Vol	36	0	0	103	0	10
Through Vol	0	0	219	0	267	1
RT Vol	0	418	18	0	7	0
Lane Flow Rate	36	418	237	103	274	11
Geometry Grp	5	5	4b	5	5	4b
Degree of Util (X)	0.082	0.797	0.49	0.23	0.542	0.03
Departure Headway (Hd)	8.206	6.865	7.45	8.027	7.118	9.812
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	436	527	481	445	504	367
Service Time	5.978	4.636	5.538	5.813	4.903	7.812
HCM Lane V/C Ratio	0.083	0.793	0.493	0.231	0.544	0.03
HCM Control Delay	11.7	31.6	17.6	13.2	18.1	13.1
HCM Lane LOS	B	D	C	B	C	B
HCM 95th-tile Q	0.3	7.5	2.7	0.9	3.2	0.1

MOVEMENT SUMMARY

Site: 101 [Prince of Wales and Barnsdale FB2036 AM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Prince of Wales Drive															
1	L2	All MCs	7	2.0	7	2.0	0.826	31.9	LOS D	9.4	68.1	0.91	1.22	2.07	26.0
2	T1	All MCs	462	4.0	462	4.0	0.826	32.2	LOS D	9.4	68.1	0.91	1.22	2.07	26.5
3	R2	All MCs	14	8.0	14	8.0	0.826	32.9	LOS D	9.4	68.1	0.91	1.22	2.07	22.3
Approach			483	4.1	483	4.1	0.826	32.2	LOS D	9.4	68.1	0.91	1.22	2.07	26.4
East: Barnsdale Road															
4	L2	All MCs	13	2.0	13	2.0	0.237	13.0	LOS B	0.8	5.5	0.70	0.70	0.70	33.1
5	T1	All MCs	80	2.0	80	2.0	0.237	13.0	LOS B	0.8	5.5	0.70	0.70	0.70	37.0
6	R2	All MCs	1	2.0	1	2.0	0.237	13.0	LOS B	0.8	5.5	0.70	0.70	0.70	37.1
Approach			94	2.0	94	2.0	0.237	13.0	LOS B	0.8	5.5	0.70	0.70	0.70	36.5
North: Prince of Wales Drive															
7	L2	All MCs	3	33.0	3	33.0	0.526	11.5	LOS B	3.3	23.8	0.38	0.18	0.38	33.4
8	T1	All MCs	267	5.0	267	5.0	0.526	9.8	LOS A	3.3	23.8	0.38	0.18	0.38	40.2
9	R2	All MCs	251	5.0	251	5.0	0.526	9.8	LOS A	3.3	23.8	0.38	0.18	0.38	43.8
Approach			521	5.2	521	5.2	0.526	9.8	LOS A	3.3	23.8	0.38	0.18	0.38	42.0
West: Barnsdale Road															
10	L2	All MCs	530	2.0	530	2.0	0.739	18.7	LOS C	11.3	80.4	0.79	0.79	1.46	33.7
11	T1	All MCs	77	2.0	77	2.0	0.739	18.7	LOS C	11.3	80.4	0.79	0.79	1.46	29.5
12	R2	All MCs	9	2.0	9	2.0	0.739	18.7	LOS C	11.3	80.4	0.79	0.79	1.46	31.3
Approach			616	2.0	616	2.0	0.739	18.7	LOS C	11.3	80.4	0.79	0.79	1.46	33.2
All Vehicles			1714	3.6	1714	3.6	0.826	19.5	LOS C	11.3	80.4	0.70	0.72	1.26	33.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Prince of Wales and Barnsdale FB2036 PM (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Prince of Wales Drive															
1	L2	All MCs	13	2.0	13	2.0	0.437	11.5	LOS B	2.3	16.3	0.63	0.60	0.81	39.1
2	T1	All MCs	276	2.0	276	2.0	0.437	11.5	LOS B	2.3	16.3	0.63	0.60	0.81	39.3
3	R2	All MCs	4	25.0	4	25.0	0.437	14.4	LOS B	2.3	16.3	0.63	0.60	0.81	33.5
Approach			293	2.3	293	2.3	0.437	11.6	LOS B	2.3	16.3	0.63	0.60	0.81	39.2
East: Barnsdale Road															
4	L2	All MCs	8	2.0	8	2.0	0.174	8.6	LOS A	0.6	4.2	0.57	0.54	0.57	37.6
5	T1	All MCs	88	2.0	88	2.0	0.174	8.6	LOS A	0.6	4.2	0.57	0.54	0.57	41.5
6	R2	All MCs	2	2.0	2	2.0	0.174	8.6	LOS A	0.6	4.2	0.57	0.54	0.57	41.4
Approach			98	2.0	98	2.0	0.174	8.6	LOS A	0.6	4.2	0.57	0.54	0.57	41.2
North: Prince of Wales Drive															
7	L2	All MCs	3	2.0	3	2.0	1.034	49.3	LOS F	73.1	520.1	1.00	1.80	2.26	18.7
8	T1	All MCs	531	2.0	531	2.0	1.034	49.3	LOS F	73.1	520.1	1.00	1.80	2.26	20.4
9	R2	All MCs	500	2.0	500	2.0	1.034	49.3	LOS F	73.1	520.1	1.00	1.80	2.26	23.2
Approach			1034	2.0	1034	2.0	1.034	49.3	LOS E	73.1	520.1	1.00	1.80	2.26	21.7
West: Barnsdale Road															
10	L2	All MCs	376	5.0	376	5.0	0.775	25.8	LOS D	8.4	61.6	0.87	1.01	1.77	30.2
11	T1	All MCs	108	7.0	108	7.0	0.775	26.1	LOS D	8.4	61.6	0.87	1.01	1.77	26.4
12	R2	All MCs	7	2.0	7	2.0	0.775	25.4	LOS D	8.4	61.6	0.87	1.01	1.77	27.8
Approach			490	5.4	490	5.4	0.775	25.8	LOS D	8.4	61.6	0.87	1.01	1.77	29.4
All Vehicles			1916	2.9	1916	2.9	1.034	35.4	LOS E	73.1	520.1	0.89	1.35	1.83	25.8

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Prince of Wales and Barnsdale FT2031 AM - SBR (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Prince of Wales Drive															
1	L2	All MCs	4	2.0	4	2.0	0.806	29.3	LOS D	8.9	64.4	0.89	1.17	1.96	27.2
2	T1	All MCs	462	4.0	462	4.0	0.806	29.7	LOS D	8.9	64.4	0.89	1.17	1.96	27.6
3	R2	All MCs	14	8.0	14	8.0	0.806	30.3	LOS D	8.9	64.4	0.89	1.17	1.96	23.4
Approach			481	4.1	481	4.1	0.806	29.7	LOS D	8.9	64.4	0.89	1.17	1.96	27.5
East: Barnsdale Road															
4	L2	All MCs	13	2.0	13	2.0	0.232	12.6	LOS B	0.8	5.4	0.69	0.69	0.69	33.5
5	T1	All MCs	80	2.0	80	2.0	0.232	12.6	LOS B	0.8	5.4	0.69	0.69	0.69	37.3
6	R2	All MCs	1	2.0	1	2.0	0.232	12.6	LOS B	0.8	5.4	0.69	0.69	0.69	37.4
Approach			94	2.0	94	2.0	0.232	12.6	LOS B	0.8	5.4	0.69	0.69	0.69	36.8
North: Prince of Wales Drive															
7	L2	All MCs	3	33.0	3	33.0	0.442	9.9	LOS A	2.4	17.5	0.33	0.16	0.33	34.6
8	T1	All MCs	267	5.0	267	5.0	0.442	8.4	LOS A	2.4	17.5	0.33	0.16	0.33	41.8
9	R2	All MCs	243	5.0	243	5.0	0.442	7.4	LOS A	2.4	17.5	0.34	0.18	0.34	46.3
Approach			513	5.2	513	5.2	0.442	7.9	LOS A	2.4	17.5	0.33	0.17	0.33	43.9
West: Barnsdale Road															
10	L2	All MCs	510	2.0	510	2.0	0.711	17.3	LOS C	9.9	70.3	0.76	0.74	1.34	34.5
11	T1	All MCs	77	2.0	77	2.0	0.711	17.3	LOS C	9.9	70.3	0.76	0.74	1.34	30.3
12	R2	All MCs	6	2.0	6	2.0	0.711	17.3	LOS C	9.9	70.3	0.76	0.74	1.34	32.1
Approach			592	2.0	592	2.0	0.711	17.3	LOS C	9.9	70.3	0.76	0.74	1.34	33.9
All Vehicles			1681	3.6	1681	3.6	0.806	17.7	LOS C	9.9	70.3	0.66	0.69	1.17	34.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Prince of Wales and Barnsdale FB2036 PM - SBR (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Prince of Wales Drive															
1	L2	All MCs	13	2.0	13	2.0	0.437	11.5	LOS B	2.3	16.3	0.63	0.60	0.81	39.1
2	T1	All MCs	276	2.0	276	2.0	0.437	11.5	LOS B	2.3	16.3	0.63	0.60	0.81	39.3
3	R2	All MCs	4	25.0	4	25.0	0.437	14.4	LOS B	2.3	16.3	0.63	0.60	0.81	33.5
Approach			293	2.3	293	2.3	0.437	11.6	LOS B	2.3	16.3	0.63	0.60	0.81	39.2
East: Barnsdale Road															
4	L2	All MCs	8	2.0	8	2.0	0.174	8.6	LOS A	0.6	4.2	0.57	0.54	0.57	37.6
5	T1	All MCs	88	2.0	88	2.0	0.174	8.6	LOS A	0.6	4.2	0.57	0.54	0.57	41.5
6	R2	All MCs	2	2.0	2	2.0	0.174	8.6	LOS A	0.6	4.2	0.57	0.54	0.57	41.4
Approach			98	2.0	98	2.0	0.174	8.6	LOS A	0.6	4.2	0.57	0.54	0.57	41.2
North: Prince of Wales Drive															
7	L2	All MCs	3	2.0	3	2.0	0.910	27.4	LOS D	34.3	244.0	1.00	0.92	1.56	25.1
8	T1	All MCs	531	2.0	531	2.0	0.910	27.4	LOS D	34.3	244.0	1.00	0.92	1.56	28.2
9	R2	All MCs	500	2.0	500	2.0	0.910	22.4	LOS C	34.3	244.0	0.88	0.80	1.30	34.2
Approach			1034	2.0	1034	2.0	0.910	25.0	LOS C	34.3	244.0	0.94	0.86	1.44	31.0
West: Barnsdale Road															
10	L2	All MCs	376	5.0	376	5.0	0.789	27.3	LOS D	8.7	63.6	0.88	1.04	1.84	29.5
11	T1	All MCs	108	7.0	108	7.0	0.789	27.6	LOS D	8.7	63.6	0.88	1.04	1.84	25.8
12	R2	All MCs	7	2.0	7	2.0	0.789	26.9	LOS D	8.7	63.6	0.88	1.04	1.84	27.2
Approach			490	5.4	490	5.4	0.789	27.4	LOS D	8.7	63.6	0.88	1.04	1.84	28.7
All Vehicles			1916	2.9	1916	2.9	0.910	22.7	LOS C	34.3	244.0	0.86	0.85	1.40	31.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Appendix N

Synchro and Sidra Worksheets – 2031 Future Total Horizon

MOVEMENT SUMMARY

Site: 101 [Borrisokane Road at Cambrian Road FT2031 AM - with industrial (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Borrisokane															
2	T1	All MCs	203	10.0	203	10.0	0.428	9.4	LOS A	2.0	14.9	0.56	0.68	0.60	61.0
3	R2	All MCs	110	10.0	110	10.0	0.428	8.8	LOS A	2.0	14.9	0.56	0.68	0.60	57.8
Approach			313	10.0	313	10.0	0.428	9.2	LOS A	2.0	14.9	0.56	0.68	0.60	59.9
East: Cambrian															
4	L2	All MCs	212	10.0	212	10.0	0.943	26.0	LOS D	23.4	177.1	1.00	1.11	1.68	47.1
6	R2	All MCs	598	9.0	598	9.0	0.943	20.8	LOS C	23.4	177.1	1.00	1.11	1.68	47.8
Approach			810	9.3	810	9.3	0.943	22.2	LOS C	23.4	177.1	1.00	1.11	1.68	47.6
North: Borrisokane															
7	L2	All MCs	330	17.0	330	17.0	0.597	14.1	LOS B	3.9	31.1	0.59	0.68	0.65	53.0
8	T1	All MCs	158	13.0	158	13.0	0.597	9.3	LOS A	3.9	31.1	0.59	0.68	0.65	57.5
Approach			488	15.7	488	15.7	0.597	12.6	LOS B	3.9	31.1	0.59	0.68	0.65	54.4
All Vehicles			1611	11.4	1611	11.4	0.943	16.7	LOS C	23.4	177.1	0.79	0.89	1.16	51.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Borrisokane Road at Cambrian Road FT2031 PM - with industrial (Site Folder: General)]

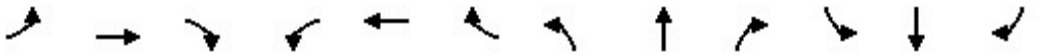
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Borrisokane															
2	T1	All MCs	201	3.0	201	3.0	0.686	14.2	LOS B	4.7	34.3	0.80	0.91	1.15	57.9
3	R2	All MCs	219	8.0	219	8.0	0.686	14.1	LOS B	4.7	34.3	0.80	0.91	1.15	54.1
Approach			420	5.6	420	5.6	0.686	14.1	LOS B	4.7	34.3	0.80	0.91	1.15	55.9
East: Cambrian															
4	L2	All MCs	180	4.0	180	4.0	0.761	14.5	LOS B	8.3	61.3	0.78	0.68	0.92	56.5
6	R2	All MCs	493	7.0	493	7.0	0.761	9.6	LOS A	8.3	61.3	0.78	0.68	0.92	56.4
Approach			673	6.2	673	6.2	0.761	10.9	LOS B	8.3	61.3	0.78	0.68	0.92	56.4
North: Borrisokane															
7	L2	All MCs	542	6.0	542	6.0	0.818	16.4	LOS C	11.2	81.6	0.87	0.68	1.04	53.6
8	T1	All MCs	203	2.0	203	2.0	0.818	11.6	LOS B	11.2	81.6	0.87	0.68	1.04	57.7
Approach			745	4.9	745	4.9	0.818	15.1	LOS C	11.2	81.6	0.87	0.68	1.04	54.6
All Vehicles			1838	5.5	1838	5.5	0.818	13.3	LOS B	11.2	81.6	0.82	0.73	1.02	55.5

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	77	218	146	59	414	84	289	14	104	104	5	105
Future Volume (vph)	77	218	146	59	414	84	289	14	104	104	5	105
Satd. Flow (prot)	1523	1360	0	1658	1658	0	1013	1515	0	1595	1371	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1523	1360	0	1658	1658	0	1013	1515	0	1595	1371	0
Lane Group Flow (vph)	77	364	0	59	498	0	289	118	0	104	110	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 66.6%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	158.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	77	218	146	59	414	84	289	14	104	104	5	105
Future Vol, veh/h	77	218	146	59	414	84	289	14	104	104	5	105
Conflicting Peds, #/hr	6	0	0	0	0	6	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	37.5	-	-	37.5	-	-	30	-	-	30	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	11	5	50	2	3	13	67	2	2	6	100	7
Mvmt Flow	77	218	146	59	414	84	289	14	104	104	5	105

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	504	0	0	364	0	0	1074	1067	291	1084	1098	462
Stage 1	-	-	-	-	-	-	445	445	-	580	580	-
Stage 2	-	-	-	-	-	-	629	622	-	504	518	-
Critical Hdwy	4.21	-	-	4.12	-	-	7.77	6.52	6.22	7.16	7.5	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	6.77	5.52	-	6.16	6.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.77	5.52	-	6.16	6.5	-
Follow-up Hdwy	2.299	-	-	2.218	-	-	4.103	4.018	3.318	3.554	4.9	3.363
Pot Cap-1 Maneuver	1016	-	-	1195	-	-	~ 150	222	748	191	144	589
Stage 1	-	-	-	-	-	-	484	575	-	493	373	-
Stage 2	-	-	-	-	-	-	377	479	-	543	402	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1011	-	-	1195	-	-	~ 108	194	748	140	126	586
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 108	194	-	140	126	-
Stage 1	-	-	-	-	-	-	447	531	-	454	353	-
Stage 2	-	-	-	-	-	-	290	453	-	421	371	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.5	0.9	$ 602	47.1
HCM LOS			F	E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	108	559	1011	-	-	1195	-	-	140	503
HCM Lane V/C Ratio	2.676	0.211	0.076	-	-	0.049	-	-	0.743	0.219
HCM Control Delay (s)	$ 842.4	13.2	8.9	-	-	8.2	-	-	82.1	14.1
HCM Lane LOS	F	B	A	-	-	A	-	-	F	B
HCM 95th %tile Q(veh)	26.7	0.8	0.2	-	-	0.2	-	-	4.4	0.8

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

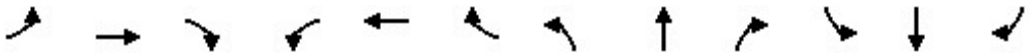
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	318	290	32	332	158	125	27	39	21	78	190	82
Future Volume (vph)	318	290	32	332	158	125	27	39	21	78	190	82
Satd. Flow (prot)	0	1684	0	0	1650	0	0	1662	0	0	1652	0
Flt Permitted		0.579			0.547			0.733			0.905	
Satd. Flow (perm)	0	999	0	0	926	0	0	1237	0	0	1512	0
Satd. Flow (RTOR)		5			23			12			12	
Lane Group Flow (vph)	0	640	0	0	615	0	0	87	0	0	350	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	25.8	25.8		25.8	25.8		25.2	25.2		25.2	25.2	
Total Split (s)	86.0	86.0		86.0	86.0		34.0	34.0		34.0	34.0	
Total Split (%)	71.7%	71.7%		71.7%	71.7%		28.3%	28.3%		28.3%	28.3%	
Yellow Time (s)	5.1	5.1		5.1	5.1		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.7	1.7		1.7	1.7		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.8			6.8			6.2			6.2	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Act Effct Green (s)		79.2			79.2			27.8			27.8	
Actuated g/C Ratio		0.66			0.66			0.23			0.23	
v/c Ratio		0.97			1.00			0.29			0.97	
Control Delay		48.7			56.0			35.8			86.4	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		48.7			56.0			35.8			86.4	
LOS		D			E			D			F	
Approach Delay		48.7			56.0			35.8			86.4	
Approach LOS		D			E			D			F	
Queue Length 50th (m)		129.8			128.7			14.6			79.9	
Queue Length 95th (m)		#221.3			#217.0			29.4			#139.3	
Internal Link Dist (m)		543.4			1759.4			562.8			296.1	
Turn Bay Length (m)												
Base Capacity (vph)		661			618			295			359	
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			1.00			0.29			0.97	

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 120
Natural Cycle: 120
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 1.00

Intersection Signal Delay: 58.5 Intersection LOS: E
Intersection Capacity Utilization 82.0% 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: 3: Hwy 416/Borrisokane & Barnsdale





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	161	193	13	4	241	100	10	76	1	304	132	305
Future Volume (vph)	161	193	13	4	241	100	10	76	1	304	132	305
Satd. Flow (prot)	0	1661	0	0	1626	0	0	1659	0	0	1609	0
Flt Permitted		0.979			0.999			0.994			0.980	
Satd. Flow (perm)	0	1661	0	0	1626	0	0	1659	0	0	1609	0
Lane Group Flow (vph)	0	367	0	0	345	0	0	87	0	0	741	0
Sign Control		Stop			Stop			Stop			Stop	

Intersection Summary	
Control Type: Unsignalized	
Intersection Capacity Utilization 102.5%	ICU Level of Service G
Analysis Period (min) 15	

Intersection	
Intersection Delay, s/veh	103.3
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	161	193	13	4	241	100	10	76	1	304	132	305
Future Vol, veh/h	161	193	13	4	241	100	10	76	1	304	132	305
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	7	2	8	2	6	3	10	6	2	2	4	2
Mvmt Flow	161	193	13	4	241	100	10	76	1	304	132	305
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	29.8	25	14.3	186.6
HCM LOS	D	C	B	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	11%	44%	1%	41%
Vol Thru, %	87%	53%	70%	18%
Vol Right, %	1%	4%	29%	41%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	87	367	345	741
LT Vol	10	161	4	304
Through Vol	76	193	241	132
RT Vol	1	13	100	305
Lane Flow Rate	87	367	345	741
Geometry Grp	1	1	1	1
Degree of Util (X)	0.199	0.727	0.662	1.344
Departure Headway (Hd)	9.037	8.099	7.878	6.528
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	399	451	462	563
Service Time	7.037	6.099	5.878	4.534
HCM Lane V/C Ratio	0.218	0.814	0.747	1.316
HCM Control Delay	14.3	29.8	25	186.6
HCM Lane LOS	B	D	C	F
HCM 95th-tile Q	0.7	5.8	4.7	32.3



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	10	37	269	49	62	312
Future Volume (vph)	10	37	269	49	62	312
Satd. Flow (prot)	1424	0	1607	0	1470	1679
Flt Permitted	0.989				0.950	
Satd. Flow (perm)	1424	0	1607	0	1470	1679
Lane Group Flow (vph)	47	0	318	0	62	312
Sign Control	Stop		Free			Free

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 35.0%		ICU Level of Service A	
Analysis Period (min) 15			

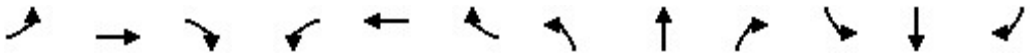
Intersection	
Int Delay, s/veh	1.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	37	269	49	62	312
Future Vol, veh/h	10	37	269	49	62	312
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	45	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	5	12	8	11	15	6
Mvmt Flow	10	37	269	49	62	312

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	730	294	0	0	318	0
Stage 1	294	-	-	-	-	-
Stage 2	436	-	-	-	-	-
Critical Hdwy	6.45	6.32	-	-	4.25	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.408	-	-	2.335	-
Pot Cap-1 Maneuver	385	722	-	-	1172	-
Stage 1	749	-	-	-	-	-
Stage 2	646	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	365	722	-	-	1172	-
Mov Cap-2 Maneuver	365	-	-	-	-	-
Stage 1	749	-	-	-	-	-
Stage 2	612	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11.5	0	1.4
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	598	1172	-
HCM Lane V/C Ratio	-	-	0.079	0.053	-
HCM Control Delay (s)	-	-	11.5	8.2	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.3	0.2	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	248	24	78	175	15	12	0	387	5	2	1
Future Volume (vph)	1	248	24	78	175	15	12	0	387	5	2	1
Satd. Flow (prot)	0	1274	0	0	1265	0	0	1127	0	0	1040	0
Flt Permitted					0.986			0.998			0.970	
Satd. Flow (perm)	0	1274	0	0	1265	0	0	1127	0	0	1040	0
Lane Group Flow (vph)	0	273	0	0	268	0	0	399	0	0	8	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 66.4%		ICU Level of Service C	
Analysis Period (min) 15			

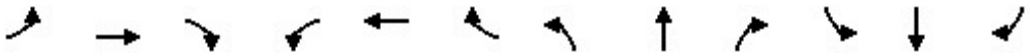
Intersection	
Int Delay, s/veh	8.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	1	248	24	78	175	15	12	0	387	5	2	1
Future Vol, veh/h	1	248	24	78	175	15	12	0	387	5	2	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	37	50	50	28	86	67	60	36	100	2	2
Mvmt Flow	1	248	24	78	175	15	12	0	387	5	2	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	190	0	0	272	0	0	602	608	260	795	613	183
Stage 1	-	-	-	-	-	-	262	262	-	339	339	-
Stage 2	-	-	-	-	-	-	340	346	-	456	274	-
Critical Hdwy	4.12	-	-	4.6	-	-	7.77	7.1	6.56	8.1	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.77	6.1	-	7.1	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.77	6.1	-	7.1	5.52	-
Follow-up Hdwy	2.218	-	-	2.65	-	-	4.103	4.54	3.624	4.4	4.018	3.318
Pot Cap-1 Maneuver	1384	-	-	1059	-	-	331	342	703	214	408	859
Stage 1	-	-	-	-	-	-	620	597	-	512	640	-
Stage 2	-	-	-	-	-	-	558	544	-	434	683	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1384	-	-	1059	-	-	308	313	703	90	374	859
Mov Cap-2 Maneuver	-	-	-	-	-	-	308	313	-	90	374	-
Stage 1	-	-	-	-	-	-	619	596	-	511	587	-
Stage 2	-	-	-	-	-	-	509	499	-	195	682	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	2.5	17.7	34.7
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	677	1384	-	-	1059	-	-	129
HCM Lane V/C Ratio	0.589	0.001	-	-	0.074	-	-	0.062
HCM Control Delay (s)	17.7	7.6	0	-	8.7	0	-	34.7
HCM Lane LOS	C	A	A	-	A	A	-	D
HCM 95th %tile Q(veh)	3.9	0	-	-	0.2	-	-	0.2



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	9	10	20	5	93	10	118	44	66	66	10
Future Volume (vph)	10	9	10	20	5	93	10	118	44	66	66	10
Satd. Flow (prot)	0	1635	0	0	1548	0	0	1679	0	0	1688	0
Flt Permitted		0.983			0.992			0.997			0.977	
Satd. Flow (perm)	0	1635	0	0	1548	0	0	1679	0	0	1688	0
Lane Group Flow (vph)	0	29	0	0	118	0	0	172	0	0	142	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 36.4%		ICU Level of Service A	
Analysis Period (min) 15			

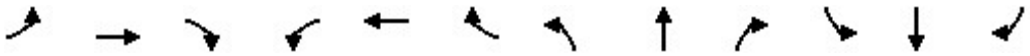
Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	9	10	20	5	93	10	118	44	66	66	10
Future Vol, veh/h	10	9	10	20	5	93	10	118	44	66	66	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	9	10	20	5	93	10	118	44	66	66	10

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	412	385	71	373	368	140	76	0	0	162	0	0
Stage 1	203	203	-	160	160	-	-	-	-	-	-	-
Stage 2	209	182	-	213	208	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	550	549	991	584	561	908	1523	-	-	1417	-	-
Stage 1	799	733	-	842	766	-	-	-	-	-	-	-
Stage 2	793	749	-	789	730	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	469	518	991	546	530	908	1523	-	-	1417	-	-
Mov Cap-2 Maneuver	469	518	-	546	530	-	-	-	-	-	-	-
Stage 1	793	697	-	836	761	-	-	-	-	-	-	-
Stage 2	702	744	-	733	694	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.4	10.3	0.4	3.6
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1523	-	-	594	795	1417	-	-
HCM Lane V/C Ratio	0.007	-	-	0.049	0.148	0.047	-	-
HCM Control Delay (s)	7.4	0	-	11.4	10.3	7.7	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.5	0.1	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	5	10	36	10	9	10	70	98	7	36	10
Future Volume (vph)	10	5	10	36	10	9	10	70	98	7	36	10
Satd. Flow (prot)	0	1618	0	0	1652	0	0	1611	0	0	1690	0
Flt Permitted		0.980			0.968			0.997			0.993	
Satd. Flow (perm)	0	1618	0	0	1652	0	0	1611	0	0	1690	0
Lane Group Flow (vph)	0	25	0	0	55	0	0	178	0	0	53	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 24.1%		ICU Level of Service A	
Analysis Period (min) 15			

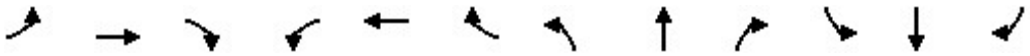
Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	5	10	36	10	9	10	70	98	7	36	10
Future Vol, veh/h	10	5	10	36	10	9	10	70	98	7	36	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	5	10	36	10	9	10	70	98	7	36	10

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	204	243	41	202	199	119	46	0	0	168	0	0
Stage 1	55	55	-	139	139	-	-	-	-	-	-	-
Stage 2	149	188	-	63	60	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	754	659	1030	756	697	933	1562	-	-	1410	-	-
Stage 1	957	849	-	864	782	-	-	-	-	-	-	-
Stage 2	854	745	-	948	845	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	731	651	1030	738	689	933	1562	-	-	1410	-	-
Mov Cap-2 Maneuver	731	651	-	738	689	-	-	-	-	-	-	-
Stage 1	950	845	-	858	777	-	-	-	-	-	-	-
Stage 2	829	740	-	929	841	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.6	10.2	0.4	1
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1562	-	-	805	754	1410	-	-
HCM Lane V/C Ratio	0.006	-	-	0.031	0.073	0.005	-	-
HCM Control Delay (s)	7.3	0	-	9.6	10.2	7.6	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.2	0	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	94	389	277	101	368	114	212	7	88	116	5	93
Future Volume (vph)	94	389	277	101	368	114	212	7	88	116	5	93
Satd. Flow (prot)	1523	1350	0	1658	1630	0	1013	1503	0	1595	1367	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1523	1350	0	1658	1630	0	1013	1503	0	1595	1367	0
Lane Group Flow (vph)	94	666	0	101	482	0	212	95	0	116	98	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 74.4%		ICU Level of Service D	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	174.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	94	389	277	101	368	114	212	7	88	116	5	93
Future Vol, veh/h	94	389	277	101	368	114	212	7	88	116	5	93
Conflicting Peds, #/hr	6	0	0	0	0	6	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	37.5	-	-	37.5	-	-	30	-	-	30	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	11	5	50	2	3	13	67	2	2	6	100	7
Mvmt Flow	94	389	277	101	368	114	212	7	88	116	5	93

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	488	0	0	666	0	0	1392	1406	528	1396	1487	431
Stage 1	-	-	-	-	-	-	716	716	-	633	633	-
Stage 2	-	-	-	-	-	-	676	690	-	763	854	-
Critical Hdwy	4.21	-	-	4.12	-	-	7.77	6.52	6.22	7.16	7.5	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	6.77	5.52	-	6.16	6.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.77	5.52	-	6.16	6.5	-
Follow-up Hdwy	2.299	-	-	2.218	-	-	4.103	4.018	3.318	3.554	4.9	3.363
Pot Cap-1 Maneuver	1030	-	-	923	-	-	~ 87	139	550	116	77	614
Stage 1	-	-	-	-	-	-	334	434	-	461	350	-
Stage 2	-	-	-	-	-	-	353	446	-	391	266	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1025	-	-	923	-	-	~ 59	112	550	~ 79	62	611
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 59	112	-	~ 79	62	-
Stage 1	-	-	-	-	-	-	303	394	-	417	310	-
Stage 2	-	-	-	-	-	-	262	396	-	293	242	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.1	1.6	$ 911	202
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	59	427	1025	-	-	923	-	-	79	421
HCM Lane V/C Ratio	3.593	0.222	0.092	-	-	0.109	-	-	1.468	0.233
HCM Control Delay (s)	$ 1312.1	15.8	8.9	-	-	9.4	-	-	$ 359	16.1
HCM Lane LOS	F	C	A	-	-	A	-	-	F	C
HCM 95th %tile Q(veh)	22.6	0.8	0.3	-	-	0.4	-	-	9.3	0.9

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	246	472	17	218	219	108	27	49	29	150	246	145
Future Volume (vph)	246	472	17	218	219	108	27	49	29	150	246	145
Satd. Flow (prot)	0	1701	0	0	1657	0	0	1659	0	0	1639	0
Flt Permitted		0.681			0.569			0.778			0.873	
Satd. Flow (perm)	0	1177	0	0	962	0	0	1307	0	0	1451	0
Satd. Flow (RTOR)		2			16			16			15	
Lane Group Flow (vph)	0	735	0	0	545	0	0	105	0	0	541	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	25.8	25.8		25.8	25.8		25.2	25.2		25.2	25.2	
Total Split (s)	82.0	82.0		82.0	82.0		48.0	48.0		48.0	48.0	
Total Split (%)	63.1%	63.1%		63.1%	63.1%		36.9%	36.9%		36.9%	36.9%	
Yellow Time (s)	5.1	5.1		5.1	5.1		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.7	1.7		1.7	1.7		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.8			6.8			6.2			6.2	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Act Effct Green (s)		75.2			75.2			41.8			41.8	
Actuated g/C Ratio		0.58			0.58			0.32			0.32	
v/c Ratio		1.08			0.97			0.24			1.14	
Control Delay		85.6			57.4			29.2			123.8	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		85.6			57.4			29.2			123.8	
LOS		F			E			C			F	
Approach Delay		85.6			57.4			29.2			123.8	
Approach LOS		F			E			C			F	
Queue Length 50th (m)		~210.0			125.5			16.6			~158.8	
Queue Length 95th (m)		#284.6			#206.8			31.6			#227.5	
Internal Link Dist (m)		543.4			1759.4			562.8			300.3	
Turn Bay Length (m)												
Base Capacity (vph)		681			563			431			476	
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		1.08			0.97			0.24			1.14	

Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Natural Cycle: 130
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.14

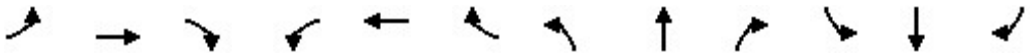
Intersection Signal Delay: 85.3	Intersection LOS: F
Intersection Capacity Utilization 100.0%	ICU Level of Service G
Analysis Period (min) 15	

~ 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: 3: Hwy 416/Borrisokane & Barnsdale





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	297	281	21	0	247	265	10	123	3	168	162	247
Future Volume (vph)	297	281	21	0	247	265	10	123	3	168	162	247
Satd. Flow (prot)	0	1651	0	0	1585	0	0	1664	0	0	1612	0
Flt Permitted		0.976						0.996			0.986	
Satd. Flow (perm)	0	1651	0	0	1585	0	0	1664	0	0	1612	0
Lane Group Flow (vph)	0	599	0	0	512	0	0	136	0	0	577	0
Sign Control		Stop			Stop			Stop			Stop	

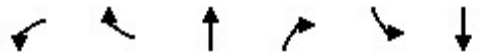
Intersection Summary	
Control Type: Unsignalized	
Intersection Capacity Utilization 121.0%	ICU Level of Service H
Analysis Period (min) 15	

Intersection	
Intersection Delay, s/veh	143.9
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	297	281	21	0	247	265	10	123	3	168	162	247
Future Vol, veh/h	297	281	21	0	247	265	10	123	3	168	162	247
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	7	2	8	2	6	3	10	6	2	2	4	2
Mvmt Flow	297	281	21	0	247	265	10	123	3	168	162	247
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	197.5	103.4	21.8	153.1
HCM LOS	F	F	C	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	7%	50%	0%	29%
Vol Thru, %	90%	47%	48%	28%
Vol Right, %	2%	4%	52%	43%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	136	599	512	577
LT Vol	10	297	0	168
Through Vol	123	281	247	162
RT Vol	3	21	265	247
Lane Flow Rate	136	599	512	577
Geometry Grp	1	1	1	1
Degree of Util (X)	0.369	1.346	1.093	1.238
Departure Headway (Hd)	11.935	9.095	9.169	8.712
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	303	407	399	421
Service Time	9.935	7.095	7.169	6.712
HCM Lane V/C Ratio	0.449	1.472	1.283	1.371
HCM Control Delay	21.8	197.5	103.4	153.1
HCM Lane LOS	C	F	F	F
HCM 95th-tile Q	1.6	25.1	15.2	21.3



