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Proposed Residential Development

3265 Jockvale Road

Barrhaven Town Center – Minto Stage 2

Transportation Impact Assessment

Prepared for: Minto Communities Inc.

Proposed Residential Development

3265 Jockvale Road

Barrhaven Town Center – Minto Stage 2

Transportation Impact Assessment

Prepared By:

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February 05, 2026
Revised: September 11, 2026

Novatech File: 125109
Ref: R-2025-114

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Engineers, Planners & Landscape Architects

September 11, 2026

City of Ottawa
Planning, Development & Building Services Department
110 Laurier Ave. W. 4th Floor
Ottawa, ON K1P 1J1

Attention: **Josiane Gervais**
Project Manager, Infrastructure Approvals

Dear Ms. Gervais:

Reference: **3265 Jockvale Road – BTC Minto Stage 2**
Transportation Impact Assessment
Novatech File No.: 125109

We are pleased to submit the following revised Transportation Impact Assessment (TIA) report in support of Zoning By-law (ZBL) Amendment and Draft Plan of Subdivision (DPS) applications for the above noted property for your review and signoff. The structure and format of this report is in accordance with the City of Ottawa 2017 TIA Guidelines and its 2023 revisions.

This revised TIA has been updated to address the city comments provided on the first submission, as well as to reflect the changes of the revised concept plan prepared for this second submission.

If you have any questions or comments regarding this report, please feel free to contact Brad Byvelds or the undersigned.

Yours truly,

NOVATECH

Mohammed Talha, M. Eng.
Engineering Intern | Transportation

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EXECUTIVE SUMMARY

This Transportation Impact Assessment (TIA) report has been prepared in support of Zoning By-law (ZBL) Amendment and Draft Plan of Subdivision (DPS) applications for the property located at 3265 Jockvale Road, in Ward 3, Barrhaven West, in Ottawa. The subject site is designated as Minto Stage 2 of the overall Barrhaven Town Center (BTC) Development. Minto Stage 1 of the BTC is the Anthem Subdivision which is currently under construction.

The subject site currently is surrounded by the following:

- Land reserved for the future expansion of Chapman Mills Drive, followed by Riocan Avenue, southern terminus of the OC Transpo Southwest Transitway and other Minto owned lands within the BTC Development to the north;
- 2325 Longfields Drive, a land owned by the City of Ottawa which is currently vacant to the south;
- Longfields Drive followed by residential developments to the east; and
- Jockvale Road (former alignment) followed by single detached dwellings to the west.

The subject site is currently zoned as DR – Development Reserve Zone. Based on Schedule A of the City of Ottawa's *Official Plan (OP)*, the subject site falls within the Suburban (Southwest) Transect. Within Schedule B6 of the City's *OP*, the subject site is designated as a Town Center (Barrhaven Town Centre), a Hub, and has an evolving neighbourhood overlay. Chapman Mills Drive including its future extension is designated as a minor corridor. Within Schedule C1, it is also designated as Protected Major Transit Station Area (PMTSA). Within Schedule C7-A, it is also designated as a Design Priority Area (DPA). Per Annex 6 of the City's *OP*, the subject site is also subject to the Barrhaven Downtown Secondary Plan.

The proposed development includes a residential subdivision consisting of 266 townhouse units and three medium density blocks which are estimated to provide 219 residential units. Therefore, a total of 485 residential units are proposed. The development also includes an extension of a portion of the Riocan Avenue which travels through the subject site in a curvilinear alignment. This extension of Riocan Avenue will provide access to the new locals within the subdivision. The Riocan Avenue/Future Chapman Mills Drive intersection will be signalized as part of the City's Chapman Mills Drive project. A secondary local roadway connection is also proposed as right-in right-out operation along the future Chapman Mills Drive between Riocan Avenue and Longfields Drive. The proposed development is anticipated to completed in a single phase, with buildout occurring in 2030.

The study area for this report includes the boundary roadway Longfields Drive, as well as the intersections Longfields Drive/Chapman Mills Drive, Longfields Drive/Marketplace Avenue/Clearbrook Drive, Greenbank Road/Marketplace Avenue, Greenbank Road/Jockvale Road (former alignment), Greenbank Road/Chapman Mills Drive (future intersection), and Chapman Mills Drive/Riocan Avenue (future intersection).

The selected time periods for the analysis are the weekday AM and PM peak hours, as they represent the 'worst case' combination of site generated traffic and adjacent street traffic. Analysis has been completed for the 2030 buildout year and 2035 horizon year.

The conclusions and recommendations of this TIA can be summarized as follows:

Trip Generation

- The proposed development is anticipated to generate 279 AM peak hour person trips (including 103 vehicle trips) and 290 PM peak hour person trips (including 109 vehicle trips).

Access Location

- Accesses to the subdivision are proposed from Riocan Avenue Extension and a local roadway off Chapman Mills Drive. This local roadway is proposed between the central and eastern medium density blocks.
- Section 9.4.2.1 of the 2017 Transportation Association of Canada's (TAC) Geometric Design Guide for Canadian Roads (GDGCR) identifies a minimum intersection spacing of 100m between a signalized intersection and an adjacent RIRO intersection along an arterial roadway. The proposed local roadway (RIRO) between the central and eastern medium density blocks adheres to this minimum intersection spacing requirement.

Existing Traffic Operations

- Under existing traffic operations, all the movements at the study area intersections are operating with an acceptable LOS.

- At the Greenbank Road/Marketplace Avenue intersection, the 95th percentile queue lengths of the northbound left turn, westbound left turn exceed the available respective storage lengths. Additionally, the 95th percentile westbound queue length extends beyond the adjacent all-way stop-controlled intersection.

Background Traffic Operations

- Under 2030 background traffic operations, all the movements at the study area intersections are operating with an acceptable LOS.

- At the Longfields Drive/Chapman Mills Drive intersection, the 95th percentile queue lengths of the eastbound left turn, northbound left turn, and eastbound right turn exceed the respective available storage lengths.

- At the Greenbank Road/Marketplace intersection, the 95th percentile queue length of the northbound left turn exceeds the available storage length. For the southbound movement, the queue length takes up the entire available spacing to the upstream Greenbank Road/Strandherd Drive intersection.

- At the Greenbank Road/Chapman Mills Drive intersection, the 95th percentile queue length of the southbound left turn movement exceeds the available storage length and extends through the future upstream intersection to the north. Increasing the cycle length to 150 seconds provides minor improvements to the queue. Alternatively, dual southbound left turn lanes could be provided which alleviates the storage length issues. To accommodate the queue lengths within the provided storage length, approximately 170-215 southbound left turn vehicles would need to reroute through Greenbank Road instead of through Chapman Mills Drive.

Development Design

- A review of the new road network with respect to the initiatives identified in the city's Building Better and Smarter Suburbs (BBSS) report was completed. The proposed road network is consistent with the following initiatives:
    - Design the street network as an integral part and extension of the municipal grid, taking into consideration its future adjustments and evolution.
    - Ensure that a range of appropriately sized roadways complements the character and functional needs of each community area.
    - Avoid reverse frontage lots (rear yards abutting public streets) within a community.

- Section 9.4.2.2 of the *2017 TAC GDGCR* identifies a typical minimum intersection spacing of 60m between adjacent intersections along a collector roadway. The distance between the Chapman Mills Drive/Riocan Avenue intersection and the Riocan Avenue/North Site Access is approximately 95m measured centerline to centerline. The distance between Riocan Avenue/North Site Access and Riocan Avenue/South Site Access is approximately 75m measured centerline to centerline. Therefore, the minimum 60m spacing requirement is met.

- Section 9.4.2.3 of the *2017 TAC GDGCR* identifies a minimum spacing of 60m between two adjacent four-legged intersections along a local road. In the case of three-legged intersections, a minimum spacing of 40m is identified. This minimum spacing requirement is met for all the intersections formed by the new local roadways within the subdivision.

- Section 2.5.3 and Section 9.9.2 of the *2017 TAC GDGCR* identify minimum required Stopping Sight Distance (SSD) and Intersection Sight Distance (ISD) respectively. These minimum required SSD and ISD are met at both the proposed access along Riocan Avenue.

- The Riocan Avenue extension will be designed with a 24 m ROW which is wider than the approved 22 m ROW design of Riocan Avenue north of Future Chapman Mills Drive. The proposed 24 m cross-section will include 1.80 wide sidewalk and 1.70 m wide cycle track on both sides of the 8.5m roadway platform. The width of the proposed inner boulevard and outer boulevard is 3.95 m and 0.3m respectively on both sides of the roadway.

- All the local roadways within the subdivision will be designed per the city's standard 18m/14.75m ROW cross-section. They will include a 1.8m sidewalk on one side of the roadway.

Boundary Streets

- Segment MMLOS have been reviewed for existing conditions along Longfields Drive only. It has not been evaluated along Chapman Mills Drive Extension as it is being designed as a complete street by the city.

- Longfields Drive does not meet the target PLOS and the BLOS. To meet the target PLOS A, a reduced frequency of controlled pedestrian crossing facilities is required along the segment. To meet the target BLOS B, a buffer between the vehicle travel lane and the on-road bike lane or a higher order facility is required. This is identified for city's consideration.

Transportation Demand Management

- As the assumed modal shares for the development are higher than the modal shares outlined for a development in a TOD zone identified in the city's TOD guidelines and the subject site's proximity to the two OC Transpo transitways, the modal shares assumed are anticipated to be met.

- The existing bus stops #3045A, #3045B, #1221, #1404, #1227, #3020, and #0310 are within a 400m radius from all the units within the proposed subdivision. As the existing bus stops meet the city's policies for the proximity of transit to residential units, an early transit service agreement is not proposed.

- The following TDM measures will be implemented for the proposed development:
    - Maps showing walking paths in the area (i.e., to/from BTC) – will be provided in the sales center.
    - Maps showing transit routes/stop locations – will be provided in the sales centre.
    - Multi-modal travel option information package will be provided to the residents upon move-in.

Transit Priority

- As part of the city's Greenbank Realignment and Southwest Transitway project, Median BRT will be provided along Chapman Mills Drive Extension.

- The site generated traffic is expected to have a negligible impact on transit operations in the study area. The delays along transit movements are within acceptable TLOS based on the city's *2025 MMLOS Guidelines*. Therefore, no transit priority measures have been identified.

Existing Intersection MMLOS

- The existing Longfields Drive/Chapman Mills intersection and, the future Greenbank Road/Chapman Mills Drive and Chapman Mills Drive/Riocan Avenue intersections have not been assessed for MMLOS as they are currently being designed (by others) as part of the Greenbank Road Realignment project.

- The Longfields Drive/Marketplace Avenue/Clearbrook Drive intersection does not meet the target PLOS and BLOS.
    - None of the approaches meet the target PLOS A. There is limited opportunity to meet the target PLOS A without reducing the number of travel lanes crossed and would require protected intersection signalization measures (Leading Pedestrian Interval (LPI), No Right Turn on Red (NTOR), etc.) to reduce the right-turn and left-turn conflicts. The north and south approaches have a crossing distance of 5 vehicle travel lanes, and the east and west approaches have a crossing distance of 3 vehicle travel lanes.
    - None of the approaches meet the target BLOS B based on the right and left turn characteristics. Protected corners and crossrides would be required to meet the target BLOS B.

- The Greenbank Road/Marketplace Avenue intersection does not meet the target PLOS and BLOS.
    - None of the approaches meet the target BLOS A. There is limited opportunity to meet the target BLOS A without reducing the number of travel lanes crossed and

would require protected intersection signalization measures (Leading Pedestrian Interval (LPI), No Right Turn on Red (NTOR), etc.) to reduce the right-turn and left-turn conflicts. The north, south, east, and west approaches have a crossing distance of 6, 5, 4, and 3 vehicles lanes respectively.

- None of the approaches meet the target BLOS B based on the right and left turn characteristics. Protected corners and crossrides would be required to meet the target BLOS B.

Total Traffic Operations

- Under total traffic operations, all the movements at the study area intersections are operating with an acceptable LOS.

- The total intersection operations are generally consistent with the background intersection operations.

The proposed development is recommended from a transportation perspective.

1.0 SCREENING

1.1 Introduction

This revised Transportation Impact Assessment (TIA) report has been prepared in support of Zoning By-law (ZBL) Amendment and Draft Plan of Subdivision (DPS) applications for the property located at 3265 Jockvale Road, in Ward 3, Barrhaven West, in Ottawa. The subject site is designated as Minto Stage 2 of the overall Barrhaven Town Center (BTC) Development. Minto Stage 1 of the BTC is the Anthem Subdivision which is currently under construction.

The subject site currently is surrounded by the following:

- Land reserved for the future expansion of Chapman Mills Drive, followed by Riocan Avenue, southern terminus of the OC Transpo Southwest Transitway and other Minto owned lands within the BTC Development to the north;
- 2325 Longfields Drive, a land owned by the City of Ottawa which is currently vacant to the south;
- Longfields Drive followed by residential developments to the east; and
- Jockvale Road (former alignment) followed by single detached dwellings to the west.

An aerial of the subject site and its vicinity is shown in **Figure 1**.

1.2 Proposed Development

The subject site is currently zoned as DR – Development Reserve Zone. Based on Schedule A of the City of Ottawa's *Official Plan (OP)*, the subject site falls within the Suburban (Southwest) Transect. Within Schedule B6 of the City's *OP*, the subject site is designated as a Town Center (Barrhaven Town Centre), a Hub, and has an evolving neighbourhood overlay. Chapman Mills Drive including its future extension is designated as a minor corridor. Within Schedule C1, it is also designated as Protected Major Transit Station Area (PMTSA). Within Schedule C7-A, it is also designated as a Design Priority Area (DPA). Per Annex 6 of the City's *OP*, the subject site is also subject to the Barrhaven Downtown Secondary Plan.

The proposed development includes a residential subdivision consisting of 259 townhouse units and three medium density blocks which are estimated to provide 219 residential units. Therefore, a total of 478 residential units are proposed. The development also includes an extension of a portion of the Riocan Avenue which travels through the subject site in a curvilinear alignment. This extension of Riocan Avenue will provide access to the new locals within the subdivision. The Riocan Avenue/Future Chapman Mills Drive intersection will be signalized as part of the City's Chapman Mills Drive project. A secondary local roadway connection is also proposed as right-in right-out operation along the future Chapman Mills Drive between Riocan Avenue and Longfields Drive. The proposed development is anticipated to completed in a single phase, with buildout occurring in 2030.

A copy of the Draft Plan of Subdivision is included in **Appendix A**.

Figure 1: An Aerial of the Subject Site and its Vicinity

Source: Background Aerial Snapshotted from Google Earth

1.3 Screening Form

The City's *2023 TIA Guidelines* identify three triggers to satisfy the requirements for the need of a TIA report, including trip generation, location and safety. The minimum criteria for each trigger are outlined in the City's TIA Screening form, which is included in **Appendix B**. The trigger results are as follows:

- Trip Generation Trigger – The proposed development is anticipated to generate more than 60 person trips; further analysis is **required** based on this trigger.
- Location Triggers – The development proposes new driveways to the Future Chapman Mills Drive Extension that is designated as part of the Rapid Transit and Transit Priority Network (*2013 TMP*) and the Priority Transit Network (*2023 TMP's CIP*). The development is also located in PMTSA and DPA area; further assessment is **required** based on this trigger.
- Safety Triggers – None of the safety triggers are met; further assessment is **not required** based on this trigger.

2.0 SCOPING

2.1 Existing Conditions

2.1.1 Roadways

All roadways fall under the jurisdiction of the City of Ottawa.

Longfields Drive runs in a C-shaped alignment between Bill Leathem Drive/Longfields Drive roundabout intersection to the north and Prince of Wales Drive/Rideau Valley Drive North/Longfields Drive intersection to the south. Based on Schedule C4 of the City's *OP*, it is classified as a major collector roadway between Bill Leathem Drive and Strandherd Drive, and as an arterial roadway between Strandherd Drive and Prince of Wales Drive. Within the study area, it has a divided four lane urban cross-section. It has a posted speed limit of 50kmph between Strandherd Drive and Chapman Mills Drive. South of Chapman Mills Drive, it transforms to 60kmph. It is classified as a full load truck route between Strandherd Drive and Prince of Wales Drive. Schedule C16 of the City's *OP* identifies a ROW protection for Longfields Drive of 37.5m between Strandherd Drive and Cambrian Road.

Chapman Mills Drive generally runs on an east-west alignment between Woodroffe Avenue to the east and Strandherd Drive to the west. It becomes discontinuous between Longfields Drive to the east and Hamsa Street/Point Prim Crescent intersection to the west. Based on Schedule C4 of the City's *OP*, it is classified as a future major collector roadway between Strandherd Drive and Longfields Drive, and as an existing major collector between Longfields Drive and Woodroffe Avenue. Within the study area (to the east of Longfields Drive), it has a divided four lane urban cross-section (including two vehicle lanes and two median Bus Rapid Transit lanes) with a posted speed limit of 50kmph. It is not classified as a truck route. Schedule C16 of the City's *OP* identifies a ROW protection for Chapman Mills Drive of 41m between Longfields Drive and Riocan Drive, and 43m between Riocan Drive and Greenbank Road.

Riocan Avenue runs on a north-south alignment between Strandherd Drive to the north and ends in a cul-de-sac approximately 450m to its south. Based on Schedule C4 of the City's *OP*, it is identified as a collector roadway. The existing roadway has an undivided urban cross-section with an unposted regulatory speed of 50kmph under the Highway Traffic Act. It is not classified as a truck route. The existing section of Riocan Avenue has a ROW of 22m.

Greenbank Road runs on a north-south alignment between HWY417 to the north (where it transitions to Pinecrest Road) and Prince of Wales Drive to the south. Based on Schedule C4 of the City's *OP*, the existing alignment is classified as an arterial road. The portion of the roadway between Darjeeling Avenue and Barnsdale Road which is being realigned is classified as a future arterial road. Within the study area, south of Jockvale Road, it has a two-lane undivided semi-urban cross-section with posted speed limit of 60kmph (reduced to 40kmph during the school hours). North of Jockvale Road, it has a three lane semi-urban cross-section. It is classified as a full load truck route north of Jockvale Road.

Marketplace Avenue is a short collector roadway within the BTC that runs on an east-west alignment between Greenbank Road and Longfields Drive. It has a two-lane urban cross-section with a posted speed limit of 50kmph. At its east end, it transitions into Clearbrook Drive.

Clearbrook Drive runs in an L-shaped alignment between Longfields Drive and Paul Métivier Drive. Based on Schedule C4 of the City's OP, it is classified as a collector roadway between Longfields Drive and Chapman Mills Drive, and as a local roadway between Chapman Mills Drive and Paul Métivier Drive. Within the study area, it has a two-lane undivided urban cross-section with a posted speed limit of 50kmph.

Jockvale Road generally runs in a sloped north-south alignment between Cedarview Road and Strandherd Drive. South of Strandherd Drive it is currently being realigned as developments advance in the Barrhaven Downtown Secondary Plan. The new Jockvale Road will run from Strandherd Drive to Bending Way. The former Jockvale Road alignment is still operational and runs from west of Greenbank Road to Longfields Drive, along the western border of the subject site. Based on Section 4.3 of the Volume 2A-Barrhaven Downtown Secondary Plan of the city's *OP*, the former Jockvale Road ROW is envisioned to be repurposed as a recreation corridor to further improve the pedestrian and cyclist connectivity between the District Park and Natural Lands and the central plaza.

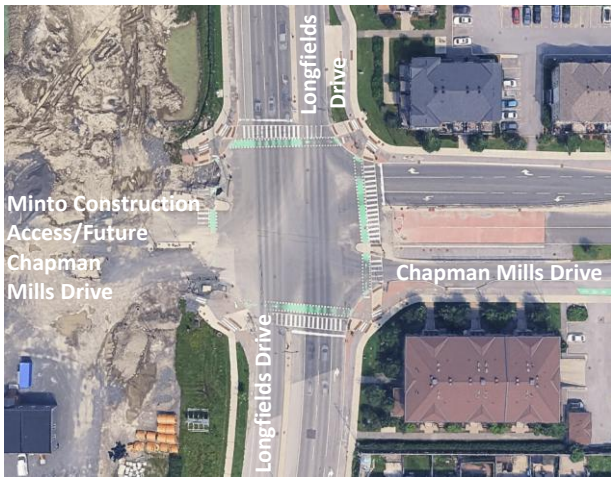
Based on Schedule C4 of the city's *OP*, it is classified as an existing collector roadway between Cedarview Road and Strandherd Drive. South of Strandherd Drive, the new alignment is classified as a future collector roadway. The former alignment that runs parallel to the subject site's western property line, does not have any classification under Schedule C4 of the *OP*, but is classified as an arterial roadway between Greenbank Road and Longfields Drive based on *geoOttawa* mapping.

The former alignment is currently classified as a full load truck route. It currently has an undivided rural two-lane rural cross-section with a posted speed limit of 60kmph.

2.1.2 Study Intersections

<u>Longfields Drive/Chapman Mills Drive</u>

- Signalized four-legged protected intersection.
- Northbound Approach (Longfields Drive): one reserved left turn lane for future use, two through lanes, and one right turn lane.
- Southbound Approach (Longfields Drive): one left turn lane, two through lanes, one temporary bike lane overlayed on a right turn lane reserved for future use.
- Eastbound Approach (Minto Construction Access/Future Chapman Mills Drive Extension): one shared all-movement lane functioning as a construction access for Minto.
- Westbound Approach (Chapman Mills Drive): one left turn lane, one through lane, and one right turn lane.
- There are two Median Bus Rapid Transit (BRT) lanes on the westbound



approach that are reserved for future use.
- Ladder crosswalks on all approaches.
- Crossrides on all approaches.

Longfields Drive/Marketplace Avenue/ Clearbrook Drive

- Signalized four-legged intersection.
- Northbound Approach (Longfields Drive): one left turn lane, one through lane, one through/right turn lane, and one bike lane.
- Southbound Approach (Longfields Drive): one left turn lane, one through lane, one through/right turn lane, and one bike lane.
- Eastbound Approach (Marketplace Avenue): one left turn lane, and one through/right turn lane.
- Westbound Approach (Clearbrook Drive): one left turn lane, and one through/right turn lane.
- Standard crosswalk markings on all approaches.

Greenbank Road/Marketplace Avenue

- Signalized four-legged intersection.
- Northbound Approach (Greenbank Road): one left turn lane, one through lane, and one through/right turn lane.
- Southbound Approach (Greenbank Road): two left turn lanes, one through lane, one through/right turn lane, and one bike lane.
- Eastbound Approach (3777 Strandherd Drive Access): one left turn lane and one through/right turn lane.
- Westbound Approach (Marketplace Avenue): one left turn lane, and one through/right turn lane.
- Standard crosswalk markings on all approaches.

Greenbank Road/Jockvale Road (former alignment)

- Signalized four-legged skewed intersection.
- Northbound Approach (Greenbank Road): one shared all-movement lane and one bike lane.
- Southbound Approach (Greenbank Road): one left turn lane and one through/right turn lane.
- Eastbound Approach (Jockvale Road): one shared all-movement lane.
- Westbound Approach (Jockvale Road): one through/left turn lane and one right turn lane.
- Standard crosswalk markings on all approaches except westbound approach which has ladder markings.

Other study area intersections include the intersections that will be created by the future expansions of Chapman Mills Drive and Riocan Avenue. These future intersections are:

- Chapman Mills Drive Extension/Riocan Avenue Extension
- Chapman Mills Drive Extension/Greenbank Road

For the purposes of analysis within this report, the lane configuration of these two future intersections will be based on the design being developed as part of another city project. The details of this project are discussed in detail in section 2.2.1 of this report. It is noteworthy that that once the Chapman Mills Drive Extension is constructed, the existing Greenbank Road/Jockvale Road intersection will be decommissioned.

2.1.3 Driveways

A review of the existing adjacent driveways within approximately 200m from the subject site is provided as follows:

Chapman Mills Drive (North Side)

- East of Longfields Drive: None.
- West of Greenbank Road: None.

Chapman Mills Drive (South Side)

- East of Longfields Drive: One residential driveway to 780 D Chapman Mills Drive.
- West of Greenbank Road: None.

Riocan Avenue (East Side)

- One fire route access to upcoming development at 201 Glenroy Gilbert Drive.

Riocan Avenue (West Side)

- None.

Longfields Drive (East Side)

- None.

Longfields Drive (West Side)

- None.

2.1.4 Pedestrian and Cycling Infrastructure

Pedestrian Infrastructure

- Longfields Drive has sidewalks on both sides of the roadway.
- Jockvale Road has only paved shoulders on both sides of the roadway.
- Riocan Avenue has sidewalks on both sides of the roadway.
- Transitway has a sidewalk on the west side of the roadway, and a Multi-use Pathway (MUP) on the east side of the roadway which transforms into a sidewalk approximately 280m north of its south terminus.
- Marketplace Avenue has sidewalks on both sides of the roadway.
- Clearbrook Drive has sidewalks on both sides of the roadway.
- Greenbank Road has a concrete/paved sidewalk only on the east side of the roadway till St. Joseph Catholic High School and transforms into a separated paved shoulder (flex stakes) south of it. On the west side, it has a paved shoulder.

Cycling Infrastructure

- Longfields Drive has bike lanes on both sides of the roadway.
- Jockvale Road has only paved shoulders on both sides of the roadway.
- Riocan Avenue between Strandherd Drive and the Anthem Subdivision does not have any cycling infrastructure (mixed traffic). Within the Anthem Subdivision, cycle tracks will be provided on both sides of the road.
- Marketplace Avenue does not have any cycling infrastructure (mixed traffic).
- Clearbrook Drive does not have any cycling infrastructure (mixed traffic).
- Greenbank Road has a paved shoulder in the southbound direction. It has a bike lane in the northbound direction between Jockvale Road and St. Joseph Catholic High School. South of the school, it has a separated paved shoulder (flex stakes).

2.1.5 Transit

There are several OC Transpo bus stops in the vicinity of the subject site including the Barrhaven Center and the Marketplace Transit Stations of the Southwest Transitway. The closest bus stops are shown in **Figure 2**. The location of the bus stops including the routes they service are summarized in **Table 1**. The routes that serve the study area are summarized in **Table 2**. OC Transpo route maps are included in **Appendix C**.

Figure 2: OC Transpo Bus Stop Locations

Source: Background Aerial Snapshotted from Google Earth

Table 1: OC Transpo Transit Stops

Road	Side	Stop No.	Location	Routes Serviced
Transitway	East Side	3045	At southern terminus	70, 75, 80, 99, 110, 173, 275, 279, 671, 673, 677, 683, 684, 690
		3047	South of Marketplace Avenue	70, 75, 80, 99, 110, 173, 275, 279, 671, 673, 677, 683, 684, 690
	West Side	3045	At southern terminus	70, 75, 99, 110, 275, 279, 671, 672, 673, 677, 683, 684, 690
		3047	South of Marketplace Avenue	70, 75, 80, 99, 110, 173, 275, 279, 671, 672, 673, 677, 683, 684, 690

Road	Side	Stop No.	Location	Routes Serviced
Longfields Drive	East Side	1221	North of Chapman Mills Drive	99, 110, 672, 684
	West Side	6675	South of Strandherd Drive	80, 659
		1227	South of Chapman Mills Drive	675, 684
Chapman Mills Drive	South Side	1404	East of Longfields Drive	99, 110, 675
Jockvale Road	East Side	0320	North of Bending Way	75, 275, 279, 671, 683
	West Side	0310	North of Bending Way	75, 275, 279, 671, 672, 677, 679, 683

Table 2: OC Transpo Route Information

Route Details	Frequency
Route 70 – Local Limebank ↔ Fallowfield	Weekday: 15-minute headways during peak hours, otherwise 30 minutes. Weekend: 30-minute headways.
Route 75 – Frequent Cambrian ↔ Tunney's Pasture	Weekday: 15-minute headways. Weekend: 15-minute headways.
Route 80 - Frequent Tunney's Pasture ↔ Barrhaven Center	Weekday: 15-minute headways. Every alternate extends to/from Barrhaven Center. Weekend: 30-minute headways.
Route 99 – Local Limebank ↔ Barrhaven Center/Weybridge	Weekday: 30-minute headways. Weekend: 30-minute headways.
Route 110 – Local Innovation/Briarbrook ↔ Limebank	Weekday: 30-minute headways. Weekend: Only two buses in the morning (6-7AM) and evening (5-6PM) with 30-minute headways.
Route 173 – Local Barrhaven Center ↔ Citigate	Weekday: 30-minute headways during peak hours, otherwise 60-minute headways. Weekend: 60-minute headways.
Route 275 – Connection Half Moon Bay ↔ Tunney's Pasture	Weekdays: Serviced only during peak periods with 30-minute headways. Weekend: Not serviced.
Route 279 – Connection Manotick ↔ Tunney's Pasture	Weekday: Serviced only during peak periods with 60-minute headways. Weekend: Not serviced.
Route 659 – School	Weekday: Four buses to school in the morning and five buses from school in the evening.

Route Details	Frequency
Leikin ↔ Longfields-Davidson Heights	Weekend: Not serviced.
Route 671 – School John McCrae H. S. ↔ Half Moon Bay	Weekday: Five buses to school in the morning and five buses from school in the evening. Weekend: Not serviced.
Route 672 – School John McCrae H. S. ↔ Golflinks	Weekday: One bus to school in the morning and one bus from school in the evening. Weekend: Not serviced.
Route 673 – School Longfields Davidson Heights & Pierre-de-blois ↔ Fallowfield	Weekday: One bus to school in the morning and three buses from school in the evening. Weekend: Not serviced.
Route 675 – School Bell H.S./Franco-Ouest ↔ Cambrian	Weekday: One bus to school in the morning and one bus from school in the evening. Weekend: Not serviced.
Route 677 – School Larkin ↔ St-Joseph H. S.	Weekday: Two buses to school in the morning and two buses from school in the evening. Weekend: Not serviced.
Route 679 – School Cobble Hill ↔ St. Joseph H. S.	Weekday: Three buses to school in the morning and three buses from school in the evening. Weekend: Not serviced.
Route 683 – School Half Moon Bay ↔ Cedarview M. S.	Weekday: Eight buses to school in the morning and six buses from school in the evening. Weekend: Not serviced.
Route 684 – School Golflinks ↔ Longfields Davidson Heights	Weekday: Two buses to school in the morning and one bus from school in the evening. Weekend: Not serviced.
Route 690 – School Barrhaven Center ↔ St. Mother Theresa H. S.	Weekday: One bus to school in the morning and two buses from school in the evening. Weekend: Not serviced.

*Data from OC Transpo website accessed on November 19, 2025

2.1.6 Area Traffic Management

The following area traffic management measures were identified in the vicinity of the subject site:

- No right on red signage for northbound movement at Longfields Drive/Chapman Mills Drive intersection.
- Community safety zone on Longfields Drive between Strandherd Drive and Chapman Mills Drive with posted speed limit reduced to 50kmph. This segment also has school zone signage and includes an automated speed enforcement camera (currently decommissioned as a result of Bill 56).
- Community safety zone on Greenbank Road between Jockvale Road and Bending Way with posted speed limit reduced to 40kmph. This segment also has school zone signage and includes an automated speed enforcement camera (currently decommissioned as a result of Bill 56).

Within the study area, there are no Traffic Calming Studies (TCS) that are in progress or completed recently.

2.1.7 Existing Traffic Volumes

Weekday traffic counts were obtained from the City of Ottawa and were used to determine the existing pedestrian, cyclist, and vehicular traffic volumes at the study area intersections. These traffic counts are included in **Appendix D**. The traffic counts were completed on the following dates:

- Longfields Drive/Chapman Mills Drive — June 19, 2018
- Longfields Drive/Marketplace Avenue/Clearbrook Drive — November 09, 2021
- Greenbank Road/Marketplace Avenue — May 21, 2025
- Greenbank Road/Jockvale Road — January 08, 2020

It is acknowledged that the traffic count at Longfields Drive/Chapman Mills Drive intersection is outdated. Comparing the 2021 traffic count at Longfields Drive/Marketplace Avenue/Clearbrook Drive with the 2018 traffic count at Longfields Drive/Chapman Mills Drive, the traffic volumes at these intersections are generally consistent. These two intersections are one beside the other. Additionally, snapshots of the city's 2022 and 2046 long-range model for the study area were obtained from the city and are included in **Appendix E**. A review of the snapshots indicates that the traffic growth along Longfields Drive is approximately 0.8% per year, which is generally considered to be minimal.

The existing traffic volumes within the study area are shown in **Figure 3**.

2.1.8 Collision History

Historical collision data from 2019 to 2022 and for 2024 was obtained from the city for the study area. Copies of the collision summary reports are included in **Appendix F**.

The collision data has been evaluated to determine if there are any identifiable collision patterns and is summarized in **Table 3**.

Figure 3: Existing Traffic Volumes

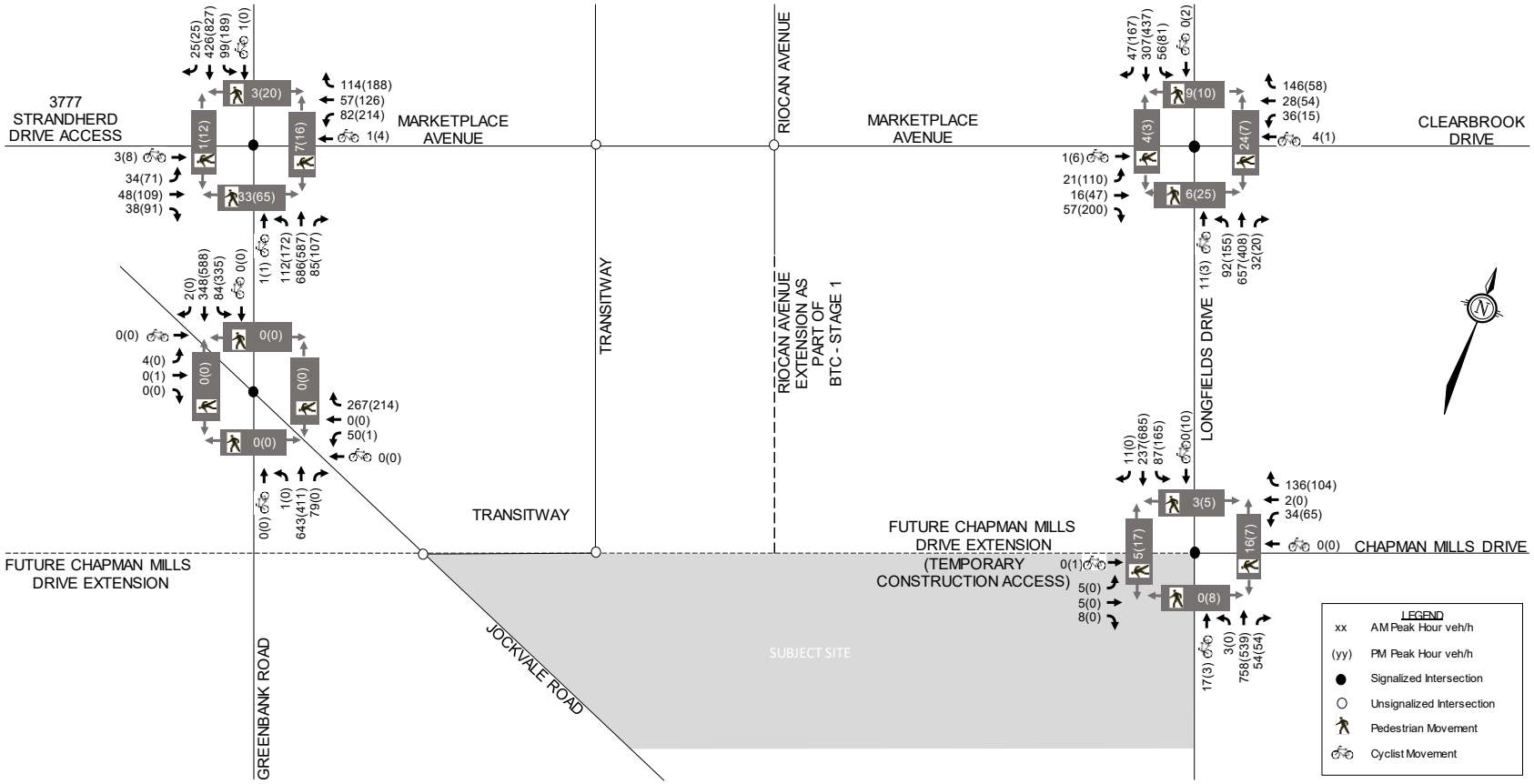


Table 3: Collision History

Intersection/ Street Segment	Impact Types						Total
	Approach	Angle	Rear End	Sideswipe	Turning Movement	SMV[(1)]/ Other	
Intersection							
Longfields Drive/Chapman Mills Drive	0	2	3	0	2	1	8
Longfields Drive/Marketplace Avenue/Clearbrook Drive	0	5	6	2	7	4	24
Greenbank Road/Marketplace Avenue	0	1	18	7	15	1	42
Greenbank Road/Jockvale Road	1	2	16	1	3	2	25
Segment							
Longfields Drive b/w Paul Métivier Drive and Chapman Mills Drive	0	0	1	1	0	1	3
Greenbank Road b/w Marketplace Avenue and Jockvale Road	0	1	1	2	2	0	6

Longfields Drive/Chapman Mills Drive

Three of the eight collisions caused injuries, but none caused fatalities. None of the collisions involved a pedestrian or a cyclist.

Six of the eight collisions occurred in clear conditions, and two occurred in snowy conditions. Additionally, six of the eight collisions occurred in daylight conditions, and two occurred in dark conditions.

Longfields Drive/Marketplace Avenue/Clearbrook Drive

Six of the twenty-four collisions caused injuries, but none caused fatalities. One of the collisions involved two pedestrians and a southbound left turning vehicle. One of the collisions involved a pedestrian and an eastbound left turning vehicle. None of the collisions involved a cyclist.

Eighteen of the collisions occurred in clear conditions, three in snowy conditions, two in freezing rain conditions, and one in rainy condition. Additionally, fourteen occurred in daylight conditions, eight in dark conditions, and two in dusky conditions.

Of the six rear-end collisions:

- Three collisions involved southbound vehicles.
- Two collisions involved eastbound vehicles.
- One collision involved westbound vehicles.

Of the seven turning movement collisions:

- Four collisions involved northbound left turning vehicles with southbound vehicles.
- One collision involved eastbound left turning vehicle with southbound vehicle.
- One collision involved southbound left turning vehicle with a southbound vehicle.

- One collision involved southbound left turning vehicle with a northbound vehicle.

Greenbank Road/Marketplace Avenue

Two of the forty-two collisions caused injuries, but none caused fatalities. One of the collisions involved a pedestrian and a southbound left turning vehicle. None of the collisions involved a cyclist.

Thirty-three of the collisions occurred in clear conditions, five occurred in rainy conditions, three in snowy conditions, and one in foggy/misty/smoky/dusty conditions. Additionally, thirty collisions occurred in daylight conditions, nine in dark conditions, and three in dusky conditions.

Of the eighteen rear-end collisions:

- Ten collisions involved westbound vehicles.
- Four collisions involved northbound vehicles.
- Three collisions involved southbound vehicles.
- One collision involved eastbound vehicles

The westbound approach has a downgrade but there are clear sightlines. The ten rear-end collisions in the westbound direction may be attributable to tailgating and the downgrade factoring in as well.

Of the fifteen turning movement collisions:

- Three collisions involved northbound right turning vehicles with northbound vehicles.
- Two collisions involved westbound right turning vehicles with eastbound left turning vehicles.
- Two collisions involved westbound left turning vehicles with eastbound vehicles.
- Two collision involved westbound left turning vehicle with eastbound right turning vehicle.
- One collision involved northbound right turning vehicle with northbound left turning vehicle.
- One collision involved northbound left turning vehicle with northbound vehicle.
- One collision involved northbound left turning vehicle with westbound left turning vehicle.
- One collision involved southbound left turning vehicle with northbound vehicle.
- One collision involved two southbound left turning vehicles.
- One collision involved eastbound right turning vehicle with eastbound vehicle.

Of the seven sideswipe collisions:

- Four collisions involved southbound vehicles.
- Two collisions involved northbound vehicles.
- One collision involved a southbound and a northbound vehicle.

Greenbank Road/Jockvale Road

Five of the twenty-five collisions caused injuries, but none caused fatalities. One of the collisions involved a southbound cyclist and a westbound right turning vehicle. None of the collisions involved a pedestrian.

Twenty-one collisions occurred in clear conditions, two occurred in rainy conditions, and two occurred in snowy conditions. Additionally, twenty occurred in daylight conditions, and four occurred in dark conditions.

Of the sixteen rear-end collisions:

- Eight collisions involved northbound vehicles.
- Four collisions involved southbound vehicles.
- Two collisions involved eastbound vehicles.
- Two collisions involved westbound vehicles.

In the northbound direction, there are clear sightlines and no obstacles have been identified that restrict driver sightlines. Majority of the northbound rear-end collisions occurred during the PM peak period. This is likely a result of long crossing distance and high southbound left turn volumes, leading the drivers to stop short instead of carrying through amber.

Longfields Drive b/w Paul Métivier Drive and Chapman Mills Drive
Two of the three collisions caused injuries, but none caused fatalities. None of the collisions involved a pedestrian or a cyclist.

Two of the three collisions occurred in clear conditions, and one occurred in drifting snow conditions. Additionally, two of the collisions occurred in daylight conditions and one occurred in dark conditions.

Greenbank Road b/w Marketplace Avenue and Jockvale Road
One of the six collisions caused injuries which involved a southbound cyclist and a westbound right turning vehicle. None of the collisions caused fatalities nor involved a pedestrian.

Five of the six collisions occurred in clear conditions, and one occurred in rainy conditions. Additionally, five of the collisions occurred in daylight conditions, and one occurred in dark conditions.

2.2 Planned Conditions

2.2.1 Transportation Projects

The following transportation projects were identified in the vicinity of the subject site:

O-Train Line 1 Extension – Algonquin Station to BTC
The Needs Based Transit Network and the Priority Transit Network within the *2023 Transportation Master Plan's (TMP) Capital Infrastructure Plan (CIP)* identify the extension of O-Train service from Algonquin Station (Baseline Station) to BTC. This project replaces the existing Southwest Transitway with Light Rail Transit (LRT). While this project is enlisted in the Priority Transit Network which is intended to be implemented by 2046, the 2023 TMP identifies that the implementation of this project is fully reliant on funding from other levels of government.

An Environmental Assessment Study (EAS) was undertaken by Parsons on behalf of the city for this project and subsequently an Environmental Study Report (ESR) was published by Parsons dated October 2024. The recommended plan within the ESR includes functional design for the project. The functional design within the vicinity of the subject site was extracted from the ESR and is included in **Appendix G**.

Southwest Transitway (Barrhaven Center Station to Kilbirnie Station) Median BRT Project and the Greenbank Road Realignment Project

The Needs Based Transit Network within the *2023 TMP's CIP* identifies the extension of Southwest Transitway from BTC to Barnsdale Road. However, the Priority Transit Network identifies it from BTC to Kilbirnie Drive.

The Needs Based Road Network within the *2023 TMP's CIP* identifies the realignment of Greenbank Road between Cambrian Road and Kilbirnie Drive with median bus lanes, as well as Kilbirnie Drive to Barnsdale Road without the median bus lanes.

South Transitway (Limebank Station to Borrisokane Road)

The Needs Based Transit Network within the *2023 TMP's CIP* identifies extension of the South Transitway from Limebank Station to Borrisokane Road. The project includes dedicated bus rapid transit with at-grade crossings from Limebank Station to Nepean Woods Station, transitioning to Median Bus Rapid Transit (BRT) in the Chapman Mills Drive Corridor. The Median BRT has already been built in the Chapman Mills Corridor from Nepean Woods Transit Station to Longfields Drive. The TMP's Priority Transit Network has separated this project into smaller segments for implementation. The South Transitway (Longfields Drive to Greenbank Road) project will be constructed initially, followed by the South Transitway (Riverview Station to Limebank Station). The South Transitway (Greenbank Road to Borrisokane Road) is not included in the Priority transit network and will be implemented post 2046.