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	75	80	344	20	62	324
Future Volume (vph)	75	80	344	20	62	324
Satd. Flow (prot)	1488	0	1634	0	1470	1679
Flt Permitted	0.976				0.950	
Satd. Flow (perm)	1488	0	1634	0	1470	1679
Lane Group Flow (vph)	155	0	364	0	62	324
Sign Control	Stop		Free			Free

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

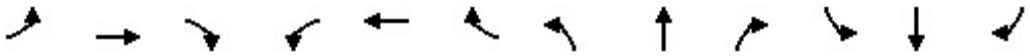
Intersection	
Int Delay, s/veh	3.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	75	80	344	20	62	324
Future Vol, veh/h	75	80	344	20	62	324
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	45	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	5	12	8	11	15	6
Mvmt Flow	75	80	344	20	62	324

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	802	354	0	0	364	0
Stage 1	354	-	-	-	-	-
Stage 2	448	-	-	-	-	-
Critical Hdwy	6.45	6.32	-	-	4.25	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.408	-	-	2.335	-
Pot Cap-1 Maneuver	349	668	-	-	1126	-
Stage 1	704	-	-	-	-	-
Stage 2	637	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	330	668	-	-	1126	-
Mov Cap-2 Maneuver	330	-	-	-	-	-
Stage 1	704	-	-	-	-	-
Stage 2	602	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17.3	0	1.3
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	447	1126	-
HCM Lane V/C Ratio	-	-	0.347	0.055	-
HCM Control Delay (s)	-	-	17.3	8.4	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	1.5	0.2	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	220	18	115	271	7	36	0	506	10	1	0
Future Volume (vph)	0	220	18	115	271	7	36	0	506	10	1	0
Satd. Flow (prot)	0	1277	0	0	1293	0	0	1123	0	0	891	0
Flt Permitted					0.986			0.997			0.957	
Satd. Flow (perm)	0	1277	0	0	1293	0	0	1123	0	0	891	0
Lane Group Flow (vph)	0	238	0	0	393	0	0	542	0	0	11	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 79.8%		ICU Level of Service D	
Analysis Period (min) 15			

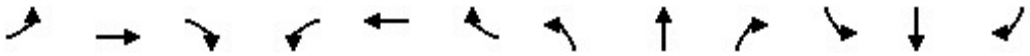
Intersection	
Int Delay, s/veh	16.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	220	18	115	271	7	36	0	506	10	1	0
Future Vol, veh/h	0	220	18	115	271	7	36	0	506	10	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	37	50	50	28	86	67	60	36	100	2	2
Mvmt Flow	0	220	18	115	271	7	36	0	506	10	1	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	278	0	0	238	0	0	734	737	229	987	743	275
Stage 1	-	-	-	-	-	-	229	229	-	505	505	-
Stage 2	-	-	-	-	-	-	505	508	-	482	238	-
Critical Hdwy	4.12	-	-	4.6	-	-	7.77	7.1	6.56	8.1	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.77	6.1	-	7.1	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.77	6.1	-	7.1	5.52	-
Follow-up Hdwy	2.218	-	-	2.65	-	-	4.103	4.54	3.624	4.4	4.018	3.318
Pot Cap-1 Maneuver	1285	-	-	1093	-	-	266	285	733	153	343	764
Stage 1	-	-	-	-	-	-	648	619	-	405	540	-
Stage 2	-	-	-	-	-	-	446	454	-	418	708	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1285	-	-	1093	-	-	240	249	733	43	300	764
Mov Cap-2 Maneuver	-	-	-	-	-	-	240	249	-	43	300	-
Stage 1	-	-	-	-	-	-	648	619	-	405	473	-
Stage 2	-	-	-	-	-	-	389	397	-	129	708	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	2.5	33	103.6
HCM LOS			D	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	645	1285	-	-	1093	-	-	47
HCM Lane V/C Ratio	0.84	-	-	-	0.105	-	-	0.234
HCM Control Delay (s)	33	0	-	-	8.7	0	-	103.6
HCM Lane LOS	D	A	-	-	A	A	-	F
HCM 95th %tile Q(veh)	9.2	0	-	-	0.4	-	-	0.8



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	7	10	41	8	96	10	85	30	80	123	10
Future Volume (vph)	10	7	10	41	8	96	10	85	30	80	123	10
Satd. Flow (prot)	0	1628	0	0	1568	0	0	1682	0	0	1703	0
Flt Permitted		0.982			0.986			0.996			0.982	
Satd. Flow (perm)	0	1628	0	0	1568	0	0	1682	0	0	1703	0
Lane Group Flow (vph)	0	27	0	0	145	0	0	125	0	0	213	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 36.3%		ICU Level of Service A	
Analysis Period (min) 15			

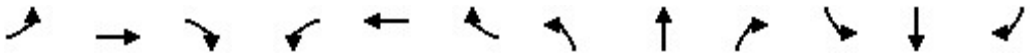
Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	10	7	10	41	8	96	10	85	30	80	123	10
Future Vol, veh/h	10	7	10	41	8	96	10	85	30	80	123	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	7	10	41	8	96	10	85	30	80	123	10

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	460	423	128	417	413	100	133	0	0	115	0	0
Stage 1	288	288	-	120	120	-	-	-	-	-	-	-
Stage 2	172	135	-	297	293	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	512	522	922	546	529	956	1452	-	-	1474	-	-
Stage 1	720	674	-	884	796	-	-	-	-	-	-	-
Stage 2	830	785	-	712	670	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	432	488	922	507	494	956	1452	-	-	1474	-	-
Mov Cap-2 Maneuver	432	488	-	507	494	-	-	-	-	-	-	-
Stage 1	715	634	-	878	790	-	-	-	-	-	-	-
Stage 2	734	780	-	655	630	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.8	11.1	0.6	2.8
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1452	-	-	559	734	1474	-	-
HCM Lane V/C Ratio	0.007	-	-	0.048	0.198	0.054	-	-
HCM Control Delay (s)	7.5	0	-	11.8	11.1	7.6	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.7	0.2	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	5	10	79	10	6	10	45	63	6	79	10
Future Volume (vph)	10	5	10	79	10	6	10	45	63	6	79	10
Satd. Flow (prot)	0	1618	0	0	1660	0	0	1613	0	0	1716	0
Flt Permitted		0.980			0.960			0.996			0.997	
Satd. Flow (perm)	0	1618	0	0	1660	0	0	1613	0	0	1716	0
Lane Group Flow (vph)	0	25	0	0	95	0	0	118	0	0	95	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 27.2%		ICU Level of Service A	
Analysis Period (min) 15			

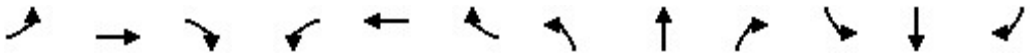
Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	10	5	10	79	10	6	10	45	63	6	79	10
Future Vol, veh/h	10	5	10	79	10	6	10	45	63	6	79	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	5	10	79	10	6	10	45	63	6	79	10

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	201	224	84	201	198	77	89	0	0	108	0	0
Stage 1	96	96	-	97	97	-	-	-	-	-	-	-
Stage 2	105	128	-	104	101	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	757	675	975	757	698	984	1506	-	-	1483	-	-
Stage 1	911	815	-	910	815	-	-	-	-	-	-	-
Stage 2	901	790	-	902	811	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	738	668	975	739	690	984	1506	-	-	1483	-	-
Mov Cap-2 Maneuver	738	668	-	739	690	-	-	-	-	-	-	-
Stage 1	905	812	-	904	809	-	-	-	-	-	-	-
Stage 2	878	784	-	884	808	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.7	10.5	0.6	0.5
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1506	-	-	799	745	1483	-	-
HCM Lane V/C Ratio	0.007	-	-	0.031	0.128	0.004	-	-
HCM Control Delay (s)	7.4	0	-	9.7	10.5	7.4	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.4	0	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	161	193	13	4	241	100	10	76	1	304	132	305
Future Volume (vph)	161	193	13	4	241	100	10	76	1	304	132	305
Satd. Flow (prot)	1580	1723	0	0	1626	0	0	1659	0	1658	1553	0
Flt Permitted	0.950				0.999			0.994		0.950		
Satd. Flow (perm)	1580	1723	0	0	1626	0	0	1659	0	1658	1553	0
Lane Group Flow (vph)	161	206	0	0	345	0	0	87	0	304	437	0
Sign Control		Stop			Stop			Stop			Stop	

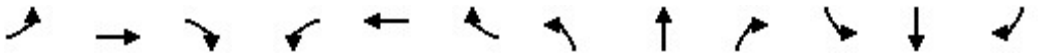
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 68.7%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	25.1
Intersection LOS	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	161	193	13	4	241	100	10	76	1	304	132	305
Future Vol, veh/h	161	193	13	4	241	100	10	76	1	304	132	305
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	7	2	8	2	6	3	10	6	2	2	4	2
Mvmt Flow	161	193	13	4	241	100	10	76	1	304	132	305
Number of Lanes	1	1	0	0	1	0	0	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	2
HCM Control Delay	16.3	27.1	14.2	29.9
HCM LOS	C	D	B	D

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	11%	100%	0%	1%	100%	0%
Vol Thru, %	87%	0%	94%	70%	0%	30%
Vol Right, %	1%	0%	6%	29%	0%	70%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	87	161	206	345	304	437
LT Vol	10	161	0	4	304	0
Through Vol	76	0	193	241	0	132
RT Vol	1	0	13	100	0	305
Lane Flow Rate	87	161	206	345	304	437
Geometry Grp	4b	5	5	4b	5	5
Degree of Util (X)	0.212	0.376	0.443	0.715	0.655	0.824
Departure Headway (Hd)	8.789	8.398	7.75	7.456	7.762	6.784
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	408	428	466	486	465	533
Service Time	6.855	6.142	5.494	5.494	5.503	4.525
HCM Lane V/C Ratio	0.213	0.376	0.442	0.71	0.654	0.82
HCM Control Delay	14.2	16.1	16.5	27.1	24.1	33.9
HCM Lane LOS	B	C	C	D	C	D
HCM 95th-tile Q	0.8	1.7	2.2	5.7	4.6	8.2



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	248	24	78	175	15	12	0	387	5	2	1
Future Volume (vph)	1	248	24	78	175	15	12	0	387	5	2	1
Satd. Flow (prot)	0	1274	0	1127	1326	0	0	1013	1113	0	1040	0
Flt Permitted				0.950				0.950			0.970	
Satd. Flow (perm)	0	1274	0	1127	1326	0	0	1013	1113	0	1040	0
Lane Group Flow (vph)	0	273	0	78	190	0	0	12	387	0	8	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 54.0%		ICU Level of Service A	
Analysis Period (min) 15			

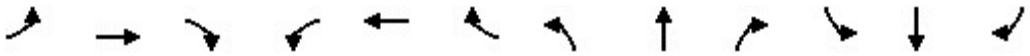
Intersection	
Int Delay, s/veh	7.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	248	24	78	175	15	12	0	387	5	2	1
Future Vol, veh/h	1	248	24	78	175	15	12	0	387	5	2	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	30	-	-	-	-	30	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	37	50	50	28	86	67	60	36	100	2	2
Mvmt Flow	1	248	24	78	175	15	12	0	387	5	2	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	190	0	0	272	0	0	602	608	260	795	613	183
Stage 1	-	-	-	-	-	-	262	262	-	339	339	-
Stage 2	-	-	-	-	-	-	340	346	-	456	274	-
Critical Hdwy	4.12	-	-	4.6	-	-	7.77	7.1	6.56	8.1	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.77	6.1	-	7.1	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.77	6.1	-	7.1	5.52	-
Follow-up Hdwy	2.218	-	-	2.65	-	-	4.103	4.54	3.624	4.4	4.018	3.318
Pot Cap-1 Maneuver	1384	-	-	1059	-	-	331	342	703	214	408	859
Stage 1	-	-	-	-	-	-	620	597	-	512	640	-
Stage 2	-	-	-	-	-	-	558	544	-	434	683	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1384	-	-	1059	-	-	310	316	703	91	377	859
Mov Cap-2 Maneuver	-	-	-	-	-	-	310	316	-	91	377	-
Stage 1	-	-	-	-	-	-	619	596	-	511	593	-
Stage 2	-	-	-	-	-	-	515	504	-	195	682	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	2.5	16.2	34.5
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	310	703	1384	-	-	1059	-	-	130
HCM Lane V/C Ratio	0.039	0.55	0.001	-	-	0.074	-	-	0.062
HCM Control Delay (s)	17.1	16.2	7.6	0	-	8.7	-	-	34.5
HCM Lane LOS	C	C	A	A	-	A	-	-	D
HCM 95th %tile Q(veh)	0.1	3.4	0	-	-	0.2	-	-	0.2



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	297	281	21	0	247	265	10	123	3	168	162	247
Future Volume (vph)	297	281	21	0	247	265	10	123	3	168	162	247
Satd. Flow (prot)	1580	1721	0	0	1585	0	0	1664	0	1658	1574	0
Flt Permitted	0.950							0.996		0.950		
Satd. Flow (perm)	1580	1721	0	0	1585	0	0	1664	0	1658	1574	0
Lane Group Flow (vph)	297	302	0	0	512	0	0	136	0	168	409	0
Sign Control		Stop			Stop			Stop			Stop	

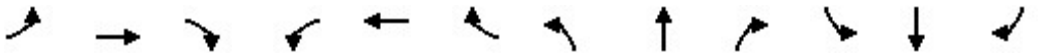
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 94.3%		ICU Level of Service F	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	60.2
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	297	281	21	0	247	265	10	123	3	168	162	247
Future Vol, veh/h	297	281	21	0	247	265	10	123	3	168	162	247
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	7	2	8	2	6	3	10	6	2	2	4	2
Mvmt Flow	297	281	21	0	247	265	10	123	3	168	162	247
Number of Lanes	1	1	0	0	1	0	0	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	2
HCM Control Delay	31.3	125.4	20.1	41.9
HCM LOS	D	F	C	E

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	7%	100%	0%	0%	100%	0%
Vol Thru, %	90%	0%	93%	48%	0%	40%
Vol Right, %	2%	0%	7%	52%	0%	60%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	136	297	302	512	168	409
LT Vol	10	297	0	0	168	0
Through Vol	123	0	281	247	0	162
RT Vol	3	0	21	265	0	247
Lane Flow Rate	136	297	302	512	168	409
Geometry Grp	4b	5	5	4b	5	5
Degree of Util (X)	0.377	0.734	0.693	1.169	0.412	0.903
Departure Headway (Hd)	10.719	9.359	8.7	8.223	9.303	8.378
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	337	389	420	445	390	438
Service Time	8.719	7.059	6.4	6.268	7.003	6.078
HCM Lane V/C Ratio	0.404	0.763	0.719	1.151	0.431	0.934
HCM Control Delay	20.1	33.9	28.8	125.4	18.4	51.5
HCM Lane LOS	C	D	D	F	C	F
HCM 95th-tile Q	1.7	5.7	5.1	19.2	2	9.7



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	220	18	115	271	7	36	0	506	10	1	0
Future Volume (vph)	0	220	18	115	271	7	36	0	506	10	1	0
Satd. Flow (prot)	0	1277	0	1127	1369	0	0	1013	1113	0	891	0
Flt Permitted				0.950				0.950			0.957	
Satd. Flow (perm)	0	1277	0	1127	1369	0	0	1013	1113	0	891	0
Lane Group Flow (vph)	0	238	0	115	278	0	0	36	506	0	11	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary		
Control Type: Unsignalized		
Intersection Capacity Utilization 59.8%	ICU Level of Service B	
Analysis Period (min) 15		

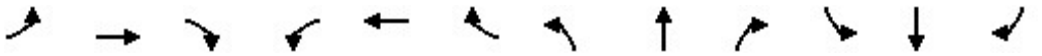
Intersection	
Int Delay, s/veh	11

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	220	18	115	271	7	36	0	506	10	1	0
Future Vol, veh/h	0	220	18	115	271	7	36	0	506	10	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	30	-	-	-	-	30	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	37	50	50	28	86	67	60	36	100	2	2
Mvmt Flow	0	220	18	115	271	7	36	0	506	10	1	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	278	0	0	238	0	0	734	737	229	987	743	275
Stage 1	-	-	-	-	-	-	229	229	-	505	505	-
Stage 2	-	-	-	-	-	-	505	508	-	482	238	-
Critical Hdwy	4.12	-	-	4.6	-	-	7.77	7.1	6.56	8.1	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.77	6.1	-	7.1	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.77	6.1	-	7.1	5.52	-
Follow-up Hdwy	2.218	-	-	2.65	-	-	4.103	4.54	3.624	4.4	4.018	3.318
Pot Cap-1 Maneuver	1285	-	-	1093	-	-	266	285	733	153	343	764
Stage 1	-	-	-	-	-	-	648	619	-	405	540	-
Stage 2	-	-	-	-	-	-	446	454	-	418	708	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1285	-	-	1093	-	-	244	255	733	44	307	764
Mov Cap-2 Maneuver	-	-	-	-	-	-	244	255	-	44	307	-
Stage 1	-	-	-	-	-	-	648	619	-	405	483	-
Stage 2	-	-	-	-	-	-	398	406	-	129	708	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	2.5	20.2	101
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	244	733	1285	-	-	1093	-	-	48
HCM Lane V/C Ratio	0.148	0.69	-	-	-	0.105	-	-	0.229
HCM Control Delay (s)	22.3	20.1	0	-	-	8.7	-	-	101
HCM Lane LOS	C	C	A	-	-	A	-	-	F
HCM 95th %tile Q(veh)	0.5	5.6	0	-	-	0.4	-	-	0.8



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	318	290	32	332	158	125	27	39	21	78	190	82
Future Volume (vph)	318	290	32	332	158	125	27	39	21	78	190	82
Satd. Flow (prot)	0	1684	0	0	1650	0	0	1662	0	1658	1643	0
Flt Permitted		0.580			0.549			0.656		0.774		
Satd. Flow (perm)	0	1001	0	0	930	0	0	1107	0	1351	1643	0
Satd. Flow (RTOR)		6			28			16			22	
Lane Group Flow (vph)	0	640	0	0	615	0	0	87	0	78	272	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	25.8	25.8		25.8	25.8		25.2	25.2		25.2	25.2	
Total Split (s)	64.0	64.0		64.0	64.0		26.0	26.0		26.0	26.0	
Total Split (%)	71.1%	71.1%		71.1%	71.1%		28.9%	28.9%		28.9%	28.9%	
Yellow Time (s)	5.1	5.1		5.1	5.1		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.7	1.7		1.7	1.7		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0		0.0	0.0	
Total Lost Time (s)		6.8			6.8			6.2		6.2	6.2	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Act Effct Green (s)		57.7			57.7			17.2		17.2	17.2	
Actuated g/C Ratio		0.66			0.66			0.20		0.20	0.20	
v/c Ratio		0.97			0.99			0.38		0.30	0.80	
Control Delay		46.6			52.2			30.2		32.9	49.7	
Queue Delay		0.0			0.0			0.0		0.0	0.0	
Total Delay		46.6			52.2			30.2		32.9	49.7	
LOS		D			D			C		C	D	
Approach Delay		46.6			52.2			30.2			45.9	
Approach LOS		D			D			C			D	
Queue Length 50th (m)		97.2			~100.4			10.3		11.2	40.3	
Queue Length 95th (m)		#180.5			#176.0			23.7		23.4	#73.5	
Internal Link Dist (m)		543.4			1759.4			562.8			300.3	
Turn Bay Length (m)										40.0		
Base Capacity (vph)		659			620			262		304	387	
Starvation Cap Reductn		0			0			0		0	0	
Spillback Cap Reductn		0			0			0		0	0	
Storage Cap Reductn		0			0			0		0	0	
Reduced v/c Ratio		0.97			0.99			0.33		0.26	0.70	

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 87.9
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.99

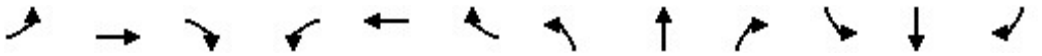
Intersection Signal Delay: 47.6	Intersection LOS: D
Intersection Capacity Utilization 86.9%	ICU Level of Service E
Analysis Period (min) 15	

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

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

Splits and Phases: 3: Hwy 416/Borrisokane & Barnsdale





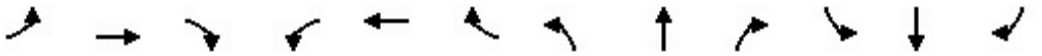
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	246	472	17	218	219	108	27	49	29	150	246	145
Future Volume (vph)	246	472	17	218	219	108	27	49	29	150	246	145
Satd. Flow (prot)	0	1701	0	0	1657	0	0	1659	0	1658	1618	0
Flt Permitted		0.689			0.577			0.507		0.730		
Satd. Flow (perm)	0	1191	0	0	976	0	0	852	0	1274	1618	0
Satd. Flow (RTOR)		3			26			20			31	
Lane Group Flow (vph)	0	735	0	0	545	0	0	105	0	150	391	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	25.8	25.8		25.8	25.8		25.2	25.2		25.2	25.2	
Total Split (s)	63.0	63.0		63.0	63.0		27.0	27.0		27.0	27.0	
Total Split (%)	70.0%	70.0%		70.0%	70.0%		30.0%	30.0%		30.0%	30.0%	
Yellow Time (s)	5.1	5.1		5.1	5.1		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.7	1.7		1.7	1.7		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0		0.0	0.0	
Total Lost Time (s)		6.8			6.8			6.2		6.2	6.2	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Act Effct Green (s)		56.2			56.2			20.8		20.8	20.8	
Actuated g/C Ratio		0.62			0.62			0.23		0.23	0.23	
v/c Ratio		0.99			0.88			0.50		0.51	0.98	
Control Delay		49.0			32.1			33.4		37.3	75.4	
Queue Delay		0.0			0.0			0.0		0.0	0.0	
Total Delay		49.0			32.1			33.4		37.3	75.4	
LOS		D			C			C		D	E	
Approach Delay		49.0			32.1			33.4			64.8	
Approach LOS		D			C			C			E	
Queue Length 50th (m)		112.2			68.4			12.7		22.7	62.9	
Queue Length 95th (m)		#198.3			#144.0			29.1		41.3	#119.5	
Internal Link Dist (m)		543.4			1759.4			562.8			300.3	
Turn Bay Length (m)										40.0		
Base Capacity (vph)		744			619			212		294	397	
Starvation Cap Reductn		0			0			0		0	0	
Spillback Cap Reductn		0			0			0		0	0	
Storage Cap Reductn		0			0			0		0	0	
Reduced v/c Ratio		0.99			0.88			0.50		0.51	0.98	

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.99

Intersection Signal Delay: 47.8 Intersection LOS: D
Intersection Capacity Utilization 92.1% 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: 3: Hwy 416/Borrisokane & Barnsdale





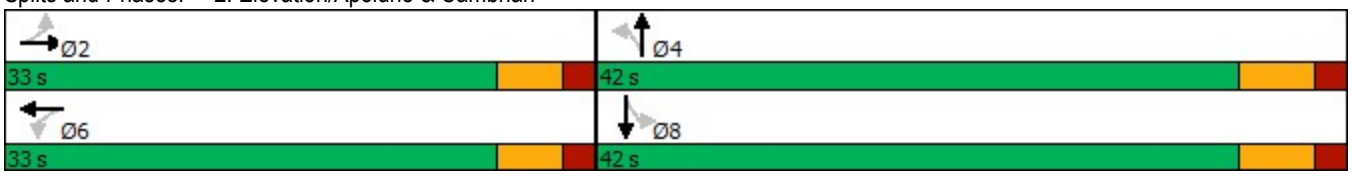
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	77	218	146	59	414	84	289	14	104	104	5	105
Future Volume (vph)	77	218	146	59	414	84	289	14	104	104	5	105
Satd. Flow (prot)	1523	1360	0	1658	1649	0	1013	1515	0	1595	1371	0
Flt Permitted	0.297			0.443			0.686			0.681		
Satd. Flow (perm)	474	1360	0	773	1649	0	731	1515	0	1144	1371	0
Satd. Flow (RTOR)		51			15			104			105	
Lane Group Flow (vph)	77	364	0	59	498	0	289	118	0	104	110	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	24.6	24.6		24.6	24.6		28.1	28.1		28.1	28.1	
Total Split (s)	33.0	33.0		33.0	33.0		42.0	42.0		42.0	42.0	
Total Split (%)	44.0%	44.0%		44.0%	44.0%		56.0%	56.0%		56.0%	56.0%	
Yellow Time (s)	3.7	3.7		3.7	3.7		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.9	1.9		1.9	1.9		1.9	1.9		1.9	1.9	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.6	5.6		5.6	5.6		6.1	6.1		6.1	6.1	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Act Effct Green (s)	27.7	27.7		27.7	27.7		30.7	30.7		30.7	30.7	
Actuated g/C Ratio	0.39	0.39		0.39	0.39		0.44	0.44		0.44	0.44	
v/c Ratio	0.41	0.64		0.19	0.76		0.91	0.16		0.21	0.17	
Control Delay	26.3	22.6		18.3	28.8		51.9	3.9		12.8	3.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	26.3	22.6		18.3	28.8		51.9	3.9		12.8	3.5	
LOS	C	C		B	C		D	A		B	A	
Approach Delay		23.2			27.7			38.0			8.0	
Approach LOS		C			C			D			A	
Queue Length 50th (m)	8.1	36.7		5.6	60.5		33.4	1.0		8.0	0.4	
Queue Length 95th (m)	21.0	66.4		14.0	#110.3		#78.0	8.6		16.7	7.7	
Internal Link Dist (m)		524.9			573.6			253.1			160.5	
Turn Bay Length (m)	37.5			37.5			30.0			30.0		
Base Capacity (vph)	187	567		304	658		377	832		590	758	
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	0.41	0.64		0.19	0.76		0.77	0.14		0.18	0.15	

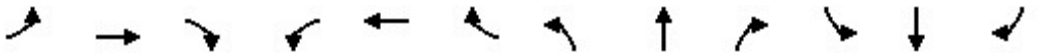
Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 70.2
Natural Cycle: 65
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.91

Intersection Signal Delay: 26.5	Intersection LOS: C
Intersection Capacity Utilization 74.8%	ICU Level of Service D
Analysis Period (min) 15	

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

Splits and Phases: 2: Elevation/Apolune & Cambrian





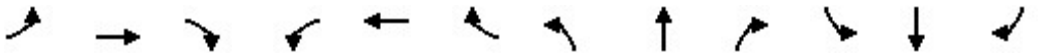
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	318	290	32	332	158	125	27	39	21	78	190	82
Future Volume (vph)	318	290	32	332	158	125	27	39	21	78	190	82
Satd. Flow (prot)	1658	1704	0	1658	1621	0	0	1662	0	1658	1643	0
Flt Permitted	0.558			0.467				0.774		0.701		
Satd. Flow (perm)	974	1704	0	815	1621	0	0	1306	0	1223	1643	0
Satd. Flow (RTOR)		7			55			21			28	
Lane Group Flow (vph)	318	322	0	332	283	0	0	87	0	78	272	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	11.7	25.8		11.7	25.8		25.2	25.2		25.2	25.2	
Total Split (s)	19.0	28.0		21.0	30.0		26.0	26.0		26.0	26.0	
Total Split (%)	25.3%	37.3%		28.0%	40.0%		34.7%	34.7%		34.7%	34.7%	
Yellow Time (s)	5.1	5.1		5.1	5.1		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.6	1.7		1.6	1.7		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0		0.0	0.0	
Total Lost Time (s)	6.7	6.8		6.7	6.8			6.2		6.2	6.2	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	Max		None	Max		None	None		None	None	
Act Effct Green (s)	33.8	22.6		35.2	23.3			15.2		15.2	15.2	
Actuated g/C Ratio	0.49	0.33		0.51	0.34			0.22		0.22	0.22	
v/c Ratio	0.55	0.58		0.60	0.49			0.29		0.29	0.71	
Control Delay	12.5	25.6		13.1	19.2			20.6		25.7	33.6	
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	
Total Delay	12.5	25.6		13.1	19.2			20.6		25.7	33.6	
LOS	B	C		B	B			C		C	C	
Approach Delay		19.1			15.9			20.6			31.9	
Approach LOS		B			B			C			C	
Queue Length 50th (m)	18.8	34.3		19.8	23.5			7.2		8.7	30.0	
Queue Length 95th (m)	36.9	65.2		38.7	48.1			18.0		19.3	53.2	
Internal Link Dist (m)		543.4			1759.4			562.8			300.3	
Turn Bay Length (m)	75.0			80.0						40.0		
Base Capacity (vph)	613	559		618	581			389		350	491	
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	0.52	0.58		0.54	0.49			0.22		0.22	0.55	

Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 69.4
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.71

Intersection Signal Delay: 20.7	Intersection LOS: C
Intersection Capacity Utilization 83.3%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 3: Hwy 416/Borrisokane & Barnsdale





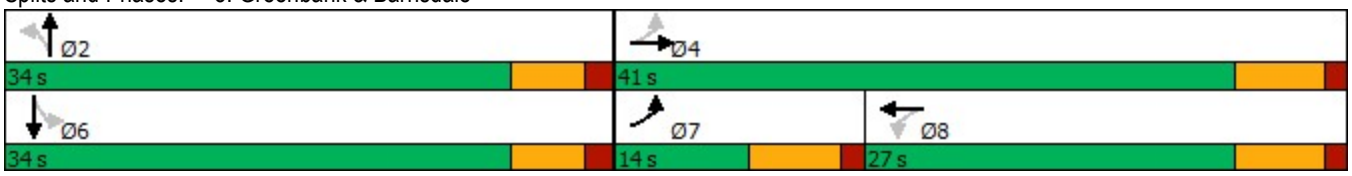
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	161	193	13	4	241	100	10	76	1	304	132	305
Future Volume (vph)	161	193	13	4	241	100	10	76	1	304	132	305
Satd. Flow (prot)	1580	1723	0	0	1626	0	0	1659	0	1658	1553	0
Flt Permitted	0.274				0.996			0.944		0.701		
Satd. Flow (perm)	456	1723	0	0	1621	0	0	1575	0	1221	1553	0
Satd. Flow (RTOR)		6			27			1			178	
Lane Group Flow (vph)	161	206	0	0	345	0	0	87	0	304	437	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	11.5	24.4		24.4	24.4		23.8	23.8		23.8	23.8	
Total Split (s)	14.0	41.0		27.0	27.0		34.0	34.0		34.0	34.0	
Total Split (%)	18.7%	54.7%		36.0%	36.0%		45.3%	45.3%		45.3%	45.3%	
Yellow Time (s)	5.1	5.1		5.1	5.1		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.4	1.3		1.3	1.3		1.6	1.6		1.6	1.6	
Lost Time Adjust (s)	0.0	0.0			0.0			0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.4			6.4			5.8		5.8	5.8	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)	31.8	31.9			17.9			28.3		28.3	28.3	
Actuated g/C Ratio	0.44	0.44			0.25			0.39		0.39	0.39	
v/c Ratio	0.51	0.27			0.82			0.14		0.64	0.61	
Control Delay	18.6	13.4			40.8			16.0		26.2	15.0	
Queue Delay	0.0	0.0			0.0			0.0		0.0	0.0	
Total Delay	18.6	13.4			40.8			16.0		26.2	15.0	
LOS	B	B			D			B		C	B	
Approach Delay		15.6			40.8			16.0			19.6	
Approach LOS		B			D			B			B	
Queue Length 50th (m)	13.0	16.4			40.9			7.8		34.6	27.7	
Queue Length 95th (m)	24.3	29.4			#77.8			16.8		62.1	57.2	
Internal Link Dist (m)		1759.4			1181.9			632.6			239.9	
Turn Bay Length (m)	70.0									75.0		
Base Capacity (vph)	317	828			481			615		476	715	
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	0.51	0.25			0.72			0.14		0.64	0.61	

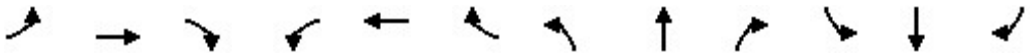
Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 72.4
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.82

Intersection Signal Delay: 23.2	Intersection LOS: C
Intersection Capacity Utilization 74.2%	ICU Level of Service D
Analysis Period (min) 15	

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

Splits and Phases: 5: Greenbank & Barnsdale





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	248	24	78	175	15	12	0	387	5	2	1
Future Volume (vph)	1	248	24	78	175	15	12	0	387	5	2	1
Satd. Flow (prot)	0	1274	0	0	1265	0	0	1127	0	0	1040	0
Flt Permitted					0.986			0.998			0.970	
Satd. Flow (perm)	0	1274	0	0	1265	0	0	1127	0	0	1040	0
Lane Group Flow (vph)	0	273	0	0	268	0	0	399	0	0	8	0
Sign Control		Stop			Stop			Stop			Stop	

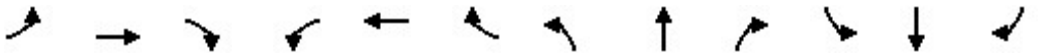
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 66.4%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	17.3
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	248	24	78	175	15	12	0	387	5	2	1
Future Vol, veh/h	1	248	24	78	175	15	12	0	387	5	2	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	37	50	50	28	86	67	60	36	100	2	2
Mvmt Flow	1	248	24	78	175	15	12	0	387	5	2	1
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	13.2	15.9	21.2	11.5
HCM LOS	B	C	C	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	3%	0%	29%	62%
Vol Thru, %	0%	91%	65%	25%
Vol Right, %	97%	9%	6%	12%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	399	273	268	8
LT Vol	12	1	78	5
Through Vol	0	248	175	2
RT Vol	387	24	15	1
Lane Flow Rate	399	273	268	8
Geometry Grp	1	1	1	1
Degree of Util (X)	0.678	0.435	0.49	0.018
Departure Headway (Hd)	6.115	5.74	6.586	8.241
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	591	625	547	432
Service Time	4.164	3.8	4.646	6.336
HCM Lane V/C Ratio	0.675	0.437	0.49	0.019
HCM Control Delay	21.2	13.2	15.9	11.5
HCM Lane LOS	C	B	C	B
HCM 95th-tile Q	5.2	2.2	2.7	0.1



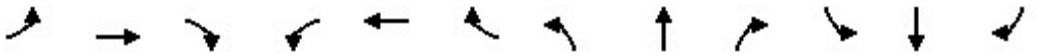
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	94	389	277	101	368	114	212	7	88	116	5	93
Future Volume (vph)	94	389	277	101	368	114	212	7	88	116	5	93
Satd. Flow (prot)	1523	1350	0	1658	1617	0	1013	1503	0	1595	1367	0
Flt Permitted	0.402			0.263			0.694			0.695		
Satd. Flow (perm)	641	1350	0	459	1617	0	740	1503	0	1167	1367	0
Satd. Flow (RTOR)		68			30			88			93	
Lane Group Flow (vph)	94	666	0	101	482	0	212	95	0	116	98	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	24.6	24.6		24.6	24.6		28.1	28.1		28.1	28.1	
Total Split (s)	48.0	48.0		48.0	48.0		32.0	32.0		32.0	32.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Yellow Time (s)	3.7	3.7		3.7	3.7		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.9	1.9		1.9	1.9		1.9	1.9		1.9	1.9	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.6	5.6		5.6	5.6		6.1	6.1		6.1	6.1	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Act Effct Green (s)	43.5	43.5		43.5	43.5		24.6	24.6		24.6	24.6	
Actuated g/C Ratio	0.55	0.55		0.55	0.55		0.31	0.31		0.31	0.31	
v/c Ratio	0.27	0.87		0.40	0.54		0.93	0.18		0.32	0.20	
Control Delay	13.0	29.4		17.5	14.1		73.8	6.4		23.6	6.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	13.0	29.4		17.5	14.1		73.8	6.4		23.6	6.3	
LOS	B	C		B	B		E	A		C	A	
Approach Delay		27.4			14.7			53.0			15.7	
Approach LOS		C			B			D			B	
Queue Length 50th (m)	7.4	77.1		8.6	42.4		30.2	0.7		13.1	0.5	
Queue Length 95th (m)	16.8	#150.4		21.8	69.0		#69.4	10.3		26.4	10.2	
Internal Link Dist (m)		524.9			573.6			253.1			160.5	
Turn Bay Length (m)	37.5			37.5			30.0			30.0		
Base Capacity (vph)	349	766		250	894		240	547		378	506	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.27	0.87		0.40	0.54		0.88	0.17		0.31	0.19	

Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 79.8
Natural Cycle: 80
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.93

Intersection Signal Delay: 26.3 Intersection LOS: C
Intersection Capacity Utilization 81.3% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 2: Elevation/Apolune & Cambrian





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	246	472	17	218	219	108	27	49	29	150	246	145
Future Volume (vph)	246	472	17	218	219	108	27	49	29	150	246	145
Satd. Flow (prot)	1658	1720	0	1658	1647	0	0	1659	0	1658	1619	0
Flt Permitted	0.459			0.319				0.640		0.740		
Satd. Flow (perm)	801	1720	0	557	1647	0	0	1076	0	1291	1619	0
Satd. Flow (RTOR)		2			31			21			33	
Lane Group Flow (vph)	246	489	0	218	327	0	0	105	0	150	391	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	11.7	25.8		11.7	25.8		25.2	25.2		25.2	25.2	
Total Split (s)	19.0	41.0		17.0	39.0		32.0	32.0		32.0	32.0	
Total Split (%)	21.1%	45.6%		18.9%	43.3%		35.6%	35.6%		35.6%	35.6%	
Yellow Time (s)	5.1	5.1		5.1	5.1		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.6	1.7		1.6	1.7		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0		0.0	0.0	
Total Lost Time (s)	6.7	6.8		6.7	6.8			6.2		6.2	6.2	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	Max		None	Max		None	None		None	None	
Act Effct Green (s)	45.3	34.3		42.5	32.9			22.7		22.7	22.7	
Actuated g/C Ratio	0.52	0.40		0.49	0.38			0.26		0.26	0.26	
v/c Ratio	0.47	0.71		0.55	0.50			0.35		0.44	0.87	
Control Delay	12.7	29.9		15.6	22.9			24.3		31.0	48.5	
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	
Total Delay	12.7	29.9		15.6	22.9			24.3		31.0	48.5	
LOS	B	C		B	C			C		C	D	
Approach Delay		24.2			20.0			24.3			43.6	
Approach LOS		C			B			C			D	
Queue Length 50th (m)	20.0	71.6		17.3	39.8			11.2		20.9	57.5	
Queue Length 95th (m)	32.7	108.7		29.0	65.4			25.1		37.9	#102.5	
Internal Link Dist (m)		543.4			1759.4			562.8			300.3	
Turn Bay Length (m)	75.0			80.0						40.0		
Base Capacity (vph)	556	684		411	648			337		387	508	
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	0.44	0.71		0.53	0.50			0.31		0.39	0.77	

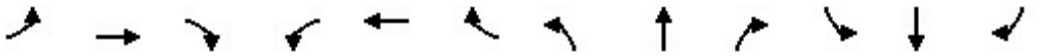
Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 86.3
Natural Cycle: 70
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.87

Intersection Signal Delay: 28.4	Intersection LOS: C
Intersection Capacity Utilization 87.0%	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: 3: Hwy 416/Borrisokane & Barnsdale





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	297	281	21	0	247	265	10	123	3	168	162	247
Future Volume (vph)	297	281	21	0	247	265	10	123	3	168	162	247
Satd. Flow (prot)	1580	1721	0	0	1585	0	0	1663	0	1658	1574	0
Flt Permitted	0.143							0.902		0.704		
Satd. Flow (perm)	238	1721	0	0	1585	0	0	1506	0	1227	1574	0
Satd. Flow (RTOR)		8			75			1			100	
Lane Group Flow (vph)	297	302	0	0	512	0	0	136	0	168	409	0
Turn Type	pm+pt	NA			NA		Perm	NA		Perm	NA	
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	11.5	24.4		24.4	24.4		23.8	23.8		23.8	23.8	
Total Split (s)	19.0	49.0		30.0	30.0		26.0	26.0		26.0	26.0	
Total Split (%)	25.3%	65.3%		40.0%	40.0%		34.7%	34.7%		34.7%	34.7%	
Yellow Time (s)	5.1	5.1		5.1	5.1		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.4	1.3		1.3	1.3		1.6	1.6		1.6	1.6	
Lost Time Adjust (s)	0.0	0.0			0.0			0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.4			6.4			5.8		5.8	5.8	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)	41.8	41.9			22.9			20.2		20.2	20.2	
Actuated g/C Ratio	0.56	0.56			0.31			0.27		0.27	0.27	
v/c Ratio	0.83	0.31			0.95			0.33		0.50	0.82	
Control Delay	35.9	9.3			51.8			24.6		29.4	34.7	
Queue Delay	0.0	0.0			0.0			0.0		0.0	0.0	
Total Delay	35.9	9.3			51.8			24.6		29.4	34.7	
LOS	D	A			D			C		C	C	
Approach Delay		22.5			51.8			24.6			33.2	
Approach LOS		C			D			C			C	
Queue Length 50th (m)	25.1	19.8			60.6			15.3		20.1	41.3	
Queue Length 95th (m)	#65.1	33.2			#118.4			29.6		38.1	#87.0	
Internal Link Dist (m)		1759.4			1181.9			632.6			239.9	
Turn Bay Length (m)	70.0									75.0		
Base Capacity (vph)	359	990			555			410		333	500	
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	0.83	0.31			0.92			0.33		0.50	0.82	

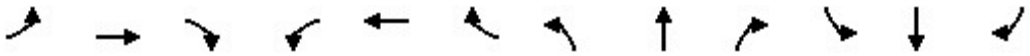
Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 74.3
Natural Cycle: 75
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.95

Intersection Signal Delay: 34.3	Intersection LOS: C
Intersection Capacity Utilization 108.5%	ICU Level of Service G
Analysis Period (min) 15	

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

Splits and Phases: 5: Greenbank & Barnsdale





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	220	18	115	271	7	36	0	506	10	1	0
Future Volume (vph)	0	220	18	115	271	7	36	0	506	10	1	0
Satd. Flow (prot)	0	1277	0	0	1293	0	0	1123	0	0	891	0
Flt Permitted					0.986			0.997			0.957	
Satd. Flow (perm)	0	1277	0	0	1293	0	0	1123	0	0	891	0
Lane Group Flow (vph)	0	238	0	0	393	0	0	542	0	0	11	0
Sign Control		Stop			Stop			Stop			Stop	

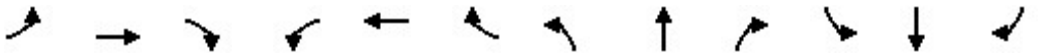
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 79.8%		ICU Level of Service D	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	48.1
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	220	18	115	271	7	36	0	506	10	1	0
Future Vol, veh/h	0	220	18	115	271	7	36	0	506	10	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	37	50	50	28	86	67	60	36	100	2	2
Mvmt Flow	0	220	18	115	271	7	36	0	506	10	1	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	17.7	34.4	72.1	13.2
HCM LOS	C	D	F	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	7%	0%	29%	91%
Vol Thru, %	0%	92%	69%	9%
Vol Right, %	93%	8%	2%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	542	238	393	11
LT Vol	36	0	115	10
Through Vol	0	220	271	1
RT Vol	506	18	7	0
Lane Flow Rate	542	238	393	11
Geometry Grp	1	1	1	1
Degree of Util (X)	1.026	0.49	0.801	0.029
Departure Headway (Hd)	6.816	7.608	7.516	9.928
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	537	476	483	363
Service Time	4.816	5.608	5.516	7.928
HCM Lane V/C Ratio	1.009	0.5	0.814	0.03
HCM Control Delay	72.1	17.7	34.4	13.2
HCM Lane LOS	F	C	D	B
HCM 95th-tile Q	15.1	2.6	7.4	0.1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	248	24	78	175	15	12	0	387	5	2	1
Future Volume (vph)	1	248	24	78	175	15	12	0	387	5	2	1
Satd. Flow (prot)	0	1274	0	1127	1326	0	0	1013	1113	0	1040	0
Flt Permitted				0.950				0.950			0.970	
Satd. Flow (perm)	0	1274	0	1127	1326	0	0	1013	1113	0	1040	0
Lane Group Flow (vph)	0	273	0	78	190	0	0	12	387	0	8	0
Sign Control		Stop			Stop			Stop			Stop	

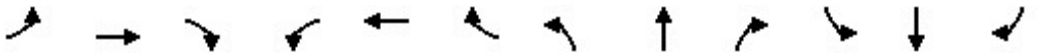
Intersection Summary	
Control Type: Unsignalized	
Intersection Capacity Utilization 54.0%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Intersection Delay, s/veh	17.9
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	248	24	78	175	15	12	0	387	5	2	1
Future Vol, veh/h	1	248	24	78	175	15	12	0	387	5	2	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	37	50	50	28	86	67	60	36	100	2	2
Mvmt Flow	1	248	24	78	175	15	12	0	387	5	2	1
Number of Lanes	0	1	0	1	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	1
HCM Control Delay	15.4	13	22.9	12.3
HCM LOS	C	B	C	B

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	100%	0%	0%	100%	0%	62%
Vol Thru, %	0%	0%	91%	0%	92%	25%
Vol Right, %	0%	100%	9%	0%	8%	12%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	12	387	273	78	190	8
LT Vol	12	0	1	78	0	5
Through Vol	0	0	248	0	175	2
RT Vol	0	387	24	0	15	1
Lane Flow Rate	12	387	273	78	190	8
Geometry Grp	5	5	4b	5	5	4b
Degree of Util (X)	0.026	0.702	0.485	0.168	0.36	0.02
Departure Headway (Hd)	7.871	6.534	6.395	7.761	6.816	8.972
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	455	553	562	461	526	397
Service Time	5.623	4.285	4.453	5.523	4.578	7.068
HCM Lane V/C Ratio	0.026	0.7	0.486	0.169	0.361	0.02
HCM Control Delay	10.8	23.3	15.4	12.1	13.4	12.3
HCM Lane LOS	B	C	C	B	B	B
HCM 95th-tile Q	0.1	5.6	2.6	0.6	1.6	0.1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	220	18	115	271	7	36	0	506	10	1	0
Future Volume (vph)	0	220	18	115	271	7	36	0	506	10	1	0
Satd. Flow (prot)	0	1277	0	1127	1369	0	0	1013	1113	0	891	0
Flt Permitted				0.950				0.950			0.957	
Satd. Flow (perm)	0	1277	0	1127	1369	0	0	1013	1113	0	891	0
Lane Group Flow (vph)	0	238	0	115	278	0	0	36	506	0	11	0
Sign Control		Stop			Stop			Stop			Stop	

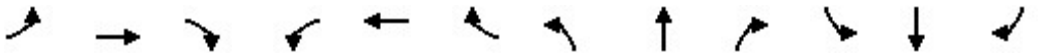
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 59.8%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	38.9
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	220	18	115	271	7	36	0	506	10	1	0
Future Vol, veh/h	0	220	18	115	271	7	36	0	506	10	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	37	50	50	28	86	67	60	36	100	2	2
Mvmt Flow	0	220	18	115	271	7	36	0	506	10	1	0
Number of Lanes	0	1	0	1	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	1
HCM Control Delay	19.7	19	62.2	13.7
HCM LOS	C	C	F	B

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	100%	0%	0%	100%	0%	91%
Vol Thru, %	0%	0%	92%	0%	97%	9%
Vol Right, %	0%	100%	8%	0%	3%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	36	506	238	115	278	11
LT Vol	36	0	0	115	0	10
Through Vol	0	0	220	0	271	1
RT Vol	0	506	18	0	7	0
Lane Flow Rate	36	506	238	115	278	11
Geometry Grp	5	5	4b	5	5	4b
Degree of Util (X)	0.084	0.998	0.528	0.273	0.59	0.031
Departure Headway (Hd)	8.445	7.101	7.99	8.556	7.644	10.3
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	427	516	452	420	473	347
Service Time	6.145	4.801	6.034	6.302	5.389	8.368
HCM Lane V/C Ratio	0.084	0.981	0.527	0.274	0.588	0.032
HCM Control Delay	11.9	65.8	19.7	14.5	20.9	13.7
HCM Lane LOS	B	F	C	B	C	B
HCM 95th-tile Q	0.3	13.7	3	1.1	3.7	0.1



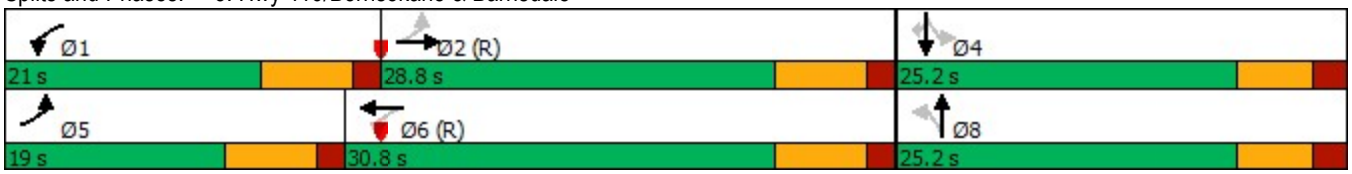
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	318	290	32	332	158	125	27	39	21	78	190	82
Future Volume (vph)	318	290	32	332	158	125	27	39	21	78	190	82
Satd. Flow (prot)	1658	1704	0	1658	1621	0	0	1662	0	1658	1745	1455
Flt Permitted	0.568			0.497				0.842		0.819		
Satd. Flow (perm)	991	1704	0	867	1621	0	0	1421	0	1429	1745	1415
Satd. Flow (RTOR)		7			56			20				153
Lane Group Flow (vph)	318	322	0	332	283	0	0	87	0	78	190	82
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		1	6		8	8		4	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	11.7	25.8		11.7	25.8		25.2	25.2		25.2	25.2	25.2
Total Split (s)	19.0	28.8		21.0	30.8		25.2	25.2		25.2	25.2	25.2
Total Split (%)	25.3%	38.4%		28.0%	41.1%		33.6%	33.6%		33.6%	33.6%	33.6%
Yellow Time (s)	5.1	5.1		5.1	5.1		4.2	4.2		4.2	4.2	4.2
All-Red Time (s)	1.6	1.7		1.6	1.7		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Lost Time (s)	6.7	6.8		6.7	6.8			6.2		6.2	6.2	6.2
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	None
Act Effct Green (s)	41.1	29.7		42.3	30.3			13.7		13.7	13.7	13.7
Actuated g/C Ratio	0.55	0.40		0.56	0.40			0.18		0.18	0.18	0.18
v/c Ratio	0.50	0.47		0.54	0.41			0.32		0.30	0.60	0.21
Control Delay	8.9	19.9		10.5	16.4			23.3		28.4	35.6	1.7
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Delay	8.9	19.9		10.5	16.4			23.3		28.4	35.6	1.7
LOS	A	B		B	B			C		C	D	A
Approach Delay		14.4			13.2			23.3			26.1	
Approach LOS		B			B			C			C	
Queue Length 50th (m)	11.4	32.1		17.8	21.7			8.3		9.7	25.1	0.0
Queue Length 95th (m)	30.5	67.0		36.7	47.2			18.5		19.4	40.6	1.5
Internal Link Dist (m)		543.4			1759.4			562.8			300.3	
Turn Bay Length (m)	75.0			80.0						40.0		20.0
Base Capacity (vph)	675	678		670	689			374		362	442	472
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	0.47	0.47		0.50	0.41			0.23		0.22	0.43	0.17

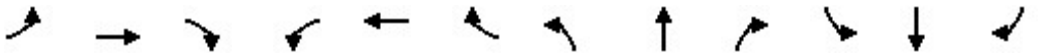
Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green, Master Intersection
Natural Cycle: 65
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.60

Intersection Signal Delay: 16.9	Intersection LOS: B
Intersection Capacity Utilization 78.0%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 3: Hwy 416/Borrisokane & Barnsdale



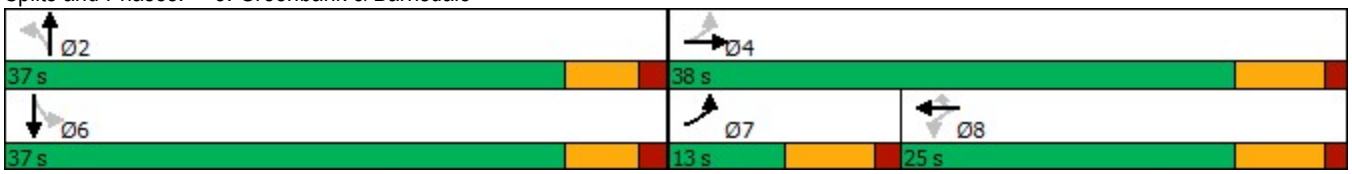


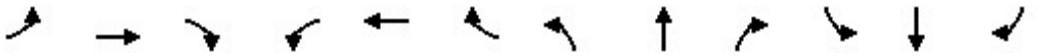
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	161	193	13	4	241	100	10	76	1	304	132	305
Future Volume (vph)	161	193	13	4	241	100	10	76	1	304	132	305
Satd. Flow (prot)	1580	1723	0	0	1679	1469	0	1659	0	1658	1553	0
Flt Permitted	0.353				0.993			0.947		0.701		
Satd. Flow (perm)	587	1723	0	0	1669	1469	0	1580	0	1221	1553	0
Satd. Flow (RTOR)		6				135		1			190	
Lane Group Flow (vph)	161	206	0	0	245	100	0	87	0	304	437	0
Turn Type	pm+pt	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	7	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	11.5	24.4		24.4	24.4	24.4	23.8	23.8		23.8	23.8	
Total Split (s)	13.0	38.0		25.0	25.0	25.0	37.0	37.0		37.0	37.0	
Total Split (%)	17.3%	50.7%		33.3%	33.3%	33.3%	49.3%	49.3%		49.3%	49.3%	
Yellow Time (s)	5.1	5.1		5.1	5.1	5.1	4.2	4.2		4.2	4.2	
All-Red Time (s)	1.4	1.3		1.3	1.3	1.3	1.6	1.6		1.6	1.6	
Lost Time Adjust (s)	0.0	0.0			0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.4			6.4	6.4		5.8		5.8	5.8	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Recall Mode	None	None		None	None	None	Max	Max		Max	Max	
Act Effct Green (s)	27.9	28.0			15.0	15.0		31.3		31.3	31.3	
Actuated g/C Ratio	0.39	0.39			0.21	0.21		0.44		0.44	0.44	
v/c Ratio	0.50	0.30			0.70	0.24		0.13		0.57	0.56	
Control Delay	20.7	15.7			37.5	3.8		13.6		21.2	11.8	
Queue Delay	0.0	0.0			0.0	0.0		0.0		0.0	0.0	
Total Delay	20.7	15.7			37.5	3.8		13.6		21.2	11.8	
LOS	C	B			D	A		B		C	B	
Approach Delay		17.9			27.8			13.6			15.6	
Approach LOS		B			C			B			B	
Queue Length 50th (m)	14.2	17.9			30.6	0.0		6.7		29.8	22.0	
Queue Length 95th (m)	26.4	32.0			52.5	6.4		15.5		57.5	50.9	
Internal Link Dist (m)		1759.4			1181.9			632.6			239.9	
Turn Bay Length (m)	70.0					20.0				75.0		
Base Capacity (vph)	319	766			434	482		691		533	785	
Starvation Cap Reductn	0	0			0	0		0		0	0	
Spillback Cap Reductn	0	0			0	0		0		0	0	
Storage Cap Reductn	0	0			0	0		0		0	0	
Reduced v/c Ratio	0.50	0.27			0.56	0.21		0.13		0.57	0.56	

Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 71.5
Natural Cycle: 60
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.70

Intersection Signal Delay: 18.8	Intersection LOS: B
Intersection Capacity Utilization 67.8%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 5: Greenbank & Barnsdale





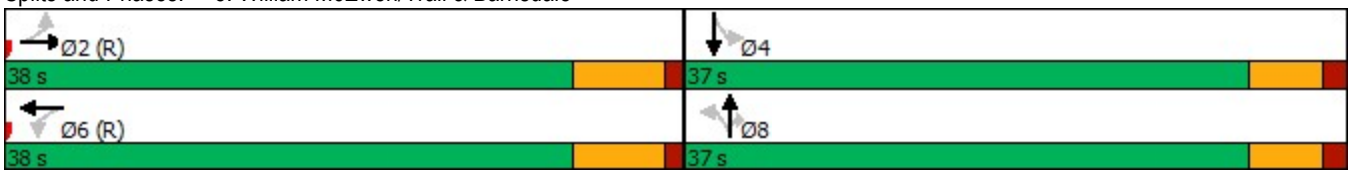
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	248	24	78	175	15	12	0	387	5	2	1
Future Volume (vph)	1	248	24	78	175	15	12	0	387	5	2	1
Satd. Flow (prot)	0	1272	0	1127	1326	0	0	1013	1113	0	1040	0
Flt Permitted				0.591				0.752			0.880	
Satd. Flow (perm)	0	1272	0	701	1326	0	0	802	1113	0	943	0
Satd. Flow (RTOR)		8			7				387		1	
Lane Group Flow (vph)	0	273	0	78	190	0	0	12	387	0	8	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Detector Phase	2	2		6	6		8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	31.3	31.3		31.3	31.3		24.6	24.6	24.6	24.6	24.6	
Total Split (s)	38.0	38.0		38.0	38.0		37.0	37.0	37.0	37.0	37.0	
Total Split (%)	50.7%	50.7%		50.7%	50.7%		49.3%	49.3%	49.3%	49.3%	49.3%	
Yellow Time (s)	5.1	5.1		5.1	5.1		4.2	4.2	4.2	4.2	4.2	
All-Red Time (s)	1.2	1.2		1.2	1.2		1.4	1.4	1.4	1.4	1.4	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)		6.3		6.3	6.3			5.6	5.6		5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Act Effct Green (s)		49.8		49.8	49.8			13.3	13.3		13.3	
Actuated g/C Ratio		0.66		0.66	0.66			0.18	0.18		0.18	
v/c Ratio		0.32		0.17	0.22			0.09	0.75		0.05	
Control Delay		7.8		3.6	3.0			23.8	12.9		21.2	
Queue Delay		0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay		7.8		3.6	3.0			23.8	12.9		21.2	
LOS		A		A	A			C	B		C	
Approach Delay		7.8			3.2			13.2			21.3	
Approach LOS		A			A			B			C	
Queue Length 50th (m)		11.3		1.3	3.0			1.5	0.0		0.9	
Queue Length 95th (m)		37.6		4.7	8.5			4.7	21.2		3.5	
Internal Link Dist (m)		615.4			543.4			486.4			581.6	
Turn Bay Length (m)				30.0					30.0			
Base Capacity (vph)		847		465	882			335	690		395	
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		0.32		0.17	0.22			0.04	0.56		0.02	

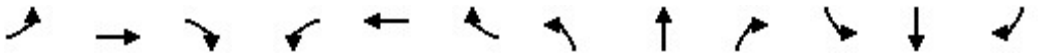
Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 46 (61%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 8.9	Intersection LOS: A
Intersection Capacity Utilization 63.6%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 8: William McEwen/Trail & Barnsdale





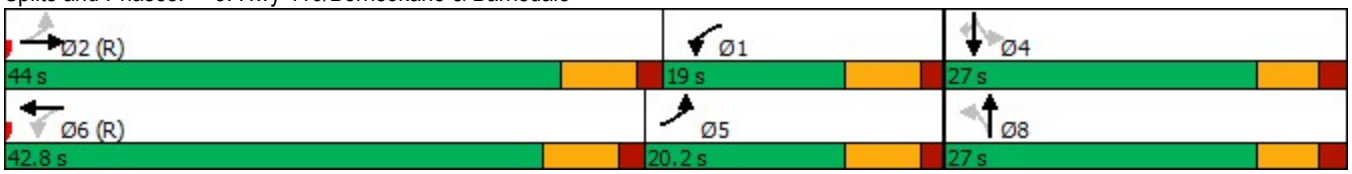
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	246	472	17	218	219	108	27	49	29	150	246	145
Future Volume (vph)	246	472	17	218	219	108	27	49	29	150	246	145
Satd. Flow (prot)	1658	1720	0	1658	1647	0	0	1659	0	1658	1745	1455
Flt Permitted	0.522			0.378				0.730		0.724		
Satd. Flow (perm)	911	1720	0	660	1647	0	0	1227	0	1263	1745	1414
Satd. Flow (RTOR)		2			33			20				127
Lane Group Flow (vph)	246	489	0	218	327	0	0	105	0	150	246	145
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		1	6		8	8		4	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	11.7	25.8		11.7	25.8		25.2	25.2		25.2	25.2	25.2
Total Split (s)	20.2	44.0		19.0	42.8		27.0	27.0		27.0	27.0	27.0
Total Split (%)	22.4%	48.9%		21.1%	47.6%		30.0%	30.0%		30.0%	30.0%	30.0%
Yellow Time (s)	5.1	5.1		5.1	5.1		4.2	4.2		4.2	4.2	4.2
All-Red Time (s)	1.6	1.7		1.6	1.7		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Lost Time (s)	6.7	6.8		6.7	6.8			6.2		6.2	6.2	6.2
Lead/Lag	Lag	Lead		Lag	Lead							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	None
Act Effct Green (s)	54.3	45.6		51.9	44.4			17.3		17.3	17.3	17.3
Actuated g/C Ratio	0.60	0.51		0.58	0.49			0.19		0.19	0.19	0.19
v/c Ratio	0.40	0.56		0.47	0.39			0.42		0.62	0.73	0.39
Control Delay	10.9	20.1		13.4	16.0			29.8		44.1	47.1	10.6
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Delay	10.9	20.1		13.4	16.0			29.8		44.1	47.1	10.6
LOS	B	C		B	B			C		D	D	B
Approach Delay		17.0			14.9			29.8			36.5	
Approach LOS		B			B			C			D	
Queue Length 50th (m)	14.9	53.8		13.1	29.9			12.8		23.8	40.0	2.6
Queue Length 95th (m)	34.5	97.8		25.4	60.3			26.3		40.8	61.4	16.6
Internal Link Dist (m)		543.4			1759.4			562.8			300.3	
Turn Bay Length (m)	75.0			80.0						40.0		20.0
Base Capacity (vph)	711	872		552	828			301		294	406	427
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	0.35	0.56		0.39	0.39			0.35		0.51	0.61	0.34

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green, Master Intersection
Natural Cycle: 70
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.73

Intersection Signal Delay: 22.6	Intersection LOS: C
Intersection Capacity Utilization 83.6%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 3: Hwy 416/Borrisokane & Barnsdale

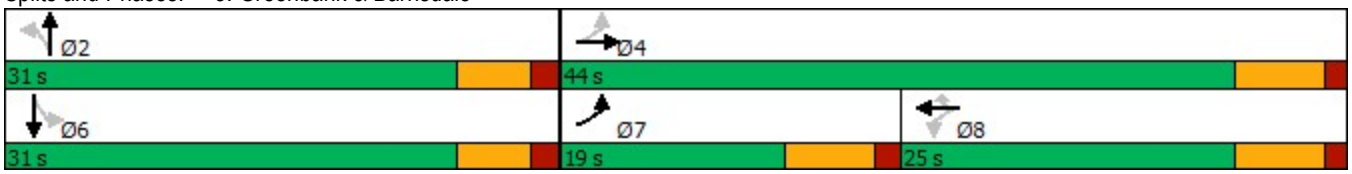


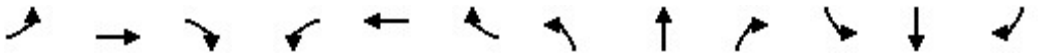
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	297	281	21	0	247	265	10	123	3	168	162	247
Future Volume (vph)	297	281	21	0	247	265	10	123	3	168	162	247
Satd. Flow (prot)	1580	1721	0	0	1679	1469	0	1663	0	1658	1574	0
Flt Permitted	0.351							0.963		0.726		
Satd. Flow (perm)	584	1721	0	0	1679	1469	0	1608	0	1265	1574	0
Satd. Flow (RTOR)		7				249		2			110	
Lane Group Flow (vph)	297	302	0	0	247	265	0	136	0	168	409	0
Turn Type	pm+pt	NA			NA	Perm	Perm	NA		Perm	NA	
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8		8	2			6		
Detector Phase	7	4		8	8	8	2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0	10.0	10.0	10.0		10.0	10.0	
Minimum Split (s)	11.5	24.4		24.4	24.4	24.4	23.8	23.8		23.8	23.8	
Total Split (s)	19.0	44.0		25.0	25.0	25.0	31.0	31.0		31.0	31.0	
Total Split (%)	25.3%	58.7%		33.3%	33.3%	33.3%	41.3%	41.3%		41.3%	41.3%	
Yellow Time (s)	5.1	5.1		5.1	5.1	5.1	4.2	4.2		4.2	4.2	
All-Red Time (s)	1.4	1.3		1.3	1.3	1.3	1.6	1.6		1.6	1.6	
Lost Time Adjust (s)	0.0	0.0			0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.4			6.4	6.4		5.8		5.8	5.8	
Lead/Lag	Lead			Lag	Lag	Lag						
Lead-Lag Optimize?	Yes			Yes	Yes	Yes						
Recall Mode	None	None		None	None	None	Max	Max		Max	Max	
Act Effct Green (s)	33.6	33.7			15.0	15.0		25.3		25.3	25.3	
Actuated g/C Ratio	0.47	0.47			0.21	0.21		0.36		0.36	0.36	
v/c Ratio	0.67	0.37			0.70	0.52		0.24		0.37	0.65	
Control Delay	20.3	13.0			37.3	8.4		18.4		21.2	20.3	
Queue Delay	0.0	0.0			0.0	0.0		0.0		0.0	0.0	
Total Delay	20.3	13.0			37.3	8.4		18.4		21.2	20.3	
LOS	C	B			D	A		B		C	C	
Approach Delay		16.6			22.4			18.4			20.6	
Approach LOS		B			C			B			C	
Queue Length 50th (m)	24.3	23.7			30.9	1.7		12.6		16.7	33.0	
Queue Length 95th (m)	41.1	39.7			52.8	18.8		26.1		33.9	65.6	
Internal Link Dist (m)		1759.4			1181.9			632.6			239.9	
Turn Bay Length (m)	70.0					20.0				75.0		
Base Capacity (vph)	450	915			439	568		572		449	629	
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	0.66	0.33			0.56	0.47		0.24		0.37	0.65	

Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 71.2
Natural Cycle: 60
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.70

Intersection Signal Delay: 19.6	Intersection LOS: B
Intersection Capacity Utilization 91.4%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 5: Greenbank & Barnsdale





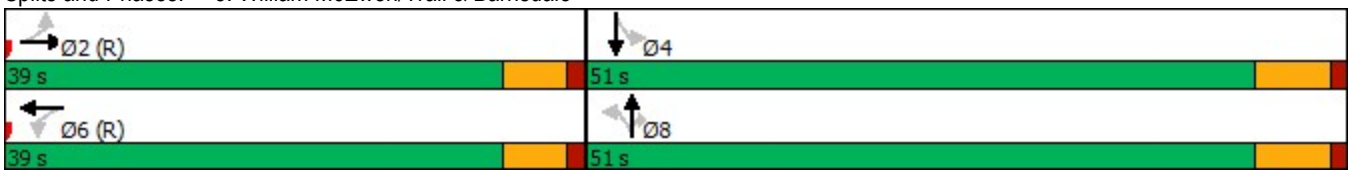
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	220	18	115	271	7	36	0	506	10	1	0
Future Volume (vph)	0	220	18	115	271	7	36	0	506	10	1	0
Satd. Flow (prot)	0	1275	0	1127	1369	0	0	1013	1113	0	891	0
Flt Permitted				0.611				0.750			0.807	
Satd. Flow (perm)	0	1275	0	725	1369	0	0	799	1113	0	752	0
Satd. Flow (RTOR)		5			2				506			
Lane Group Flow (vph)	0	238	0	115	278	0	0	36	506	0	11	0
Turn Type		NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Detector Phase	2	2		6	6		8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	30.6	30.6		30.6	30.6		25.3	25.3	25.3	25.3	25.3	
Total Split (s)	39.0	39.0		39.0	39.0		51.0	51.0	51.0	51.0	51.0	
Total Split (%)	43.3%	43.3%		43.3%	43.3%		56.7%	56.7%	56.7%	56.7%	56.7%	
Yellow Time (s)	4.2	4.2		4.2	4.2		5.1	5.1	5.1	5.1	5.1	
All-Red Time (s)	1.4	1.4		1.4	1.4		1.2	1.2	1.2	1.2	1.2	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)		5.6		5.6	5.6			6.3	6.3		6.3	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Act Effct Green (s)		61.8		61.8	61.8			16.3	16.3		16.3	
Actuated g/C Ratio		0.69		0.69	0.69			0.18	0.18		0.18	
v/c Ratio		0.27		0.23	0.30			0.25	0.82		0.08	
Control Delay		8.6		5.3	4.7			31.8	14.6		25.9	
Queue Delay		0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay		8.6		5.3	4.7			31.8	14.6		25.9	
LOS		A		A	A			C	B		C	
Approach Delay		8.6			4.9			15.7			25.9	
Approach LOS		A			A			B			C	
Queue Length 50th (m)		9.6		2.0	4.8			5.9	0.0		1.8	
Queue Length 95th (m)		42.0		15.1	29.9			10.3	25.9		4.5	
Internal Link Dist (m)		615.4			543.4			486.4			581.6	
Turn Bay Length (m)				30.0					30.0			
Base Capacity (vph)		877		498	941			396	807		373	
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		0.27		0.23	0.30			0.09	0.63		0.03	

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 41 (46%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.82

Intersection Signal Delay: 10.8	Intersection LOS: B
Intersection Capacity Utilization 69.9%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 8: William McEwen/Trail & Barnsdale