For design and construction purposes, the city has combined the above-mentioned Greenbank Road Realignment, Southwest Transitway, and South Transitway (Longfields Drive to Greenbank Road) projects. The city has retained Stantec Consulting Inc. to complete the detailed design for this project. The preliminary design for the project can be found on the city website. The preliminary design in the vicinity of the subject site showing the Future Chapman Mills Drive Extension is included in **Appendix G**. Based on the city's website, it is anticipated that phased construction will start in 2026 which is subject to change as the project progresses.

Jockvale Road (Former Alignment) Conversion to Active Transportation Corridor

Based on Section 4.3 of the Volume 2A-Barrhaven Downtown Secondary Plan of the city's *OP*, the former Jockvale Road ROW is envisioned to be repurposed as a recreation corridor to further improve the pedestrian and cyclist connectivity between the District Park and Natural Lands and the central plaza. Per our conversations with the city, this project is not included in the current version of the *2023 TMP's CIP*, however it will be enlisted in the it's final iteration. Therefore, no timelines are currently identified for decommissioning of Jockvale Road.

2.2.2 Other Area Developments

The following developments were identified within the vicinity of the subject site using the city's development application search tool. Excerpts from the respective TIA's are included in **Appendix H**.

3265 Jockvale Road (BTC Minto Phase 1 – Anthem Subdivision)

A TIA was prepared by CGH Transportation dated June 2023 for the proposed development. The development consists of 604 stacked townhouse units. All the accesses to the development are proposed from Glenroy Gilbert Drive. A review of the Geometric Road Design Drawings (GRDD) of the development shows that Riocan Avenue is proposed to be extended to its south forming a cul-de-sac within the Future Chapman Mills Drive Extension ROW. The development is anticipated to occur in single phase with buildout in 2026.

1034 McGarry Terrace
A TIA was prepared by CGH Transportation dated August 2023 for the proposed development consisting of a 26-storey tower and a 35-storey tower for a total of 592 residential units and 1,105m^2 of commercial space. The construction is anticipated to occur in a single phase with buildout in 2026.

3380 Jockvale Road
The development proposes a Planned Unit Development (PUD) which will include a 9-storey residential building with 99 units, and a 3-storey stacked dwelling with 18 units. A total of 117 units is proposed. In total, 30 parking spaces are proposed. Based on the number of proposed parking spaces, the development is not anticipated to meet the trip generation trigger.

105, 4050, and 4051 Sencha Terrace
A TIA was prepared by Novatech dated September 2022 for the proposed development consisting of 5 high-rise buildings, one mid-rise building, and one mid-rise retirement home for a total of 1,125 units. The development is anticipated to occur in 5 phases between 2025 and 2040. The anticipated buildout of Phase 1 (Blocks 15/16) is 2025, Phase 2 (Blocks 11/12) is 2029, Phase 3 (Block 24) is 2033, Phase 4 (Block 19) is 2037, and Phase 5 (Block 20) is 2040. Analysis in the report was performed for 2033 and 2040 horizon years.

3194 Jockvale Road
A TIA was prepared by CGH Transportation dated January 2019 for the proposed development. The development proposes 210 stacked townhome units and approximately 200,000ft 2 of retail space. As part of the development, Jockvale Road (new alignment) is also proposed to be extended further south, and a new east-west road will be constructed along the south frontage of the property with a new intersection at Greenbank Road. The development is anticipated to occur in a single phase with buildout in 2026. However, based on June 30, 2025, Google Earth aerial imagery, the construction hasn't started yet.

2.3 Study Area and Time Periods

The study area for this report includes the boundary roadway Longfields Drive, as well as the following intersections:

- Longfields Drive/Chapman Mills Drive
- Longfields Drive/Marketplace Avenue/Clearbrook Drive
- Greenbank Road/Marketplace Avenue
- Greenbank Road/Jockvale Road (former alignment)
- Greenbank Road/Chapman Mills Drive (future intersection)
- Chapman Mills Drive/Riocan Avenue (future intersection)

The selected time periods for the analysis are the weekday AM and PM peak hours, as they represent the 'worst case' combination of site generated traffic and adjacent street traffic. Analysis has been completed for the 2030 buildout year and 2035 horizon year.

2.4 Development Generated Travel Demand

2.4.1 Trip Generation

The *TRANS Trip Generation Manual Summary Report* (December 2020, WSP) was used to estimate the traffic generated by the proposed development. Peak period person trips generated by the proposed development have been estimated based on the Mult-Unit (High Rise) rates for the medium density blocks and Multi-Unit (Low-Rise) rates for the townhouse units. The recommended residential person trip rates and the directional distribution of the peak period trips are identified in Table 3 and Table 9 respectively in the *TRANS Manual*. The peak period person trips generated by the proposed residential development during the weekday AM and PM peak periods are estimated in **Table 4**.

It is noted that the current concept plan proposes 478 units in total. Compared to the previous concept plan which proposed a total of 485 units, there is only a reduction of 7 units. The difference in number of trips generated will be negligible. Therefore, the trip generation has not been updated.

Table 4: Peak Period Person Trips Generated

Land Use	TRANS Rate per Unit	Units	AM Peak Period (ppp[1])			PM Peak Period (ppp[1])		
			IN	OUT	TOT	IN	OUT	TOT
Multi Unit: High-Rise	AM: 0.80 PM: 0.90	219	55	120	*175*	115	82	*197*
Multi Unit: Low-Rise	AM: 1.35 PM: 1.58	266	107	253	*360*	235	185	*420*
Total		485	162	373	*535*	350	267	*617*

1. ppp =person trips per peak period

Table 6, and Table 7 of the *TRANS Manual* include recommended AM and PM period modal shares for each district based on the type of residential dwelling. Figure 1 of the *TRANS Manual* identifies the subject site as being within the South Nepean district and therefore recommends the following modal shares:

For Multi-Unit (High-Rise)

- Auto Driver: 58% AM, 54%PM
- Transit: 30% AM, 25% PM
- Pedestrian: 4% AM, 7% PM
- Auto Passenger: 6% AM, 15% PM
- Cyclist: 2% AM, 0% PM

For Multi-Unit (Low-Rise)

- Auto Driver: 49% AM, 49%PM
- Transit: 26% AM, 24% PM
- Pedestrian: 9% AM, 12% PM
- Auto Passenger: 13% AM, 13% PM
- Cyclist: 2% AM, 2% PM

However, the subject site falls within 600m walking distance to the Barrhaven Center and Marketplace Transit Stations (Southwest Transitway). The recommended modal shares for sites falling within 600m walking distance to any transit station are identified in Section 9.5 of the *City of Ottawa's Transit-Oriented Development (TOD) Plans*. The recommended modal shares for such developments are given as follows:

For TOD Developments

- Auto Driver: 15%
- Transit: 65%
- Auto Passenger: 5%
- Active Modes (Cyclist + Pedestrian): 15%

For the purposes of this report, a blend of the of the *TRANS Manual* modal shares and the TOD modal shares were used and are as follows:

- Auto Driver: 40%
- Transit: 35%
- Pedestrian: 15%
- Auto Passenger: 5%
- Cyclist: 5%

Peak period person trips across all the modal splits are summarized in **Table 5**.

Table 5: Peak Period Person Trips by Modal Shares

Modal Split	Modal Share	AM Peak Period (ppp[1])			PM Peak Period (ppp[1])		
		IN	OUT	TOT	IN	OUT	TOT
	Person Trips	*162*	*373*	*535*	*350*	*267*	*617*
Auto Driver	40%	65	149	214	140	107	247
Auto Passenger	5%	8	19	27	18	13	31
Transit	35%	57	130	187	122	94	216
Cyclist	5%	8	19	27	18	13	31
Pedestrian	15%	24	56	80	52	40	92

1. ppp =person trips per peak period

Table 4 of the *TRANS Manual* includes adjustment factors to convert the estimated peak period person trips to peak hour person trips. A breakdown of the estimated peak hour person trips with site development is shown in **Table 6**.

Table 6: Peak Hour Person Trips Generated

Modal Split	Peak Hour Factor	AM Peak Hour (pph[1])			PM Peak Hour (pph[1])		
		IN	OUT	TOT	IN	OUT	TOT
Auto Driver	AM: 0.48 PM: 0.44	32	71	*103*	61	48	*109*
Auto Passenger	AM: 0.48 PM: 0.44	3	9	*12*	9	6	*15*
Transit	AM: 0.55 PM: 0.48	31	71	*102*	58	45	*103*
Cyclist	AM: 0.58 PM: 0.48	5	11	*16*	9	6	*15*
Pedestrian	AM: 0.58 PM: 0.52	14	32	*46*	27	21	*48*
	Total	85	194	*279*	164	126	*290*

The proposed development is anticipated to generate 279 AM peak hour person trips (including 103 vehicle trips) and 290 PM peak hour person trips (including 109 vehicle trips).

2.4.2 Trip Distribution

Based on the City's website, it is understood that the Greenbank Road and Chapman Mills Drive project will be constructed in phases, with the first phase commencing south of the Jock River in 2026. The construction timing for the phases north of the Jock River (including Chapman Mills Drive between Greenbank Road and Longfields Drive) is currently unknown. Based on the City's *CIP*, the future phases are anticipated to occur in the near term. For the purposes of this TIA, it is assumed that Chapman Mills Drive is complete prior to build-out of the proposed subdivision in 2030. However, it is expected that the proposed subdivision will commence prior to the Chapman Mills Drive construction. During the interim, the subject subdivision will initially be serviced through the extension of Riocan Drive to the north. This roadway connection provides access to Strandherd Drive, Greenbank Road, and Longfields Drive through the BTC, as well as Longfields Drive through Glenroy Gilbert Drive in Minto's BTC Stage 1. The majority of the medium density residential development blocks are not anticipated to proceed in advance of the future Chapman Mills Drive roadway. Subject to the City's timelines for the construction of Chapman Mills Drive and progression of construction within the subdivision, alternative temporary connections can be investigated during the detailed subdivision design.

The trip distribution pattern was determined using the travel patterns for South Nepean District identified in the TRANS 2011 OD-Survey. The trip distribution pattern was determined as follows:

- to/from north: 50%
- to/from south: 10%
- to/from east: 20%
- to/from west: 20%

This trip distribution patters in also consistent with the trip distribution pattern used in the TIA for BTC Stage 1 prepared by CGH.

2.4.3 Trip Assignment

The extension of Riocan Avenue through the subject site will be terminated at the southern property line as the development timelines of the city owned land to the south are currently unknown. Although there are other RIRO accesses proposed from Chapman Mills Drive Extension to the subject site, all the trips have been assigned through the signalized Chapman Mills Drive/Riocan Avenue intersection to ensure conservative analysis.

The trip assignment is shown in **Figure 4** and **Figure 5**.

Figure 4: Trip Assignment (Percentages)

Figure 5: Trip Assignment (Volumes)

2.5 Access Location

Accesses to the subdivision are proposed from Riocan Avenue Extension and a local roadway off Chapman Mills Drive. This local roadway is proposed between the central and eastern medium density blocks.

Section 9.4.2.1 of the 2017 Transportation Association of Canada's (TAC) Geometric Design Guide for Canadian Roads (GDGCR) identifies a typical minimum intersection spacing of 200m between adjacent signalized intersections along an arterial roadway. A minimum intersection spacing of 100m is also identified between a signalized intersection and an adjacent RIRO intersection. The distance between the future Chapman Mills Drive/Riocan Avenue intersection and the proposed new local street (RIRO only) located between the central and eastern medium density blocks is approximately 175m measured centerline to centerline, meeting the minimum 100m requirement. The distance between the Longfields Drive/Chapman Mills Drive intersection and the proposed new local street is approximately 215m measured centerline to centerline, meeting the minimum 100m requirement.

2.6 Exemptions Review

As per the city's 2023 revisions to the TIA Guidelines, **Table 7** summarizes the exemptions applicable to the subject site.

Table 7: TIA Exemptions

Module	Element	Exemption Criteria	Status
4.1 Development Design	*4.1.2* Circulation and Access	Required for site plan and zoning by-law applications.	Exempt
	4.1.3 New Street Networks	Required for plans of subdivision.	Not Exempt
4.2 Parking	*All elements*	Required for site plan and zoning by-law applications.	Exempt
4.3 Boundary Street Design	*All elements*	Required for all.	Not Exempt
4.5 Transportation Demand Management	*All Elements*	Required for all.	Not Exempt
4.6 Neighbourhood Traffic Calming	*All elements*	Required if all the below criteria are met: 1. Access is provided to a collector or local roadway. 2. Application is for zoning by-law amendment or draft plan of subdivision. 3. Proposed development generates more than 75 vehicle trips.	Exempt

Module	Element	Exemption Criteria	Status
		4. Site trip infiltration is expected, and site-generated traffic will increase peak hour volumes by 50%+ along the route between the site and an arterial road. 5. The subject street segment is adjacent to two or more of the following significant sensitive land uses: ○ School (within 250m walking distance) ○ Park ○ Retirement/older adult facility ○ Licensed childcare centre ○ Community centre ○ 50+% of adjacent properties along the route(s) are occupied by residential lands and at least ten dwellings are occupied	
4.7 Transit	*4.7.1* Transit Route Capacity	Required when the proposed development generates more than 75 transit trips.	Exempt*
	4.7.1 Transit Priority Requirements	Required when the proposed development generates more than 75 vehicle trips.	Not Exempt
4.8 Network Concept	*All elements*	Required when the proposed development generates >200 person trips during the peak hour in excess of the equivalent volume permitted by the established zoning.	Exempt
4.9 Intersection Design	*All elements*	Required when the proposed development generates more than 75 vehicle trips.	Not Exempt

*: Per discussions with city staff, it is understood that the transit route capacity is not required.

3.0 FORECASTING

3.1 Background Traffic

3.1.1 Other Area Developments

Background developments are described in detail in section 2.2.2 of this report. The traffic volumes generated by the following developments have been added to the network as background traffic:

- 3265 Jockvale Road (BTC Minto Stage 1 – Anthem Subdivision)
- 1034 McGarry Terrace
- 3194 Jockvale Road
- 105, 4050, and 4051 Sencha Terrace Phase 3

3.1.2 Background Growth Rate

Snapshots of the city's 2022 and 2046 long-range model for the study area were obtained from the city and are included in **Appendix E**. A review of the snapshots indicates that the annual traffic growth along Longfields Drive is approximately 0.8% and along Greenbank Road is 1.8%. For conservative analysis, a growth rate of 1.0% has been applied along Longfields Drive and 2% along Greenbank Road.

3.1.3 Traffic Redistribution Due to Chapman Mills Drive Extension

The travel patterns of the commuters within the study area are anticipated to alter as new routes become available once the Chapman Mills Drive is extended. This traffic redistribution was performed within the TIA for 3265 Jockvale Road BTC – Stage 1 which was prepared by CGH Transportation dated June 2023. The same traffic redistribution was also used within the TIA for 1034 McGarry Terrace which was also prepared by CGH Transportation dated August 2023. Therefore, for consistency, the same traffic redistribution was carried forward into this report. The traffic redistribution due to Chapman Mills Extension is shown in **Figure 6**.

Additionally, once the Chapman Mills Drive Extension is constructed, the existing Greenbank Road/Jockvale Road intersection will be decommissioned. Therefore, the traffic that was previously using the Jockvale Road (former alignment) has been reassigned through the future Chapman Mills Drive Extension.

3.1.4 Future Traffic Conditions

Background traffic volumes in 2030 and 2035 are shown in **Figure 7** and **Figure 8** respectively. Total traffic volumes in 2030 and 2035 are shown in **Figure 9** and **Figure 10** respectively.

3.2 Demand Rationalization

A review of the existing and background intersection operations has been conducted to determine if and when the traffic volumes exceed the capacity within the study area. Intersection parameters used in the analysis are consistent with the city's *2017 TIA Guidelines* (saturation flow rate: 1800 vphpl, existing conditions PHF: 0.9. future conditions PHF: 1.0).

Per the city's *2023 TMP Part 1*, the city-wide target vehicular level of service (Auto LOS) is an LOS E, which equates to a maximum v/c ratio of 1.0 for signalized intersections or a delay of 50 seconds at unsignalized intersections.