MOVEMENT SUMMARY

Site: 101 [Prince of Wales and Barnsdale FT2031 AM - with industrial (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Prince of Wales Drive															
1	L2	All MCs	4	2.0	4	2.0	0.807	29.6	LOS D	8.9	64.7	0.89	1.17	1.97	27.1
2	T1	All MCs	462	4.0	462	4.0	0.807	29.9	LOS D	8.9	64.7	0.89	1.17	1.97	27.5
3	R2	All MCs	14	8.0	14	8.0	0.807	30.5	LOS D	8.9	64.7	0.89	1.17	1.97	23.3
Approach			481	4.1	481	4.1	0.807	29.9	LOS D	8.9	64.7	0.89	1.17	1.97	27.4
East: Barnsdale Road															
4	L2	All MCs	13	2.0	13	2.0	0.243	12.8	LOS B	0.8	5.7	0.69	0.69	0.70	33.3
5	T1	All MCs	84	2.0	84	2.0	0.243	12.8	LOS B	0.8	5.7	0.69	0.69	0.70	37.1
6	R2	All MCs	1	2.0	1	2.0	0.243	12.8	LOS B	0.8	5.7	0.69	0.69	0.70	37.2
Approach			99	2.0	99	2.0	0.243	12.8	LOS B	0.8	5.7	0.69	0.69	0.70	36.7
North: Prince of Wales Drive															
7	L2	All MCs	3	33.0	3	33.0	0.523	11.5	LOS B	3.2	23.6	0.38	0.19	0.38	33.5
8	T1	All MCs	267	5.0	267	5.0	0.523	9.8	LOS A	3.2	23.6	0.38	0.19	0.38	40.2
9	R2	All MCs	248	5.0	248	5.0	0.523	9.8	LOS A	3.2	23.6	0.38	0.19	0.38	43.9
Approach			518	5.2	518	5.2	0.523	9.8	LOS A	3.2	23.6	0.38	0.19	0.38	42.0
West: Barnsdale Road															
10	L2	All MCs	511	2.0	511	2.0	0.714	17.4	LOS C	10.0	71.1	0.76	0.74	1.35	34.4
11	T1	All MCs	78	2.0	78	2.0	0.714	17.4	LOS C	10.0	71.1	0.76	0.74	1.35	30.2
12	R2	All MCs	6	2.0	6	2.0	0.714	17.4	LOS C	10.0	71.1	0.76	0.74	1.35	32.0
Approach			594	2.0	594	2.0	0.714	17.4	LOS C	10.0	71.1	0.76	0.74	1.35	33.9
All Vehicles			1692	3.6	1692	3.6	0.807	18.4	LOS C	10.0	71.1	0.68	0.69	1.19	33.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Prince of Wales and Barnsdale FT2031 PM - with industrial (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Prince of Wales Drive															
1	L2	All MCs	11	2.0	11	2.0	0.432	11.4	LOS B	2.2	16.0	0.62	0.59	0.79	39.3
2	T1	All MCs	276	2.0	276	2.0	0.432	11.4	LOS B	2.2	16.0	0.62	0.59	0.79	39.5
3	R2	All MCs	4	25.0	4	25.0	0.432	14.3	LOS B	2.2	16.0	0.62	0.59	0.79	33.7
Approach			291	2.4	291	2.4	0.432	11.4	LOS B	2.2	16.0	0.62	0.59	0.79	39.4
East: Barnsdale Road															
4	L2	All MCs	8	2.0	8	2.0	0.174	8.5	LOS A	0.6	4.2	0.57	0.53	0.57	37.7
5	T1	All MCs	89	2.0	89	2.0	0.174	8.5	LOS A	0.6	4.2	0.57	0.53	0.57	41.6
6	R2	All MCs	2	2.0	2	2.0	0.174	8.5	LOS A	0.6	4.2	0.57	0.53	0.57	41.5
Approach			99	2.0	99	2.0	0.174	8.5	LOS A	0.6	4.2	0.57	0.53	0.57	41.3
North: Prince of Wales Drive															
7	L2	All MCs	3	2.0	3	2.0	1.018	45.5	LOS F	69.8	497.3	1.00	1.73	2.14	19.6
8	T1	All MCs	531	2.0	531	2.0	1.018	45.5	LOS F	69.8	497.3	1.00	1.73	2.14	21.4
9	R2	All MCs	486	2.0	486	2.0	1.018	45.5	LOS F	69.8	497.3	1.00	1.73	2.14	24.3
Approach			1020	2.0	1020	2.0	1.018	45.5	LOS E	69.8	497.3	1.00	1.73	2.14	22.8
West: Barnsdale Road															
10	L2	All MCs	367	5.0	367	5.0	0.771	25.7	LOS D	8.2	59.8	0.87	1.01	1.75	30.3
11	T1	All MCs	112	7.0	112	7.0	0.771	25.9	LOS D	8.2	59.8	0.87	1.01	1.75	26.5
12	R2	All MCs	4	2.0	4	2.0	0.771	25.2	LOS D	8.2	59.8	0.87	1.01	1.75	27.9
Approach			483	5.4	483	5.4	0.771	25.7	LOS D	8.2	59.8	0.87	1.01	1.75	29.4
All Vehicles			1893	2.9	1893	2.9	1.018	33.3	LOS D	69.8	497.3	0.89	1.30	1.75	26.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Prince of Wales and Barnsdale FT2031 AM - SBR - with industrial (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Prince of Wales Drive															
1	L2	All MCs	4	2.0	4	2.0	0.807	29.6	LOS D	8.9	64.7	0.89	1.17	1.97	27.1
2	T1	All MCs	462	4.0	462	4.0	0.807	29.9	LOS D	8.9	64.7	0.89	1.17	1.97	27.5
3	R2	All MCs	14	8.0	14	8.0	0.807	30.5	LOS D	8.9	64.7	0.89	1.17	1.97	23.3
Approach			481	4.1	481	4.1	0.807	29.9	LOS D	8.9	64.7	0.89	1.17	1.97	27.4
East: Barnsdale Road															
4	L2	All MCs	13	2.0	13	2.0	0.243	12.8	LOS B	0.8	5.7	0.69	0.69	0.70	33.3
5	T1	All MCs	84	2.0	84	2.0	0.243	12.8	LOS B	0.8	5.7	0.69	0.69	0.70	37.1
6	R2	All MCs	1	2.0	1	2.0	0.243	12.8	LOS B	0.8	5.7	0.69	0.69	0.70	37.2
Approach			99	2.0	99	2.0	0.243	12.8	LOS B	0.8	5.7	0.69	0.69	0.70	36.7
North: Prince of Wales Drive															
7	L2	All MCs	3	33.0	3	33.0	0.448	10.1	LOS B	2.4	17.9	0.34	0.16	0.34	34.5
8	T1	All MCs	267	5.0	267	5.0	0.448	8.5	LOS A	2.4	17.9	0.34	0.16	0.34	41.6
9	R2	All MCs	248	5.0	248	5.0	0.448	7.6	LOS A	2.4	17.9	0.35	0.19	0.35	46.2
Approach			518	5.2	518	5.2	0.448	8.1	LOS A	2.4	17.9	0.34	0.18	0.34	43.8
West: Barnsdale Road															
10	L2	All MCs	511	2.0	511	2.0	0.714	17.4	LOS C	10.0	71.2	0.76	0.75	1.35	34.4
11	T1	All MCs	78	2.0	78	2.0	0.714	17.4	LOS C	10.0	71.2	0.76	0.75	1.35	30.2
12	R2	All MCs	6	2.0	6	2.0	0.714	17.4	LOS C	10.0	71.2	0.76	0.75	1.35	32.0
Approach			594	2.0	594	2.0	0.714	17.4	LOS C	10.0	71.2	0.76	0.75	1.35	33.9
All Vehicles			1692	3.6	1692	3.6	0.807	17.8	LOS C	10.0	71.2	0.67	0.69	1.18	34.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Prince of Wales and Barnsdale FT2031 PM - SBR - with industrial (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Prince of Wales Drive															
1	L2	All MCs	11	2.0	11	2.0	0.432	11.4	LOS B	2.2	16.0	0.62	0.59	0.79	39.3
2	T1	All MCs	276	2.0	276	2.0	0.432	11.4	LOS B	2.2	16.0	0.62	0.59	0.79	39.5
3	R2	All MCs	4	25.0	4	25.0	0.432	14.3	LOS B	2.2	16.0	0.62	0.59	0.79	33.7
Approach			291	2.4	291	2.4	0.432	11.4	LOS B	2.2	16.0	0.62	0.59	0.79	39.4
East: Barnsdale Road															
4	L2	All MCs	8	2.0	8	2.0	0.174	8.5	LOS A	0.6	4.2	0.57	0.53	0.57	37.7
5	T1	All MCs	89	2.0	89	2.0	0.174	8.5	LOS A	0.6	4.2	0.57	0.53	0.57	41.6
6	R2	All MCs	2	2.0	2	2.0	0.174	8.5	LOS A	0.6	4.2	0.57	0.53	0.57	41.5
Approach			99	2.0	99	2.0	0.174	8.5	LOS A	0.6	4.2	0.57	0.53	0.57	41.3
North: Prince of Wales Drive															
7	L2	All MCs	3	2.0	3	2.0	0.895	25.7	LOS D	30.4	216.6	1.00	0.83	1.48	25.8
8	T1	All MCs	531	2.0	531	2.0	0.895	25.7	LOS D	30.4	216.6	1.00	0.83	1.48	29.0
9	R2	All MCs	486	2.0	486	2.0	0.895	21.0	LOS C	30.4	216.6	0.87	0.72	1.23	35.1
Approach			1020	2.0	1020	2.0	0.895	23.4	LOS C	30.4	216.6	0.94	0.78	1.36	31.9
West: Barnsdale Road															
10	L2	All MCs	367	5.0	367	5.0	0.779	26.5	LOS D	8.3	60.9	0.87	1.02	1.79	29.9
11	T1	All MCs	112	7.0	112	7.0	0.779	26.8	LOS D	8.3	60.9	0.87	1.02	1.79	26.1
12	R2	All MCs	4	2.0	4	2.0	0.779	26.1	LOS D	8.3	60.9	0.87	1.02	1.79	27.5
Approach			483	5.4	483	5.4	0.779	26.5	LOS D	8.3	60.9	0.87	1.02	1.79	29.1
All Vehicles			1893	2.9	1893	2.9	0.895	21.6	LOS C	30.4	216.6	0.85	0.80	1.34	32.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Appendix O

Synchro and Sidra Worksheets – 2036 Future Total Horizon

MOVEMENT SUMMARY

Site: 101 [Borrisokane Road at Cambrian Road FT2036 AM - with industrial (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Borrisokane															
2	T1	All MCs	204	10.0	204	10.0	0.331	7.9	LOS A	1.4	10.6	0.43	0.58	0.43	61.9
3	R2	All MCs	74	10.0	74	10.0	0.331	7.4	LOS A	1.4	10.6	0.43	0.58	0.43	58.7
Approach			278	10.0	278	10.0	0.331	7.8	LOS A	1.4	10.6	0.43	0.58	0.43	61.0
East: Cambrian															
4	L2	All MCs	140	10.0	140	10.0	0.595	12.7	LOS B	4.0	30.2	0.58	0.64	0.63	56.7
6	R2	All MCs	371	9.0	371	9.0	0.595	7.6	LOS A	4.0	30.2	0.58	0.64	0.63	57.7
Approach			511	9.3	511	9.3	0.595	9.0	LOS A	4.0	30.2	0.58	0.64	0.63	57.4
North: Borrisokane															
7	L2	All MCs	213	17.0	213	17.0	0.421	12.3	LOS B	2.0	16.0	0.39	0.61	0.39	54.5
8	T1	All MCs	162	13.0	162	13.0	0.421	7.5	LOS A	2.0	16.0	0.39	0.61	0.39	59.3
Approach			375	15.3	375	15.3	0.421	10.2	LOS B	2.0	16.0	0.39	0.61	0.39	56.5
All Vehicles			1164	11.4	1164	11.4	0.595	9.1	LOS A	4.0	30.2	0.48	0.62	0.50	57.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Borrisokane Road at Cambrian Road FT2036 PM - with industrial (Site Folder: General)]

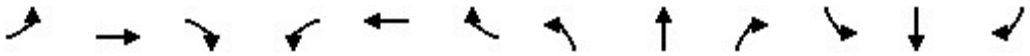
Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Borrisokane															
2	T1	All MCs	205	3.0	205	3.0	0.464	9.1	LOS A	2.3	17.2	0.58	0.68	0.62	62.9
3	R2	All MCs	153	8.0	153	8.0	0.464	8.8	LOS A	2.3	17.2	0.58	0.68	0.62	58.4
Approach			358	5.1	358	5.1	0.464	9.0	LOS A	2.3	17.2	0.58	0.68	0.62	60.9
East: Cambrian															
4	L2	All MCs	126	4.0	126	4.0	0.496	11.6	LOS B	2.6	19.5	0.50	0.61	0.50	58.8
6	R2	All MCs	311	7.0	311	7.0	0.496	6.6	LOS A	2.6	19.5	0.50	0.61	0.50	58.7
Approach			437	6.1	437	6.1	0.496	8.1	LOS A	2.6	19.5	0.50	0.61	0.50	58.8
North: Borrisokane															
7	L2	All MCs	332	6.0	332	6.0	0.555	12.0	LOS B	3.5	25.7	0.45	0.60	0.45	56.9
8	T1	All MCs	205	2.0	205	2.0	0.555	7.3	LOS A	3.5	25.7	0.45	0.60	0.45	61.5
Approach			537	4.5	537	4.5	0.555	10.2	LOS B	3.5	25.7	0.45	0.60	0.45	58.6
All Vehicles			1332	5.2	1332	5.2	0.555	9.2	LOS A	3.5	25.7	0.50	0.62	0.51	59.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	74	138	75	28	270	72	140	14	27	76	5	100
Future Volume (vph)	74	138	75	28	270	72	140	14	27	76	5	100
Satd. Flow (prot)	1523	1395	0	1658	1639	0	1013	1572	0	1595	1369	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1523	1395	0	1658	1639	0	1013	1572	0	1595	1369	0
Lane Group Flow (vph)	74	213	0	28	342	0	140	41	0	76	105	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 48.9%		ICU Level of Service A	
Analysis Period (min) 15			

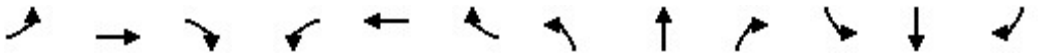
Intersection	
Int Delay, s/veh	11.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	74	138	75	28	270	72	140	14	27	76	5	100
Future Vol, veh/h	74	138	75	28	270	72	140	14	27	76	5	100
Conflicting Peds, #/hr	6	0	0	0	0	6	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	37.5	-	-	37.5	-	-	30	-	-	30	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	11	5	50	2	3	13	67	2	2	6	100	7
Mvmt Flow	74	138	75	28	270	72	140	14	27	76	5	100

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	348	0	0	213	0	0	739	728	176	712	729	312
Stage 1	-	-	-	-	-	-	324	324	-	368	368	-
Stage 2	-	-	-	-	-	-	415	404	-	344	361	-
Critical Hdwy	4.21	-	-	4.12	-	-	7.77	6.52	6.22	7.16	7.5	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	6.77	5.52	-	6.16	6.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.77	5.52	-	6.16	6.5	-
Follow-up Hdwy	2.299	-	-	2.218	-	-	4.103	4.018	3.318	3.554	4.9	3.363
Pot Cap-1 Maneuver	1162	-	-	1357	-	-	263	350	867	342	254	717
Stage 1	-	-	-	-	-	-	571	650	-	644	481	-
Stage 2	-	-	-	-	-	-	505	599	-	663	485	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1157	-	-	1357	-	-	208	319	867	299	232	714
Mov Cap-2 Maneuver	-	-	-	-	-	-	208	319	-	299	232	-
Stage 1	-	-	-	-	-	-	534	608	-	600	468	-
Stage 2	-	-	-	-	-	-	421	583	-	587	454	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	2.1	0.6	43	15.6
HCM LOS			E	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	208	546	1157	-	-	1357	-	-	299	650
HCM Lane V/C Ratio	0.673	0.075	0.064	-	-	0.021	-	-	0.254	0.162
HCM Control Delay (s)	52	12.1	8.3	-	-	7.7	-	-	21.1	11.6
HCM Lane LOS	F	B	A	-	-	A	-	-	C	B
HCM 95th %tile Q(veh)	4.2	0.2	0.2	-	-	0.1	-	-	1	0.6



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	282	354	32	471	159	125	27	39	21	78	118	82
Future Volume (vph)	282	354	32	471	159	125	27	39	21	78	118	82
Satd. Flow (prot)	0	1689	0	0	1652	0	0	1662	0	0	1629	0
Flt Permitted		0.583			0.495			0.787			0.885	
Satd. Flow (perm)	0	1006	0	0	843	0	0	1328	0	0	1462	0
Satd. Flow (RTOR)		4			16			13			17	
Lane Group Flow (vph)	0	668	0	0	755	0	0	87	0	0	278	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	25.8	25.8		25.8	25.8		25.2	25.2		25.2	25.2	
Total Split (s)	83.0	83.0		83.0	83.0		37.0	37.0		37.0	37.0	
Total Split (%)	69.2%	69.2%		69.2%	69.2%		30.8%	30.8%		30.8%	30.8%	
Yellow Time (s)	5.1	5.1		5.1	5.1		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.7	1.7		1.7	1.7		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.8			6.8			6.2			6.2	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Act Effct Green (s)		76.4			76.4			24.7			24.7	
Actuated g/C Ratio		0.67			0.67			0.22			0.22	
v/c Ratio		0.99			1.33			0.29			0.84	
Control Delay		53.6			180.2			33.6			62.7	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		53.6			180.2			33.6			62.7	
LOS		D			F			C			E	
Approach Delay		53.6			180.2			33.6			62.7	
Approach LOS		D			F			C			E	
Queue Length 50th (m)		~137.8			~222.4			13.8			56.3	
Queue Length 95th (m)		#241.6			#182.9			27.9			87.5	
Internal Link Dist (m)		543.4			978.4			562.8			300.3	
Turn Bay Length (m)												
Base Capacity (vph)		674			569			368			407	
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		0.99			1.33			0.24			0.68	

Intersection Summary
Cycle Length: 120
Actuated Cycle Length: 114.1
Natural Cycle: 150
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 1.33

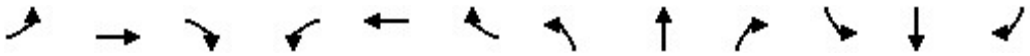
Intersection Signal Delay: 107.5	Intersection LOS: F
Intersection Capacity Utilization 99.8%	ICU Level of Service F
Analysis Period (min) 15	

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

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

Splits and Phases: 3: Hwy 416/Borrisokane & Barnsdale





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	82	262	23	4	361	41	10	79	1	261	126	151
Future Volume (vph)	82	262	23	4	361	41	10	79	1	261	126	151
Satd. Flow (prot)	0	1687	0	0	1661	0	0	1660	0	0	1631	0
Flt Permitted		0.989						0.994			0.976	
Satd. Flow (perm)	0	1687	0	0	1661	0	0	1660	0	0	1631	0
Lane Group Flow (vph)	0	367	0	0	406	0	0	90	0	0	538	0
Sign Control		Stop			Stop			Stop			Stop	

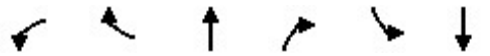
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 92.4%		ICU Level of Service F	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	48.9
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	82	262	23	4	361	41	10	79	1	261	126	151
Future Vol, veh/h	82	262	23	4	361	41	10	79	1	261	126	151
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	7	2	8	2	6	3	10	6	2	2	4	2
Mvmt Flow	82	262	23	4	361	41	10	79	1	261	126	151
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	30.8	35.1	14.4	77.4
HCM LOS	D	E	B	F

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	11%	22%	1%	49%
Vol Thru, %	88%	71%	89%	23%
Vol Right, %	1%	6%	10%	28%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	90	367	406	538
LT Vol	10	82	4	261
Through Vol	79	262	361	126
RT Vol	1	23	41	151
Lane Flow Rate	90	367	406	538
Geometry Grp	1	1	1	1
Degree of Util (X)	0.217	0.758	0.812	1.042
Departure Headway (Hd)	8.941	7.64	7.398	6.971
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	404	477	491	522
Service Time	6.941	5.64	5.398	4.971
HCM Lane V/C Ratio	0.223	0.769	0.827	1.031
HCM Control Delay	14.4	30.8	35.1	77.4
HCM Lane LOS	B	D	E	F
HCM 95th-tile Q	0.8	6.5	7.7	15.6



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	10	37	233	49	62	240
Future Volume (vph)	10	37	233	49	62	240
Satd. Flow (prot)	1424	0	1603	0	1470	1679
Flt Permitted	0.989				0.950	
Satd. Flow (perm)	1424	0	1603	0	1470	1679
Lane Group Flow (vph)	47	0	282	0	62	240
Sign Control	Stop		Free			Free

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 33.0%		ICU Level of Service A	
Analysis Period (min) 15			

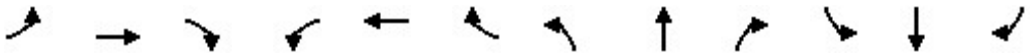
Intersection	
Int Delay, s/veh	1.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	37	233	49	62	240
Future Vol, veh/h	10	37	233	49	62	240
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	45	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	5	12	8	11	15	6
Mvmt Flow	10	37	233	49	62	240

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	622	258	0	0	282	0
Stage 1	258	-	-	-	-	-
Stage 2	364	-	-	-	-	-
Critical Hdwy	6.45	6.32	-	-	4.25	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.408	-	-	2.335	-
Pot Cap-1 Maneuver	446	757	-	-	1209	-
Stage 1	778	-	-	-	-	-
Stage 2	696	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	423	757	-	-	1209	-
Mov Cap-2 Maneuver	423	-	-	-	-	-
Stage 1	778	-	-	-	-	-
Stage 2	661	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	11	0	1.7
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	648	1209	-
HCM Lane V/C Ratio	-	-	0.073	0.051	-
HCM Control Delay (s)	-	-	11	8.1	-
HCM Lane LOS	-	-	B	A	-
HCM 95th %tile Q(veh)	-	-	0.2	0.2	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Volume (vph)	1	248	24	79	175	15	12	0	415	5	2	1
Future Volume (vph)	1	248	24	79	175	15	12	0	415	5	2	1
Satd. Flow (prot)	0	1274	0	0	1264	0	0	1129	0	0	1040	0
Flt Permitted					0.986			0.999			0.970	
Satd. Flow (perm)	0	1274	0	0	1264	0	0	1129	0	0	1040	0
Lane Group Flow (vph)	0	273	0	0	269	0	0	427	0	0	8	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 68.3%		ICU Level of Service C	
Analysis Period (min) 15			

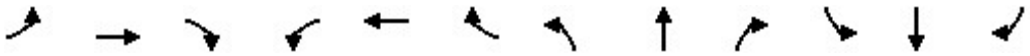
Intersection	
Int Delay, s/veh	9.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	1	248	24	79	175	15	12	0	415	5	2	1
Future Vol, veh/h	1	248	24	79	175	15	12	0	415	5	2	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	37	50	50	28	86	67	60	36	100	2	2
Mvmt Flow	1	248	24	79	175	15	12	0	415	5	2	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	190	0	0	272	0	0	604	610	260	811	615	183
Stage 1	-	-	-	-	-	-	262	262	-	341	341	-
Stage 2	-	-	-	-	-	-	342	348	-	470	274	-
Critical Hdwy	4.12	-	-	4.6	-	-	7.77	7.1	6.56	8.1	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.77	6.1	-	7.1	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.77	6.1	-	7.1	5.52	-
Follow-up Hdwy	2.218	-	-	2.65	-	-	4.103	4.54	3.624	4.4	4.018	3.318
Pot Cap-1 Maneuver	1384	-	-	1059	-	-	330	341	703	208	407	859
Stage 1	-	-	-	-	-	-	620	597	-	511	639	-
Stage 2	-	-	-	-	-	-	557	543	-	426	683	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1384	-	-	1059	-	-	307	312	703	80	372	859
Mov Cap-2 Maneuver	-	-	-	-	-	-	307	312	-	80	372	-
Stage 1	-	-	-	-	-	-	619	596	-	510	585	-
Stage 2	-	-	-	-	-	-	508	497	-	174	682	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	2.5	18.9	38.3
HCM LOS			C	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	678	1384	-	-	1059	-	-	116
HCM Lane V/C Ratio	0.63	0.001	-	-	0.075	-	-	0.069
HCM Control Delay (s)	18.9	7.6	0	-	8.7	0	-	38.3
HCM Lane LOS	C	A	A	-	A	A	-	E
HCM 95th %tile Q(veh)	4.5	0	-	-	0.2	-	-	0.2



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	9	10	22	5	101	10	47	48	152	41	10
Future Volume (vph)	10	9	10	22	5	101	10	47	48	152	41	10
Satd. Flow (prot)	0	1635	0	0	1544	0	0	1629	0	0	1670	0
Flt Permitted		0.983			0.991			0.995			0.964	
Satd. Flow (perm)	0	1635	0	0	1544	0	0	1629	0	0	1670	0
Lane Group Flow (vph)	0	29	0	0	128	0	0	105	0	0	203	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 34.2%		ICU Level of Service A	
Analysis Period (min) 15			

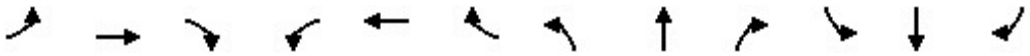
Intersection	
Int Delay, s/veh	6.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	9	10	22	5	101	10	47	48	152	41	10
Future Vol, veh/h	10	9	10	22	5	101	10	47	48	152	41	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	9	10	22	5	101	10	47	48	152	41	10

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	494	465	46	451	446	71	51	0	0	95	0	0
Stage 1	350	350	-	91	91	-	-	-	-	-	-	-
Stage 2	144	115	-	360	355	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	486	495	1023	519	507	991	1555	-	-	1499	-	-
Stage 1	666	633	-	916	820	-	-	-	-	-	-	-
Stage 2	859	800	-	658	630	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	396	441	1023	463	451	991	1555	-	-	1499	-	-
Mov Cap-2 Maneuver	396	441	-	463	451	-	-	-	-	-	-	-
Stage 1	661	567	-	910	814	-	-	-	-	-	-	-
Stage 2	761	794	-	575	564	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	12.3	10.4	0.7	5.7
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1555	-	-	523	797	1499	-	-
HCM Lane V/C Ratio	0.006	-	-	0.055	0.161	0.101	-	-
HCM Control Delay (s)	7.3	0	-	12.3	10.4	7.7	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.6	0.3	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	5	10	42	5	26	10	31	112	41	24	10
Future Volume (vph)	10	5	10	42	5	26	10	31	112	41	24	10
Satd. Flow (prot)	0	1621	0	0	1615	0	0	1568	0	0	1667	0
Flt Permitted		0.981			0.972			0.997			0.973	
Satd. Flow (perm)	0	1621	0	0	1615	0	0	1568	0	0	1667	0
Lane Group Flow (vph)	0	28	0	0	82	0	0	169	0	0	84	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary	
Control Type: Unsignalized	
Intersection Capacity Utilization 30.7%	ICU Level of Service A
Analysis Period (min) 15	

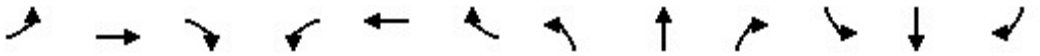
Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	10	5	10	42	5	26	10	31	112	41	24	10
Future Vol, veh/h	10	5	10	42	5	26	10	31	112	41	24	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	6	11	47	6	29	11	34	124	46	27	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	261	305	33	251	248	96	38	0	0	158	0	0
Stage 1	125	125	-	118	118	-	-	-	-	-	-	-
Stage 2	136	180	-	133	130	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	692	608	1041	702	655	960	1572	-	-	1422	-	-
Stage 1	879	792	-	887	798	-	-	-	-	-	-	-
Stage 2	867	750	-	870	789	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	646	583	1041	668	628	960	1572	-	-	1422	-	-
Mov Cap-2 Maneuver	646	583	-	668	628	-	-	-	-	-	-	-
Stage 1	872	766	-	880	792	-	-	-	-	-	-	-
Stage 2	828	744	-	826	763	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10	10.4	0.5	4.2
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1572	-	-	743	746	1422	-	-
HCM Lane V/C Ratio	0.007	-	-	0.037	0.109	0.032	-	-
HCM Control Delay (s)	7.3	0	-	10	10.4	7.6	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.4	0.1	-	-



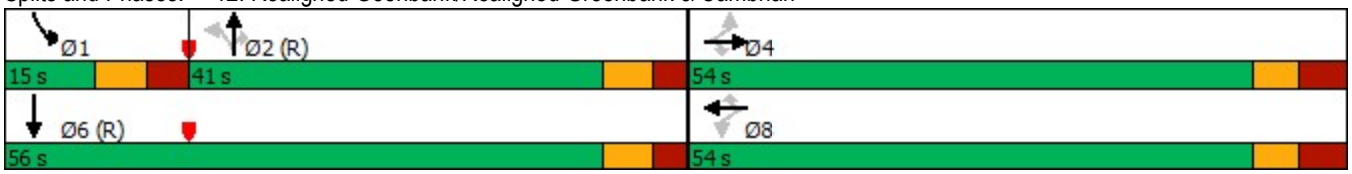
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	226	10	32	337	119	15	484	35	78	279	13
Future Volume (vph)	7	226	10	32	337	119	15	484	35	78	279	13
Satd. Flow (prot)	1658	3316	1483	1658	3316	1483	1658	3316	1483	3216	3286	0
Flt Permitted	0.522			0.611			0.573			0.950		
Satd. Flow (perm)	905	3316	1455	1061	3316	1450	982	3316	1452	3190	3286	0
Satd. Flow (RTOR)			116			119			123		5	
Lane Group Flow (vph)	7	226	10	32	337	119	15	484	35	78	292	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Prot	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4		4	8		8	2		2			
Detector Phase	4	4	4	8	8	8	2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	52.8	52.8	52.8	52.8	52.8	52.8	38.1	38.1	38.1	12.6	38.1	
Total Split (s)	54.0	54.0	54.0	54.0	54.0	54.0	41.0	41.0	41.0	15.0	56.0	
Total Split (%)	49.1%	49.1%	49.1%	49.1%	49.1%	49.1%	37.3%	37.3%	37.3%	13.6%	50.9%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	4.2	4.2	4.2	4.2	4.2	
All-Red Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	2.9	2.9	2.9	3.4	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)	7.8	7.8	7.8	7.8	7.8	7.8	7.1	7.1	7.1	7.6	7.1	
Lead/Lag							Lag	Lag	Lag	Lead		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	None	C-Max	
Act Effct Green (s)	26.7	26.7	26.7	26.7	26.7	26.7	55.8	55.8	55.8	7.6	68.4	
Actuated g/C Ratio	0.24	0.24	0.24	0.24	0.24	0.24	0.51	0.51	0.51	0.07	0.62	
v/c Ratio	0.03	0.28	0.02	0.12	0.42	0.27	0.03	0.29	0.04	0.35	0.14	
Control Delay	22.9	32.3	0.1	27.2	34.8	5.3	18.2	15.8	0.6	53.0	11.7	
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	22.9	32.3	0.1	27.2	34.8	5.3	18.2	15.8	0.6	53.0	11.7	
LOS	C	C	A	C	C	A	B	B	A	D	B	
Approach Delay		30.7			27.1			14.9			20.4	
Approach LOS		C			C			B			C	
Queue Length 50th (m)	1.3	23.5	0.0	6.1	36.3	0.0	1.1	19.4	0.0	8.3	8.9	
Queue Length 95th (m)	3.7	24.0	0.0	10.3	34.9	10.7	5.1	37.9	0.0	15.7	27.5	
Internal Link Dist (m)		399.7			554.5			777.1			190.3	
Turn Bay Length (m)	60.0		65.0	60.0		65.0	85.0		160.0	70.0		
Base Capacity (vph)	380	1392	678	445	1392	678	498	1683	797	233	2044	
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	0.02	0.16	0.01	0.07	0.24	0.18	0.03	0.29	0.04	0.33	0.14	

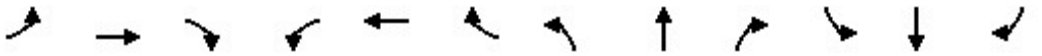
Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green, Master Intersection
Natural Cycle: 105
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.42

Intersection Signal Delay: 22.1	Intersection LOS: C
Intersection Capacity Utilization 79.2%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 12: Realigned Geenbank/Realigned Greenbank & Cambrian





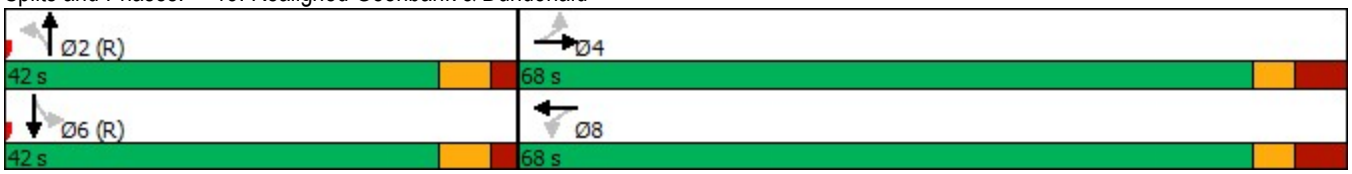
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	167	39	33	10	35	82	17	291	10	56	175	82
Future Volume (vph)	167	39	33	10	35	82	17	291	10	56	175	82
Satd. Flow (prot)	1658	1613	0	1658	1544	0	1658	3295	0	1658	3121	0
Flt Permitted	0.682			0.710			0.593			0.568		
Satd. Flow (perm)	1186	1613	0	1234	1544	0	1024	3295	0	981	3121	0
Satd. Flow (RTOR)		33			82			3			75	
Lane Group Flow (vph)	167	72	0	10	117	0	17	301	0	56	257	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	46.8	46.8		46.8	46.8		24.4	24.4		24.4	24.4	
Total Split (s)	68.0	68.0		68.0	68.0		42.0	42.0		42.0	42.0	
Total Split (%)	61.8%	61.8%		61.8%	61.8%		38.2%	38.2%		38.2%	38.2%	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.2	4.2		4.2	4.2	
All-Red Time (s)	4.5	4.5		4.5	4.5		2.2	2.2		2.2	2.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.8	7.8		7.8	7.8		6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)	23.2	23.2		23.2	23.2		72.6	72.6		72.6	72.6	
Actuated g/C Ratio	0.21	0.21		0.21	0.21		0.66	0.66		0.66	0.66	
v/c Ratio	0.67	0.20		0.04	0.30		0.03	0.14		0.09	0.12	
Control Delay	50.3	18.7		28.8	13.1		5.2	4.1		5.7	2.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	50.3	18.7		28.8	13.1		5.2	4.1		5.7	2.9	
LOS	D	B		C	B		A	A		A	A	
Approach Delay		40.8			14.3			4.1			3.4	
Approach LOS		D			B			A			A	
Queue Length 50th (m)	34.5	7.2		1.8	6.2		0.5	4.3		2.5	0.6	
Queue Length 95th (m)	46.7	15.9		5.1	17.1		2.9	12.7		4.8	1.0	
Internal Link Dist (m)		406.6			523.4			466.1			777.1	
Turn Bay Length (m)	45.0			40.0			45.0			60.0		
Base Capacity (vph)	649	897		675	882		675	2175		647	2085	
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	0.26	0.08		0.01	0.13		0.03	0.14		0.09	0.12	

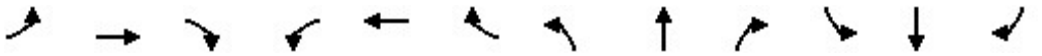
Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 37 (34%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.67

Intersection Signal Delay: 14.0	Intersection LOS: B
Intersection Capacity Utilization 59.4%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 13: Realigned Geenbank & Dundonald