Figure 6: Traffic Redistribution due to Chapman Mills Drive Extension

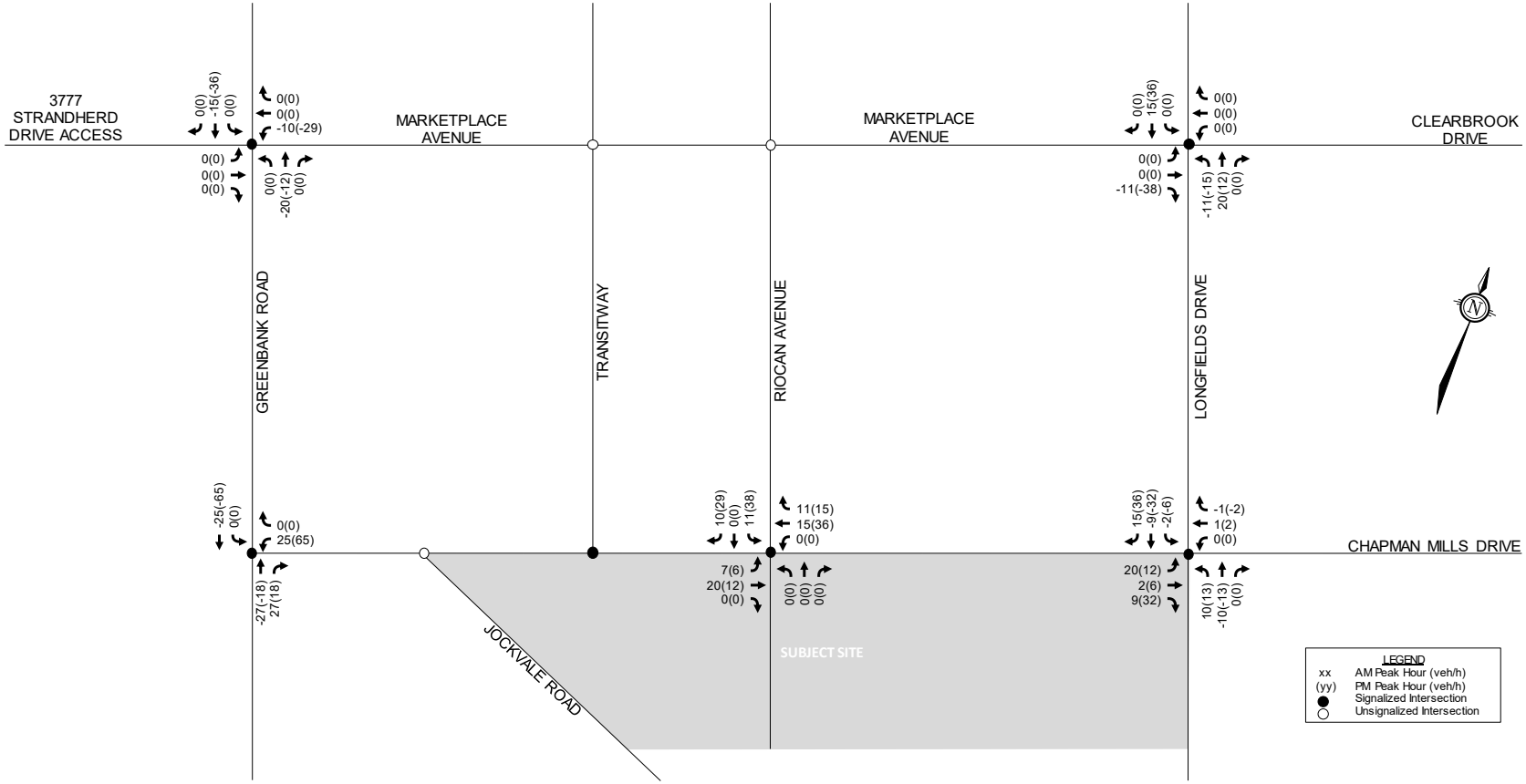


Figure 7: 2030 Background Traffic Volumes

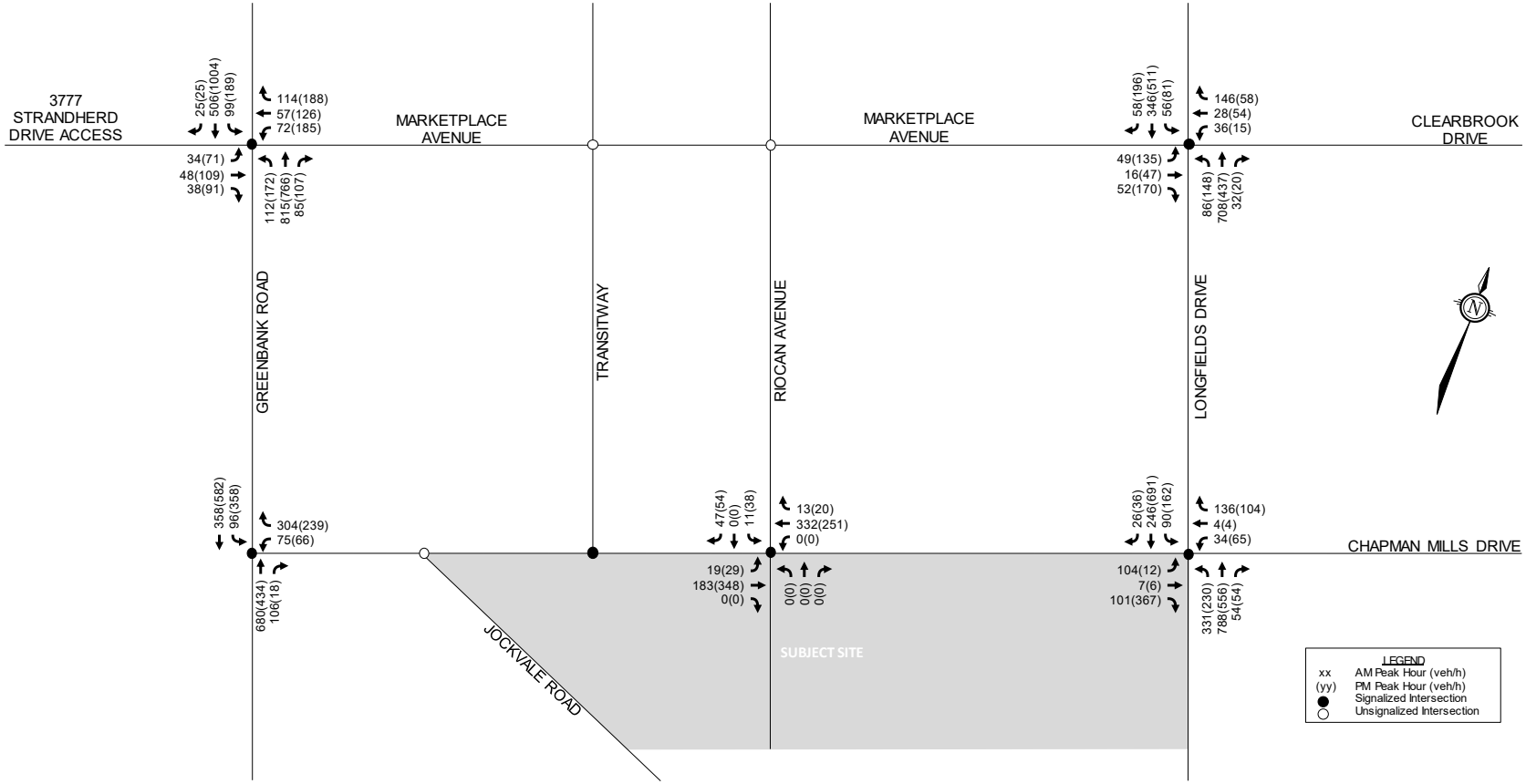


Figure 8: 2035 Background Traffic Volumes

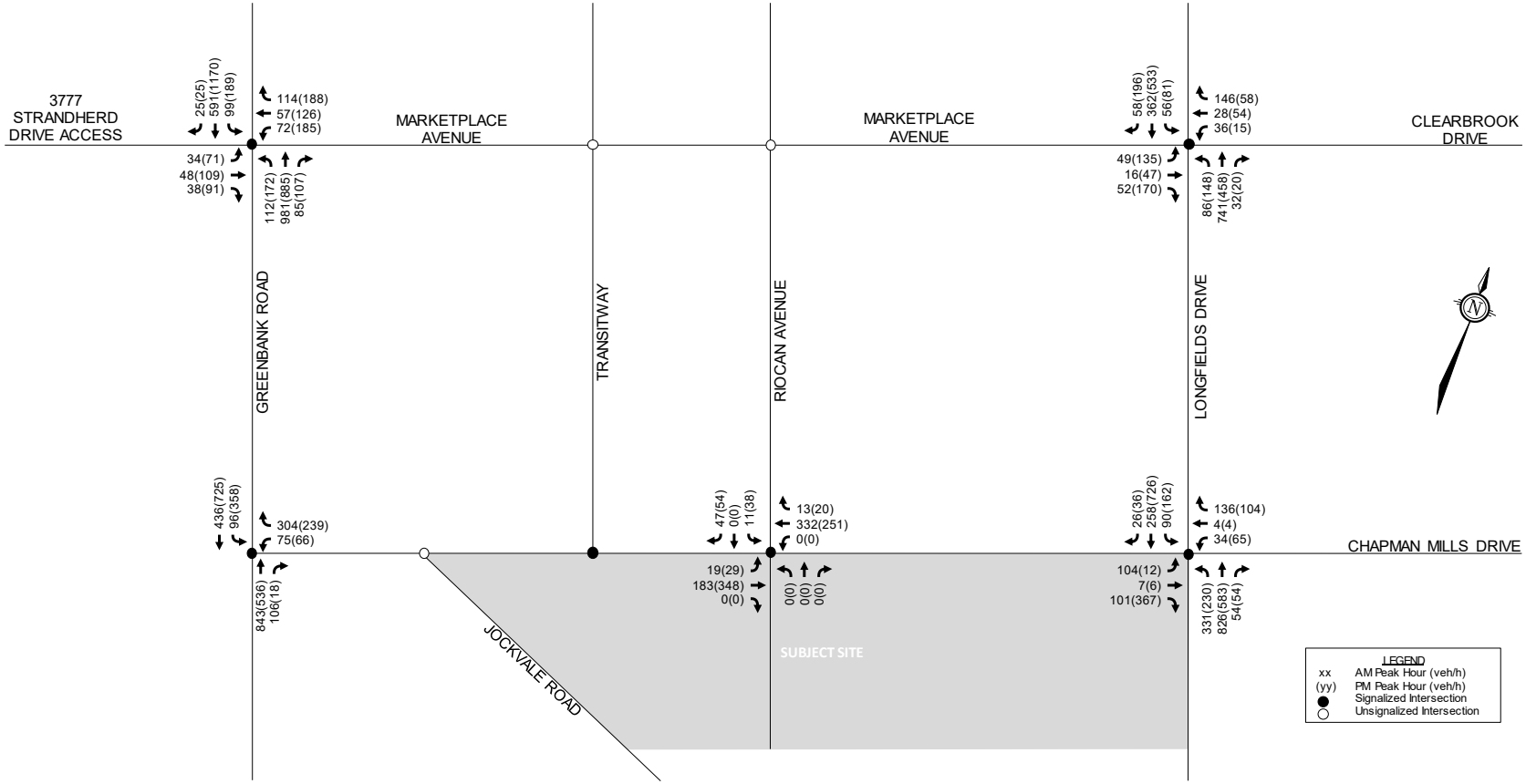


Figure 9: 2030 Total Traffic Volumes

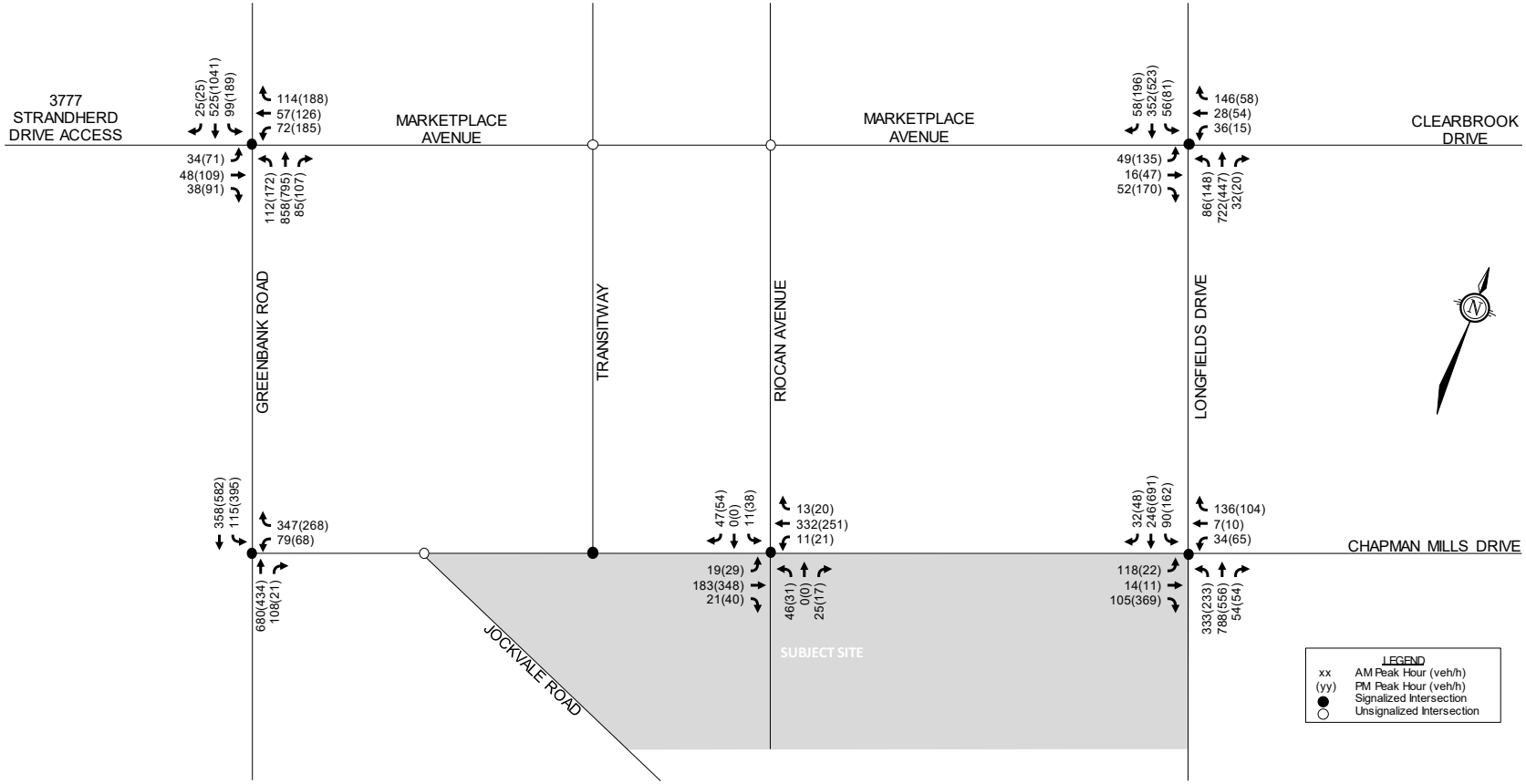
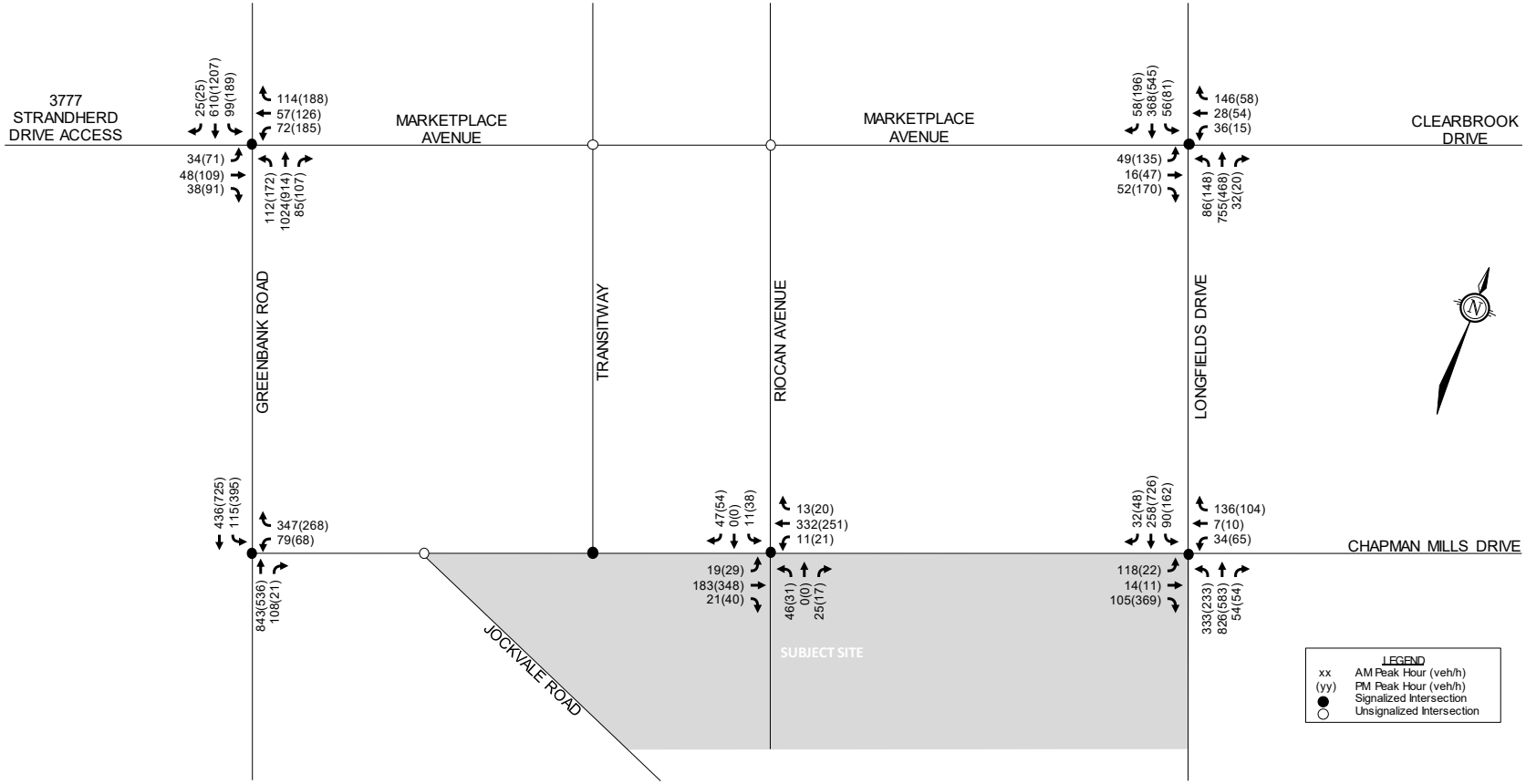


Figure 10: 2035 Total Traffic Volumes



3.2.1 Existing Traffic Operations

Intersection capacity analysis has been completed for the existing traffic volumes (see **Figure 3**) and is summarized in **Table 8**. Detailed Synchro 11 analysis reports for existing conditions are included in **Appendix I**.

Table 8: Existing Conditions Intersection Operations

Intersection	AM Peak Hour			PM Peak Hour		
	Max v/c	LOS	Mvmt	Max v/c	LOS	Mvmt
Longfields Drive/Chapman Mills Drive	0.41	A	WBR	0.43	A	WBL
Longfields Drive/Marketplace Avenue/Clearbrook Drive	0.55	A	WBT/R	0.57	A	EBT/R
Greenbank Road/Marketplace Avenue	0.61	B	NBL	0.91	E	WBL
Greenbank Road/Jockvale Road	0.77	C	WBR	0.52	A	WBR

Based on the foregoing, all the movements at the study area intersections are operating within acceptable LOS.

Greenbank Road/Marketplace Avenue

The 95th percentile queue length of the northbound left turn movement during the AM and PM peak hours is approximately 65m and 75m respectively, exceeding the available storage length of 55m. The 95th percentile queue length of the westbound left turn movement during the PM peak hour is approximately 80m exceeding the available storage length of 55m. Additionally, the 95th percentile queue length of the westbound through movement extends beyond the adjacent all-way stop-controlled intersection.

3.2.2 2030 Background Traffic Operations

Intersection capacity analysis has been completed for the 2030 background traffic volumes (see **Figure 7**) and is summarized in **Table 9**. Detailed Synchro 11 analysis reports for existing conditions are included in **Appendix J**.

The cycle length, splits, and offsets were optimized for the future traffic signals at Longfields Drive/Chapman Mills Drive, Greenbank Road/Chapman Mills Drive, and Chapman Mills Drive/Riocan Avenue intersections which will be formed when the Chapman Mills Drive and Riocan Avenue are extended, and Greenbank Road is realigned. The intersection lane configuration used in the analysis is based on the preliminary design included in **Appendix G**.

It maybe noted that due to the change in peak hour factor associated with future conditions, operating issues identified under existing conditions analysis at the Greenbank Road/Marketplace intersection may have improved slightly compared to the existing conditions.

Table 9: 2030 Background Traffic Operations

Intersection	AM Peak Hour			PM Peak Hour		
	Max v/c	LOS	Mvmt	Max v/c	LOS	Mvmt
Longfields Drive/Chapman Mills Drive	0.76	C	EBL	0.86	D	EBR
Longfields Drive/Marketplace Avenue/Clearbrook Drive	0.49	A	WBT/R	0.55	A	EBL
Greenbank Road/Marketplace Avenue	0.62	B	NBL	0.81	D	WBT/R
Greenbank Road/Chapman Mills Drive	0.59	A	SBL	0.76	C	SBL
Chapman Mills Drive/Riocan Avenue	0.76	C	WBT	0.63	B	EBT

Based on the foregoing, all the movements at the study area intersections are operating within acceptable LOS.

Longfields Drive/Chapman Mills Drive

The 95th percentile queue length of the eastbound left turn during the AM peak is approximately 45m exceeding the available storage length of 38m. The 95th percentile queue length of the northbound left turn during the AM and PM peak hours is approximately 100m and 85m respectively, exceeding the available storage length of 60m.

The 95th percentile queue length of the eastbound right turn during the PM peak is approximately 75m exceeding the available storage length of 45m.

Greenbank Road/Marketplace Avenue

The 95th percentile queue length of the northbound left turn movement during the AM and PM peak hours is approximately 60m and 65m respectively, exceeding the available storage length of 55m. The 95th percentile queue length of the southbound movement during the PM peak hour is approximately 160m consuming the whole of 160m spacing available to the upstream Greenbank Road/Strandherd Drive intersection.

Greenbank Road/Chapman Mills Drive

The 95th percentile queue length of the southbound left turn movement during the PM peak hour is approximately 175m exceeding the available storage length of 65m and extending through the future upstream intersection (see **Appendix G**) to the north. Increasing the cycle length to 150 seconds provide minor improvements to the queues by reducing the 95th percentile queue length to approximately 130m. Alternatively, dual southbound left turn lanes can be provided which alleviate the storage length issues by reducing the 95th percentile queue length to approximately 55m.

Under the existing conditions, 335 vehicles perform southbound left turn onto Jockvale Road from Greenbank Road during the PM peak hour. As discussed in section 3.1.3, the traffic using the Jockvale Road (former alignment) has been reassigned through the Chapman Mills Drive Extension. To accommodate the 95th queue length within the 65m storage length, approximately 170 vehicles that currently use Jockvale Road would need to reroute through Greenbank Road instead of through Chapman Mills Drive.

3.2.3 2035 Background Traffic Operations

Intersection capacity analysis has been completed for the 2035 background traffic volumes (see **Figure 8**) and is summarized in **Table 10**. Detailed Synchro 11 analysis reports for existing conditions are included in **Appendix K**.

Table 10: 2035 Background Traffic Operations

Intersection	AM Peak Hour			PM Peak Hour		
	Max v/c	LOS	Mvmt	Max v/c	LOS	Mvmt
Longfields Drive/Chapman Mills Drive	0.76	C	EBL	0.86	D	EBR
Longfields Drive/Marketplace Avenue/Clearbrook Drive	0.50	A	WBT	0.55	A	EBL
Greenbank Road/Marketplace Avenue	0.62	B	NBL	0.87	D	SBT
Greenbank Road/Chapman Mills Drive	0.59	A	SBL	0.76	C	SBL
Chapman Mills Drive/Riocan Avenue	0.76	C	WBT	0.63	B	EBT

Based on the foregoing, all the movements at the study area intersections are operating within acceptable LOS.
The 2035 background intersection operations are generally consistent with the 2030 background intersection operations.

Greenbank Road/Marketplace Avenue
The 95th percentile queue length of the southbound movement at the Greenbank Road/Marketplace Avenue intersection during the PM peak hour has increased to approximately 200m exceeding the available spacing of 160m to the upstream Greenbank Road/Strandherd Drive intersection.

Greenbank Road/Chapman Mills Drive
The 95th percentile queue length of the southbound left turn movement during the PM peak hour is approximately 150m exceeding the available storage length of 65m and extending through the future upstream intersection to the north. Increasing the cycle length to 150 seconds provide minor improvements to the queues by reducing the 95th percentile queue length to approximately 130m. Alternatively, dual southbound left turn lanes can be provided which alleviate the storage length issues by reducing the 95th percentile queue length to approximately 55m.

Under the existing conditions, 335 vehicles perform southbound left turn onto Jockvale Road from Greenbank Road during the PM peak hour. As discussed in section 3.1.3, the traffic using the Jockvale Road (former alignment) has been reassigned through the Chapman Mills Drive Extension. To accommodate the 95th queue length within the 65m storage length, approximately 145 vehicles that currently use Jockvale Road would need to reroute through Greenbank Road instead of through Chapman Mills Drive.

4.0 ANALYSIS

4.1 Development Design

This section provides a review of the development design in terms of the road network, roadway cross-sections, and pedestrian crossing locations. A review of the city's Transportation Demand Management (TDM) – Supportive Development Design and Infrastructure Checklist is exempt from Draft Plan of Subdivision applications.

4.1.1 Road Network

A review of the new road network with respect to the initiatives identified in the city's Building Better and Smarter Suburbs (BBSS) report was completed. The proposed road network is consistent with the following initiatives:

- Design the street network as an integral part and extension of the municipal grid, taking into consideration its future adjustments and evolution.
- Ensure that a range of appropriately sized roadways complements the character and functional needs of each community area.
- Avoid reverse frontage lots (rear yards abutting public streets) within a community.

Section 9.4.2.2 of the *2017 TAC GDGCR* identifies a typical minimum intersection spacing of 60m between adjacent intersections along a collector roadway. The distance between the Chapman Mills Drive/Riocan Avenue intersection and the Riocan Avenue/North Site Access is approximately 95m measured centerline to centerline. The distance between Riocan Avenue/North Site Access and Riocan Avenue/South Site Access is approximately 75m measured centerline to centerline. Therefore, the minimum 60m spacing requirement is met.

Section 9.4.2.3 of the *2017 TAC GDGCR* identifies a minimum spacing of 60m between two adjacent four-legged intersections along a local road. In the case of three-legged intersections, a minimum spacing of 40m is identified. This minimum spacing requirement is met for all the intersections formed by the new local roadways within the subdivision.

Section 2.5.3 and Section 9.9.2 of the *2017 TAC GDGCR* identify minimum required Stopping Sight Distance (SSD) and Intersection Sight Distance (ISD) respectively. A design speed of 60kmph have been assumed along Chapman Mills Drive and 50kmph along Riocan Avenue. The following minimum SSDs and ISDs have been identified at the proposed site access:

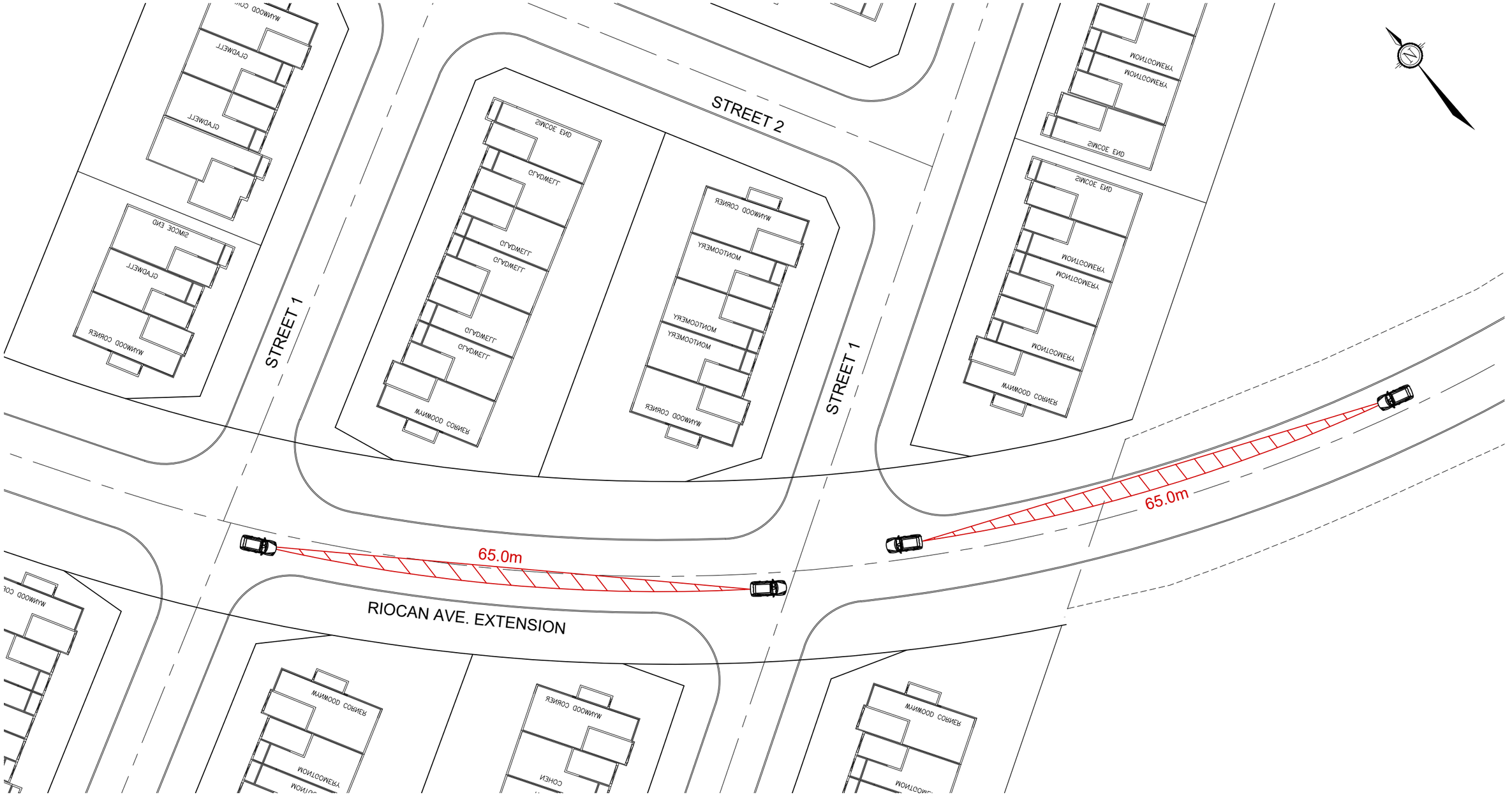
<u>Riocan Avenue/Site Accesses</u>

- SSD: 65m
- ISD: 95m looking left to turn right
  105m looking right to turn left

<u>Chapman Mills Drive/Site Accesses</u>

- SSD: 85m
- ISD: 110m looking left to turn right
  No Left Turns (RIRO Accesses)

Based on the preliminary design of Chapman Mills Drive Extension which is shown in **Appendix G**, no vertical or horizontal curves have been identified. On the other hand, the proposed alignment of Riocan Avenue has a horizontal curvature. The ISD and the SSD along the proposed accesses on Riocan Avenue are shown in **Figure 11** to **Figure 16**. The minimum SSD and ISD requirements are met at both the proposed accesses.



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3265 JOCKVALE ROAD

STOPPING SIGHT DISTANCE

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DATE SEP 2026 | JOB 125109 | FIGURE FIGURE 11

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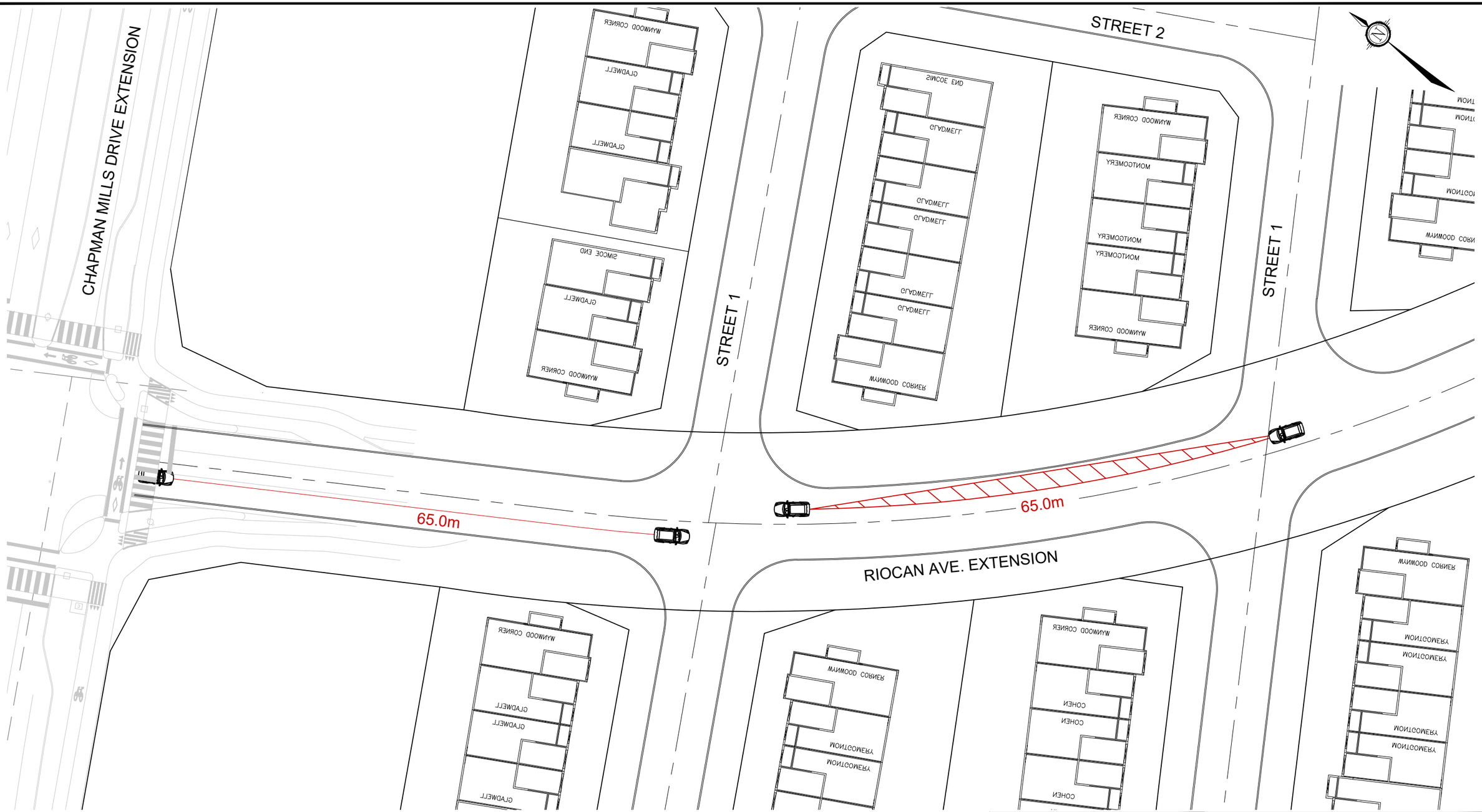

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3265 JOCKVALE ROAD

STOPPING SIGHT DISTANCE

SCALE 1 : 500 (0, 5m, 10m, 20m)

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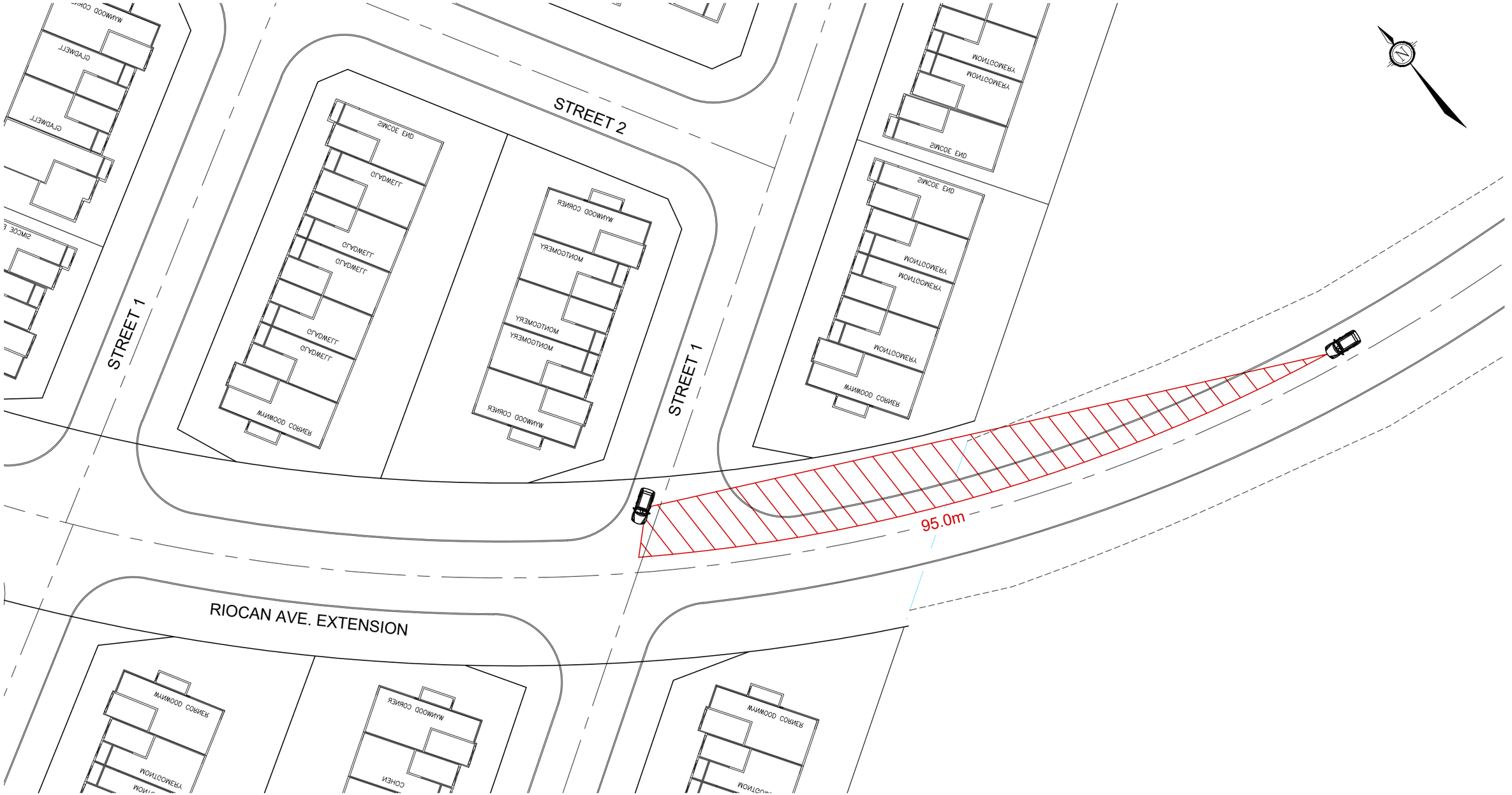

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3265 JOCKVALE ROAD

INTERSECTION SIGHT DISTANCE

SCALE 1 : 500 (0, 5m, 10m, 20m)

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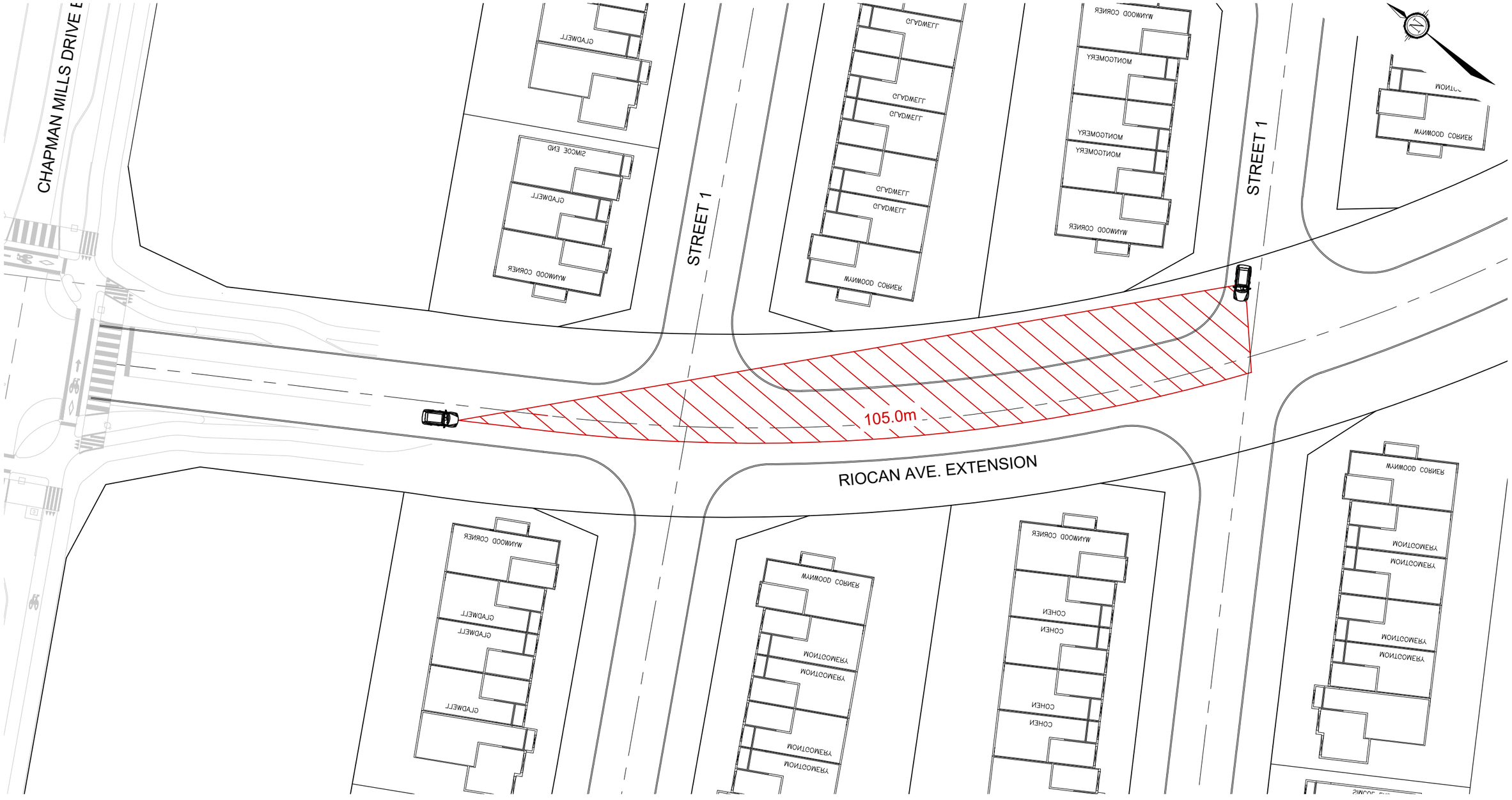

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3265 JOCKVALE ROAD

INTERSECTION SIGHT DISTANCE

SCALE 1 : 500 (0, 5m, 10m, 20m)

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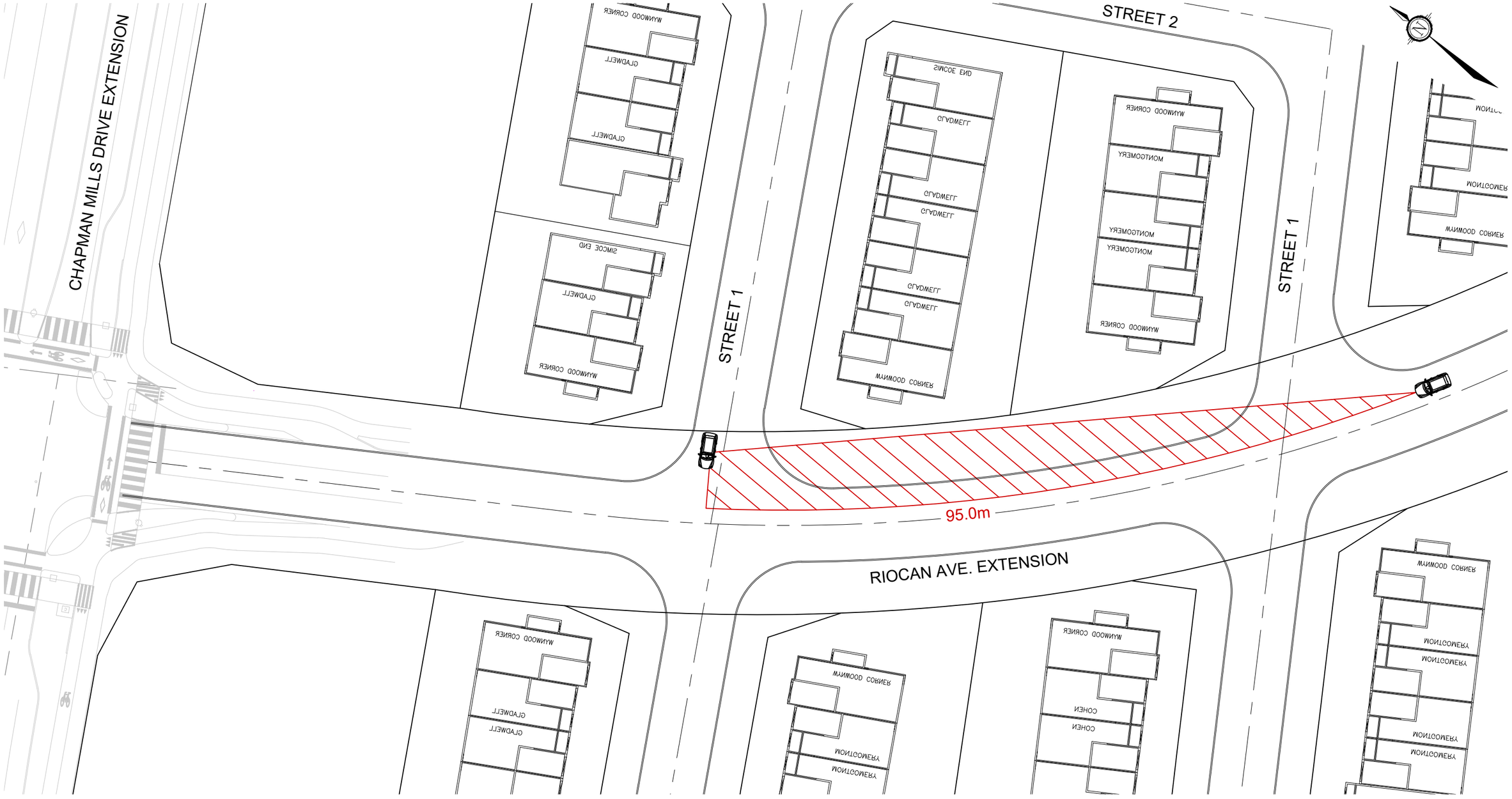

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3265 JOCKVALE ROAD

INTERSECTION SIGHT DISTANCE

SCALE 1 : 500 (0, 5m, 10m, 20m)

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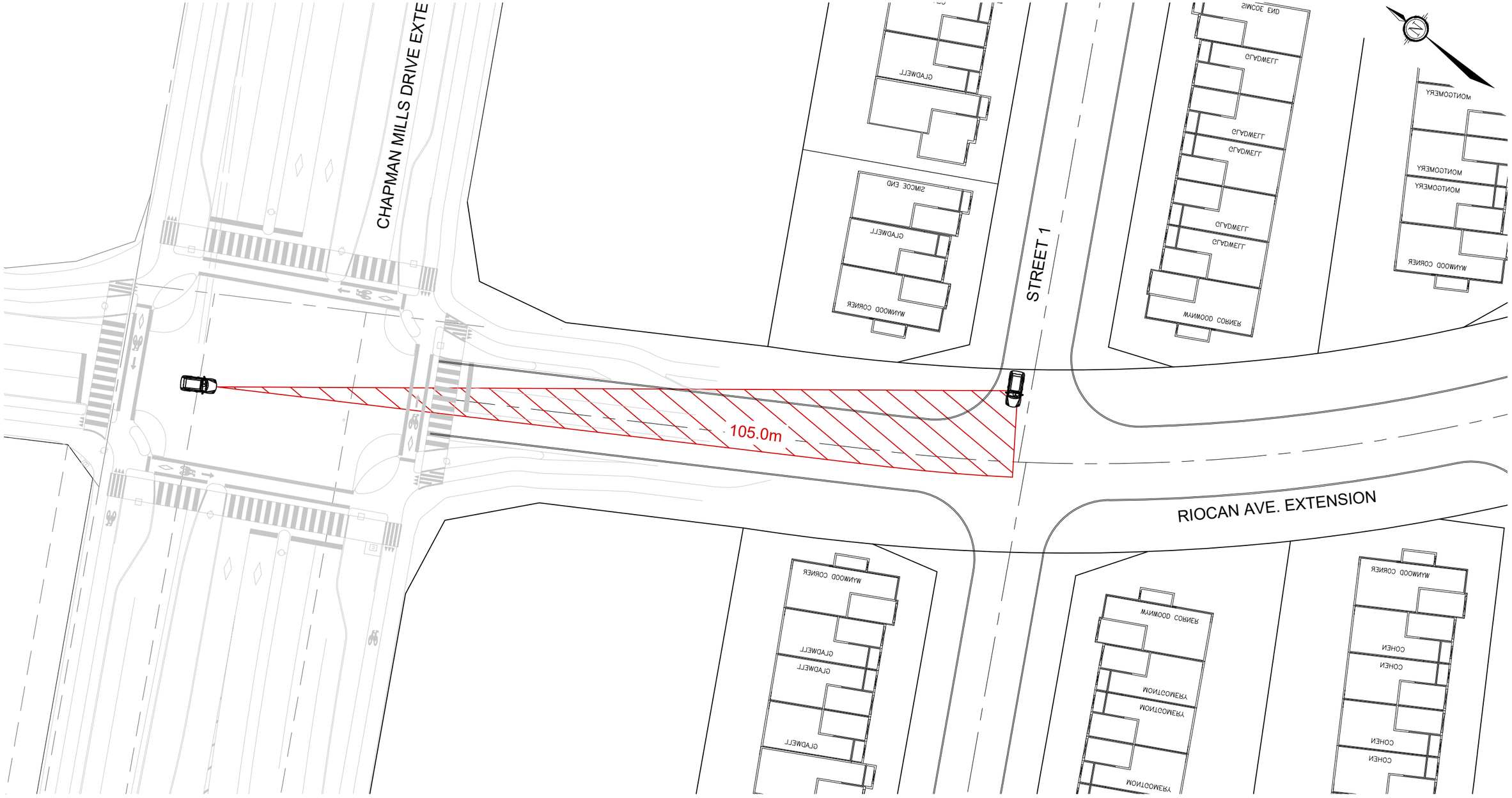

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3265 JOCKVALE ROAD

INTERSECTION SIGHT DISTANCE

SCALE 1 : 500 (0, 5m, 10m, 20m)

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4.1.2 Roadway Cross-sections

The Riocan Avenue extension will be designed with a 24 m ROW which is wider than the approved 22 m ROW design of Riocan Avenue north of Future Chapman Mills Drive. The proposed 24 m cross-section will include 1.80 wide sidewalk and 1.70 m wide cycle track on both sides of the 8.5m roadway platform. The width of the proposed inner boulevard and outer boulevard is 3.95 m and 0.3m respectively on both sides of the roadway.