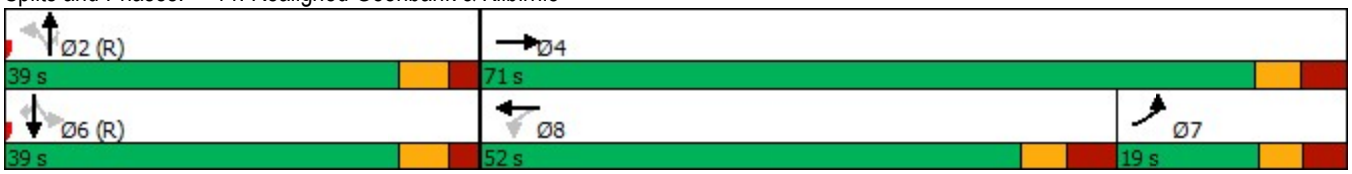
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	18	93	10	8	79	35	150	10	52	113	43
Future Volume (vph)	79	18	93	10	8	79	35	150	10	52	113	43
Satd. Flow (prot)	3216	1505	0	1658	1486	0	1658	3316	1483	1658	3316	1483
Flt Permitted	0.950			0.685			0.681			0.657		
Satd. Flow (perm)	3197	1505	0	1191	1486	0	1176	3316	1436	1135	3316	1436
Satd. Flow (RTOR)		93			79				124			124
Lane Group Flow (vph)	79	111	0	10	87	0	35	150	10	52	113	43
Turn Type	Prot	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	7	4			8			2			6	
Permitted Phases				8			2		2	6		6
Detector Phase	7	4		8	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	12.4	48.8		48.8	48.8		29.9	29.9	29.9	29.9	29.9	29.9
Total Split (s)	19.0	71.0		52.0	52.0		39.0	39.0	39.0	39.0	39.0	39.0
Total Split (%)	17.3%	64.5%		47.3%	47.3%		35.5%	35.5%	35.5%	35.5%	35.5%	35.5%
Yellow Time (s)	3.7	3.7		3.7	3.7		4.2	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	3.7	4.0		4.1	4.1		2.6	2.6	2.6	2.6	2.6	2.6
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)	7.4	7.7		7.8	7.8		6.8	6.8	6.8	6.8	6.8	6.8
Lead/Lag	Lag			Lead	Lead							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	8.1	29.1		16.2	16.2		66.4	66.4	66.4	66.4	66.4	66.4
Actuated g/C Ratio	0.07	0.26		0.15	0.15		0.60	0.60	0.60	0.60	0.60	0.60
v/c Ratio	0.33	0.24		0.06	0.31		0.05	0.07	0.01	0.08	0.06	0.05
Control Delay	46.0	4.7		34.2	11.4		6.3	5.3	0.1	11.9	10.4	0.4
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.0	4.7		34.2	11.4		6.3	5.3	0.1	11.9	10.4	0.4
LOS	D	A		C	B		A	A	A	B	B	A
Approach Delay		21.9			13.8			5.2			8.7	
Approach LOS		C			B			A			A	
Queue Length 50th (m)	7.4	0.3		2.0	1.6		0.9	2.1	0.0	2.9	3.1	0.0
Queue Length 95th (m)	16.1	4.8		4.9	11.1		6.3	10.0	0.0	10.8	10.0	0.0
Internal Link Dist (m)		413.8			483.3			501.2			466.1	
Turn Bay Length (m)	30.0			40.0			45.0		85.0	65.0		80.0
Base Capacity (vph)	339	905		478	644		709	2001	915	684	2001	915
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	0.23	0.12		0.02	0.14		0.05	0.07	0.01	0.08	0.06	0.05

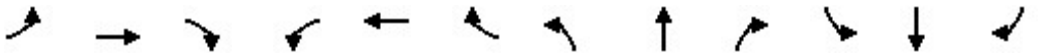
Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 41 (37%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.33

Intersection Signal Delay: 12.1	Intersection LOS: B
Intersection Capacity Utilization 58.2%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 14: Realigned Geenbank & Kilbirnie





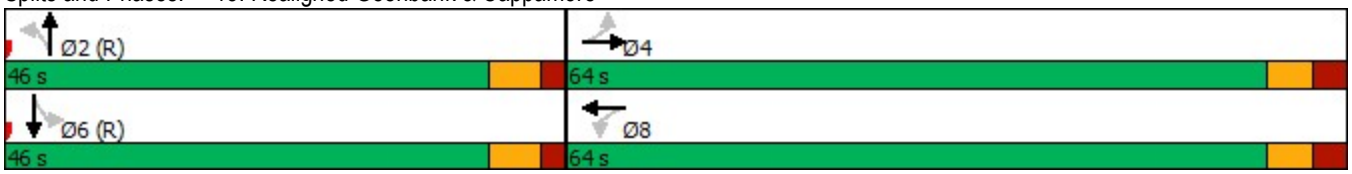
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	61	104	5	34	32	45	129	2	17	176	13
Future Volume (vph)	24	61	104	5	34	32	45	129	2	17	176	13
Satd. Flow (prot)	1658	1561	0	1658	1603	0	1658	3307	0	1658	3274	0
Flt Permitted	0.714			0.510			0.633			0.669		
Satd. Flow (perm)	1239	1561	0	886	1603	0	1091	3307	0	1152	3274	0
Satd. Flow (RTOR)		104			32			2			8	
Lane Group Flow (vph)	24	165	0	5	66	0	45	131	0	17	189	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	32.7	32.7		32.7	32.7		23.4	23.4		23.4	23.4	
Total Split (s)	64.0	64.0		64.0	64.0		46.0	46.0		46.0	46.0	
Total Split (%)	58.2%	58.2%		58.2%	58.2%		41.8%	41.8%		41.8%	41.8%	
Yellow Time (s)	3.7	3.7		3.7	3.7		4.2	4.2		4.2	4.2	
All-Red Time (s)	3.0	3.0		3.0	3.0		2.2	2.2		2.2	2.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.7	6.7		6.7	6.7		6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)	13.8	13.8		13.8	13.8		83.1	83.1		83.1	83.1	
Actuated g/C Ratio	0.13	0.13		0.13	0.13		0.76	0.76		0.76	0.76	
v/c Ratio	0.15	0.58		0.05	0.29		0.05	0.05		0.02	0.08	
Control Delay	42.0	25.2		38.6	26.9		13.4	12.1		5.0	4.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	42.0	25.2		38.6	26.9		13.4	12.1		5.0	4.1	
LOS	D	C		D	C		B	B		A	A	
Approach Delay		27.4			27.7			12.4			4.2	
Approach LOS		C			C			B			A	
Queue Length 50th (m)	4.9	12.6		1.0	6.9		5.3	8.0		0.5	2.7	
Queue Length 95th (m)	10.9	28.6		3.9	16.8		17.9	19.6		4.4	14.1	
Internal Link Dist (m)		431.8			441.9			239.7			501.2	
Turn Bay Length (m)	30.0			30.0			55.0			55.0		
Base Capacity (vph)	645	862		461	850		824	2498		870	2475	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.04	0.19		0.01	0.08		0.05	0.05		0.02	0.08	

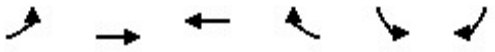
Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 38 (35%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.58

Intersection Signal Delay: 15.9	Intersection LOS: B
Intersection Capacity Utilization 50.9%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 15: Realigned Geenbank & Cappamore





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	117	315	463	59	53	234
Future Volume (vph)	117	315	463	59	53	234
Satd. Flow (prot)	1658	1745	1745	1483	1658	1483
Flt Permitted	0.272				0.950	
Satd. Flow (perm)	475	1745	1745	1483	1658	1483
Satd. Flow (RTOR)				59		234
Lane Group Flow (vph)	117	315	463	59	53	234
Turn Type	Perm	NA	NA	Perm	Perm	Perm
Protected Phases		4	8			
Permitted Phases	4			8	6	6
Detector Phase	4	4	8	8	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	5.0
Minimum Split (s)	32.2	32.2	32.2	32.2	11.5	11.5
Total Split (s)	76.0	76.0	76.0	76.0	34.0	34.0
Total Split (%)	69.1%	69.1%	69.1%	69.1%	30.9%	30.9%
Yellow Time (s)	5.1	5.1	5.1	5.1	4.2	4.2
All-Red Time (s)	2.1	2.1	2.1	2.1	2.3	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.2	7.2	7.2	7.2	6.5	6.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	C-Max	C-Max
Act Effct Green (s)	38.7	38.7	38.7	38.7	57.6	57.6
Actuated g/C Ratio	0.35	0.35	0.35	0.35	0.52	0.52
v/c Ratio	0.70	0.51	0.76	0.11	0.06	0.26
Control Delay	51.4	29.9	38.8	5.0	13.6	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.4	29.9	38.8	5.0	13.6	3.9
LOS	D	C	D	A	B	A
Approach Delay		35.7	35.0		5.7	
Approach LOS		D	C		A	
Queue Length 50th (m)	21.5	53.2	87.3	0.0	5.6	0.0
Queue Length 95th (m)	37.2	63.7	100.7	6.8	14.5	19.9
Internal Link Dist (m)		978.4	757.0		239.7	
Turn Bay Length (m)	105.0			135.0		
Base Capacity (vph)	297	1091	1091	949	868	888
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	0.39	0.29	0.42	0.06	0.06	0.26

Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 29 (26%), Referenced to phase 2: and 6:SBL, Start of Green
Natural Cycle: 45
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 28.5	Intersection LOS: C
Intersection Capacity Utilization 55.6%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 16: Barnsdale & Realigned Geenbank



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	89	258	137	27	241	93	107	7	36	88	5	90
Future Volume (vph)	89	258	137	27	241	93	107	7	36	88	5	90
Satd. Flow (prot)	1523	1399	0	1658	1612	0	1013	1525	0	1595	1365	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1523	1399	0	1658	1612	0	1013	1525	0	1595	1365	0
Lane Group Flow (vph)	89	395	0	27	334	0	107	43	0	88	95	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 49.4%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	10.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	89	258	137	27	241	93	107	7	36	88	5	90
Future Vol, veh/h	89	258	137	27	241	93	107	7	36	88	5	90
Conflicting Peds, #/hr	6	0	0	0	0	6	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	37.5	-	-	37.5	-	-	30	-	-	30	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	11	5	50	2	3	13	67	2	2	6	100	7
Mvmt Flow	89	258	137	27	241	93	107	7	36	88	5	90

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	340	0	0	395	0	0	894	899	327	874	921	294
Stage 1	-	-	-	-	-	-	505	505	-	348	348	-
Stage 2	-	-	-	-	-	-	389	394	-	526	573	-
Critical Hdwy	4.21	-	-	4.12	-	-	7.77	6.52	6.22	7.16	7.5	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-	6.77	5.52	-	6.16	6.5	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.77	5.52	-	6.16	6.5	-
Follow-up Hdwy	2.299	-	-	2.218	-	-	4.103	4.018	3.318	3.554	4.9	3.363
Pot Cap-1 Maneuver	1171	-	-	1164	-	-	203	279	714	266	189	734
Stage 1	-	-	-	-	-	-	446	540	-	660	492	-
Stage 2	-	-	-	-	-	-	523	605	-	528	376	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1166	-	-	1164	-	-	161	251	714	228	170	731
Mov Cap-2 Maneuver	-	-	-	-	-	-	161	251	-	228	170	-
Stage 1	-	-	-	-	-	-	412	499	-	607	478	-
Stage 2	-	-	-	-	-	-	443	588	-	457	347	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.5	0.6	48.6	20.7
HCM LOS			E	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	161	549	1166	-	-	1164	-	-	228	623
HCM Lane V/C Ratio	0.665	0.078	0.076	-	-	0.023	-	-	0.386	0.152
HCM Control Delay (s)	63.2	12.1	8.3	-	-	8.2	-	-	30.4	11.8
HCM Lane LOS	F	B	A	-	-	A	-	-	D	B
HCM 95th %tile Q(veh)	3.8	0.3	0.2	-	-	0.1	-	-	1.7	0.5

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	180	597	17	313	220	108	27	49	31	150	192	145
Future Volume (vph)	180	597	17	313	220	108	27	49	31	150	192	145
Satd. Flow (prot)	0	1708	0	0	1658	0	0	1657	0	0	1628	0
Flt Permitted		0.742			0.483			0.775			0.855	
Satd. Flow (perm)	0	1282	0	0	821	0	0	1300	0	0	1413	0
Satd. Flow (RTOR)		2			15			16			16	
Lane Group Flow (vph)	0	794	0	0	641	0	0	107	0	0	487	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	25.8	25.8		25.8	25.8		25.2	25.2		25.2	25.2	
Total Split (s)	88.0	88.0		88.0	88.0		42.0	42.0		42.0	42.0	
Total Split (%)	67.7%	67.7%		67.7%	67.7%		32.3%	32.3%		32.3%	32.3%	
Yellow Time (s)	5.1	5.1		5.1	5.1		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.7	1.7		1.7	1.7		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		6.8			6.8			6.2			6.2	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Max	Max		Max	Max		None	None		None	None	
Act Effct Green (s)		81.2			81.2			35.8			35.8	
Actuated g/C Ratio		0.62			0.62			0.28			0.28	
v/c Ratio		0.99			1.24			0.29			1.22	
Control Delay		54.5			147.4			33.9			157.9	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		54.5			147.4			33.9			157.9	
LOS		D			F			C			F	
Approach Delay		54.5			147.4			33.9			157.9	
Approach LOS		D			F			C			F	
Queue Length 50th (m)		188.0			~202.7			18.3			~150.1	
Queue Length 95th (m)		#284.7			#274.6			34.5			#216.6	
Internal Link Dist (m)		543.4			978.4			562.8			300.3	
Turn Bay Length (m)												
Base Capacity (vph)		801			518			369			400	
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		0.99			1.24			0.29			1.22	

Intersection Summary
Cycle Length: 130
Actuated Cycle Length: 130
Natural Cycle: 150
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 1.24

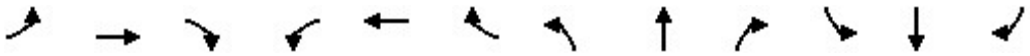
Intersection Signal Delay: 107.6	Intersection LOS: F
Intersection Capacity Utilization 119.6%	ICU Level of Service H
Analysis Period (min) 15	

~ 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: 3: Hwy 416/Borrisokane & Barnsdale





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	153	389	40	0	357	194	10	126	3	113	146	126
Future Volume (vph)	153	389	40	0	357	194	10	126	3	113	146	126
Satd. Flow (prot)	0	1678	0	0	1615	0	0	1664	0	0	1633	0
Flt Permitted		0.987						0.996			0.986	
Satd. Flow (perm)	0	1678	0	0	1615	0	0	1664	0	0	1633	0
Lane Group Flow (vph)	0	582	0	0	551	0	0	139	0	0	385	0
Sign Control		Stop			Stop			Stop			Stop	

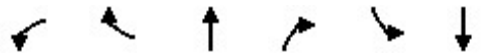
Intersection Summary	
Control Type: Unsignalized	
Intersection Capacity Utilization 109.5%	ICU Level of Service H
Analysis Period (min) 15	

Intersection	
Intersection Delay, s/veh	100.9
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	153	389	40	0	357	194	10	126	3	113	146	126
Future Vol, veh/h	153	389	40	0	357	194	10	126	3	113	146	126
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	7	2	8	2	6	3	10	6	2	2	4	2
Mvmt Flow	153	389	40	0	357	194	10	126	3	113	146	126
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	149.1	111.2	19.2	42.7
HCM LOS	F	F	C	E

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	7%	26%	0%	29%
Vol Thru, %	91%	67%	65%	38%
Vol Right, %	2%	7%	35%	33%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	139	582	551	385
LT Vol	10	153	0	113
Through Vol	126	389	357	146
RT Vol	3	40	194	126
Lane Flow Rate	139	582	551	385
Geometry Grp	1	1	1	1
Degree of Util (X)	0.36	1.235	1.133	0.837
Departure Headway (Hd)	10.437	8.036	7.955	8.621
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	347	454	463	424
Service Time	8.437	6.036	5.955	6.621
HCM Lane V/C Ratio	0.401	1.282	1.19	0.908
HCM Control Delay	19.2	149.1	111.2	42.7
HCM Lane LOS	C	F	F	E
HCM 95th-tile Q	1.6	22.4	18.1	8



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	75	80	278	20	62	270
Future Volume (vph)	75	80	278	20	62	270
Satd. Flow (prot)	1488	0	1630	0	1470	1679
Flt Permitted	0.976				0.950	
Satd. Flow (perm)	1488	0	1630	0	1470	1679
Lane Group Flow (vph)	155	0	298	0	62	270
Sign Control	Stop		Free			Free

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 39.9%		ICU Level of Service A	
Analysis Period (min) 15			

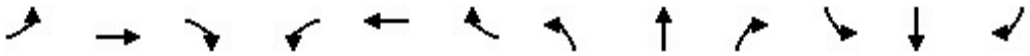
Intersection	
Int Delay, s/veh	3.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	75	80	278	20	62	270
Future Vol, veh/h	75	80	278	20	62	270
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	45	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	5	12	8	11	15	6
Mvmt Flow	75	80	278	20	62	270

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	682	288	0	0	298	0
Stage 1	288	-	-	-	-	-
Stage 2	394	-	-	-	-	-
Critical Hdwy	6.45	6.32	-	-	4.25	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.408	-	-	2.335	-
Pot Cap-1 Maneuver	411	728	-	-	1193	-
Stage 1	754	-	-	-	-	-
Stage 2	675	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	390	728	-	-	1193	-
Mov Cap-2 Maneuver	390	-	-	-	-	-
Stage 1	754	-	-	-	-	-
Stage 2	640	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	15	0	1.5
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	513	1193	-
HCM Lane V/C Ratio	-	-	0.302	0.052	-
HCM Control Delay (s)	-	-	15	8.2	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	1.3	0.2	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	220	18	116	271	7	36	0	565	10	1	0
Future Volume (vph)	0	220	18	116	271	7	36	0	565	10	1	0
Satd. Flow (prot)	0	1277	0	0	1291	0	0	1124	0	0	891	0
Flt Permitted					0.985			0.997			0.957	
Satd. Flow (perm)	0	1277	0	0	1291	0	0	1124	0	0	891	0
Lane Group Flow (vph)	0	238	0	0	394	0	0	601	0	0	11	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 83.7%		ICU Level of Service E	
Analysis Period (min) 15			

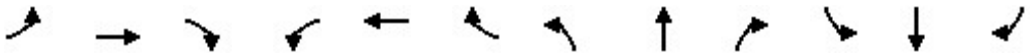
Intersection	
Int Delay, s/veh	23.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	0	220	18	116	271	7	36	0	565	10	1	0
Future Vol, veh/h	0	220	18	116	271	7	36	0	565	10	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	37	50	50	28	86	67	60	36	100	2	2
Mvmt Flow	0	220	18	116	271	7	36	0	565	10	1	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	278	0	0	238	0	0	736	739	229	1019	745	275
Stage 1	-	-	-	-	-	-	229	229	-	507	507	-
Stage 2	-	-	-	-	-	-	507	510	-	512	238	-
Critical Hdwy	4.12	-	-	4.6	-	-	7.77	7.1	6.56	8.1	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.77	6.1	-	7.1	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.77	6.1	-	7.1	5.52	-
Follow-up Hdwy	2.218	-	-	2.65	-	-	4.103	4.54	3.624	4.4	4.018	3.318
Pot Cap-1 Maneuver	1285	-	-	1093	-	-	265	284	733	144	342	764
Stage 1	-	-	-	-	-	-	648	619	-	404	539	-
Stage 2	-	-	-	-	-	-	445	453	-	401	708	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1285	-	-	1093	-	-	239	248	733	30	299	764
Mov Cap-2 Maneuver	-	-	-	-	-	-	239	248	-	30	299	-
Stage 1	-	-	-	-	-	-	648	619	-	404	471	-
Stage 2	-	-	-	-	-	-	388	396	-	92	708	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	2.6	43.9	161.2
HCM LOS			E	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	652	1285	-	-	1093	-	-	33
HCM Lane V/C Ratio	0.922	-	-	-	0.106	-	-	0.333
HCM Control Delay (s)	43.9	0	-	-	8.7	0	-	161.2
HCM Lane LOS	E	A	-	-	A	A	-	F
HCM 95th %tile Q(veh)	12.2	0	-	-	0.4	-	-	1.1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	7	10	46	8	165	10	40	33	108	65	10
Future Volume (vph)	10	7	10	46	8	165	10	40	33	108	65	10
Satd. Flow (prot)	0	1628	0	0	1551	0	0	1641	0	0	1683	0
Flt Permitted		0.982			0.990			0.994			0.971	
Satd. Flow (perm)	0	1628	0	0	1551	0	0	1641	0	0	1683	0
Lane Group Flow (vph)	0	27	0	0	219	0	0	83	0	0	183	0
Sign Control		Stop			Stop			Free			Free	

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

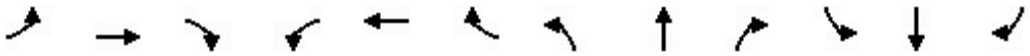
Intersection	
Int Delay, s/veh	7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	7	10	46	8	165	10	40	33	108	65	10
Future Vol, veh/h	10	7	10	46	8	165	10	40	33	108	65	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	100	100	100	100	100	100	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	7	10	46	8	165	10	40	33	108	65	10

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	449	379	70	372	368	57	75	0	0	73	0	0
Stage 1	286	286	-	77	77	-	-	-	-	-	-	-
Stage 2	163	93	-	295	291	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	520	553	993	585	561	1009	1524	-	-	1527	-	-
Stage 1	721	675	-	932	831	-	-	-	-	-	-	-
Stage 2	839	818	-	713	672	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	404	509	993	538	516	1009	1524	-	-	1527	-	-
Mov Cap-2 Maneuver	404	509	-	538	516	-	-	-	-	-	-	-
Stage 1	716	625	-	925	825	-	-	-	-	-	-	-
Stage 2	690	812	-	646	622	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.8	10.9	0.9	4.4
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1524	-	-	556	828	1527	-	-
HCM Lane V/C Ratio	0.007	-	-	0.049	0.264	0.071	-	-
HCM Control Delay (s)	7.4	0	-	11.8	10.9	7.5	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	1.1	0.2	-	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	5	10	92	5	39	10	24	72	31	44	10
Future Volume (vph)	10	5	10	92	5	39	10	24	72	31	44	10
Satd. Flow (prot)	0	1621	0	0	1623	0	0	1577	0	0	1686	0
Flt Permitted		0.981			0.967			0.995			0.982	
Satd. Flow (perm)	0	1621	0	0	1623	0	0	1577	0	0	1686	0
Lane Group Flow (vph)	0	28	0	0	151	0	0	118	0	0	94	0
Sign Control		Stop			Stop			Free			Free	

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 31.8%		ICU Level of Service A	
Analysis Period (min) 15			

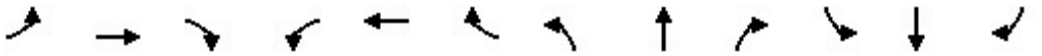
Intersection	
Int Delay, s/veh	5.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	10	5	10	92	5	39	10	24	72	31	44	10
Future Vol, veh/h	10	5	10	92	5	39	10	24	72	31	44	10
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	11	6	11	102	6	43	11	27	80	34	49	11

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	237	252	55	220	217	67	60	0	0	107	0	0
Stage 1	123	123	-	89	89	-	-	-	-	-	-	-
Stage 2	114	129	-	131	128	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	717	651	1012	736	681	997	1544	-	-	1484	-	-
Stage 1	881	794	-	918	821	-	-	-	-	-	-	-
Stage 2	891	789	-	873	790	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	665	630	1012	706	659	997	1544	-	-	1484	-	-
Mov Cap-2 Maneuver	665	630	-	706	659	-	-	-	-	-	-	-
Stage 1	874	775	-	911	814	-	-	-	-	-	-	-
Stage 2	840	783	-	837	771	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.9	10.8	0.7	2.7
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1544	-	-	761	768	1484	-	-
HCM Lane V/C Ratio	0.007	-	-	0.037	0.197	0.023	-	-
HCM Control Delay (s)	7.3	0	-	9.9	10.8	7.5	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.7	0.1	-	-



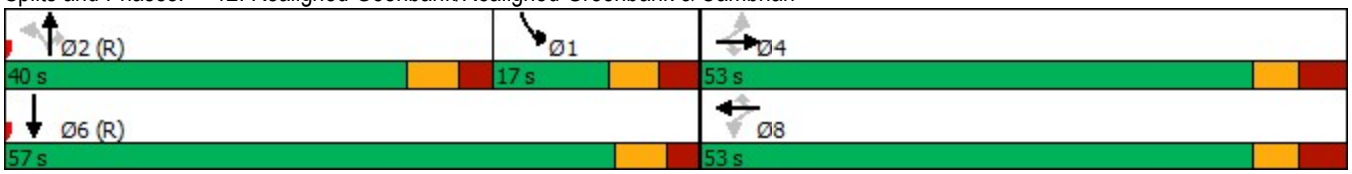
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	370	10	65	332	104	13	430	24	132	526	9
Future Volume (vph)	15	370	10	65	332	104	13	430	24	132	526	9
Satd. Flow (prot)	1658	3316	1483	1658	3316	1483	1658	3316	1483	3216	3303	0
Flt Permitted	0.529			0.488			0.446			0.950		
Satd. Flow (perm)	917	3316	1455	848	3316	1450	769	3316	1452	3188	3303	0
Satd. Flow (RTOR)			116			116			123		2	
Lane Group Flow (vph)	15	370	10	65	332	104	13	430	24	132	535	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	Prot	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4		4	8		8	2		2			
Detector Phase	4	4	4	8	8	8	2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0	
Minimum Split (s)	52.8	52.8	52.8	52.8	52.8	52.8	38.1	38.1	38.1	12.6	38.1	
Total Split (s)	53.0	53.0	53.0	53.0	53.0	53.0	40.0	40.0	40.0	17.0	57.0	
Total Split (%)	48.2%	48.2%	48.2%	48.2%	48.2%	48.2%	36.4%	36.4%	36.4%	15.5%	51.8%	
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	4.2	4.2	4.2	4.2	4.2	
All-Red Time (s)	4.1	4.1	4.1	4.1	4.1	4.1	2.9	2.9	2.9	3.4	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)	7.8	7.8	7.8	7.8	7.8	7.8	7.1	7.1	7.1	7.6	7.1	
Lead/Lag							Lead	Lead	Lead	Lag		
Lead-Lag Optimize?							Yes	Yes	Yes	Yes		
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	None	C-Max	
Act Effct Green (s)	27.3	27.3	27.3	27.3	27.3	27.3	50.8	50.8	50.8	9.4	67.8	
Actuated g/C Ratio	0.25	0.25	0.25	0.25	0.25	0.25	0.46	0.46	0.46	0.09	0.62	
v/c Ratio	0.07	0.45	0.02	0.31	0.40	0.23	0.04	0.28	0.03	0.48	0.26	
Control Delay	24.5	35.0	0.1	32.8	34.1	4.4	24.9	21.7	0.5	54.3	12.8	
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	24.5	35.0	0.1	32.8	34.1	4.4	24.9	21.7	0.5	54.3	12.8	
LOS	C	D	A	C	C	A	C	C	A	D	B	
Approach Delay		33.7			27.8			20.7			21.0	
Approach LOS		C			C			C			C	
Queue Length 50th (m)	2.8	39.8	0.0	12.8	35.3	0.0	1.2	26.1	0.1	14.1	18.8	
Queue Length 95th (m)	6.1	38.2	0.0	18.6	34.4	8.4	6.0	43.4	0.2	23.8	51.0	
Internal Link Dist (m)		399.7			554.5			777.1			190.3	
Turn Bay Length (m)	60.0		65.0	60.0		65.0	85.0		160.0	70.0		
Base Capacity (vph)	376	1362	666	348	1362	664	355	1530	736	274	2035	
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	0.04	0.27	0.02	0.19	0.24	0.16	0.04	0.28	0.03	0.48	0.26	

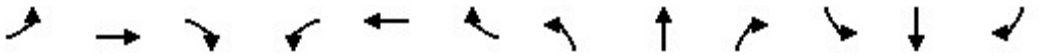
Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Green, Master Intersection
Natural Cycle: 105
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.48

Intersection Signal Delay: 25.1	Intersection LOS: C
Intersection Capacity Utilization 87.4%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 12: Realigned Geenbank/Realigned Greenbank & Cambrian





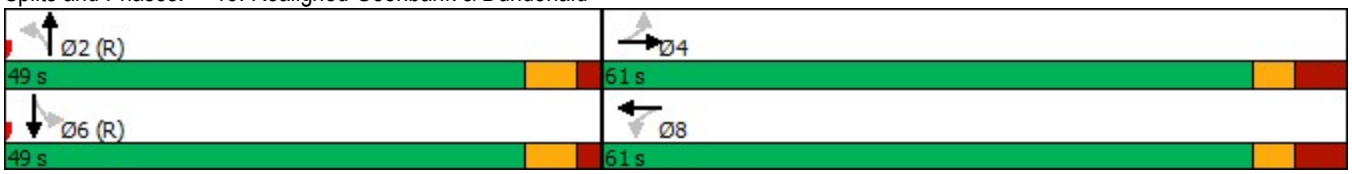
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	121	21	24	10	58	81	32	267	10	102	331	161
Future Volume (vph)	121	21	24	10	58	81	32	267	10	102	331	161
Satd. Flow (prot)	1658	1592	0	1658	1578	0	1658	3295	0	1658	3117	0
Flt Permitted	0.668			0.728			0.472			0.581		
Satd. Flow (perm)	1162	1592	0	1265	1578	0	818	3295	0	1003	3117	0
Satd. Flow (RTOR)		24			81			4			88	
Lane Group Flow (vph)	121	45	0	10	139	0	32	277	0	102	492	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	46.8	46.8		46.8	46.8		24.4	24.4		24.4	24.4	
Total Split (s)	61.0	61.0		61.0	61.0		49.0	49.0		49.0	49.0	
Total Split (%)	55.5%	55.5%		55.5%	55.5%		44.5%	44.5%		44.5%	44.5%	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.2	4.2		4.2	4.2	
All-Red Time (s)	4.5	4.5		4.5	4.5		2.2	2.2		2.2	2.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	7.8	7.8		7.8	7.8		6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)	20.1	20.1		20.1	20.1		75.7	75.7		75.7	75.7	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.69	0.69		0.69	0.69	
v/c Ratio	0.57	0.15		0.04	0.39		0.06	0.12		0.15	0.23	
Control Delay	50.3	19.7		30.8	18.5		3.8	3.0		4.4	3.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	50.3	19.7		30.8	18.5		3.8	3.0		4.4	3.1	
LOS	D	B		C	B		A	A		A	A	
Approach Delay		42.0			19.4			3.1			3.3	
Approach LOS		D			B			A			A	
Queue Length 50th (m)	25.4	4.0		1.9	11.1		0.8	3.7		9.1	21.0	
Queue Length 95th (m)	35.1	11.1		5.1	21.9		3.5	9.2		3.8	0.8	
Internal Link Dist (m)		406.6			523.4			466.1			777.1	
Turn Bay Length (m)	45.0			40.0			45.0			60.0		
Base Capacity (vph)	561	782		611	805		563	2269		690	2173	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.22	0.06		0.02	0.17		0.06	0.12		0.15	0.23	

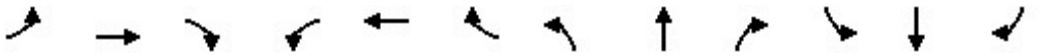
Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 66 (60%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 75
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.57

Intersection Signal Delay: 10.5	Intersection LOS: B
Intersection Capacity Utilization 68.0%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 13: Realigned Geenbank & Dundonald





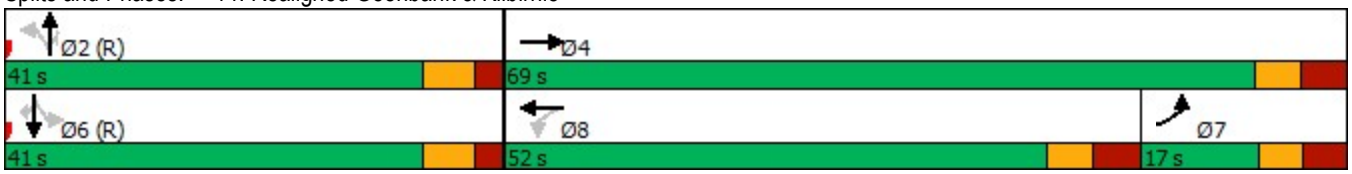
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	10	62	10	14	79	75	159	10	94	176	85
Future Volume (vph)	61	10	62	10	14	79	75	159	10	94	176	85
Satd. Flow (prot)	3216	1499	0	1658	1503	0	1658	3316	1483	1658	3316	1483
Flt Permitted	0.950			0.710			0.641			0.651		
Satd. Flow (perm)	3197	1499	0	1235	1503	0	1108	3316	1436	1125	3316	1436
Satd. Flow (RTOR)		62			79				123			123
Lane Group Flow (vph)	61	72	0	10	93	0	75	159	10	94	176	85
Turn Type	Prot	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	7	4			8			2			6	
Permitted Phases				8			2		2	6		6
Detector Phase	7	4		8	8		2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	12.4	48.7		48.7	48.7		29.8	29.8	29.8	29.8	29.8	29.8
Total Split (s)	17.0	69.0		52.0	52.0		41.0	41.0	41.0	41.0	41.0	41.0
Total Split (%)	15.5%	62.7%		47.3%	47.3%		37.3%	37.3%	37.3%	37.3%	37.3%	37.3%
Yellow Time (s)	3.7	3.7		3.7	3.7		4.2	4.2	4.2	4.2	4.2	4.2
All-Red Time (s)	3.7	4.0		4.0	4.0		2.6	2.6	2.6	2.6	2.6	2.6
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)	7.4	7.7		7.7	7.7		6.8	6.8	6.8	6.8	6.8	6.8
Lead/Lag	Lag			Lead	Lead							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	None	None		None	None		C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	7.5	28.5		16.2	16.2		71.9	71.9	71.9	71.9	71.9	71.9
Actuated g/C Ratio	0.07	0.26		0.15	0.15		0.65	0.65	0.65	0.65	0.65	0.65
v/c Ratio	0.28	0.17		0.05	0.32		0.10	0.07	0.01	0.13	0.08	0.09
Control Delay	41.5	3.9		34.1	12.9		6.7	5.0	0.0	10.3	9.0	0.4
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.5	3.9		34.1	12.9		6.7	5.0	0.0	10.3	9.0	0.4
LOS	D	A		C	B		A	A	A	B	A	A
Approach Delay		21.1			14.9			5.3			7.3	
Approach LOS		C			B			A			A	
Queue Length 50th (m)	5.6	0.2		2.0	2.8		2.3	2.4	0.0	5.3	5.2	0.0
Queue Length 95th (m)	12.7	1.0		4.9	12.3		10.7	10.0	0.0	14.4	12.2	0.6
Internal Link Dist (m)		418.6			483.3			501.2			466.1	
Turn Bay Length (m)	30.0			40.0			45.0		85.0	65.0		80.0
Base Capacity (vph)	280	862		497	652		724	2168	981	735	2168	981
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	0.22	0.08		0.02	0.14		0.10	0.07	0.01	0.13	0.08	0.09

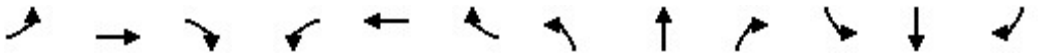
Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 62 (56%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.32

Intersection Signal Delay: 9.9	Intersection LOS: A
Intersection Capacity Utilization 57.7%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 14: Realigned Geenbank & Kilbirnie