All the local roadways within the subdivision will be designed per the city's standard 18m/14.75m ROW cross-section. They will include a 1.8m sidewalk on one side of the roadway.

All proposed cross-sections are included in **Appendix L**.

4.1.3 Pedestrian and Cycling Infrastructure

The proposed sidewalk network is summarized below:

- on both sides of Riocan Avenue Extension.
- on one side of the proposed local roadways within the subdivision.

Cycle tracks will be provided on both sides of Riocan Avenue Extension.

The concept plan included in **Appendix A** shows the locations of the sidewalks.

4.2 Boundary Streets

This section provides a review of the boundary street Longfields Drive using the city's complete street principles. MMLOS along the Chapman Mills Drive extension have not been evaluated as it is being designed as a complete street by the city. The *2025 Multi-Modal Level of Service (MMLOS) Guidelines* were used to evaluate the LOS for each alternative mode of transportation on the boundary street. The subject site is located within the Suburban (Southwest) Transect and within 600m of a rapid transit station.

A detailed segment MMLOS analysis was performed using the city's MMLOS spreadsheet tool and is included in **Appendix M**. A summary of the segment MMLOS analysis is provided in **Table 11**.

Table 11: Segment MMLOS Summary

Segment	PLOS		BLOS		TLOS		PRLOS
	Actual	Target	Actual	Target	Actual	Target	Actual
Longfields Drive b/w Chapman Mills Drive and Paul Métivier Drive	**B (C)**	A	**C (C)**	B	C	D	C

Note: Overall (Critical)

Based on **Table 11**, the target PLOS and BLOS are not met along Longfields Drive.

To meet the target PLOS A, a reduced frequency of controlled pedestrian crossing facilities is required along the segment.

To meet the target BLOS B, a buffer between the vehicle travel lane and the on-road bike lane or a higher order facility is required.

These above-mentioned measures are identified for city's consideration as funding becomes available.

4.3 Transportation Demand Management

As the assumed modal shares for the development are higher than the modal shares outlined for a development in a TOD zone identified in the city's TOD guidelines and the subject site's proximity to the two OC Transpo transitways, the modal shares assumed are anticipated to be met.

The existing bus stops #3045A, #3045B, #1221, #1404, #1227, #3020, and #0310 are within a 400m radius from all the units within the proposed subdivision. As the existing bus stops meet the city's policies for the proximity of transit to residential units, an early transit service agreement is not proposed.

A review of the city's *TDM Measures Checklist* has been conducted. The following measures will be implemented for the proposed development:

- Maps showing walking paths in the area (i.e., to/from BTC) – will be provided in the sales center.
- Maps showing transit routes/stop locations – will be provided in the sales centre.
- Multi-modal travel option information package will be provided to the residents upon move-in.

A copy of the city's TDM checklist is included in **Appendix N**.

4.4 Transit Priority

As part of the city's Greenbank Realignment and Southwest Transitway project, Median BRT will be provided along Chapman Mills Drive Extension. For the transit movements that will occur through mixed traffic conditions, the impacts of the development traffic on the Transit Level of Service (TLOS) have been reviewed.

OC Transpo Route 88 (Frequent Route) performs the eastbound left turn and southbound right turn movements at the Longfields Drive/Marketplace Avenue intersection. OC Transpo Route 99 (Local Route) and 110 (Local Route) perform the eastbound right turn and northbound left turn movements at Longfields Drive/Marketplace Avenue/Clearbrook Drive intersection, as well as the southbound left turn and westbound right turn movements at the Longfields Drive/Chapman Mills Drive intersection. OC Transpo Route 99 (Local Route) also performs the northbound and southbound through movements at Greenbank Road/Marketplace Avenue intersection.

The delays for mixed traffic/transit prior to the buildout of the subject site are summarized in **Table 12**.

Table 12: Transit Delays – 2030 Background Traffic

Intersection	Transit Mvmt	AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS
Longfields Drive/Marketplace Avenue/Clearbrook Drive	NBL	7 sec.	A	10 sec.	A
	EBR	12 sec.	B	11 sec.	B
	EBL	32 sec.	C	37 sec.	D
	SBR	12 sec.	B	16 sec.	B
Greenbank Road/Marketplace Avenue	SBT	19 sec.	B	37 sec.	D
	NBT	15 sec.	B	27 sec.	C

The delays after the buildout of the subject site are summarized in **Table 13**.

Table 13: Transit Delays - 2030 Total Traffic

Intersection	Transit Mvmt	AM Peak Hour		PM Peak Hour	
		Delay	LOS	Delay	LOS
Longfields Drive/Marketplace Avenue/Clearbrook Drive	NBL	8 sec.	A	10 sec.	A
	EBR	12 sec.	B	11 sec.	B
	EBL	32 sec.	C	37 sec.	D
	SBR	12 sec.	B	16 sec.	B
Greenbank Road/Marketplace Avenue	SBT	19 sec.	B	38 sec.	D
	NBT	15 sec.	B	27 sec.	C

Based on the above, site generated traffic is expected to have a negligible impact on transit operations in the study area. The delays along transit movements are within acceptable TLOS based on the city's *2025 MMLOS Guidelines*. Therefore, no transit priority measures have been identified.

4.5 Intersection Design

4.5.1 Existing Intersection MMLOS Review

A review of the existing signalized study area intersections was conducted for existing conditions based on the city's complete street principles. The existing Longfields Drive/Chapman Mills intersection and, the future Greenbank Road/Chapman Mills Drive and Chapman Mills Drive/Riocan Avenue intersections have not ben assessed for MMLOS as they are currently being designed (by others) as part of the Greenbank Road Realignment project. The city's *2025 MMLOS Guidelines* were used to evaluate levels of service for each alternative mode of transportation at the intersections.

As mentioned in section 1.2, the subject site is designated as a Hub within Schedule B6 of the City's *OP*. The subject site is also within 600m of the Barrhaven Center Transit Station. The MMLOS at these intersections have been evaluated based on the targets for a 'Hub" or '600m of a rapid transit station' identified in Exhibit 2 of the *MMLOS Guidelines*. The targets are same for a 'Hub' and '600m of a rapid transit station'. A detailed MMLOS analysis is included in **Appendix M**. A summary of the intersection MMLOS results is provided in **Table 14**.

Table 14: Intersection MMLOS Summary

Intersection	PLOS		BLOS		TLOS	
	Actual	Target	Actual	Target	Actual	Target
Longfields Drive/Marketplace Avenue/Clearbrook Drive	**B (C)**	A	**D (F)**	B	B (B)	D
Greenbank Road/Marketplace Avenue	**C (C)**		**D (D)**	A	C (C)	

Note: AM Peak (PM Peak)

Longfields Drive/Marketplace Avenue/Clearbrook Drive
This intersection does not meet the target PLOS and BLOS.

None of the approaches meet the target PLOS A. There is limited opportunity to meet the target PLOS A without reducing the number of travel lanes crossed and would require protected intersection signalization measures (Leading Pedestrian Interval (LPI), No Right Turn on Red (NTOR), etc.) to reduce the right-turn and left-turn conflicts. The north and south approaches have a crossing distance of 5 vehicle travel lanes, and the east and west approaches have a crossing distance of 3 vehicle travel lanes.

None of the approaches meet the target BLOS B based on the right and left turn characteristics. Protected corners and crossrides would be required to meet the target BLOS B.

Greenbank Road/Marketplace Avenue
This intersection does not meet the target PLOS and BLOS.

None of the approaches meet the target PLOS A. There is limited opportunity to meet the target PLOS A without reducing the number of travel lanes crossed and would require protected intersection signalization measures (Leading Pedestrian Interval (LPI), No Right Turn on Red (NTOR), etc.) to reduce the right-turn and left-turn conflicts. The north, south, east, and west approaches have a crossing distance of 6, 5, 4, and 3 vehicles travel lanes respectively.

None of the approaches meet the target BLOS B based on the right and left turn characteristics. Protected corners and crossrides would be required to meet the target BLOS B.

4.5.2 2030 Total Intersection Operations

Intersection capacity analysis has been completed for the 2030 total traffic volumes (see **Figure 9**) and is summarized in **Table 15**. Detailed Synchro 11 analysis reports for existing conditions are included in **Appendix O**.

Table 15: 2030 Total Traffic Operations

Intersection	AM Peak Hour			PM Peak Hour		
	Max v/c	LOS	Mvmt	Max v/c	LOS	Mvmt
Longfields Drive/Chapman Mills Drive	0.86	D	EBL	0.86	D	EBR
Longfields Drive/Marketplace Avenue/Clearbrook Drive	0.50	A	WBT	0.55	A	EBL
Greenbank Road/Marketplace Avenue	0.62	B	NBL	0.81	D	WBT
Greenbank Road/Chapman Mills Drive	0.67	B	SBL	0.79	C	SBL
Chapman Mills Drive/Riocan Avenue	0.76	C	WBT	0.81	D	EBT

Based on the foregoing, all the movements at the study area intersections are operating within acceptable LOS.

The 2030 total intersection operations are generally consistent with the 2030 background intersection operations, with the following exception.

Greenbank Road/Chapman Mills Drive

The 95th percentile queue length of the southbound left turn movement during the PM peak hour is approximately 190m exceeding the available storage length of 65m and extending through the future upstream intersection to the north. Increasing the cycle length to 150 seconds provide minor improvements to the queues by reducing the 95th percentile queue length to approximately 145m. Alternatively, dual southbound left turn lanes can be provided which alleviate the storage length issues by reducing the 95th percentile queue length to approximately 70m.

Under the existing conditions, 335 vehicles perform southbound left turn onto Jockvale Road from Greenbank Road during the PM peak hour. As discussed in section 3.1.3, the traffic using the Jockvale Road (former alignment) has been reassigned through the Chapman Mills Drive Extension. To accommodate the 95th queue length within the 65m storage length, approximately 200 vehicles that currently use Jockvale Road would need to reroute through Greenbank Road instead of through Chapman Mills Drive.

4.5.3 2035 Total Intersection Operations

Intersection capacity analysis has been completed for the 2035 total traffic volumes (see **Figure 10**) and is summarized in **Table 16**. Detailed Synchro 11 analysis reports for existing conditions are included in **Appendix P**.

Table 16: 2035 Total Traffic Operations

Intersection	AM Peak Hour			PM Peak Hour		
	Max v/c	LOS	Mvmt	Max v/c	LOS	Mvmt
Longfields Drive/Chapman Mills Drive	0.86	C	EBL	0.86	D	EBR
Longfields Drive/Marketplace Avenue/Clearbrook Drive	0.51	A	WBT	0.55	A	EBL
Greenbank Road/Marketplace Avenue	0.62	B	NB	0.90	D	SBT
Greenbank Road/Chapman Mills Drive	0.67	B	SBL	0.79	C	SBL
Chapman Mills Drive/Riocan Avenue	0.76	C	WBT	0.81	D	EBT

Based on the foregoing, all the movements at the study area intersections are operating within acceptable LOS.

The 2035 total intersection operations are generally consistent with the 2035 background intersection operations, with the following exception.

Greenbank Road/Chapman Mills Drive

The 95th percentile queue length of the southbound left turn movement during the PM peak hour is approximately 165m exceeding the available storage length of 65m and extending through the future upstream intersection to the north. Increasing the cycle length to 150 seconds provide minor improvements to the queues by reducing the 95th percentile queue length to approximately 145m. Alternatively, dual southbound left turn lanes can be provided which alleviate the storage length issues by reducing the 95th percentile queue length to approximately 60m.

Under the existing conditions, 335 vehicles perform southbound left turn onto Jockvale Road from Greenbank Road during the PM peak hour. As discussed in section 3.1.3, the traffic using the Jockvale Road (former alignment) has been reassigned through the Chapman Mills Drive Extension. To accommodate the 95th queue length within the 65m storage length, approximately 175 vehicles that currently use Jockvale Road would need to reroute through Greenbank Road instead of through Chapman Mills Drive.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The conclusions and recommendations of this TIA can be summarized as follows:

Trip Generation

- The proposed development is anticipated to generate 279 AM peak hour person trips (including 103 vehicle trips) and 290 PM peak hour person trips (including 109 vehicle trips).

Access Location

- Accesses to the subdivision are proposed from Riocan Avenue Extension and a local roadway off Chapman Mills Drive. This local roadway is proposed between the central and eastern medium density blocks.

- Section 9.4.2.1 of the 2017 Transportation Association of Canada's (TAC) Geometric Design Guide for Canadian Roads (GDGCR) identifies a minimum intersection spacing of 100m between a signalized intersection and an adjacent RIRO intersection along an arterial roadway. The proposed local roadway (RIRO) between the central and eastern medium density blocks adheres to this minimum intersection spacing requirement.

Existing Traffic Operations

- Under existing traffic operations, all the movements at the study area intersections are operating with an acceptable LOS.

- At the Greenbank Road/Marketplace Avenue intersection, the 95th percentile queue lengths of the northbound left turn, westbound left turn exceed the available respective storage lengths. Additionally, the 95th percentile westbound queue length extends beyond the adjacent all-way stop-controlled intersection.

Background Traffic Operations

- Under 2030 background traffic operations, all the movements at the study area intersections are operating with an acceptable LOS.

- At the Longfields Drive/Chapman Mills Drive intersection, the 95th percentile queue lengths of the eastbound left turn, northbound left turn, and eastbound right turn exceed the respective available storage lengths.

- At the Greenbank Road/Marketplace intersection, the 95th percentile queue length of the northbound left turn exceeds the available storage length. For the southbound movement, the queue length takes up the entire available spacing to the upstream Greenbank Road/Strandherd Drive intersection.

- At the Greenbank Road/Chapman Mills Drive intersection, the 95th percentile queue length of the southbound left turn movement exceeds the available storage length and extends through the future upstream intersection to the north. Increasing the cycle length to 150 seconds provides minor improvements to the queue. Alternatively, dual southbound left turn lanes could be provided which alleviates the storage length issues. To accommodate the queue lengths within the provided storage length, approximately 170-215 southbound left turn vehicles would need to reroute through Greenbank Road instead of through Chapman Mills Drive.

Development Design

- A review of the new road network with respect to the initiatives identified in the city's Building Better and Smarter Suburbs (BBSS) report was completed. The proposed road network is consistent with the following initiatives:
    - Design the street network as an integral part and extension of the municipal grid, taking into consideration its future adjustments and evolution.
    - Ensure that a range of appropriately sized roadways complements the character and functional needs of each community area.
    - Avoid reverse frontage lots (rear yards abutting public streets) within a community.

- Section 9.4.2.2 of the *2017 TAC GDGCR* identifies a typical minimum intersection spacing of 60m between adjacent intersections along a collector roadway. The distance between the Chapman Mills Drive/Riocan Avenue intersection and the Riocan Avenue/North Site

Access is approximately 95m measured centerline to centerline. The distance between Riocan Avenue/North Site Access and Riocan Avenue/South Site Access is approximately 75m measured centerline to centerline. Therefore, the minimum 60m spacing requirement is met.

- Section 9.4.2.3 of the *2017 TAC GDGCR* identifies a minimum spacing of 60m between two adjacent four-legged intersections along a local road. In the case of three-legged intersections, a minimum spacing of 40m is identified. This minimum spacing requirement is met for all the intersections formed by the new local roadways within the subdivision.

- Section 2.5.3 and Section 9.9.2 of the *2017 TAC GDGCR* identify minimum required Stopping Sight Distance (SSD) and Intersection Sight Distance (ISD) respectively. These minimum required SSD and ISD are met at both the proposed access along Riocan Avenue.

- The Riocan Avenue extension will be designed with a 24 m ROW which is wider than the approved 22 m ROW design of Riocan Avenue north of Future Chapman Mills Drive. The proposed 24 m cross-section will include 1.80 wide sidewalk and 1.70 m wide cycle track on both sides of the 8.5m roadway platform. The width of the proposed inner boulevard and outer boulevard is 3.95 m and 0.3m respectively on both sides of the roadway.

- All the local roadways within the subdivision will be designed per the city's standard 18m/14.75m ROW cross-section. They will include a 1.8m sidewalk on one side of the roadway.

Boundary Streets

- Segment MMLOS have been reviewed for existing conditions along Longfields Drive only. It has not been evaluated along Chapman Mills Drive Extension as it is being designed as a complete street by the city.

- Longfields Drive does not meet the target PLOS and the BLOS. To meet the target PLOS A, a reduced frequency of controlled pedestrian crossing facilities is required along the segment. To meet the target BLOS B, a buffer between the vehicle travel lane and the on-road bike lane or a higher order facility is required. This is identified for city's consideration.

Transportation Demand Management

- As the assumed modal shares for the development are higher than the modal shares outlined for a development in a TOD zone identified in the city's TOD guidelines and the subject site's proximity to the two OC Transpo transitways, the modal shares assumed are anticipated to be met.

- The existing bus stops #3045A, #3045B, #1221, #1404, #1227, #3020, and #0310 are within a 400m radius from all the units within the proposed subdivision. As the existing bus stops meet the city's policies for the proximity of transit to residential units, an early transit service agreement is not proposed.

- The following TDM measures will be implemented for the proposed development:
    - Maps showing walking paths in the area (i.e., to/from BTC) – will be provided in the sales center.
    - Maps showing transit routes/stop locations – will be provided in the sales centre.

- Multi-modal travel option information package will be provided to the residents upon move-in.

Transit Priority

- As part of the city's Greenbank Realignment and Southwest Transitway project, Median BRT will be provided along Chapman Mills Drive Extension.

- The site generated traffic is expected to have a negligible impact on transit operations in the study area. The delays along transit movements are within acceptable TLOS based on the city's *2025 MMLOS Guidelines*. Therefore, no transit priority measures have been identified.

Existing Intersection MMLOS

- The existing Longfields Drive/Chapman Mills intersection and, the future Greenbank Road/Chapman Mills Drive and Chapman Mills Drive/Riocan Avenue intersections have not been assessed for MMLOS as they are currently being designed (by others) as part of the Greenbank Road Realignment project.

- The Longfields Drive/Marketplace Avenue/Clearbrook Drive intersection does not meet the target PLOS and BLOS.
  - None of the approaches meet the target PLOS A. There is limited opportunity to meet the target PLOS A without reducing the number of travel lanes crossed and would require protected intersection signalization measures (Leading Pedestrian Interval (LPI), No Right Turn on Red (NTOR), etc.) to reduce the right-turn and left-turn conflicts. The north and south approaches have a crossing distance of 5 vehicle travel lanes, and the east and west approaches have a crossing distance of 3 vehicle travel lanes.
  - None of the approaches meet the target BLOS B based on the right and left turn characteristics. Protected corners and crossrides would be required to meet the target BLOS B.

- The Greenbank Road/Marketplace Avenue intersection does not meet the target PLOS and BLOS.
  - None of the approaches meet the target BLOS A. There is limited opportunity to meet the target BLOS A without reducing the number of travel lanes crossed and would require protected intersection signalization measures (Leading Pedestrian Interval (LPI), No Right Turn on Red (NTOR), etc.) to reduce the right-turn and left-turn conflicts. The north, south, east, and west approaches have a crossing distance of 6, 5, 4, and 3 vehicles lanes respectively.
  - None of the approaches meet the target BLOS B based on the right and left turn characteristics. Protected corners and crossrides would be required to meet the target BLOS B.

Total Traffic Operations

- Under total traffic operations, all the movements at the study area intersections are operating with an acceptable LOS.

- The total intersection operations are generally consistent with the background intersection operations.

The proposed development is recommended from a transportation perspective.

NOVATECH

Prepared by:

Mohammed Talha, M. Eng.
Engineering Intern | Transportation

Reviewed by:

Brad Byvelds, P. Eng.
Senior Project Manager | Transportation Team Lead

Appendix A: Draft Plan of Subdivision

Future Development (Minto)

Future Barrhaven Civic Centre

av. Riocan Ave.

Anthem Phase 1 (Minto)

Future prom. Chapman Mills Dr.

prom. Chapman Mills Dr.

ch. Greenbank Rd.

PARK 0.6ha

STREET 1

STREET 2

STREET 3

STREET 4

prom. Longfields Dr.

Vacant Lands (Owned by Others)

Future Riocan Avenue Extension (By Others)

ch. Jockvale Rd.

Vacant Lands (Owned by Others)

prom. Paul Metivier Dr.

LEGEND

- Subject Site
- Residential: Medium Density
- Residential: Townhomes
- Residential: Back-to-Back
- Park Block
- Future City Greenspace
- Pathway Block
- Cycling Facility (By Others) [Barrhaven Downtown Secondary Plan 2022]
- Proposed Multi-Use Trail (By Others) [Barrhaven Downtown Secondary Plan 2022]
- Proposed Multi-Use Trail [Barrhaven Downtown Secondary Plan 2022]
- Proposed 1.8m Concrete Sidewalk
- Proposed 1.8m Concrete Sidewalk
- Existing Sidewalk
- Proposed 1.7m Cycle Track
- Transitway Station (Official Plan 2022)
- Transfer Station (Official Plan 2022)
- Transitway - At-Grade (Official Plan 2022)

minto Communities

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

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6

Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

BARRHAVEN TOWN CENTRE (STAGE 2)

CONCEPT PLAN

SCALE 1 : 2500 (0 25 50 75 100)

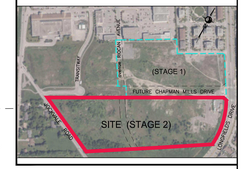
DATE AUG 2026 | JOB 125109 | FIGURE CP

M:\2025\125109\CAD\PLANNING\CONCEPT PLANS\125109-CP.DWG 8/6/2026 3:39 PM - WSLOSS

SHT11X17.DWG - 279mmX432mm

KEY PLAN

(NOT TO SCALE)



DRAFT PLAN OF SUBDIVISION OF

PART OF LOT 14
CONCESSION 2 (RIDEAU FRONT)

(GEOGRAPHIC TOWNSHIP OF NEPEAN)

CITY OF OTTAWA

Scale 1:500

10 0 10 20 30 METRES

METRIC CONVERSION

DISTANCES AND COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

ADDITIONAL INFORMATION REQUIRED UNDER SECTION 51 OF THE PLANNING ACT.

(A)-AS SHOWN ON DRAFT PLAN
(B)-AS SHOWN ON DRAFT PLAN
(C)-AS SHOWN ON DRAFT AND KEY PLANS
(D)- SEE PROPOSED LAND USE SCHEDULE (BELOW)
(E)-AS SHOWN ON DRAFT PLAN
(F)-AS SHOWN ON DRAFT PLAN
(G)-AS SHOWN ON DRAFT PLAN
(H)-CITY WATER AVAILABLE
(I)-SEE SOIL REPORT
(J)-SEE TOPOGRAPHICAL INFORMATION
(K)-ALL CITY SERVICES AVAILABLE
(L)-AS SHOWN ON DRAFT PLAN

SCHEDULE OF LAND USE

BLOCK	USE	UNITS	AREA (Ha/ac)
1, 2, 3	MEDIUM DENSITY		2.116/5.23
4 TO 35	EXECUTIVE TOWNS	157	3.333/8.24
36 TO 42	AVENUE TOWNS (B2B)	102	0.930/2.30
43	ACCESS WALKWAYS		0.016/0.04
44	PARK		0.604/1.49
45, 46, 47 & 48	STREET WIDENINGS		0.114/0.28
49, 50 & 51	RESERVES (0.30 m)		0.001/0.00
	STREETS		2.556/6.32
TOTAL		259 (TOWNS)	9.670/23.89

NOTE:

THE PLAN DATA IS COMPILED FROM OFFICE RECORDS OF STANTEC GEOMATICS LTD. AND HAS NOT BEEN VERIFIED BY FIELD MEASUREMENTS. ALL DISTANCES ARE APPROXIMATE, TO BE VERIFIED BY FINAL REGISTERED PLAN(S).

OWNER'S CERTIFICATE

I HEREBY AUTHORIZE STANTEC GEOMATICS LTD. TO SUBMIT THIS DRAFT PLAN OF SUBDIVISION ON MY BEHALF

DATE

I HAVE THE AUTHORITY TO BIND THE CORPORATION

SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT THE BOUNDARIES OF THE SUBJECT LANDS AND THEIR RELATIONSHIP TO ADJOINING LANDS HAVE BEEN ACCURATELY AND CORRECTLY SHOWN.

DATE

FRANCIS LAU
ONTARIO LAND SURVEYOR

Stantec

Stantec Geomatics Ltd.
CANADA LAND SURVEYORS
ONTARIO LAND SURVEYORS
1331 CLYDE AVENUE, SUITE 300
OTTAWA, ONTARIO, K2C 3G4
TEL: 613.722.4420
stantec.com

DRAWN: ME	CHECKED: -	DATE: February 19, 2026	PROJECT NO.: 161614938-131

Appendix B: TIA Screening Form

City of Ottawa 2017 TIA Guidelines TIA Screening

1. Description of Proposed Development

Municipal Address	3265 Jockvale Road
Description of Location	South of Future Chapman Mills Drive Extension, between Jockvale Road and Longfields Drive
Land Use Classification	Residential
Development Size (units)	485
Development Size square metre (m^2)	
Number of Accesses and Locations	3 (1 to Future Chapman Mills Drive Extension, 2 to Riocan Avenue Extension)
Phase of Development	One
Buildout Year	2030

If available, please attach a sketch of the development or site plan to this form.

2. Trip Generation Trigger

Considering the Development's Land Use type and Size (as filled out in the previous section), please refer to the Trip Generation Trigger checks below.

Table notes:

1. Table 2, Table 3 & Table 4 TRANS Trip Generation Manual
2. Institute of Transportation Engineers (ITE) Trip Generation Manual 11.1 Ed.

Land Use Type	Minimum Development Size
Single-family homes	**60 units**
Multi-Use Family (Low-Rise)[1]	**90 units**
Multi-Use Family (High-Rise)[1]	**150 units**
Office[2]	**1,400 m^2**
Industrial[2]	**7,000 m^2**
Fast-food restaurant or coffee shop[2]	**110 m^2**
Destination retail[2]	**1,800 m^2**
Gas station or convenience market[2]	**90 m^2**

If the proposed development size is equal to or greater than the sizes identified above, the Trip Generation Trigger is satisfied.

3. Location Triggers

	Yes	No
Does the development propose a new driveway to a boundary street that is designated as part of the Transit Priority Network, Rapid Transit network or Cross-Town Bikeways?	☑	☐
Is the development in a Hub, a Protected Major Transit Station Area (PMTSA), or a Design Priority Area (DPA)?[2]	☑	☐

If any of the above questions were answered with 'Yes,' the Location Trigger is satisfied.

4. Safety Triggers

	Yes	No
Are posted speed limits on a boundary street are 80 kilometers per hour (km/h) or greater?	☐	☑
Are there any horizontal/vertical curvatures on a boundary street limits sight lines at a proposed driveway?	☐	☑
Is the proposed driveway within the area of influence of an adjacent traffic signal or roundabout (i.e. within 300 metre [m] of intersection in rural conditions, or within 150 m of intersection in urban/ suburban conditions)?	☐	☑
Is the proposed driveway within auxiliary lanes of an intersection?	☐	☑
Does the proposed driveway make use of an existing median break that serves an existing site?	☐	☑

[2] Hubs are identified in Schedules B1 to B8 of the City of Ottawa Official Plan. PMTSAs are identified in Schedule C1 of the Official Plan. DPAs are identified in Schedule C7A and C7B of the Official. See Chapter 4 for a list of City of Ottawa Planning and Engineering documents that support the completion of TIA.

	Yes	No
Is there is a documented history of traffic operations or safety concerns on the boundary streets within 500 m of the development?	☐	☑
Does the development include a drive-thru facility?	☐	☑

If any of the above questions were answered with 'Yes,' the Safety Trigger is satisfied.

5. Summary

Results of Screening	Yes	No
Does the development satisfy the Trip Generation Trigger?	☑	☐
Does the development satisfy the Location Trigger?	☑	☐
Does the development satisfy the Safety Trigger?	☐	☑

If none of the triggers are satisfied, the TIA Study is complete. If one or more of the triggers is satisfied, the TIA Study must continue into the next stage (Screening and Scoping).

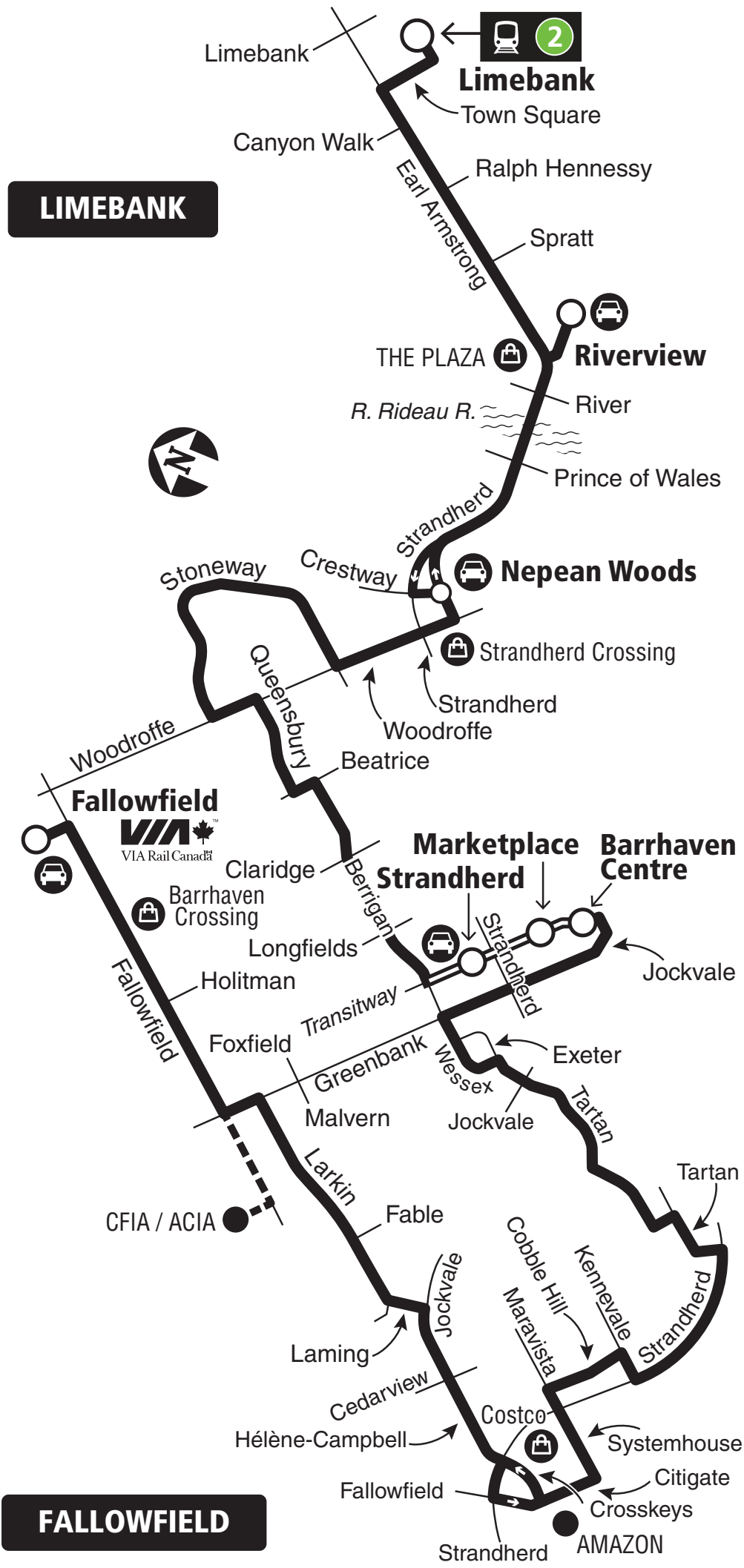
Appendix C: OC Transpo Maps

70

LIMEBANK
FALLOWFIELD

Local

7 days a week / 7 jours par semaine
All day service
Service toute la journée



05.2025

- Transitway & Station
- Some trips / Quelques trajets
- Park & Ride / Parc relais
- Shopping Centre / Centre commercial

2025.05

This route starts on April 27, 2025 when the New Ways to Bus network comes into effect.

Ce circuit sera mis en service le 27 avril 2025, lorsque le réseau L'autobus réinventé entrera en vigueur.

Customer Service / Service à la clientèle **613-560-5000**

Security / Sécurité **613-741-2478**

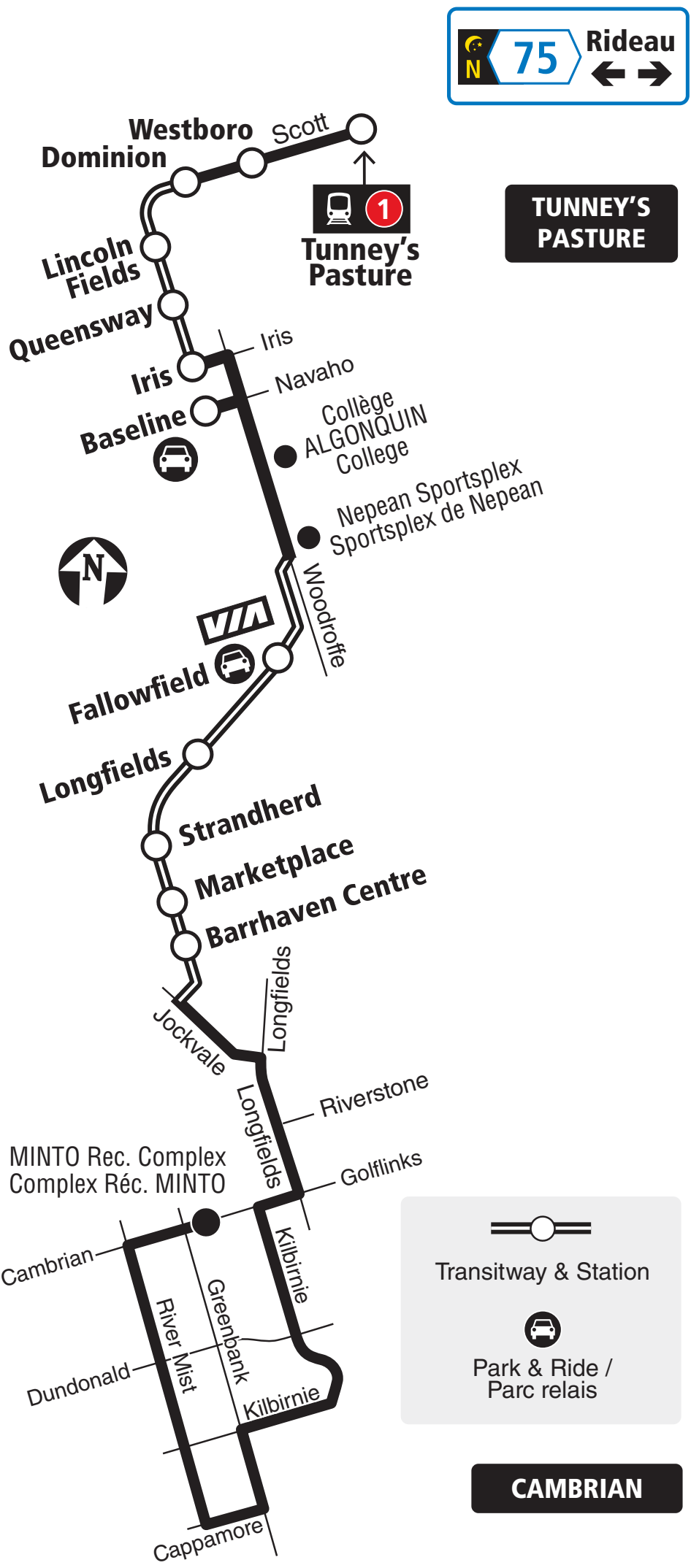
OC Transpo **octranspo.com**

75 CAMBRIAN / TUNNEY'S PASTURE

Fréquent

7 days a week / 7 jours par semaine

All day and overnight service
Service toute la journée et la nuit



04.2025

N 75 When O-Train Line 1 is not running overnight, Route 75 will be extended downtown to Rideau Station. / Lorsque la Ligne 1 de l'O-Train ne circule pas la nuit, le circuit 75 sera prolongée au centre-ville jusqu'à la station Rideau.

2025.04

This route starts on April 27, 2025 when the New Ways to Bus network comes into effect.

Ce circuit sera mis en service le 27 avril 2025, lorsque le réseau L'autobus réinventé entrera en vigueur.

Customer Service / Service à la clientèle **613-560-5000**

Security / Sécurité **613-741-2478**

OC Transpo **octranspo.com**

80

Fréquent

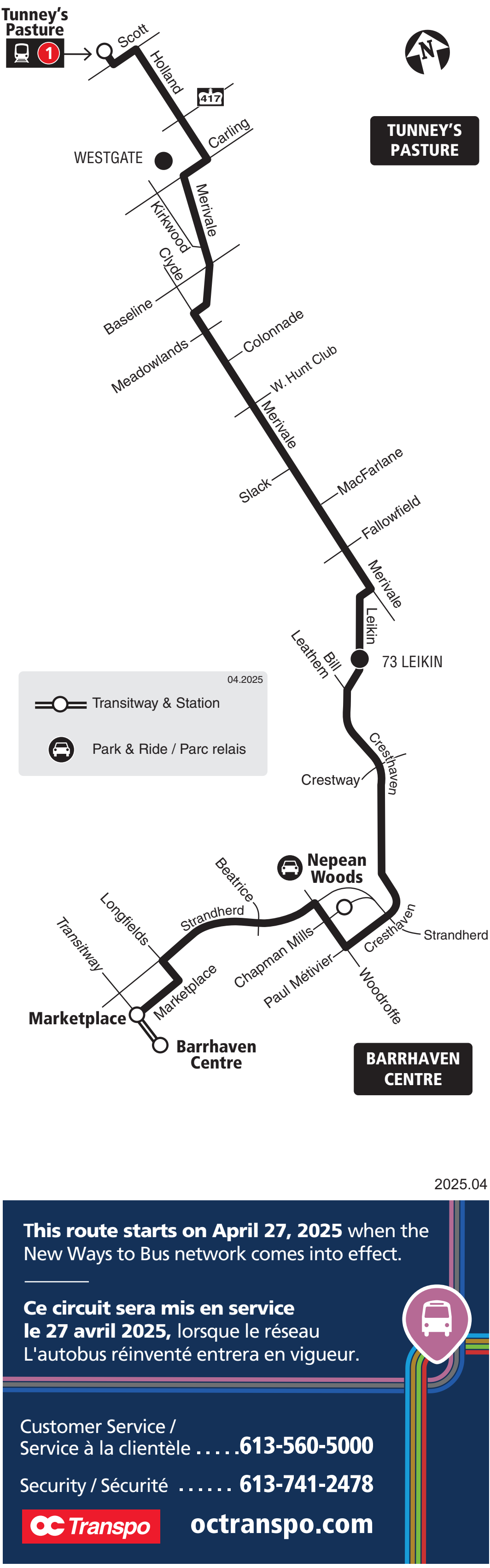
TUNNEY'S PASTURE

BARRHAVEN CENTRE

7 days a week / 7 jours par semaine

All day service

Service toute la journée



2025.04

This route starts on April 27, 2025 when the New Ways to Bus network comes into effect.

Ce circuit sera mis en service le 27 avril 2025, lorsque le réseau L'autobus réinventé entrera en vigueur.