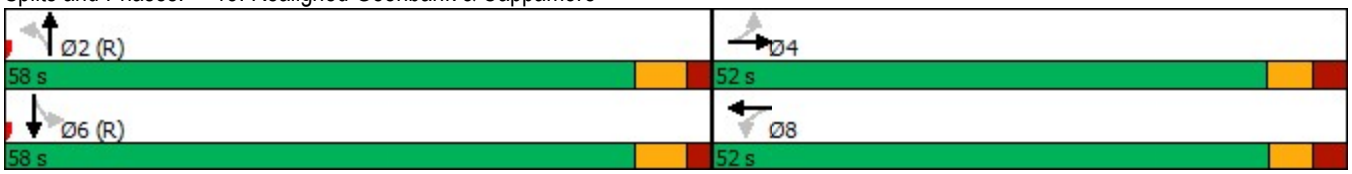
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	54	68	3	69	27	98	188	4	34	179	25
Future Volume (vph)	19	54	68	3	69	27	98	188	4	34	179	25
Satd. Flow (prot)	1658	1582	0	1658	1663	0	1658	3303	0	1658	3242	0
Flt Permitted	0.695			0.664			0.624			0.631		
Satd. Flow (perm)	1206	1582	0	1153	1663	0	1076	3303	0	1088	3242	0
Satd. Flow (RTOR)		68			22			3			19	
Lane Group Flow (vph)	19	122	0	3	96	0	98	192	0	34	204	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	32.7	32.7		32.6	32.6		23.4	23.4		23.4	23.4	
Total Split (s)	52.0	52.0		52.0	52.0		58.0	58.0		58.0	58.0	
Total Split (%)	47.3%	47.3%		47.3%	47.3%		52.7%	52.7%		52.7%	52.7%	
Yellow Time (s)	3.7	3.7		3.7	3.7		4.2	4.2		4.2	4.2	
All-Red Time (s)	3.0	3.0		2.9	2.9		2.2	2.2		2.2	2.2	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.7	6.7		6.6	6.6		6.4	6.4		6.4	6.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Max	C-Max		C-Max	C-Max	
Act Effct Green (s)	13.7	13.7		13.8	13.8		83.2	83.2		83.2	83.2	
Actuated g/C Ratio	0.12	0.12		0.13	0.13		0.76	0.76		0.76	0.76	
v/c Ratio	0.13	0.48		0.02	0.42		0.12	0.08		0.04	0.08	
Control Delay	42.5	27.0		37.3	38.1		11.4	9.7		6.5	5.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	42.5	27.0		37.3	38.1		11.4	9.7		6.5	5.1	
LOS	D	C		D	D		B	A		A	A	
Approach Delay		29.1			38.1			10.2			5.3	
Approach LOS		C			D			B			A	
Queue Length 50th (m)	3.9	11.1		0.6	15.3		11.3	10.4		1.0	2.7	
Queue Length 95th (m)	9.4	24.8		2.8	26.6		28.3	21.3		9.6	18.5	
Internal Link Dist (m)		431.8			441.9			239.7			501.2	
Turn Bay Length (m)	30.0			30.0			55.0			55.0		
Base Capacity (vph)	496	691		475	699		814	2500		823	2457	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.04	0.18		0.01	0.14		0.12	0.08		0.04	0.08	

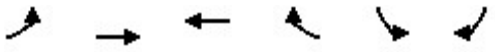
Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 48 (44%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.48

Intersection Signal Delay: 15.8	Intersection LOS: B
Intersection Capacity Utilization 49.1%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 15: Realigned Geenbank & Cappamore





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	219	508	422	71	74	177
Future Volume (vph)	219	508	422	71	74	177
Satd. Flow (prot)	1658	1745	1745	1483	1658	1483
Flt Permitted	0.364				0.950	
Satd. Flow (perm)	635	1745	1745	1483	1658	1483
Satd. Flow (RTOR)				71		177
Lane Group Flow (vph)	219	508	422	71	74	177
Turn Type	Perm	NA	NA	Perm	Perm	Perm
Protected Phases		4	8			
Permitted Phases	4			8	6	6
Detector Phase	4	4	8	8	6	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	5.0	5.0
Minimum Split (s)	32.2	32.2	32.2	32.2	11.5	11.5
Total Split (s)	84.0	84.0	84.0	84.0	26.0	26.0
Total Split (%)	76.4%	76.4%	76.4%	76.4%	23.6%	23.6%
Yellow Time (s)	5.1	5.1	5.1	5.1	4.2	4.2
All-Red Time (s)	2.1	2.1	2.1	2.1	2.3	2.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.2	7.2	7.2	7.2	6.5	6.5
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	None	None	C-Max	C-Max
Act Effct Green (s)	44.1	44.1	44.1	44.1	52.2	52.2
Actuated g/C Ratio	0.40	0.40	0.40	0.40	0.47	0.47
v/c Ratio	0.86	0.73	0.60	0.11	0.09	0.22
Control Delay	58.6	33.1	28.6	3.7	18.1	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.6	33.1	28.6	3.7	18.1	5.5
LOS	E	C	C	A	B	A
Approach Delay		40.8	25.0		9.2	
Approach LOS		D	C		A	
Queue Length 50th (m)	42.4	90.9	70.5	0.0	10.4	1.2
Queue Length 95th (m)	61.7	97.3	76.7	6.3	17.9	14.6
Internal Link Dist (m)		978.4	757.0		239.7	
Turn Bay Length (m)	105.0			135.0		
Base Capacity (vph)	443	1218	1218	1056	787	797
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	0.49	0.42	0.35	0.07	0.09	0.22

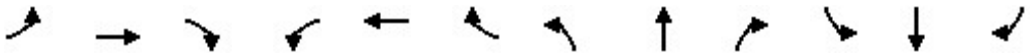
Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 54 (49%), Referenced to phase 2: and 6:SBL, Start of Green
Natural Cycle: 45
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.86

Intersection Signal Delay: 30.1	Intersection LOS: C
Intersection Capacity Utilization 58.0%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 16: Barnsdale & Realigned Geenbank





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	82	262	23	4	361	41	10	79	1	261	126	151
Future Volume (vph)	82	262	23	4	361	41	10	79	1	261	126	151
Satd. Flow (prot)	1580	1716	0	0	1661	0	0	1660	0	1658	1588	0
Flt Permitted	0.950							0.994		0.950		
Satd. Flow (perm)	1580	1716	0	0	1661	0	0	1660	0	1658	1588	0
Lane Group Flow (vph)	82	285	0	0	406	0	0	90	0	261	277	0
Sign Control		Stop			Stop			Stop			Stop	

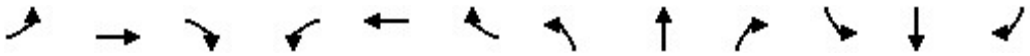
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 70.9%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	23.9
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	82	262	23	4	361	41	10	79	1	261	126	151
Future Vol, veh/h	82	262	23	4	361	41	10	79	1	261	126	151
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	7	2	8	2	6	3	10	6	2	2	4	2
Mvmt Flow	82	262	23	4	361	41	10	79	1	261	126	151
Number of Lanes	1	1	0	0	1	0	0	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	2
HCM Control Delay	18.9	36.3	14.4	19.5
HCM LOS	C	E	B	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	11%	100%	0%	1%	100%	0%
Vol Thru, %	88%	0%	92%	89%	0%	45%
Vol Right, %	1%	0%	8%	10%	0%	55%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	90	82	285	406	261	277
LT Vol	10	82	0	4	261	0
Through Vol	79	0	262	361	0	126
RT Vol	1	0	23	41	0	151
Lane Flow Rate	90	82	285	406	261	277
Geometry Grp	4b	5	5	4b	5	5
Degree of Util (X)	0.22	0.186	0.593	0.824	0.576	0.545
Departure Headway (Hd)	8.812	8.145	7.486	7.302	7.949	7.079
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	406	440	482	495	454	510
Service Time	6.904	5.904	5.244	5.354	5.707	4.836
HCM Lane V/C Ratio	0.222	0.186	0.591	0.82	0.575	0.543
HCM Control Delay	14.4	12.8	20.6	36.3	21	18.1
HCM Lane LOS	B	B	C	E	C	C
HCM 95th-tile Q	0.8	0.7	3.8	8	3.5	3.2



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	248	24	79	175	15	12	0	415	5	2	1
Future Volume (vph)	1	248	24	79	175	15	12	0	415	5	2	1
Satd. Flow (prot)	0	1274	0	0	1264	0	0	1129	0	0	1040	0
Flt Permitted					0.986			0.999			0.970	
Satd. Flow (perm)	0	1274	0	0	1264	0	0	1129	0	0	1040	0
Lane Group Flow (vph)	0	273	0	0	269	0	0	427	0	0	8	0
Sign Control		Stop			Stop			Stop			Stop	

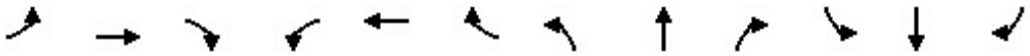
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 68.3%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	18.9
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	248	24	79	175	15	12	0	415	5	2	1
Future Vol, veh/h	1	248	24	79	175	15	12	0	415	5	2	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	37	50	50	28	86	67	60	36	100	2	2
Mvmt Flow	1	248	24	79	175	15	12	0	415	5	2	1
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	13.6	16.4	24	11.6
HCM LOS	B	C	C	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	3%	0%	29%	62%
Vol Thru, %	0%	91%	65%	25%
Vol Right, %	97%	9%	6%	12%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	427	273	269	8
LT Vol	12	1	79	5
Through Vol	0	248	175	2
RT Vol	415	24	15	1
Lane Flow Rate	427	273	269	8
Geometry Grp	1	1	1	1
Degree of Util (X)	0.728	0.444	0.501	0.019
Departure Headway (Hd)	6.141	5.854	6.699	8.455
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	589	612	535	426
Service Time	4.197	3.924	4.767	6.455
HCM Lane V/C Ratio	0.725	0.446	0.503	0.019
HCM Control Delay	24	13.6	16.4	11.6
HCM Lane LOS	C	B	C	B
HCM 95th-tile Q	6.1	2.3	2.8	0.1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	153	389	40	0	357	194	10	126	3	113	146	126
Future Volume (vph)	153	389	40	0	357	194	10	126	3	113	146	126
Satd. Flow (prot)	1580	1711	0	0	1615	0	0	1664	0	1658	1608	0
Flt Permitted	0.950							0.996		0.950		
Satd. Flow (perm)	1580	1711	0	0	1615	0	0	1664	0	1658	1608	0
Lane Group Flow (vph)	153	429	0	0	551	0	0	139	0	113	272	0
Sign Control		Stop			Stop			Stop			Stop	

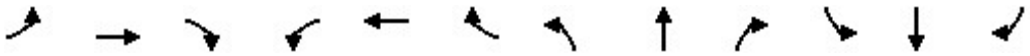
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 94.0%		ICU Level of Service F	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	64.9
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	153	389	40	0	357	194	10	126	3	113	146	126
Future Vol, veh/h	153	389	40	0	357	194	10	126	3	113	146	126
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	7	2	8	2	6	3	10	6	2	2	4	2
Mvmt Flow	153	389	40	0	357	194	10	126	3	113	146	126
Number of Lanes	1	1	0	0	1	0	0	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	2	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	2	1	2
HCM Control Delay	42.3	130.8	18.9	21.2
HCM LOS	E	F	C	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1	SBLn2
Vol Left, %	7%	100%	0%	0%	100%	0%
Vol Thru, %	91%	0%	91%	65%	0%	54%
Vol Right, %	2%	0%	9%	35%	0%	46%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	139	153	429	551	113	272
LT Vol	10	153	0	0	113	0
Through Vol	126	0	389	357	0	146
RT Vol	3	0	40	194	0	126
Lane Flow Rate	139	153	429	551	113	272
Geometry Grp	4b	5	5	4b	5	5
Degree of Util (X)	0.365	0.352	0.911	1.189	0.277	0.607
Departure Headway (Hd)	10.179	8.742	8.068	7.771	9.334	8.511
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	356	415	455	468	388	427
Service Time	8.179	6.442	5.768	5.819	7.034	6.211
HCM Lane V/C Ratio	0.39	0.369	0.943	1.177	0.291	0.637
HCM Control Delay	18.9	16.1	51.6	130.8	15.6	23.5
HCM Lane LOS	C	C	F	F	C	C
HCM 95th-tile Q	1.6	1.6	10.1	20.8	1.1	3.9



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	220	18	116	271	7	36	0	565	10	1	0
Future Volume (vph)	0	220	18	116	271	7	36	0	565	10	1	0
Satd. Flow (prot)	0	1277	0	0	1291	0	0	1124	0	0	891	0
Flt Permitted					0.985			0.997			0.957	
Satd. Flow (perm)	0	1277	0	0	1291	0	0	1124	0	0	891	0
Lane Group Flow (vph)	0	238	0	0	394	0	0	601	0	0	11	0
Sign Control		Stop			Stop			Stop			Stop	

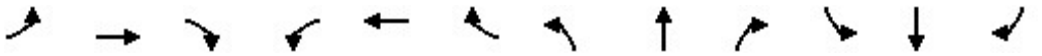
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 83.7%		ICU Level of Service E	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	65.1
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	220	18	116	271	7	36	0	565	10	1	0
Future Vol, veh/h	0	220	18	116	271	7	36	0	565	10	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	37	50	50	28	86	67	60	36	100	2	2
Mvmt Flow	0	220	18	116	271	7	36	0	565	10	1	0
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay	18.1	35.1	104.4	13.4
HCM LOS	C	E	F	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	6%	0%	29%	91%
Vol Thru, %	0%	92%	69%	9%
Vol Right, %	94%	8%	2%	0%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	601	238	394	11
LT Vol	36	0	116	10
Through Vol	0	220	271	1
RT Vol	565	18	7	0
Lane Flow Rate	601	238	394	11
Geometry Grp	1	1	1	1
Degree of Util (X)	1.129	0.488	0.8	0.029
Departure Headway (Hd)	6.76	7.847	7.739	10.105
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	541	462	473	356
Service Time	4.806	5.847	5.739	8.105
HCM Lane V/C Ratio	1.111	0.515	0.833	0.031
HCM Control Delay	104.4	18.1	35.1	13.4
HCM Lane LOS	F	C	E	B
HCM 95th-tile Q	19.8	2.6	7.4	0.1



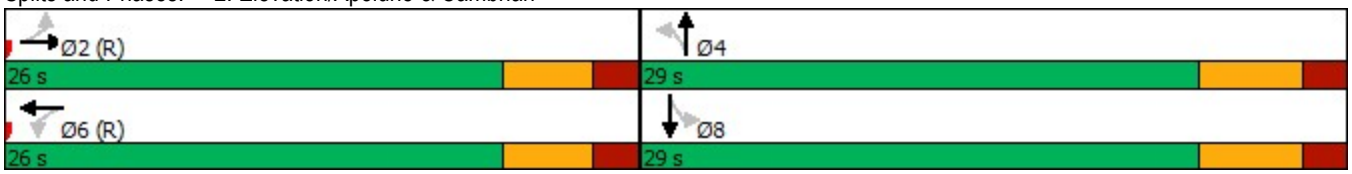
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	74	138	75	28	270	72	140	14	27	76	5	100
Future Volume (vph)	74	138	75	28	270	72	140	14	27	76	5	100
Satd. Flow (prot)	1523	1395	0	1658	1629	0	1013	1572	0	1595	1369	0
Flt Permitted	0.547			0.625			0.689			0.730		
Satd. Flow (perm)	873	1395	0	1091	1629	0	734	1572	0	1226	1369	0
Satd. Flow (RTOR)		57			28			27			100	
Lane Group Flow (vph)	74	213	0	28	342	0	140	41	0	76	105	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	24.6	24.6		24.6	24.6		28.1	28.1		28.1	28.1	
Total Split (s)	26.0	26.0		26.0	26.0		29.0	29.0		29.0	29.0	
Total Split (%)	47.3%	47.3%		47.3%	47.3%		52.7%	52.7%		52.7%	52.7%	
Yellow Time (s)	3.7	3.7		3.7	3.7		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.9	1.9		1.9	1.9		1.9	1.9		1.9	1.9	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.6	5.6		5.6	5.6		6.1	6.1		6.1	6.1	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effct Green (s)	31.6	31.6		31.6	31.6		16.0	16.0		16.0	16.0	
Actuated g/C Ratio	0.57	0.57		0.57	0.57		0.29	0.29		0.29	0.29	
v/c Ratio	0.15	0.26		0.04	0.36		0.66	0.09		0.21	0.22	
Control Delay	11.1	8.6		4.0	8.2		30.7	5.9		14.1	4.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	11.1	8.6		4.0	8.2		30.7	5.9		14.1	4.5	
LOS	B	A		A	A		C	A		B	A	
Approach Delay		9.3			7.8			25.1			8.6	
Approach LOS		A			A			C			A	
Queue Length 50th (m)	3.7	8.0		0.2	35.2		12.0	1.0		5.7	0.4	
Queue Length 95th (m)	12.7	24.3		3.3	72.8		18.0	3.7		11.1	7.1	
Internal Link Dist (m)		524.9			399.7			253.1			160.5	
Turn Bay Length (m)	37.5			37.5			30.0			30.0		
Base Capacity (vph)	501	826		627	948		305	670		510	628	
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	0.15	0.26		0.04	0.36		0.46	0.06		0.15	0.17	

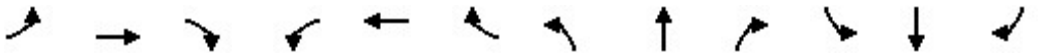
Intersection Summary
Cycle Length: 55
Actuated Cycle Length: 55
Offset: 16 (29%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 55
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.66

Intersection Signal Delay: 11.4	Intersection LOS: B
Intersection Capacity Utilization 57.4%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 2: Elevation/Apolune & Cambrian



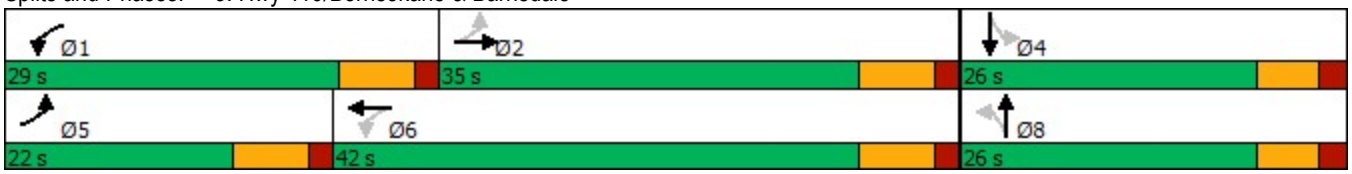


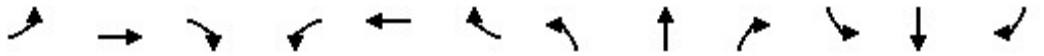
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	282	354	32	471	159	125	27	39	21	78	118	82
Future Volume (vph)	282	354	32	471	159	125	27	39	21	78	118	82
Satd. Flow (prot)	1658	1709	0	1658	1621	0	0	1662	0	1658	1605	0
Flt Permitted	0.586			0.342				0.785		0.799		
Satd. Flow (perm)	1023	1709	0	597	1621	0	0	1325	0	1394	1605	0
Satd. Flow (RTOR)		5			52			16			36	
Lane Group Flow (vph)	282	386	0	471	284	0	0	87	0	78	200	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	11.7	25.8		11.7	25.8		25.2	25.2		25.2	25.2	
Total Split (s)	22.0	35.0		29.0	42.0		26.0	26.0		26.0	26.0	
Total Split (%)	24.4%	38.9%		32.2%	46.7%		28.9%	28.9%		28.9%	28.9%	
Yellow Time (s)	5.1	5.1		5.1	5.1		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.6	1.7		1.6	1.7		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0		0.0	0.0	
Total Lost Time (s)	6.7	6.8		6.7	6.8			6.2		6.2	6.2	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	Max		None	Max		None	None		None	None	
Act Effct Green (s)	41.6	30.1		52.6	35.8			14.0		14.0	14.0	
Actuated g/C Ratio	0.51	0.37		0.65	0.44			0.17		0.17	0.17	
v/c Ratio	0.46	0.61		0.77	0.38			0.36		0.33	0.65	
Control Delay	10.1	27.5		16.8	15.3			29.6		33.7	36.4	
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	
Total Delay	10.1	27.5		16.8	15.3			29.6		33.7	36.4	
LOS	B	C		B	B			C		C	D	
Approach Delay		20.2			16.2			29.6			35.6	
Approach LOS		C			B			C			D	
Queue Length 50th (m)	14.8	46.3		28.7	22.3			9.6		10.6	23.4	
Queue Length 95th (m)	30.9	89.8		60.5	49.0			23.0		23.3	45.9	
Internal Link Dist (m)		543.4			978.4			562.8			300.3	
Turn Bay Length (m)	75.0			125.0						40.0		
Base Capacity (vph)	695	637		691	745			337		342	421	
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	0.41	0.61		0.68	0.38			0.26		0.23	0.48	

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 81.1
Natural Cycle: 80
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.77

Intersection Signal Delay: 21.4	Intersection LOS: C
Intersection Capacity Utilization 91.0%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 3: Hwy 416/Borrisokane & Barnsdale



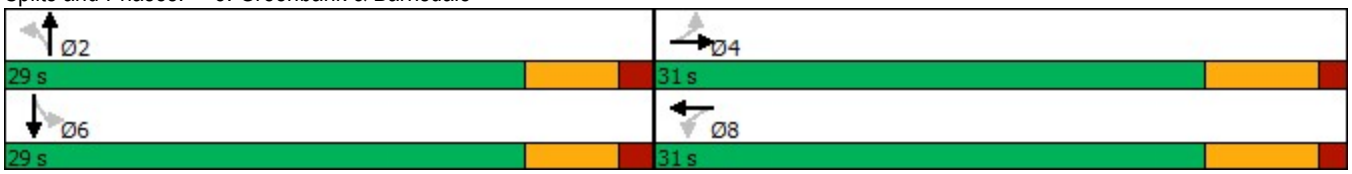


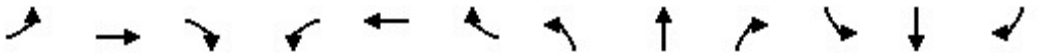
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	82	262	23	4	361	41	10	79	1	261	126	151
Future Volume (vph)	82	262	23	4	361	41	10	79	1	261	126	151
Satd. Flow (prot)	1580	1716	0	0	1661	0	0	1659	0	1658	1588	0
Flt Permitted	0.451				0.996			0.960		0.699		
Satd. Flow (perm)	750	1716	0	0	1654	0	0	1602	0	1218	1588	0
Satd. Flow (RTOR)		9			11			1			117	
Lane Group Flow (vph)	82	285	0	0	406	0	0	90	0	261	277	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	24.4	24.4		24.4	24.4		23.8	23.8		23.8	23.8	
Total Split (s)	31.0	31.0		31.0	31.0		29.0	29.0		29.0	29.0	
Total Split (%)	51.7%	51.7%		51.7%	51.7%		48.3%	48.3%		48.3%	48.3%	
Yellow Time (s)	5.1	5.1		5.1	5.1		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.3	1.3		1.3	1.3		1.6	1.6		1.6	1.6	
Lost Time Adjust (s)	0.0	0.0			0.0			0.0		0.0	0.0	
Total Lost Time (s)	6.4	6.4			6.4			5.8		5.8	5.8	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)	17.3	17.3			17.3			23.4		23.4	23.4	
Actuated g/C Ratio	0.33	0.33			0.33			0.44		0.44	0.44	
v/c Ratio	0.34	0.51			0.74			0.13		0.49	0.36	
Control Delay	17.1	16.9			24.3			11.0		16.0	8.3	
Queue Delay	0.0	0.0			0.0			0.0		0.0	0.0	
Total Delay	17.1	16.9			24.3			11.0		16.0	8.3	
LOS	B	B			C			B		B	A	
Approach Delay		16.9			24.3			11.0			12.0	
Approach LOS		B			C			B			B	
Queue Length 50th (m)	5.7	20.4			32.4			4.7		16.6	8.9	
Queue Length 95th (m)	14.4	37.0			56.7			13.9		41.7	27.0	
Internal Link Dist (m)		757.0			1181.9			632.6			239.9	
Turn Bay Length (m)	40.0									65.0		
Base Capacity (vph)	351	808			780			708		538	767	
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	0.23	0.35			0.52			0.13		0.49	0.36	

Intersection Summary
Cycle Length: 60
Actuated Cycle Length: 53
Natural Cycle: 50
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.74

Intersection Signal Delay: 16.8	Intersection LOS: B
Intersection Capacity Utilization 76.4%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 5: Greenbank & Barnsdale





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	248	24	79	175	15	12	0	415	5	2	1
Future Volume (vph)	1	248	24	79	175	15	12	0	415	5	2	1
Satd. Flow (prot)	0	1274	0	1127	1326	0	0	1013	1113	0	1040	0
Flt Permitted				0.950				0.950			0.970	
Satd. Flow (perm)	0	1274	0	1127	1326	0	0	1013	1113	0	1040	0
Lane Group Flow (vph)	0	273	0	79	190	0	0	12	415	0	8	0
Sign Control		Stop			Stop			Stop			Stop	

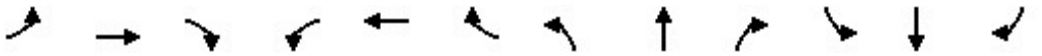
Intersection Summary	
Control Type: Unsignalized	
Intersection Capacity Utilization 55.8%	ICU Level of Service B
Analysis Period (min) 15	

Intersection	
Intersection Delay, s/veh	19.8
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	248	24	79	175	15	12	0	415	5	2	1
Future Vol, veh/h	1	248	24	79	175	15	12	0	415	5	2	1
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	37	50	50	28	86	67	60	36	100	2	2
Mvmt Flow	1	248	24	79	175	15	12	0	415	5	2	1
Number of Lanes	0	1	0	1	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	1
HCM Control Delay	15.8	13.3	26.5	12.4
HCM LOS	C	B	D	B

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	100%	0%	0%	100%	0%	62%
Vol Thru, %	0%	0%	91%	0%	92%	25%
Vol Right, %	0%	100%	9%	0%	8%	12%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	12	415	273	79	190	8
LT Vol	12	0	1	79	0	5
Through Vol	0	0	248	0	175	2
RT Vol	0	415	24	0	15	1
Lane Flow Rate	12	415	273	79	190	8
Geometry Grp	5	5	4b	5	5	4b
Degree of Util (X)	0.026	0.756	0.494	0.173	0.366	0.02
Departure Headway (Hd)	7.898	6.561	6.512	7.885	6.939	9.188
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	453	552	551	453	517	392
Service Time	5.653	4.315	4.577	5.657	4.71	7.188
HCM Lane V/C Ratio	0.026	0.752	0.495	0.174	0.368	0.02
HCM Control Delay	10.9	27	15.8	12.3	13.7	12.4
HCM Lane LOS	B	D	C	B	B	B
HCM 95th-tile Q	0.1	6.6	2.7	0.6	1.7	0.1



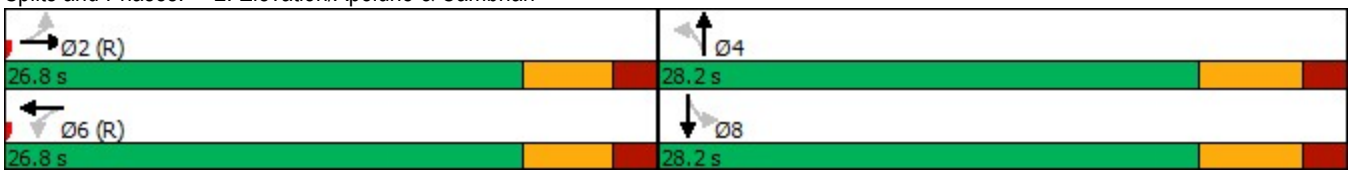
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	89	258	137	27	241	93	107	7	36	88	5	90
Future Volume (vph)	89	258	137	27	241	93	107	7	36	88	5	90
Satd. Flow (prot)	1523	1399	0	1658	1599	0	1013	1525	0	1595	1365	0
Flt Permitted	0.559			0.510			0.695			0.729		
Satd. Flow (perm)	892	1399	0	890	1599	0	741	1525	0	1224	1365	0
Satd. Flow (RTOR)		57			41			36			90	
Lane Group Flow (vph)	89	395	0	27	334	0	107	43	0	88	95	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			4			8	
Permitted Phases	2			6			4			8		
Detector Phase	2	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	24.6	24.6		24.6	24.6		28.1	28.1		28.1	28.1	
Total Split (s)	26.8	26.8		26.8	26.8		28.2	28.2		28.2	28.2	
Total Split (%)	48.7%	48.7%		48.7%	48.7%		51.3%	51.3%		51.3%	51.3%	
Yellow Time (s)	3.7	3.7		3.7	3.7		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.9	1.9		1.9	1.9		1.9	1.9		1.9	1.9	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	5.6	5.6		5.6	5.6		6.1	6.1		6.1	6.1	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effct Green (s)	33.5	33.5		33.5	33.5		14.1	14.1		14.1	14.1	
Actuated g/C Ratio	0.61	0.61		0.61	0.61		0.26	0.26		0.26	0.26	
v/c Ratio	0.16	0.45		0.05	0.34		0.57	0.10		0.28	0.23	
Control Delay	9.8	10.3		3.5	7.1		28.5	5.4		17.1	5.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	9.8	10.3		3.5	7.1		28.5	5.4		17.1	5.3	
LOS	A	B		A	A		C	A		B	A	
Approach Delay		10.2			6.8			21.9			11.0	
Approach LOS		B			A			C			B	
Queue Length 50th (m)	4.0	17.8		0.2	35.1		9.6	0.6		7.2	0.4	
Queue Length 95th (m)	13.9	51.0		2.9	72.3		15.1	3.9		13.6	7.4	
Internal Link Dist (m)		524.9			399.7			253.1			160.5	
Turn Bay Length (m)	37.5			37.5			30.0			30.0		
Base Capacity (vph)	544	875		542	991		297	634		491	602	
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	0.16	0.45		0.05	0.34		0.36	0.07		0.18	0.16	

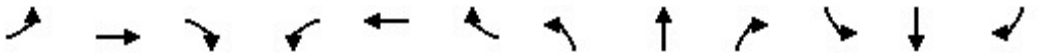
Intersection Summary
Cycle Length: 55
Actuated Cycle Length: 55
Offset: 18 (33%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.57

Intersection Signal Delay: 10.8	Intersection LOS: B
Intersection Capacity Utilization 58.8%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 2: Elevation/Apolune & Cambrian





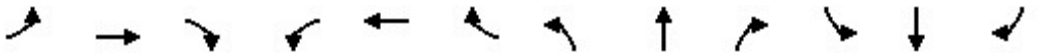
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	180	597	17	313	220	108	27	49	31	150	192	145
Future Volume (vph)	180	597	17	313	220	108	27	49	31	150	192	145
Satd. Flow (prot)	1658	1722	0	1658	1649	0	0	1657	0	1658	1598	0
Flt Permitted	0.562			0.184				0.570		0.726		
Satd. Flow (perm)	981	1722	0	321	1649	0	0	956	0	1267	1598	0
Satd. Flow (RTOR)		2			37			21			39	
Lane Group Flow (vph)	180	614	0	313	328	0	0	107	0	150	337	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	11.7	25.8		11.7	25.8		25.2	25.2		25.2	25.2	
Total Split (s)	14.8	43.9		20.1	49.2		26.0	26.0		26.0	26.0	
Total Split (%)	16.4%	48.8%		22.3%	54.7%		28.9%	28.9%		28.9%	28.9%	
Yellow Time (s)	5.1	5.1		5.1	5.1		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.6	1.7		1.6	1.7		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0		0.0	0.0	
Total Lost Time (s)	6.7	6.8		6.7	6.8			6.2		6.2	6.2	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	Max		None	Max		None	None		None	None	
Act Effct Green (s)	45.7	37.7		55.0	42.4			18.9		18.9	18.9	
Actuated g/C Ratio	0.51	0.42		0.62	0.48			0.21		0.21	0.21	
v/c Ratio	0.32	0.84		0.81	0.41			0.49		0.56	0.91	
Control Delay	9.2	35.8		29.2	15.4			33.0		40.2	60.7	
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	
Total Delay	9.2	35.8		29.2	15.4			33.0		40.2	60.7	
LOS	A	D		C	B			C		D	E	
Approach Delay		29.8			22.1			33.0			54.4	
Approach LOS		C			C			C			D	
Queue Length 50th (m)	11.4	94.2		22.0	31.3			12.8		23.1	50.5	
Queue Length 95th (m)	19.7	#156.4		#61.6	51.6			29.1		42.0	#98.2	
Internal Link Dist (m)		543.4			978.4			562.8			300.3	
Turn Bay Length (m)	75.0			125.0						40.0		
Base Capacity (vph)	568	732		403	806			229		282	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	0.32	0.84		0.78	0.41			0.47		0.53	0.87	

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 88.9
Natural Cycle: 90
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.91

Intersection Signal Delay: 33.4 Intersection LOS: C
Intersection Capacity Utilization 99.7% 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: 3: Hwy 416/Borrisokane & Barnsdale



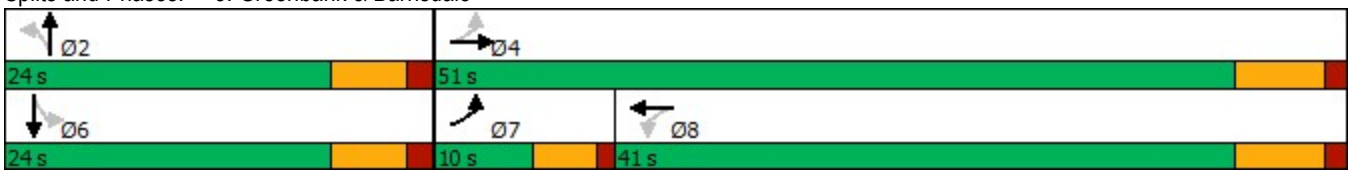


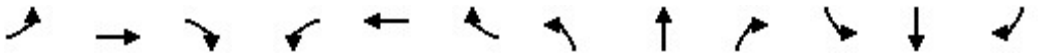
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	153	389	40	0	357	194	10	126	3	113	146	126
Future Volume (vph)	153	389	40	0	357	194	10	126	3	113	146	126
Satd. Flow (prot)	1580	1711	0	0	1615	0	0	1664	0	1658	1608	0
Flt Permitted	0.218							0.968		0.733		
Satd. Flow (perm)	363	1711	0	0	1615	0	0	1617	0	1277	1608	0
Satd. Flow (RTOR)		12			48			1			55	
Lane Group Flow (vph)	153	429	0	0	551	0	0	139	0	113	272	0
Turn Type	pm+pt	NA			NA		Perm	NA		Perm	NA	
Protected Phases	7	4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	7	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	9.5	24.4		24.4	24.4		23.8	23.8		23.8	23.8	
Total Split (s)	10.0	51.0		41.0	41.0		24.0	24.0		24.0	24.0	
Total Split (%)	13.3%	68.0%		54.7%	54.7%		32.0%	32.0%		32.0%	32.0%	
Yellow Time (s)	3.5	5.1		5.1	5.1		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.0	1.3		1.3	1.3		1.6	1.6		1.6	1.6	
Lost Time Adjust (s)	0.0	0.0			0.0			0.0		0.0	0.0	
Total Lost Time (s)	4.5	6.4			6.4			5.8		5.8	5.8	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Act Effct Green (s)	34.6	32.7			25.2			18.8		18.8	18.8	
Actuated g/C Ratio	0.54	0.51			0.39			0.29		0.29	0.29	
v/c Ratio	0.50	0.49			0.83			0.29		0.30	0.53	
Control Delay	12.5	11.2			28.0			23.2		24.3	22.3	
Queue Delay	0.0	0.0			0.0			0.0		0.0	0.0	
Total Delay	12.5	11.2			28.0			23.2		24.3	22.3	
LOS	B	B			C			C		C	C	
Approach Delay		11.5			28.0			23.2			22.9	
Approach LOS		B			C			C			C	
Queue Length 50th (m)	8.1	28.4			54.5			13.4		11.0	22.3	
Queue Length 95th (m)	15.2	46.3			91.1			31.0		27.1	51.0	
Internal Link Dist (m)		757.0			1181.9			632.6			239.9	
Turn Bay Length (m)	40.0									65.0		
Base Capacity (vph)	304	1232			921			474		374	510	
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	0.50	0.35			0.60			0.29		0.30	0.53	

Intersection Summary
Cycle Length: 75
Actuated Cycle Length: 64
Natural Cycle: 65
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.83

Intersection Signal Delay: 20.6	Intersection LOS: C
Intersection Capacity Utilization 108.1%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 5: Greenbank & Barnsdale





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	220	18	116	271	7	36	0	565	10	1	0
Future Volume (vph)	0	220	18	116	271	7	36	0	565	10	1	0
Satd. Flow (prot)	0	1277	0	1127	1369	0	0	1013	1113	0	891	0
Flt Permitted				0.950				0.950			0.957	
Satd. Flow (perm)	0	1277	0	1127	1369	0	0	1013	1113	0	891	0
Lane Group Flow (vph)	0	238	0	116	278	0	0	36	565	0	11	0
Sign Control		Stop			Stop			Stop			Stop	

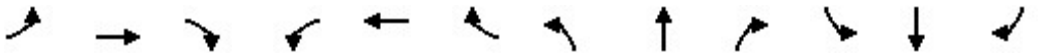
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 63.6%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Intersection Delay, s/veh	54.5
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	220	18	116	271	7	36	0	565	10	1	0
Future Vol, veh/h	0	220	18	116	271	7	36	0	565	10	1	0
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles, %	2	37	50	50	28	86	67	60	36	100	2	2
Mvmt Flow	0	220	18	116	271	7	36	0	565	10	1	0
Number of Lanes	0	1	0	1	1	0	0	1	1	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	1	1	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	2	1	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	1	2	1
HCM Control Delay	19.8	19.2	92.1	13.8
HCM LOS	C	C	F	B

Lane	NBLn1	NBLn2	EBLn1	WBLn1	WBLn2	SBLn1
Vol Left, %	100%	0%	0%	100%	0%	91%
Vol Thru, %	0%	0%	92%	0%	97%	9%
Vol Right, %	0%	100%	8%	0%	3%	0%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	36	565	238	116	278	11
LT Vol	36	0	0	116	0	10
Through Vol	0	0	220	0	271	1
RT Vol	0	565	18	0	7	0
Lane Flow Rate	36	565	238	116	278	11
Geometry Grp	5	5	4b	5	5	4b
Degree of Util (X)	0.084	1.105	0.519	0.272	0.582	0.031
Departure Headway (Hd)	8.383	7.04	8.251	8.825	7.91	10.502
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes
Cap	428	520	440	409	459	343
Service Time	6.12	4.776	6.251	6.525	5.61	8.502
HCM Lane V/C Ratio	0.084	1.087	0.541	0.284	0.606	0.032
HCM Control Delay	11.9	97.2	19.8	14.8	21	13.8
HCM Lane LOS	B	F	C	B	C	B
HCM 95th-tile Q	0.3	18.2	2.9	1.1	3.6	0.1



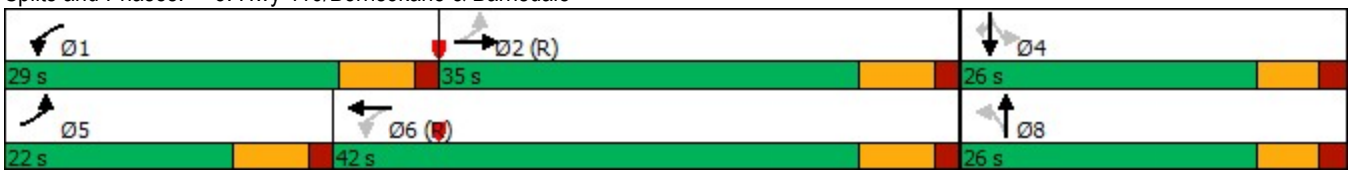
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	282	354	32	471	159	125	27	39	21	78	118	82
Future Volume (vph)	282	354	32	471	159	125	27	39	21	78	118	82
Satd. Flow (prot)	1658	1709	0	1658	1621	0	0	1662	0	1658	1745	1455
Flt Permitted	0.586			0.367				0.852		0.773		
Satd. Flow (perm)	1023	1709	0	640	1621	0	0	1438	0	1349	1745	1413
Satd. Flow (RTOR)		5			52			16				208
Lane Group Flow (vph)	282	386	0	471	284	0	0	87	0	78	118	82
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		1	6		8	8		4	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	11.7	25.8		11.7	25.8		25.2	25.2		25.2	25.2	25.2
Total Split (s)	22.0	35.0		29.0	42.0		26.0	26.0		26.0	26.0	26.0
Total Split (%)	24.4%	38.9%		32.2%	46.7%		28.9%	28.9%		28.9%	28.9%	28.9%
Yellow Time (s)	5.1	5.1		5.1	5.1		4.2	4.2		4.2	4.2	4.2
All-Red Time (s)	1.6	1.7		1.6	1.7		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Lost Time (s)	6.7	6.8		6.7	6.8			6.2		6.2	6.2	6.2
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	None
Act Effct Green (s)	49.3	38.3		64.4	47.3			12.1		12.1	12.1	12.1
Actuated g/C Ratio	0.55	0.43		0.72	0.53			0.13		0.13	0.13	0.13
v/c Ratio	0.44	0.53		0.69	0.32			0.42		0.43	0.50	0.22
Control Delay	8.8	24.5		11.1	12.2			35.2		42.9	43.5	1.4
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Delay	8.8	24.5		11.1	12.2			35.2		42.9	43.5	1.4
LOS	A	C		B	B			D		D	D	A
Approach Delay		17.9			11.5			35.2			30.9	
Approach LOS		B			B			D			C	
Queue Length 50th (m)	8.0	48.1		25.5	20.3			11.5		12.7	19.4	0.0
Queue Length 95th (m)	25.3	92.9		48.4	44.8			24.2		24.9	34.0	0.0
Internal Link Dist (m)		543.4			978.4			562.8			300.3	
Turn Bay Length (m)	75.0			125.0						40.0		15.0
Base Capacity (vph)	718	730		727	877			328		296	383	473
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	0.39	0.53		0.65	0.32			0.27		0.26	0.31	0.17

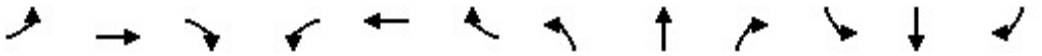
Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green, Master Intersection
Natural Cycle: 80
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.69

Intersection Signal Delay: 18.0	Intersection LOS: B
Intersection Capacity Utilization 77.4%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 3: Hwy 416/Borrisokane & Barnsdale





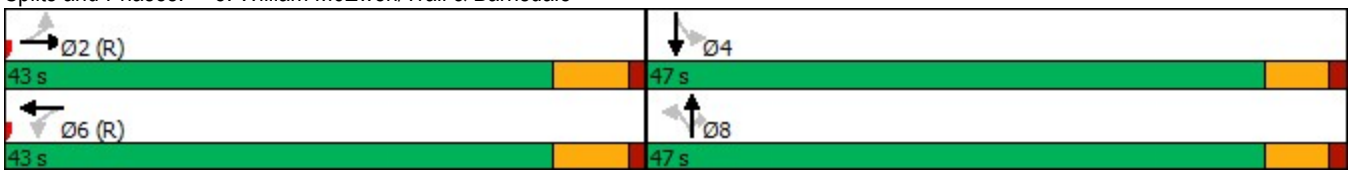
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	248	24	79	175	15	12	0	415	5	2	1
Future Volume (vph)	1	248	24	79	175	15	12	0	415	5	2	1
Satd. Flow (prot)	0	1272	0	1127	1326	0	0	1013	1113	0	1040	0
Flt Permitted				0.591				0.752			0.882	
Satd. Flow (perm)	0	1272	0	701	1326	0	0	802	1113	0	945	0
Satd. Flow (RTOR)		7			6				415		1	
Lane Group Flow (vph)	0	273	0	79	190	0	0	12	415	0	8	0
Turn Type	Perm	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Detector Phase	2	2		6	6		8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	31.3	31.3		31.3	31.3		24.6	24.6	24.6	24.6	24.6	
Total Split (s)	43.0	43.0		43.0	43.0		47.0	47.0	47.0	47.0	47.0	
Total Split (%)	47.8%	47.8%		47.8%	47.8%		52.2%	52.2%	52.2%	52.2%	52.2%	
Yellow Time (s)	5.1	5.1		5.1	5.1		4.2	4.2	4.2	4.2	4.2	
All-Red Time (s)	1.2	1.2		1.2	1.2		1.4	1.4	1.4	1.4	1.4	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)		6.3		6.3	6.3			5.6	5.6		5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Act Effct Green (s)		63.8		63.8	63.8			14.3	14.3		14.3	
Actuated g/C Ratio		0.71		0.71	0.71			0.16	0.16		0.16	
v/c Ratio		0.30		0.16	0.20			0.09	0.79		0.05	
Control Delay		7.2		5.2	4.7			29.5	14.9		26.4	
Queue Delay		0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay		7.2		5.2	4.7			29.5	14.9		26.4	
LOS		A		A	A			C	B		C	
Approach Delay		7.2			4.8			15.3			26.4	
Approach LOS		A			A			B			C	
Queue Length 50th (m)		11.3		1.2	2.8			1.9	0.0		1.1	
Queue Length 95th (m)		40.5		17.2	32.8			5.4	25.4		4.0	
Internal Link Dist (m)		615.4			543.4			486.4			581.6	
Turn Bay Length (m)				30.0					40.0			
Base Capacity (vph)		903		496	941			368	736		435	
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		0.30		0.16	0.20			0.03	0.56		0.02	

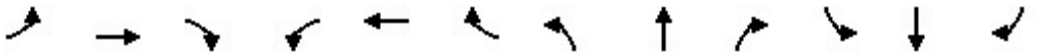
Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 55 (61%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 10.2	Intersection LOS: B
Intersection Capacity Utilization 65.4%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 8: William McEwen/Trail & Barnsdale





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	180	597	17	313	220	108	27	49	31	150	192	145
Future Volume (vph)	180	597	17	313	220	108	27	49	31	150	192	145
Satd. Flow (prot)	1658	1722	0	1658	1649	0	0	1657	0	1658	1745	1455
Flt Permitted	0.562			0.204				0.815		0.715		
Satd. Flow (perm)	981	1722	0	356	1649	0	0	1367	0	1248	1745	1413
Satd. Flow (RTOR)		2			37			21				208
Lane Group Flow (vph)	180	614	0	313	328	0	0	107	0	150	192	145
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		1	6		8	8		4	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	11.7	25.8		11.7	25.8		25.2	25.2		25.2	25.2	25.2
Total Split (s)	15.0	42.0		22.0	49.0		26.0	26.0		26.0	26.0	26.0
Total Split (%)	16.7%	46.7%		24.4%	54.4%		28.9%	28.9%		28.9%	28.9%	28.9%
Yellow Time (s)	5.1	5.1		5.1	5.1		4.2	4.2		4.2	4.2	4.2
All-Red Time (s)	1.6	1.7		1.6	1.7		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Lost Time (s)	6.7	6.8		6.7	6.8			6.2		6.2	6.2	6.2
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	C-Max		None	C-Max		None	None		None	None	None
Act Effct Green (s)	49.0	40.7		60.6	46.6			15.5		15.5	15.5	15.5
Actuated g/C Ratio	0.54	0.45		0.67	0.52			0.17		0.17	0.17	0.17
v/c Ratio	0.30	0.79		0.71	0.38			0.42		0.70	0.64	0.35
Control Delay	8.0	30.7		17.8	13.9			30.8		51.9	44.1	3.7
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Delay	8.0	30.7		17.8	13.9			30.8		51.9	44.1	3.7
LOS	A	C		B	B			C		D	D	A
Approach Delay		25.5			15.8			30.8			34.5	
Approach LOS		C			B			C			C	
Queue Length 50th (m)	8.8	87.2		18.6	29.0			13.2		24.5	31.0	0.0
Queue Length 95th (m)	m17.8	#163.2		45.6	51.9			27.0		42.1	49.5	4.9
Internal Link Dist (m)		543.4			978.4			562.8			300.3	
Turn Bay Length (m)	75.0			125.0						40.0		15.0
Base Capacity (vph)	604	780		471	872			317		274	383	473
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	0.30	0.79		0.66	0.38			0.34		0.55	0.50	0.31

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green, Master Intersection
Natural Cycle: 90
Control Type: Actuated-Coordinated

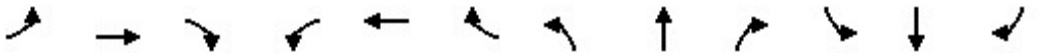
Maximum v/c Ratio: 0.79

Intersection Signal Delay: 24.9	Intersection LOS: C
Intersection Capacity Utilization 93.1%	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.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Hwy 416/Borrisokane & Barnsdale





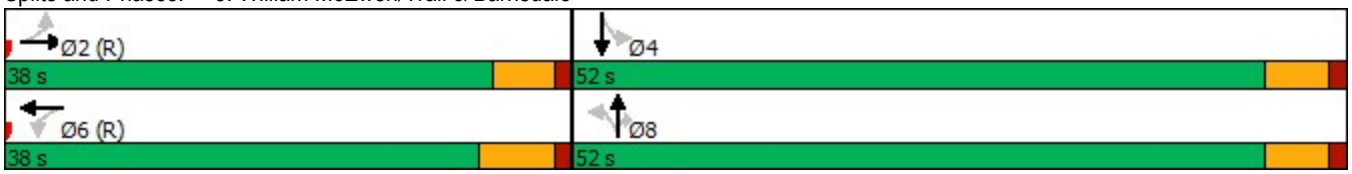
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	220	18	116	271	7	36	0	565	10	1	0
Future Volume (vph)	0	220	18	116	271	7	36	0	565	10	1	0
Satd. Flow (prot)	0	1275	0	1127	1369	0	0	1013	1113	0	891	0
Flt Permitted				0.611				0.750			0.837	
Satd. Flow (perm)	0	1275	0	725	1369	0	0	799	1113	0	780	0
Satd. Flow (RTOR)		5			2				501			
Lane Group Flow (vph)	0	238	0	116	278	0	0	36	565	0	11	0
Turn Type		NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8		8	4		
Detector Phase	2	2		6	6		8	8	8	4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	30.3	30.3		31.3	31.3		24.6	24.6	24.6	24.6	24.6	
Total Split (s)	38.0	38.0		38.0	38.0		52.0	52.0	52.0	52.0	52.0	
Total Split (%)	42.2%	42.2%		42.2%	42.2%		57.8%	57.8%	57.8%	57.8%	57.8%	
Yellow Time (s)	4.1	4.1		5.1	5.1		4.2	4.2	4.2	4.2	4.2	
All-Red Time (s)	1.2	1.2		1.2	1.2		1.4	1.4	1.4	1.4	1.4	
Lost Time Adjust (s)		0.0		0.0	0.0			0.0	0.0		0.0	
Total Lost Time (s)		5.3		6.3	6.3			5.6	5.6		5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Act Effct Green (s)		59.0		58.0	58.0			20.1	20.1		20.1	
Actuated g/C Ratio		0.66		0.64	0.64			0.22	0.22		0.22	
v/c Ratio		0.28		0.25	0.32			0.20	0.89		0.06	
Control Delay		12.0		10.9	9.8			24.1	20.6		18.7	
Queue Delay		0.0		0.0	0.0			0.0	0.0		0.0	
Total Delay		12.0		10.9	9.8			24.1	20.6		18.7	
LOS		B		B	A			C	C		B	
Approach Delay		12.0			10.1			20.8			18.7	
Approach LOS		B			B			C			B	
Queue Length 50th (m)		12.0		5.3	13.1			5.5	9.9		1.6	
Queue Length 95th (m)		51.4		18.8	40.5			8.2	37.4		3.6	
Internal Link Dist (m)		615.4			543.4			486.4			581.6	
Turn Bay Length (m)				30.0					40.0			
Base Capacity (vph)		836		466	882			411	816		402	
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		0.28		0.25	0.32			0.09	0.69		0.03	

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 31 (34%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 15.7	Intersection LOS: B
Intersection Capacity Utilization 68.2%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 8: William McEwen/Trail & Barnsdale



MOVEMENT SUMMARY

Site: 101 [Prince of Wales and Barnsdale FT2036 AM - with industrial (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Prince of Wales Drive															
1	L2	All MCs	7	2.0	7	2.0	0.856	36.2	LOS E	10.1	73.2	0.93	1.29	2.24	24.3
2	T1	All MCs	462	4.0	462	4.0	0.856	36.5	LOS E	10.1	73.2	0.93	1.29	2.24	24.8
3	R2	All MCs	14	8.0	14	8.0	0.856	37.3	LOS E	10.1	73.2	0.93	1.29	2.24	20.8
Approach			483	4.1	483	4.1	0.856	36.6	LOS E	10.1	73.2	0.93	1.29	2.24	24.7
East: Barnsdale Road															
4	L2	All MCs	13	2.0	13	2.0	0.257	13.8	LOS B	0.9	6.1	0.71	0.73	0.76	32.5
5	T1	All MCs	84	2.0	84	2.0	0.257	13.8	LOS B	0.9	6.1	0.71	0.73	0.76	36.3
6	R2	All MCs	1	2.0	1	2.0	0.257	13.8	LOS B	0.9	6.1	0.71	0.73	0.76	36.5
Approach			99	2.0	99	2.0	0.257	13.8	LOS B	0.9	6.1	0.71	0.73	0.76	35.9
North: Prince of Wales Drive															
7	L2	All MCs	3	33.0	3	33.0	0.546	11.9	LOS B	3.5	25.5	0.40	0.20	0.40	33.1
8	T1	All MCs	267	5.0	267	5.0	0.546	10.3	LOS B	3.5	25.5	0.40	0.20	0.40	39.7
9	R2	All MCs	269	5.0	269	5.0	0.546	10.3	LOS B	3.5	25.5	0.40	0.20	0.40	43.4
Approach			539	5.2	539	5.2	0.546	10.3	LOS B	3.5	25.5	0.40	0.20	0.40	41.6
West: Barnsdale Road															
10	L2	All MCs	562	2.0	562	2.0	0.779	21.0	LOS C	13.7	97.7	0.85	0.88	1.66	32.5
11	T1	All MCs	78	2.0	78	2.0	0.779	21.0	LOS C	13.7	97.7	0.85	0.88	1.66	28.4
12	R2	All MCs	9	2.0	9	2.0	0.779	21.0	LOS C	13.7	97.7	0.85	0.88	1.66	30.0
Approach			649	2.0	649	2.0	0.779	21.0	LOS C	13.7	97.7	0.85	0.88	1.66	32.0
All Vehicles			1770	3.5	1770	3.5	0.856	21.6	LOS C	13.7	97.7	0.73	0.78	1.38	32.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Prince of Wales and Barnsdale FT2036 PM - with industrial (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Prince of Wales Drive															
1	L2	All MCs	13	2.0	13	2.0	0.451	12.1	LOS B	2.4	17.1	0.64	0.63	0.85	38.6
2	T1	All MCs	276	2.0	276	2.0	0.451	12.1	LOS B	2.4	17.1	0.64	0.63	0.85	38.8
3	R2	All MCs	4	25.0	4	25.0	0.451	15.2	LOS C	2.4	17.1	0.64	0.63	0.85	33.0
Approach			293	2.3	293	2.3	0.451	12.1	LOS B	2.4	17.1	0.64	0.63	0.85	38.7
East: Barnsdale Road															
4	L2	All MCs	8	2.0	8	2.0	0.181	8.9	LOS A	0.6	4.4	0.58	0.55	0.58	37.3
5	T1	All MCs	89	2.0	89	2.0	0.181	8.9	LOS A	0.6	4.4	0.58	0.55	0.58	41.2
6	R2	All MCs	2	2.0	2	2.0	0.181	8.9	LOS A	0.6	4.4	0.58	0.55	0.58	41.1
Approach			99	2.0	99	2.0	0.181	8.9	LOS A	0.6	4.4	0.58	0.55	0.58	40.9
North: Prince of Wales Drive															
7	L2	All MCs	3	2.0	3	2.0	1.065	57.7	LOS F	79.9	568.7	1.00	1.93	2.48	17.0
8	T1	All MCs	531	2.0	531	2.0	1.065	57.7	LOS F	79.9	568.7	1.00	1.93	2.48	18.4
9	R2	All MCs	530	2.0	530	2.0	1.065	57.7	LOS F	79.9	568.7	1.00	1.93	2.48	21.0
Approach			1064	2.0	1064	2.0	1.065	57.7	LOS F	79.9	568.7	1.00	1.93	2.48	19.7
West: Barnsdale Road															
10	L2	All MCs	400	5.0	400	5.0	0.807	28.1	LOS D	9.9	72.5	0.90	1.07	1.94	29.2
11	T1	All MCs	112	7.0	112	7.0	0.807	28.4	LOS D	9.9	72.5	0.90	1.07	1.94	25.5
12	R2	All MCs	7	2.0	7	2.0	0.807	27.7	LOS D	9.9	72.5	0.90	1.07	1.94	26.8
Approach			519	5.4	519	5.4	0.807	28.2	LOS D	9.9	72.5	0.90	1.07	1.94	28.4
All Vehicles			1976	2.9	1976	2.9	1.065	40.7	LOS E	79.9	568.7	0.90	1.44	2.00	24.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Prince of Wales and Barnsdale FT2036 PM - SBR - with industrial (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Prince of Wales Drive															
1	L2	All MCs	13	2.0	13	2.0	0.451	12.1	LOS B	2.4	17.1	0.64	0.63	0.85	38.6
2	T1	All MCs	276	2.0	276	2.0	0.451	12.1	LOS B	2.4	17.1	0.64	0.63	0.85	38.8
3	R2	All MCs	4	25.0	4	25.0	0.451	15.2	LOS C	2.4	17.1	0.64	0.63	0.85	33.0
Approach			293	2.3	293	2.3	0.451	12.2	LOS B	2.4	17.1	0.64	0.63	0.85	38.7
East: Barnsdale Road															
4	L2	All MCs	8	2.0	8	2.0	0.181	8.9	LOS A	0.6	4.4	0.58	0.55	0.58	37.3
5	T1	All MCs	89	2.0	89	2.0	0.181	8.9	LOS A	0.6	4.4	0.58	0.55	0.58	41.2
6	R2	All MCs	2	2.0	2	2.0	0.181	8.9	LOS A	0.6	4.4	0.58	0.55	0.58	41.1
Approach			99	2.0	99	2.0	0.181	8.9	LOS A	0.6	4.4	0.58	0.55	0.58	40.9
North: Prince of Wales Drive															
7	L2	All MCs	3	2.0	3	2.0	0.941	31.4	LOS D	42.9	305.2	1.00	1.12	1.73	23.6
8	T1	All MCs	531	2.0	531	2.0	0.941	31.4	LOS D	42.9	305.2	1.00	1.12	1.73	26.3
9	R2	All MCs	530	2.0	530	2.0	0.941	25.8	LOS D	42.9	305.2	0.89	0.96	1.44	32.3
Approach			1064	2.0	1064	2.0	0.941	28.6	LOS D	42.9	305.2	0.94	1.04	1.59	29.2
West: Barnsdale Road															
10	L2	All MCs	400	5.0	400	5.0	0.836	31.8	LOS D	10.6	77.7	0.93	1.15	2.11	27.8
11	T1	All MCs	112	7.0	112	7.0	0.836	32.0	LOS D	10.6	77.7	0.93	1.15	2.11	24.1
12	R2	All MCs	7	2.0	7	2.0	0.836	31.3	LOS D	10.6	77.7	0.93	1.15	2.11	25.4
Approach			519	5.4	519	5.4	0.836	31.8	LOS D	10.6	77.7	0.93	1.15	2.11	27.0
All Vehicles			1976	2.9	1976	2.9	0.941	26.0	LOS D	42.9	305.2	0.88	0.98	1.56	29.9

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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MOVEMENT SUMMARY

Site: 101 [Prince of Wales and Barnsdale FT2036 AM - SBR - with industrial (Site Folder: General)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance

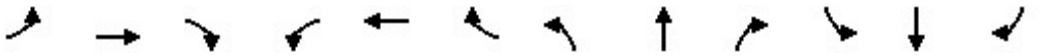
Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Prince of Wales Drive															
1	L2	All MCs	7	2.0	7	2.0	0.856	36.2	LOS E	10.1	73.2	0.93	1.29	2.24	24.3
2	T1	All MCs	462	4.0	462	4.0	0.856	36.5	LOS E	10.1	73.2	0.93	1.29	2.24	24.8
3	R2	All MCs	14	8.0	14	8.0	0.856	37.3	LOS E	10.1	73.2	0.93	1.29	2.24	20.8
Approach			483	4.1	483	4.1	0.856	36.6	LOS E	10.1	73.2	0.93	1.29	2.24	24.7
East: Barnsdale Road															
4	L2	All MCs	13	2.0	13	2.0	0.257	13.8	LOS B	0.9	6.1	0.71	0.73	0.76	32.5
5	T1	All MCs	84	2.0	84	2.0	0.257	13.8	LOS B	0.9	6.1	0.71	0.73	0.76	36.3
6	R2	All MCs	1	2.0	1	2.0	0.257	13.8	LOS B	0.9	6.1	0.71	0.73	0.76	36.5
Approach			99	2.0	99	2.0	0.257	13.8	LOS B	0.9	6.1	0.71	0.73	0.76	35.9
North: Prince of Wales Drive															
7	L2	All MCs	3	33.0	3	33.0	0.469	10.5	LOS B	2.6	19.3	0.36	0.17	0.36	34.2
8	T1	All MCs	267	5.0	267	5.0	0.469	8.9	LOS A	2.6	19.3	0.36	0.17	0.36	41.2
9	R2	All MCs	269	5.0	269	5.0	0.469	7.9	LOS A	2.6	19.3	0.36	0.20	0.36	45.8
Approach			539	5.2	539	5.2	0.469	8.4	LOS A	2.6	19.3	0.36	0.19	0.36	43.5
West: Barnsdale Road															
10	L2	All MCs	562	2.0	562	2.0	0.779	21.0	LOS C	13.7	97.9	0.85	0.88	1.66	32.5
11	T1	All MCs	78	2.0	78	2.0	0.779	21.0	LOS C	13.7	97.9	0.85	0.88	1.66	28.4
12	R2	All MCs	9	2.0	9	2.0	0.779	21.0	LOS C	13.7	97.9	0.85	0.88	1.66	30.0
Approach			649	2.0	649	2.0	0.779	21.0	LOS C	13.7	97.9	0.85	0.88	1.66	32.0
All Vehicles			1770	3.5	1770	3.5	0.856	21.0	LOS C	13.7	97.9	0.72	0.77	1.37	32.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 2010).
Roundabout Capacity Model: US HCM 2010.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 2010 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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Appendix P

Synchro Worksheets – 2031 Future Total Horizon – Sensitivity



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	397	254	32	234	158	125	27	39	21	78	371	82
Future Volume (vph)	397	254	32	234	158	125	27	39	21	78	371	82
Satd. Flow (prot)	1658	1701	0	1658	1621	0	0	1662	0	1658	1684	0
Flt Permitted	0.367			0.584				0.627		0.701		
Satd. Flow (perm)	640	1701	0	1019	1621	0	0	1058	0	1223	1684	0
Satd. Flow (RTOR)		7			41			19			13	
Lane Group Flow (vph)	397	286	0	234	283	0	0	87	0	78	453	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	11.7	25.8		11.7	25.8		25.2	25.2		25.2	25.2	
Total Split (s)	26.0	35.0		19.0	28.0		36.0	36.0		36.0	36.0	
Total Split (%)	28.9%	38.9%		21.1%	31.1%		40.0%	40.0%		40.0%	40.0%	
Yellow Time (s)	5.1	5.1		5.1	5.1		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.6	1.7		1.6	1.7		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0		0.0	0.0	
Total Lost Time (s)	6.7	6.8		6.7	6.8			6.2		6.2	6.2	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	Max		None	Max		None	None		None	None	
Act Effct Green (s)	45.0	28.4		33.5	22.5			25.8		25.8	25.8	
Actuated g/C Ratio	0.53	0.33		0.40	0.27			0.30		0.30	0.30	
v/c Ratio	0.74	0.50		0.48	0.62			0.26		0.21	0.87	
Control Delay	21.7	27.1		16.1	31.9			20.2		23.5	45.9	
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	
Total Delay	21.7	27.1		16.1	31.9			20.2		23.5	45.9	
LOS	C	C		B	C			C		C	D	
Approach Delay		23.9			24.8			20.2			42.6	
Approach LOS		C			C			C			D	
Queue Length 50th (m)	39.5	38.9		20.6	37.6			8.3		9.6	68.7	
Queue Length 95th (m)	62.8	63.7		34.9	65.3			19.7		20.0	#116.4	
Internal Link Dist (m)		543.4			1759.4			562.8			300.3	
Turn Bay Length (m)	110.0			65.0						40.0		
Base Capacity (vph)	580	573		513	460			386		432	603	
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	0.68	0.50		0.46	0.62			0.23		0.18	0.75	

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 84.8
Natural Cycle: 80
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.87

Intersection Signal Delay: 29.5	Intersection LOS: C
Intersection Capacity Utilization 86.0%	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: 3: Hwy 416/Borrisokane & Barnsdale





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	274	20	364	128	11	240
Future Volume (vph)	274	20	364	128	11	240
Satd. Flow (prot)	1652	0	1684	0	0	1742
Flt Permitted	0.955					0.998
Satd. Flow (perm)	1652	0	1684	0	0	1742
Lane Group Flow (vph)	294	0	492	0	0	251
Sign Control	Stop		Free			Free

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 52.4%		ICU Level of Service A	
Analysis Period (min) 15			

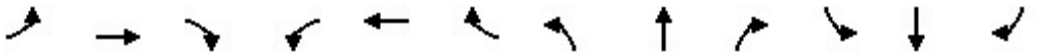
Intersection	
Int Delay, s/veh	9.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	274	20	364	128	11	240
Future Vol, veh/h	274	20	364	128	11	240
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	274	20	364	128	11	240

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	690	428	0	0	492	0
Stage 1	428	-	-	-	-	-
Stage 2	262	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	411	627	-	-	1071	-
Stage 1	657	-	-	-	-	-
Stage 2	782	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	406	627	-	-	1071	-
Mov Cap-2 Maneuver	406	-	-	-	-	-
Stage 1	657	-	-	-	-	-
Stage 2	773	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	32	0	0.4
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	416	1071	-
HCM Lane V/C Ratio	-	-	0.707	0.01	-
HCM Control Delay (s)	-	-	32	8.4	0
HCM Lane LOS	-	-	D	A	A
HCM 95th %tile Q(veh)	-	-	5.4	0	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	403	393	17	154	219	108	27	49	29	150	370	145
Future Volume (vph)	403	393	17	154	219	108	27	49	29	150	370	145
Satd. Flow (prot)	1658	1718	0	1658	1647	0	0	1659	0	1658	1651	0
Flt Permitted	0.322			0.513				0.559		0.715		
Satd. Flow (perm)	562	1718	0	895	1647	0	0	939	0	1248	1651	0
Satd. Flow (RTOR)		2			22			19			20	
Lane Group Flow (vph)	403	410	0	154	327	0	0	105	0	150	515	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	11.7	25.8		11.7	25.8		25.2	25.2		25.2	25.2	
Total Split (s)	30.0	50.0		16.0	36.0		44.0	44.0		44.0	44.0	
Total Split (%)	27.3%	45.5%		14.5%	32.7%		40.0%	40.0%		40.0%	40.0%	
Yellow Time (s)	5.1	5.1		5.1	5.1		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.6	1.7		1.6	1.7		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0		0.0	0.0	
Total Lost Time (s)	6.7	6.8		6.7	6.8			6.2		6.2	6.2	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	Max		None	Max		None	None		None	None	
Act Effct Green (s)	58.9	43.3		40.8	31.9			34.9		34.9	34.9	
Actuated g/C Ratio	0.55	0.41		0.38	0.30			0.33		0.33	0.33	
v/c Ratio	0.78	0.59		0.38	0.64			0.33		0.37	0.93	
Control Delay	26.5	29.7		17.6	39.0			25.1		30.4	58.6	
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	
Total Delay	26.5	29.7		17.6	39.0			25.1		30.4	58.6	
LOS	C	C		B	D			C		C	E	
Approach Delay		28.1			32.1			25.1			52.2	
Approach LOS		C			C			C			D	
Queue Length 50th (m)	50.2	68.8		16.0	59.2			13.3		23.8	100.2	
Queue Length 95th (m)	74.2	101.0		27.0	91.8			27.8		41.4	#161.4	
Internal Link Dist (m)		543.4			1759.4			562.8			300.3	
Turn Bay Length (m)	110.0			65.0						40.0		
Base Capacity (vph)	550	697		413	507			345		442	598	
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	0.73	0.59		0.37	0.64			0.30		0.34	0.86	

Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 106.8
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.93

Intersection Signal Delay: 36.7	Intersection LOS: D
Intersection Capacity Utilization 89.6%	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: 3: Hwy 416/Borrisokane & Barnsdale





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	149	62	365	139	66	430
Future Volume (vph)	149	62	365	139	66	430
Satd. Flow (prot)	1618	0	1681	0	0	1733
Flt Permitted	0.966					0.993
Satd. Flow (perm)	1618	0	1681	0	0	1733
Lane Group Flow (vph)	211	0	504	0	0	496
Sign Control	Stop		Free			Free

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 79.7%		ICU Level of Service D	
Analysis Period (min) 15			

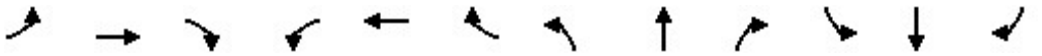
Intersection	
Int Delay, s/veh	7.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	149	62	365	139	66	430
Future Vol, veh/h	149	62	365	139	66	430
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	149	62	365	139	66	430

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	997	435	0	0	504	0
Stage 1	435	-	-	-	-	-
Stage 2	562	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	271	621	-	-	1061	-
Stage 1	653	-	-	-	-	-
Stage 2	571	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	249	621	-	-	1061	-
Mov Cap-2 Maneuver	249	-	-	-	-	-
Stage 1	653	-	-	-	-	-
Stage 2	524	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	40.5	0	1.1
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	302	1061	-
HCM Lane V/C Ratio	-	-	0.699	0.062	-
HCM Control Delay (s)	-	-	40.5	8.6	0
HCM Lane LOS	-	-	E	A	A
HCM 95th %tile Q(veh)	-	-	4.9	0.2	-



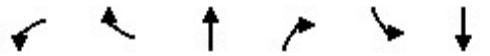
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	397	254	32	234	158	125	27	39	21	78	371	82
Future Volume (vph)	397	254	32	234	158	125	27	39	21	78	371	82
Satd. Flow (prot)	1658	1701	0	1658	1621	0	0	1662	0	1658	1745	1455
Flt Permitted	0.408			0.584				0.661		0.701		
Satd. Flow (perm)	712	1701	0	1019	1621	0	0	1115	0	1223	1745	1417
Satd. Flow (RTOR)		8			43			18				208
Lane Group Flow (vph)	397	286	0	234	283	0	0	87	0	78	371	82
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		1	6		8	8		4	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	11.7	25.8		11.7	25.8		25.2	25.2		25.2	25.2	25.2
Total Split (s)	27.0	38.0		19.0	30.0		33.0	33.0		33.0	33.0	33.0
Total Split (%)	30.0%	42.2%		21.1%	33.3%		36.7%	36.7%		36.7%	36.7%	36.7%
Yellow Time (s)	5.1	5.1		5.1	5.1		4.2	4.2		4.2	4.2	4.2
All-Red Time (s)	1.6	1.7		1.6	1.7		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Lost Time (s)	6.7	6.8		6.7	6.8			6.2		6.2	6.2	6.2
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	Max		None	Max		None	None		None	None	None
Act Effct Green (s)	47.1	31.4		36.4	25.8			21.8		21.8	21.8	21.8
Actuated g/C Ratio	0.56	0.38		0.44	0.31			0.26		0.26	0.26	0.26
v/c Ratio	0.68	0.44		0.45	0.53			0.29		0.25	0.82	0.16
Control Delay	16.9	23.2		13.6	26.7			22.8		26.4	44.4	0.6
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Delay	16.9	23.2		13.6	26.7			22.8		26.4	44.4	0.6
LOS	B	C		B	C			C		C	D	A
Approach Delay		19.5			20.8			22.8			35.0	
Approach LOS		B			C			C			C	
Queue Length 50th (m)	33.2	34.0		17.3	32.4			8.7		9.9	56.0	0.0
Queue Length 95th (m)	57.6	60.1		32.0	62.8			20.8		21.1	88.0	0.0
Internal Link Dist (m)		543.4			1759.4			562.8			300.3	
Turn Bay Length (m)	110.0			65.0						40.0		8.0
Base Capacity (vph)	647	644		561	530			372		395	563	598
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	0.61	0.44		0.42	0.53			0.23		0.20	0.66	0.14

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 83.5
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.82

Intersection Signal Delay: 24.6	Intersection LOS: C
Intersection Capacity Utilization 86.0%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 3: Hwy 416/Borrisokane & Barnsdale





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	274	20	364	128	11	240
Future Volume (vph)	274	20	364	128	11	240
Satd. Flow (prot)	1652	0	1684	0	1658	1745
Flt Permitted	0.955				0.950	
Satd. Flow (perm)	1652	0	1684	0	1658	1745
Lane Group Flow (vph)	294	0	492	0	11	240
Sign Control	Stop		Free			Free

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 52.4%		ICU Level of Service A	
Analysis Period (min) 15			

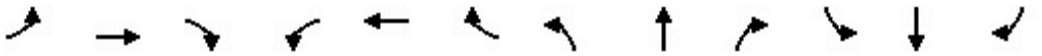
Intersection	
Int Delay, s/veh	9.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	274	20	364	128	11	240
Future Vol, veh/h	274	20	364	128	11	240
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	8	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	274	20	364	128	11	240

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	690	428	0	0	492	0
Stage 1	428	-	-	-	-	-
Stage 2	262	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	411	627	-	-	1071	-
Stage 1	657	-	-	-	-	-
Stage 2	782	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	407	627	-	-	1071	-
Mov Cap-2 Maneuver	407	-	-	-	-	-
Stage 1	657	-	-	-	-	-
Stage 2	774	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	31.8	0	0.4
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	417	1071	-
HCM Lane V/C Ratio	-	-	0.705	0.01	-
HCM Control Delay (s)	-	-	31.8	8.4	-
HCM Lane LOS	-	-	D	A	-
HCM 95th %tile Q(veh)	-	-	5.3	0	-



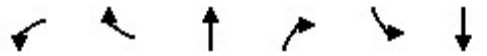
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	403	393	17	154	219	108	27	49	29	150	370	145
Future Volume (vph)	403	393	17	154	219	108	27	49	29	150	370	145
Satd. Flow (prot)	1658	1718	0	1658	1647	0	0	1659	0	1658	1745	1455
Flt Permitted	0.351			0.514				0.674		0.745		
Satd. Flow (perm)	613	1718	0	897	1647	0	0	1133	0	1300	1745	1417
Satd. Flow (RTOR)		3			27			22				208
Lane Group Flow (vph)	403	410	0	154	327	0	0	105	0	150	370	145
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		1	6		8	8		4	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	11.7	25.8		11.7	25.8		25.2	25.2		25.2	25.2	25.2
Total Split (s)	25.0	41.0		16.0	32.0		33.0	33.0		33.0	33.0	33.0
Total Split (%)	27.8%	45.6%		17.8%	35.6%		36.7%	36.7%		36.7%	36.7%	36.7%
Yellow Time (s)	5.1	5.1		5.1	5.1		4.2	4.2		4.2	4.2	4.2
All-Red Time (s)	1.6	1.7		1.6	1.7		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Lost Time (s)	6.7	6.8		6.7	6.8			6.2		6.2	6.2	6.2
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	Max		None	Max		None	None		None	None	None
Act Effct Green (s)	49.0	34.4		35.4	26.9			21.9		21.9	21.9	21.9
Actuated g/C Ratio	0.58	0.41		0.42	0.32			0.26		0.26	0.26	0.26
v/c Ratio	0.73	0.58		0.34	0.60			0.34		0.45	0.82	0.28
Control Delay	19.3	24.7		12.7	29.6			23.2		30.6	45.0	2.4
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Delay	19.3	24.7		12.7	29.6			23.2		30.6	45.0	2.4
LOS	B	C		B	C			C		C	D	A
Approach Delay		22.0			24.2			23.2			32.5	
Approach LOS		C			C			C			C	
Queue Length 50th (m)	33.8	51.8		10.8	42.8			10.8		20.4	56.5	0.0
Queue Length 95th (m)	58.8	86.7		21.5	75.1			24.2		37.2	87.8	4.3
Internal Link Dist (m)		543.4			1759.4			562.8			300.3	
Turn Bay Length (m)	110.0			65.0						40.0		8.0
Base Capacity (vph)	587	701		470	543			376		415	557	594
Starvation Cap Reductn	0	0		0	0			0		0	0	0
Spillback Cap Reductn	0	0		0	0			0		0	0	0
Storage Cap Reductn	0	0		0	0			0		0	0	0
Reduced v/c Ratio	0.69	0.58		0.33	0.60			0.28		0.36	0.66	0.24

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 84.4
Natural Cycle: 70
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.82

Intersection Signal Delay: 26.0	Intersection LOS: C
Intersection Capacity Utilization 89.6%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 3: Hwy 416/Borrisokane & Barnsdale





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	149	62	365	139	66	430
Future Volume (vph)	149	62	365	139	66	430
Satd. Flow (prot)	1618	0	1681	0	1658	1745
Flt Permitted	0.966				0.950	
Satd. Flow (perm)	1618	0	1681	0	1658	1745
Lane Group Flow (vph)	211	0	504	0	66	430
Sign Control	Stop		Free			Free

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 55.8%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	7.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	149	62	365	139	66	430
Future Vol, veh/h	149	62	365	139	66	430
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	8	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	149	62	365	139	66	430

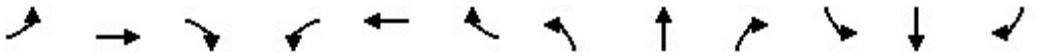
Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	997	435	0	0	504	0
Stage 1	435	-	-	-	-	-
Stage 2	562	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	271	621	-	-	1061	-
Stage 1	653	-	-	-	-	-
Stage 2	571	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	254	621	-	-	1061	-
Mov Cap-2 Maneuver	254	-	-	-	-	-
Stage 1	653	-	-	-	-	-
Stage 2	536	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	39	0	1.1
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	307	1061	-
HCM Lane V/C Ratio	-	-	0.687	0.062	-
HCM Control Delay (s)	-	-	39	8.6	-
HCM Lane LOS	-	-	E	A	-
HCM 95th %tile Q(veh)	-	-	4.7	0.2	-

Appendix Q

Synchro Worksheets – 2036 Future Total Horizon – Sensitivity

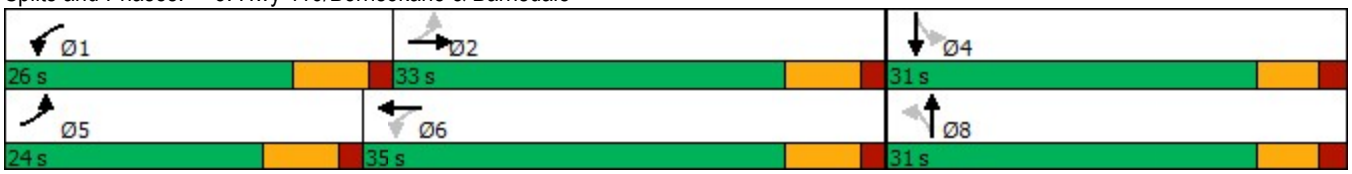


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	326	317	32	375	159	125	27	39	21	78	229	82
Future Volume (vph)	326	317	32	375	159	125	27	39	21	78	229	82
Satd. Flow (prot)	1658	1705	0	1658	1621	0	0	1662	0	1658	1655	0
Flt Permitted	0.551			0.411				0.708		0.701		
Satd. Flow (perm)	962	1705	0	717	1621	0	0	1195	0	1223	1655	0
Satd. Flow (RTOR)		6			46			18			20	
Lane Group Flow (vph)	326	349	0	375	284	0	0	87	0	78	311	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	11.7	25.8		11.7	25.8		25.2	25.2		25.2	25.2	
Total Split (s)	24.0	33.0		26.0	35.0		31.0	31.0		31.0	31.0	
Total Split (%)	26.7%	36.7%		28.9%	38.9%		34.4%	34.4%		34.4%	34.4%	
Yellow Time (s)	5.1	5.1		5.1	5.1		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.6	1.7		1.6	1.7		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0		0.0	0.0	
Total Lost Time (s)	6.7	6.8		6.7	6.8			6.2		6.2	6.2	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	Max		None	Max		None	None		None	None	
Act Effct Green (s)	40.8	27.3		43.3	28.5			18.8		18.8	18.8	
Actuated g/C Ratio	0.51	0.34		0.54	0.35			0.23		0.23	0.23	
v/c Ratio	0.54	0.60		0.67	0.47			0.30		0.27	0.78	
Control Delay	12.9	29.3		16.0	21.7			24.1		28.3	41.3	
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	
Total Delay	12.9	29.3		16.0	21.7			24.1		28.3	41.3	
LOS	B	C		B	C			C		C	D	
Approach Delay		21.4			18.5			24.1			38.7	
Approach LOS		C			B			C			D	
Queue Length 50th (m)	22.7	43.9		27.1	28.0			8.6		9.8	41.9	
Queue Length 95th (m)	43.1	82.6		50.5	57.3			21.2		21.9	72.4	
Internal Link Dist (m)		543.4			1759.4			562.8			300.3	
Turn Bay Length (m)	90.0			100.0						40.0		
Base Capacity (vph)	682	580		645	602			384		380	528	
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	0.48	0.60		0.58	0.47			0.23		0.21	0.59	

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 80.6
Natural Cycle: 70
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.78

Intersection Signal Delay: 24.2	Intersection LOS: C
Intersection Capacity Utilization 87.6%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 3: Hwy 416/Borrisokane & Barnsdale





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	156	24	350	71	11	216
Future Volume (vph)	156	24	350	71	11	216
Satd. Flow (prot)	1642	0	1705	0	0	1742
Flt Permitted	0.958					0.998
Satd. Flow (perm)	1642	0	1705	0	0	1742
Lane Group Flow (vph)	180	0	421	0	0	227
Sign Control	Stop		Free			Free

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 41.3%		ICU Level of Service A	
Analysis Period (min) 15			

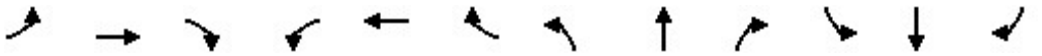
Intersection	
Int Delay, s/veh	3.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	156	24	350	71	11	216
Future Vol, veh/h	156	24	350	71	11	216
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	156	24	350	71	11	216

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	624	386	0	0	421	0
Stage 1	386	-	-	-	-	-
Stage 2	238	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	449	662	-	-	1138	-
Stage 1	687	-	-	-	-	-
Stage 2	802	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	444	662	-	-	1138	-
Mov Cap-2 Maneuver	444	-	-	-	-	-
Stage 1	687	-	-	-	-	-
Stage 2	793	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17.6	0	0.4
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	464	1138	-
HCM Lane V/C Ratio	-	-	0.388	0.01	-
HCM Control Delay (s)	-	-	17.6	8.2	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1.8	0	-



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	273	520	17	248	220	108	27	49	31	150	267	145
Future Volume (vph)	273	520	17	248	220	108	27	49	31	150	267	145
Satd. Flow (prot)	1658	1720	0	1658	1649	0	0	1657	0	1658	1626	0
Flt Permitted	0.453			0.266				0.603		0.709		
Satd. Flow (perm)	791	1720	0	464	1649	0	0	1011	0	1237	1626	0
Satd. Flow (RTOR)		2			25			19			25	
Lane Group Flow (vph)	273	537	0	248	328	0	0	107	0	150	412	0
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	11.7	25.8		11.7	25.8		25.2	25.2		25.2	25.2	
Total Split (s)	24.8	49.0		22.0	46.2		39.0	39.0		39.0	39.0	
Total Split (%)	22.5%	44.5%		20.0%	42.0%		35.5%	35.5%		35.5%	35.5%	
Yellow Time (s)	5.1	5.1		5.1	5.1		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.6	1.7		1.6	1.7		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0		0.0	0.0	
Total Lost Time (s)	6.7	6.8		6.7	6.8			6.2		6.2	6.2	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	Max		None	Max		None	None		None	None	
Act Effct Green (s)	56.3	42.5		53.9	41.2			28.3		28.3	28.3	
Actuated g/C Ratio	0.55	0.41		0.52	0.40			0.27		0.27	0.27	
v/c Ratio	0.50	0.76		0.64	0.49			0.37		0.44	0.89	
Control Delay	14.2	35.8		19.5	25.9			28.7		35.6	55.8	
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	
Total Delay	14.2	35.8		19.5	25.9			28.7		35.6	55.8	
LOS	B	D		B	C			C		D	E	
Approach Delay		28.5			23.2			28.7			50.5	
Approach LOS		C			C			C			D	
Queue Length 50th (m)	26.5	96.4		23.8	47.3			14.1		25.0	75.5	
Queue Length 95th (m)	42.1	#156.4		38.0	78.8			30.1		44.5	#126.9	
Internal Link Dist (m)		543.4			1759.4			562.8			300.3	
Turn Bay Length (m)	90.0			100.0						40.0		
Base Capacity (vph)	612	709		433	674			336		395	537	
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	0.45	0.76		0.57	0.49			0.32		0.38	0.77	

Intersection Summary
Cycle Length: 110
Actuated Cycle Length: 103.2
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.89

Intersection Signal Delay: 33.0	Intersection LOS: C
Intersection Capacity Utilization 91.6%	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: 3: Hwy 416/Borrisokane & Barnsdale





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	107	17	263	148	22	390
Future Volume (vph)	107	17	263	148	22	390
Satd. Flow (prot)	1642	0	1660	0	0	1740
Flt Permitted	0.959					0.997
Satd. Flow (perm)	1642	0	1660	0	0	1740
Lane Group Flow (vph)	124	0	411	0	0	412
Sign Control	Stop		Free			Free

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 54.7%		ICU Level of Service A	
Analysis Period (min) 15			

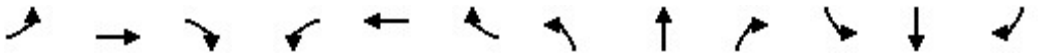
Intersection	
Int Delay, s/veh	2.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	107	17	263	148	22	390
Future Vol, veh/h	107	17	263	148	22	390
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	107	17	263	148	22	390

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	771	337	0	0	411	0
Stage 1	337	-	-	-	-	-
Stage 2	434	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	368	705	-	-	1148	-
Stage 1	723	-	-	-	-	-
Stage 2	653	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	359	705	-	-	1148	-
Mov Cap-2 Maneuver	359	-	-	-	-	-
Stage 1	723	-	-	-	-	-
Stage 2	637	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18.7	0	0.4
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	385	1148	-
HCM Lane V/C Ratio	-	-	0.322	0.019	-
HCM Control Delay (s)	-	-	18.7	8.2	0
HCM Lane LOS	-	-	C	A	A
HCM 95th %tile Q(veh)	-	-	1.4	0.1	-

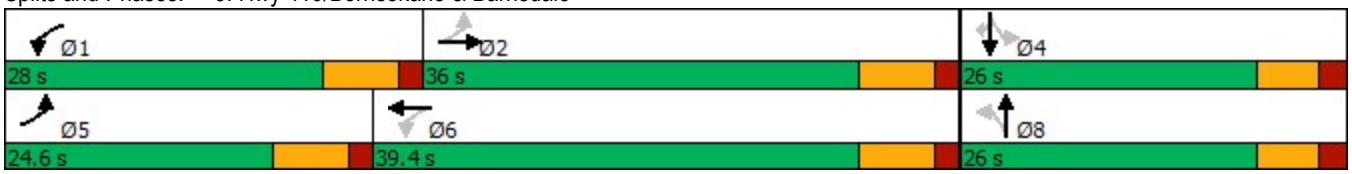


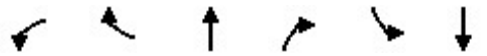
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	326	317	32	375	159	125	27	39	21	78	229	82
Future Volume (vph)	326	317	32	375	159	125	27	39	21	78	229	82
Satd. Flow (prot)	1658	1705	0	1658	1621	0	0	1662	0	1658	1745	1455
Flt Permitted	0.563			0.450				0.760		0.795		
Satd. Flow (perm)	982	1705	0	785	1621	0	0	1283	0	1387	1745	1413
Satd. Flow (RTOR)		6			49			16				127
Lane Group Flow (vph)	326	349	0	375	284	0	0	87	0	78	229	82
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		1	6		8	8		4	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	11.7	25.8		11.7	25.8		25.2	25.2		25.2	25.2	25.2
Total Split (s)	24.6	36.0		28.0	39.4		26.0	26.0		26.0	26.0	26.0
Total Split (%)	27.3%	40.0%		31.1%	43.8%		28.9%	28.9%		28.9%	28.9%	28.9%
Yellow Time (s)	5.1	5.1		5.1	5.1		4.2	4.2		4.2	4.2	4.2
All-Red Time (s)	1.6	1.7		1.6	1.7		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Lost Time (s)	6.7	6.8		6.7	6.8			6.2		6.2	6.2	6.2
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	Max		None	Max		None	None		None	None	None
Act Effct Green (s)	45.1	31.8		47.2	32.8			15.3		15.3	15.3	15.3
Actuated g/C Ratio	0.56	0.39		0.58	0.40			0.19		0.19	0.19	0.19
v/c Ratio	0.50	0.52		0.62	0.42			0.34		0.30	0.70	0.22
Control Delay	10.1	23.9		12.0	17.8			28.5		32.1	43.2	3.4
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Delay	10.1	23.9		12.0	17.8			28.5		32.1	43.2	3.4
LOS	B	C		B	B			C		C	D	A
Approach Delay		17.3			14.5			28.5			32.6	
Approach LOS		B			B			C			C	
Queue Length 50th (m)	19.5	39.6		23.3	25.0			9.5		10.4	33.2	0.0
Queue Length 95th (m)	36.2	77.6		42.5	52.2			23.1		23.4	58.7	4.3
Internal Link Dist (m)		543.4			1759.4			562.8			300.3	
Turn Bay Length (m)	90.0			100.0						40.0		20.0
Base Capacity (vph)	747	671		734	684			327		340	428	442
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	0.44	0.52		0.51	0.42			0.27		0.23	0.54	0.19

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 81.2
Natural Cycle: 70
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.70

Intersection Signal Delay: 20.1	Intersection LOS: C
Intersection Capacity Utilization 84.2%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 3: Hwy 416/Borrisokane & Barnsdale





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	156	24	350	71	11	216
Future Volume (vph)	156	24	350	71	11	216
Satd. Flow (prot)	1642	0	1705	0	1658	1745
Flt Permitted	0.958				0.950	
Satd. Flow (perm)	1642	0	1705	0	1658	1745
Lane Group Flow (vph)	180	0	421	0	11	216
Sign Control	Stop		Free			Free

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 41.3%		ICU Level of Service A	
Analysis Period (min) 15			

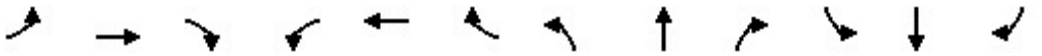
Intersection	
Int Delay, s/veh	3.9

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	156	24	350	71	11	216
Future Vol, veh/h	156	24	350	71	11	216
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	8	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	156	24	350	71	11	216

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	624	386	0	0	421	0
Stage 1	386	-	-	-	-	-
Stage 2	238	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	449	662	-	-	1138	-
Stage 1	687	-	-	-	-	-
Stage 2	802	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	445	662	-	-	1138	-
Mov Cap-2 Maneuver	445	-	-	-	-	-
Stage 1	687	-	-	-	-	-
Stage 2	794	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	17.5	0	0.4
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	465	1138	-
HCM Lane V/C Ratio	-	-	0.387	0.01	-
HCM Control Delay (s)	-	-	17.5	8.2	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	1.8	0	-

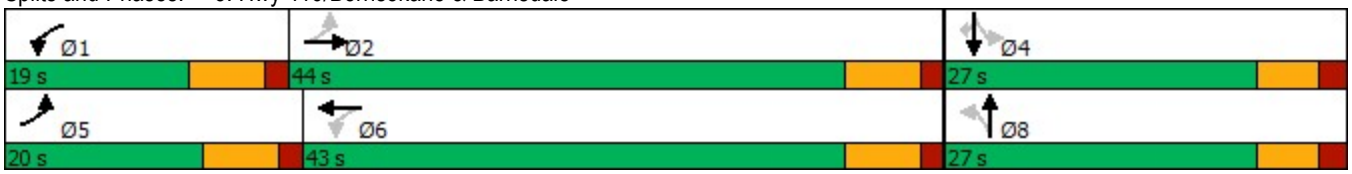


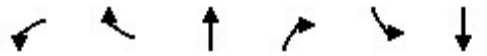
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	273	520	17	248	220	108	27	49	31	150	267	145
Future Volume (vph)	273	520	17	248	220	108	27	49	31	150	267	145
Satd. Flow (prot)	1658	1720	0	1658	1649	0	0	1657	0	1658	1745	1455
Flt Permitted	0.494			0.306				0.718		0.736		
Satd. Flow (perm)	862	1720	0	534	1649	0	0	1204	0	1284	1745	1414
Satd. Flow (RTOR)		2			33			21				127
Lane Group Flow (vph)	273	537	0	248	328	0	0	107	0	150	267	145
Turn Type	pm+pt	NA		pm+pt	NA		Perm	NA		Perm	NA	Perm
Protected Phases	5	2		1	6			8			4	
Permitted Phases	2			6			8			4		4
Detector Phase	5	2		1	6		8	8		4	4	4
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	11.7	25.8		11.7	25.8		25.2	25.2		25.2	25.2	25.2
Total Split (s)	20.0	44.0		19.0	43.0		27.0	27.0		27.0	27.0	27.0
Total Split (%)	22.2%	48.9%		21.1%	47.8%		30.0%	30.0%		30.0%	30.0%	30.0%
Yellow Time (s)	5.1	5.1		5.1	5.1		4.2	4.2		4.2	4.2	4.2
All-Red Time (s)	1.6	1.7		1.6	1.7		2.0	2.0		2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Lost Time (s)	6.7	6.8		6.7	6.8			6.2		6.2	6.2	6.2
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Recall Mode	None	Max		None	Max		None	None		None	None	None
Act Effct Green (s)	48.5	37.4		47.1	36.6			17.0		17.0	17.0	17.0
Actuated g/C Ratio	0.57	0.44		0.56	0.43			0.20		0.20	0.20	0.20
v/c Ratio	0.46	0.71		0.57	0.45			0.41		0.58	0.76	0.38
Control Delay	9.9	26.6		13.1	18.6			29.0		40.4	46.8	10.5
Queue Delay	0.0	0.0		0.0	0.0			0.0		0.0	0.0	0.0
Total Delay	9.9	26.6		13.1	18.6			29.0		40.4	46.8	10.5
LOS	A	C		B	B			C		D	D	B
Approach Delay		20.9			16.2			29.0			35.7	
Approach LOS		C			B			C			D	
Queue Length 50th (m)	17.3	70.5		15.5	33.4			12.1		22.2	41.2	2.4
Queue Length 95th (m)	31.0	116.3		28.0	60.0			27.2		41.2	67.8	16.9
Internal Link Dist (m)		543.4			1759.4			562.8			300.3	
Turn Bay Length (m)	90.0			100.0						40.0		20.0
Base Capacity (vph)	644	761		474	733			313		317	431	445
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	0.42	0.71		0.52	0.45			0.34		0.47	0.62	0.33

Intersection Summary
Cycle Length: 90
Actuated Cycle Length: 84.5
Natural Cycle: 75
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.76

Intersection Signal Delay: 24.1 Intersection LOS: C
Intersection Capacity Utilization 89.2% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 3: Hwy 416/Borrisokane & Barnsdale





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	107	17	263	148	22	390
Future Volume (vph)	107	17	263	148	22	390
Satd. Flow (prot)	1642	0	1660	0	1658	1745
Flt Permitted	0.959				0.950	
Satd. Flow (perm)	1642	0	1660	0	1658	1745
Lane Group Flow (vph)	124	0	411	0	22	390
Sign Control	Stop		Free			Free

Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 38.2%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	107	17	263	148	22	390
Future Vol, veh/h	107	17	263	148	22	390
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	8	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	100	100	100	100	100	100
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	107	17	263	148	22	390

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	771	337	0	0	411	0
Stage 1	337	-	-	-	-	-
Stage 2	434	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	368	705	-	-	1148	-
Stage 1	723	-	-	-	-	-
Stage 2	653	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	361	705	-	-	1148	-
Mov Cap-2 Maneuver	361	-	-	-	-	-
Stage 1	723	-	-	-	-	-
Stage 2	641	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18.6	0	0.4
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	387	1148	-
HCM Lane V/C Ratio	-	-	0.32	0.019	-
HCM Control Delay (s)	-	-	18.6	8.2	-
HCM Lane LOS	-	-	C	A	-
HCM 95th %tile Q(veh)	-	-	1.4	0.1	-

Appendix R

MMLOS Worksheets

Multi-Modal Level of Service - Segments Form

Project: Barrhaven South Phase 3 Lands
Consultant: CGH Transportation
Date: 2026-03-06
Scenario:

	Segment Name	**Borrisokane**		**Barnsdale (Existing)**		**Barnsdale (Future)**		**Elevation (Future)**		**Kilbirnie (Future)**		**Cappamore (Future)**		**Locals (Future)**	
	OP Transect / Policy Area	**Greenbelt or Rural**		**Outer Urban or Suburban**		**Outer Urban or Suburban**		**Within 600m of a rapid transit station**		**Within 600m of a rapid transit station**		**Within 600m of a rapid transit station**		**Within 600m of a rapid transit station**	
	Segment Component	**Majority (>50%)**		**Majority (>50%)**		**Majority (>50%)**		**Majority (>50%)**		**Majority (>50%)**		**Majority (>50%)**		**Majority (>50%)**	
	Side of Street		**E**	**N**		**N**		**W**	**E**	**N**	**S**	**N**	**S**	**W or N**	**E or S**
Pedestrian	**PLOS Inputs**														
	Posted Speed (km/h)	80 km/h		80 km/h		80 km/h		40 km/h		40 km/h		30 km/h		30 km/h	
	Two-Way ADT	4,000		5,800		5,800		2,200		500		3,400		300	
	Pedestrian Facility		None		None		Sidewalk	Sidewalk	Sidewalk	Sidewalk	Sidewalk	Sidewalk	Sidewalk	Sidewalk	Sidewalk
	Does the facility meet the TMP Sidewalk or MUP Policy? If not, for MUPs, does the location have a low volume of peak daily users AND are pedestrian volumes likely less than 20% of total users?		No		No		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Facility Width (m)		-		-		2.00m	2.00m	2.00m	2.00m	2.00m	2.00m	2.00m	1.80m	1.80m
	Offset from Motor Vehicle Travel Lanes (m)		-		-		≥ 3.0m	≥ 3.0m	≥ 3.0m	≥ 3.0m	≥ 3.0m	≥ 3.0m	0.5-1.49m	< 0.5m	< 0.5m
	Presence of Adjacent Parking?		-		-		No	Yes	Yes	Yes	Yes	Yes	-	-	-
	General Purpose Curb Lane ADT		-		-	-		≤ 3000	≤ 3000	≤ 3000	≤ 3000	≤ 3000	≤ 3000	≤ 3000	≤ 3000
	Max. Distance between Controlled Crossings (m)		-		-		> 400m	> 400m	> 400m	-	-	291-400m	291-400m	-	-
	Score	-	**0.00**	-	**0.00**	-	**3.00**	**3.75**	**3.75**	**5.00**	**5.00**	**4.00**	**4.00**	**3.50**	**3.50**
	PLOS	-	**F**	-	**F**	-	**C**	**B**	**B**	**A**	**A**	**B**	**B**	**B**	**B**
	Target PLOS	**D**		**C**		**C**		**A**		**A**		**A**		**A**	
Bicycle	**BLOS Inputs**														
	Cycling Route Classification	**Elsewhere**		**Elsewhere**		**Elsewhere**		**Elsewhere**		**Elsewhere**		**Elsewhere**		**Elsewhere**	
	Cycling Facility	Input PLOS First	Shared Operating Space	Input PLOS First	Shared Operating Space	Input PLOS First	Painted or Physically Separated Bike Lanes	Cycle Track	Cycle Track	Cycle Track	Cycle Track	Cycle Track	Cycle Track	Shared Operating Space	Shared Operating Space
	Is the minimum level of separation provided according to OTM Book 18 Pre-Selection Nomograph - Rural Context (Figure 5.6)? (for paved shoulders)		-		-		-	-	-	-	-	-	-	-	-
	Facility Operation		-		-		Unidirectional	-	-	-	-	-	-	-	-
	Pedestrian/Cyclist Volume		-		-		-	-	-	-	-	-	-	-	-
	Facility Width		-		-		2.0-2.5m	-	-	-	-	-	-	-	-
	Boulevard/Buffer Width (excluding curb)		-		-		-	-	-	-	-	-	-	-	-
	Unsignalized Roadway Crossing Type (where cyclists are required to yield)		Cross-Street		Cross-Street		Cross-Street	Cross-Street	Cross-Street	Cross-Street	Cross-Street	Cross-Street	Cross-Street	Cross-Street	Cross-Street
	Number of Travel Lanes at Crossing		≤ 2		≤ 2		≤ 2	≤ 2	≤ 2	≤ 2	≤ 2	≤ 2	≤ 2	≤ 2	≤ 2
	Crossing includes Median Refuge (≥ 2.7m)		No		No		Yes	No	No	Yes	Yes	No	No	No	No
	Cross-street Posted Speed (km/h)		≥ 60 km/h		≥ 60 km/h		≥ 60 km/h	40 km/h	40 km/h	40 km/h	40 km/h	40 km/h	40 km/h	40 km/h	40 km/h
	Cycling Path Blockages (e.g. bus stops and/or loading zones)		Rare		Rare		Rare	-	-	-	-	-	-	Frequent, Short Duration	Frequent, Short Duration
	Score	-	**0.90**	-	**0.90**	-	**2.80**	**4.85**	**4.85**	**5.00**	**5.00**	**4.85**	**4.85**	**4.55**	**4.55**
	BLOS	-	**E**	-	**E**	-	**C**	**A**	**A**	**A**	**A**	**A**	**A**	**A**	**A**
	Target BLOS	**D**		**C**		**C**		**B**		**B**		**B**		**B**	
Transit	**TLOS Inputs**														
	Transit Facility	**Select Transit Designation**		**Select Transit Designation**		**Select Transit Designation**		**Select Transit Designation**		**Mixed Traffic**		**Mixed Traffic**		**Select Transit Designation**	
	Facility Type									Mixed Traffic	Mixed Traffic	Mixed Traffic	Mixed Traffic		
	Expected Transit Running Time									Slightly Impeded	Slightly Impeded	Slightly Impeded	Slightly Impeded		
	Transit Travel Speed (if available)									Enter Speed (if available)	Enter Speed (if available)	Enter Speed (if available)	Enter Speed (if available)		
	TLOS	-	-	-	-	-	-	-	-	**C**	**C**	**C**	**C**	-	-
	Target TLOS	-		-		-		-		**E (D for frequent transit routes)**		**E (D for frequent transit routes)**		-	
Public Realm	**PRLOS Inputs**														
	Context	-	Other Streets	Input PLOS and BLOS First	Other Streets	Input PLOS and BLOS First	Other Streets	Other Streets	Other Streets	Other Streets	Other Streets	Other Streets	Other Streets	Other Streets	Other Streets
	Inner Boulevard Width	-	≤ 0.6m		≤ 0.6m		≤ 0.6m	1.5-1.99m	1.5-1.99m	1.5-1.99m	1.5-1.99m	2.0-3.99m	≤ 0.6m	≤ 0.6m	≤ 0.6m
	Middle Boulevard Width	-	≤ 0.5m		≤ 0.5m		≥ 3.0m	≤ 0.5m	≤ 0.5m	≤ 0.5m	≤ 0.5m	≤ 0.5m	≤ 0.5m	≤ 0.5m	≤ 0.5m
	Outer Boulevard (Frontage) Width	-	≤ 0.5m		≤ 0.5m		2.0-2.99m	≤ 0.5m	≤ 0.5m	≤ 0.5m	≤ 0.5m	≤ 0.5m	≤ 0.5m	≤ 0.5m	≤ 0.5m
	Transit Route on Segment?	-	No		No		No	No	No	Yes	Yes	Yes	Yes	No	No
	Bus Stop Elements	-	-		-		-	-	-	Curbside landing zone with no shelter	Curbside landing zone with no shelter	Curbside landing zone with no shelter	Curbside landing zone with no shelter	-	-
	Number of Midblock Traffic Lanes (both travel directions)	≤ 2		≤ 2		4		≤ 2		≤ 2		≤ 2		≤ 2	
	Score	-	**6.00**	-	**6.00**	-	**17.70**	**22.20**	**22.20**	**24.90**	**24.90**	**22.20**	**18.60**	**19.50**	**19.50**
	PRLOS	-	**E**	-	**E**	-	**C**	**B**	**B**	**B**	**B**	**B**	**C**	**C**	**C**
		E		**E**		**C**		**B**		**B**		**C**		**C**	