Customer Service / Service à la clientèle **613-560-5000**

Security / Sécurité **613-741-2478**

OC Transpo **octranspo.com**

99 LIMEBANK

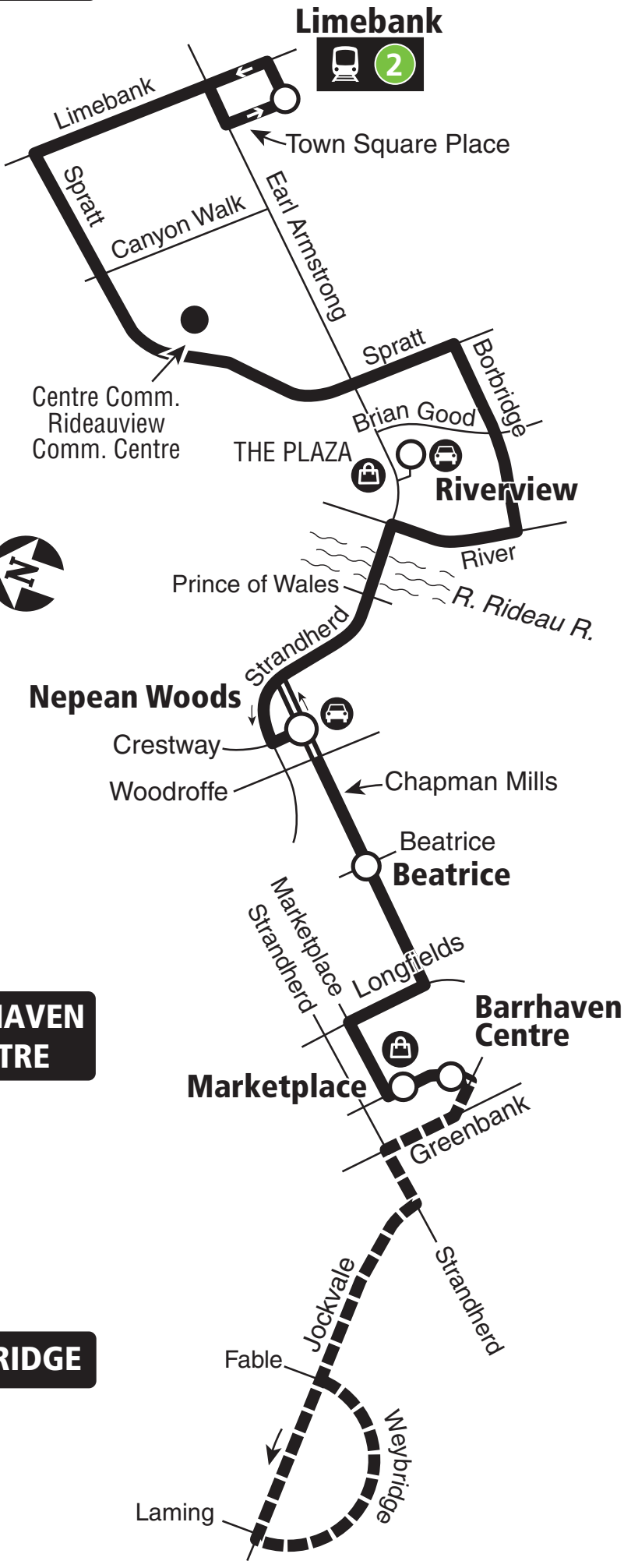
BARRHAVEN CENTRE WEYBRIDGE

Local

7 days a week / 7 jours par semaine

All day service
Service toute la journée

LIMEBANK



BARRHAVEN CENTRE

WEYBRIDGE

05.2025

- Transitway & Station
- Some trips / Quelque trajet
- Shopping Centre / Centre commercial
- Park & Ride / Parc relais

2025.05

This route starts on April 27, 2025 when the New Ways to Bus network comes into effect.

Ce circuit sera mis en service le 27 avril 2025, lorsque le réseau L'autobus réinventé entrera en vigueur.

Customer Service / Service à la clientèle **613-560-5000**

Security / Sécurité **613-741-2478**

OC Transpo **octranspo.com**

110 LIMEBANK

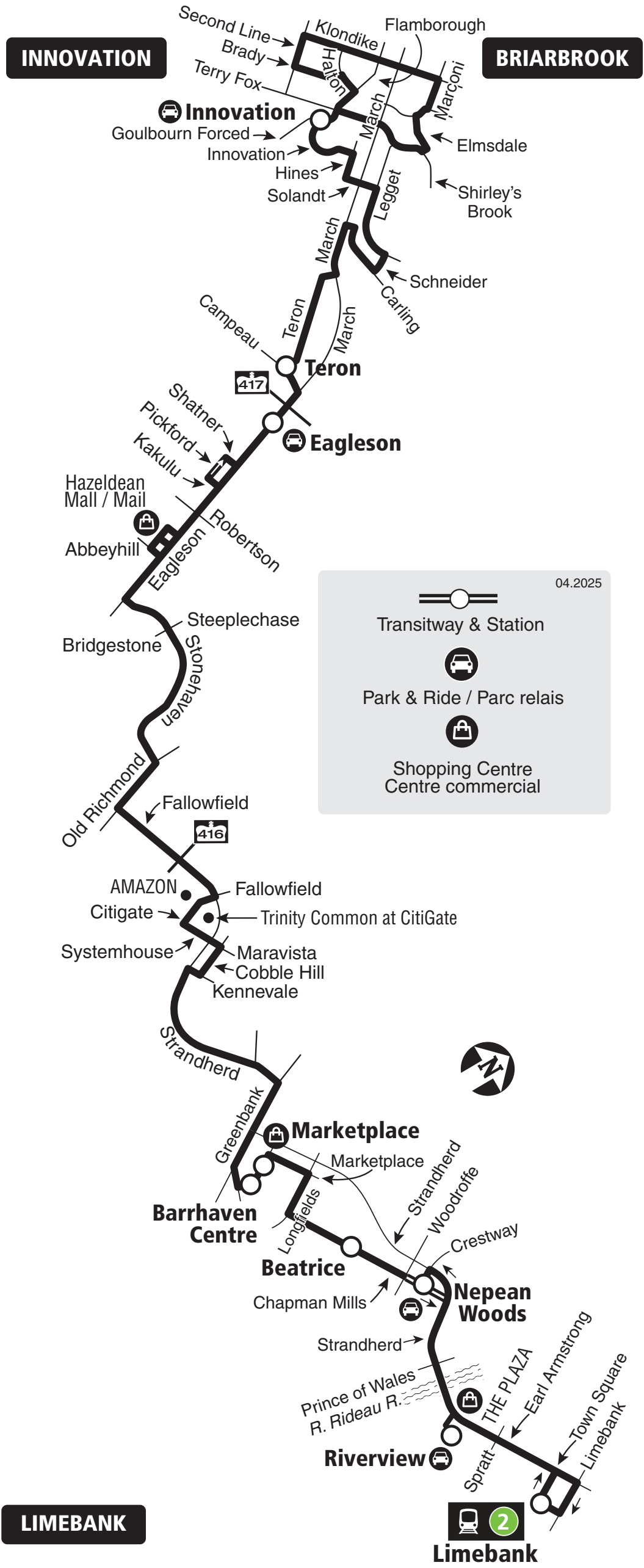
INNOVATION BRIARBROOK

Local

7 days a week / 7 jours par semaine

All day service

Service toute la journée



2025.05

This route starts on April 27, 2025 when the New Ways to Bus network comes into effect.

Ce circuit sera mis en service le 27 avril 2025, lorsque le réseau L'autobus réinventé entrera en vigueur.

Customer Service / Service à la clientèle **613-560-5000**

Security / Sécurité **613-741-2478**

OC Transpo **octranspo.com**

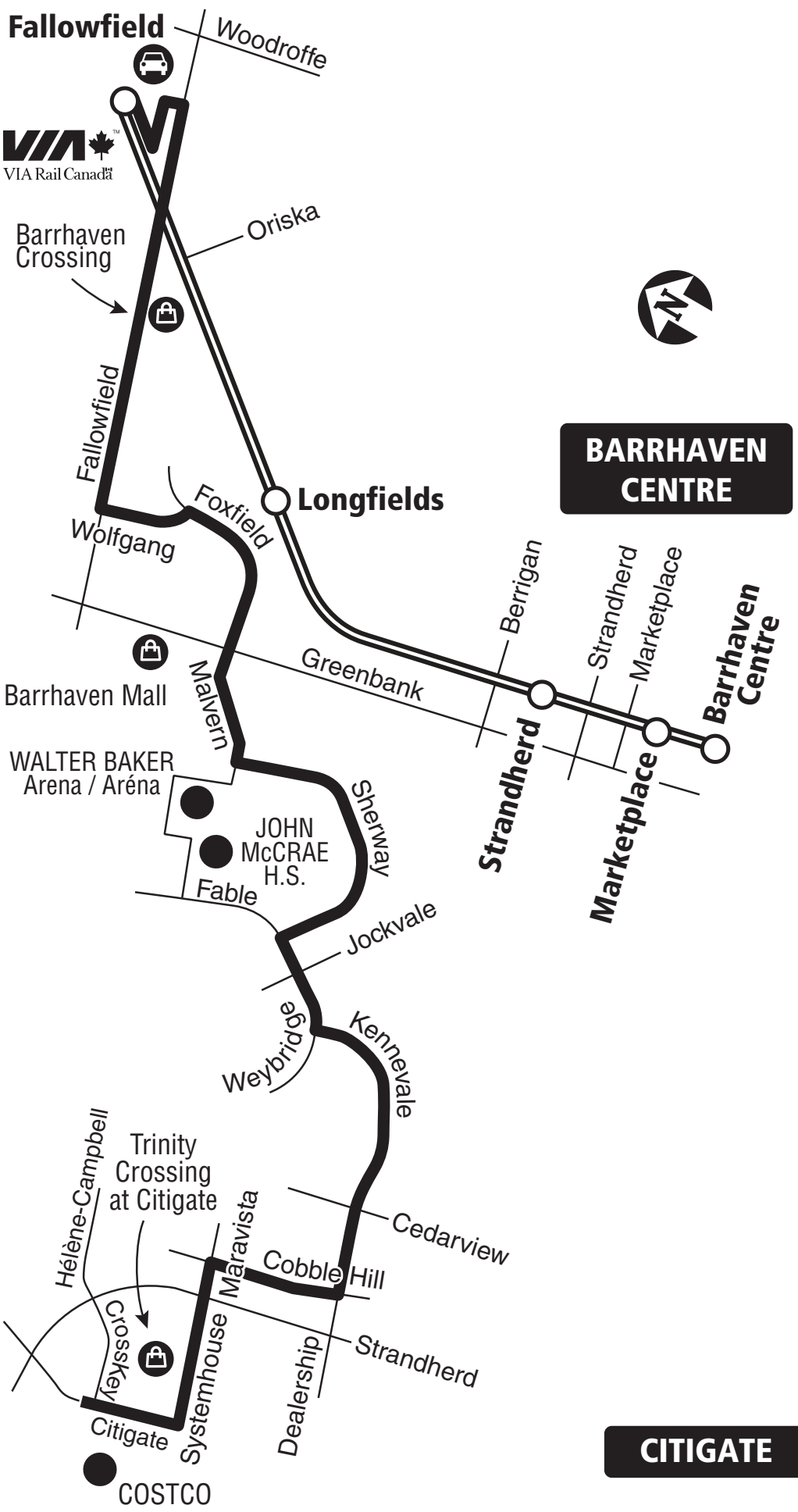
173

BARRHAVEN CENTRE
CITIGATE

Local

7 days a week / 7 jours par semaine

All day service
Service toute la journée



04.2025

- Station
- Park & Ride / Parc relais
- Shopping Centre / Centre commercial

2025.04

This route starts on April 27, 2025 when the New Ways to Bus network comes into effect.

Ce circuit sera mis en service le 27 avril 2025, lorsque le réseau L'autobus réinventé entrera en vigueur.

Customer Service / Service à la clientèle **613-560-5000**

Security / Sécurité **613-741-2478**

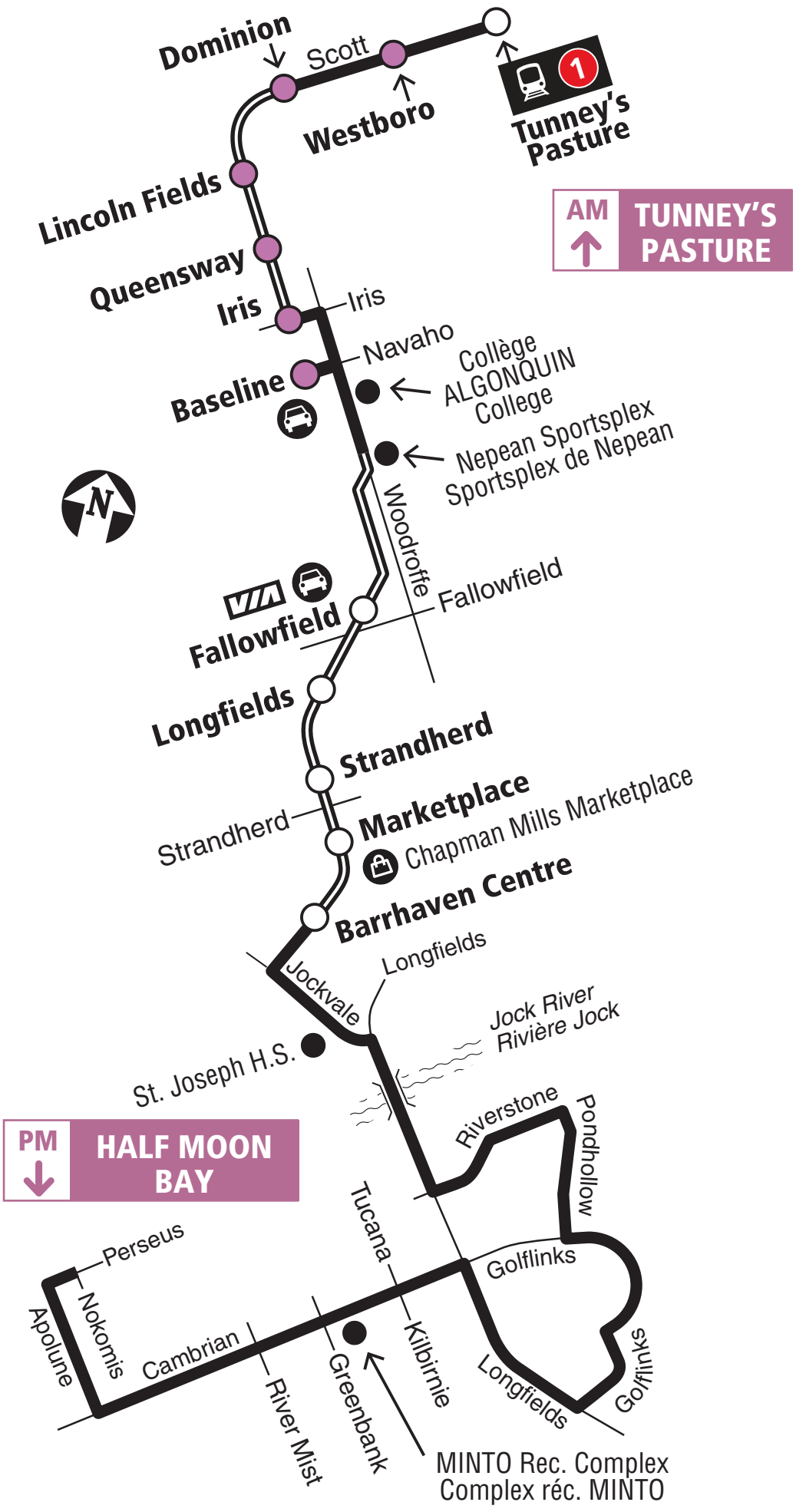
OC Transpo **octranspo.com**

275 Connexion

HALF MOON BAY
TUNNEY'S PASTURE

Monday to Friday / Lundi au vendredi

Peak periods only
Périodes de pointe seulement



04.2025

- Transitway & Station
- **Limited stops:** Off only in AM / No stop in PM
  Arrêts limités : débarquement en AM seulement / aucun arrêt en PM
- Park & Ride / Parc relais
- Shopping Centre / Centre commercial

2025.04

This route starts on April 27, 2025 when the New Ways to Bus network comes into effect.

Ce circuit sera mis en service le 27 avril 2025, lorsque le réseau L'autobus réinventé entrera en vigueur.

Customer Service / Service à la clientèle **613-560-5000**

Security / Sécurité **613-741-2478**

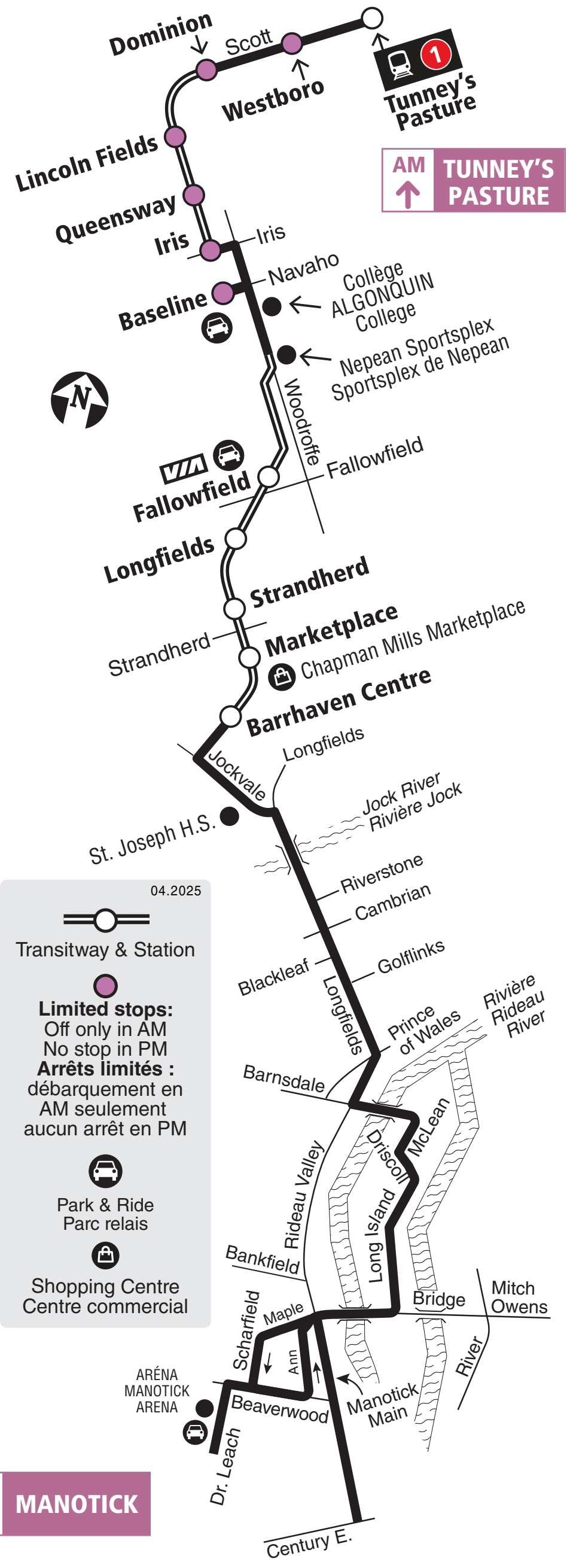
OC Transpo **octranspo.com**

279 Connexion

MANOTICK
TUNNEY'S PASTURE

Monday to Friday / Lundi au vendredi

Peak periods only
Périodes de pointe seulement



2025.04

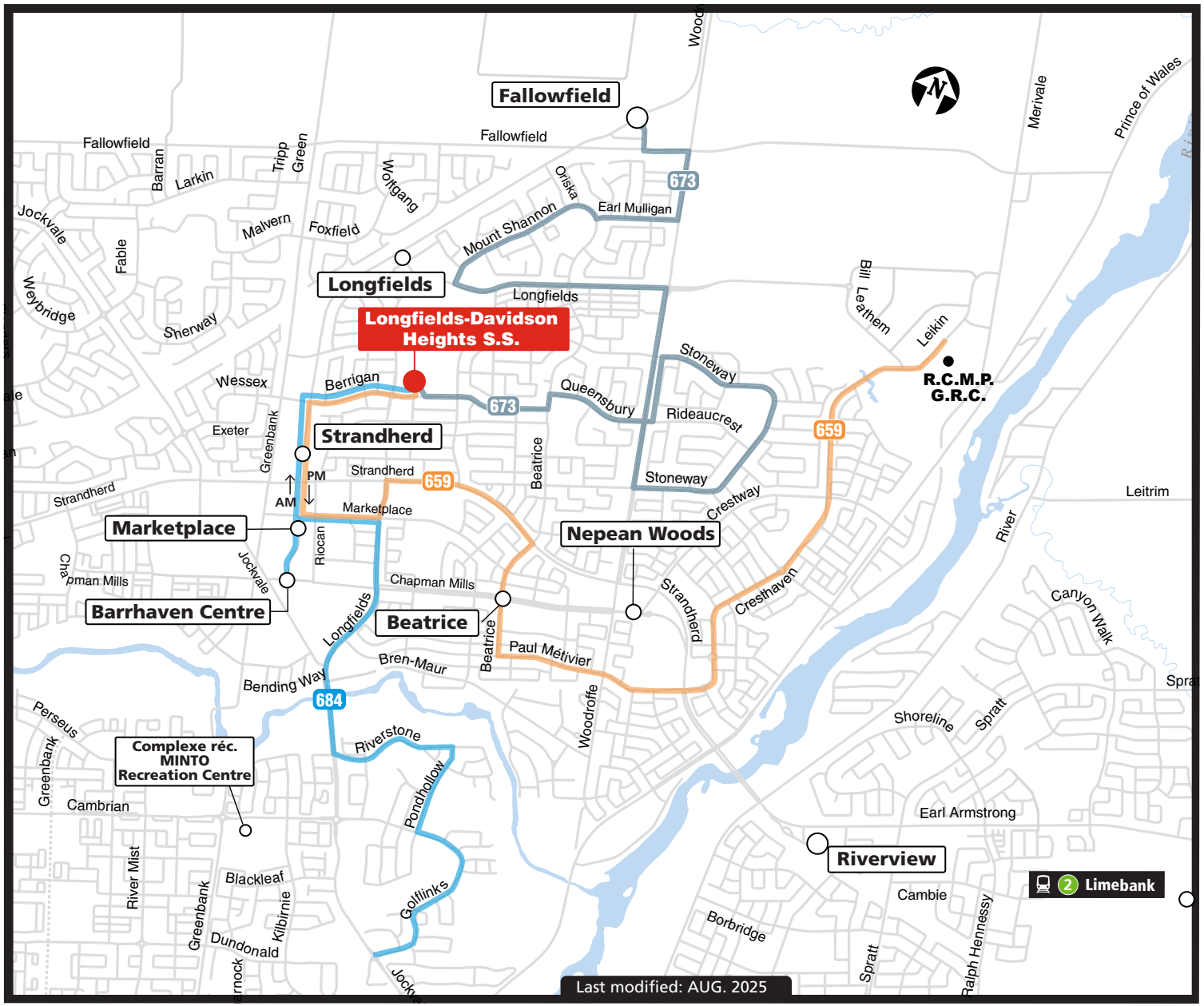
This route starts on April 27, 2025 when the New Ways to Bus network comes into effect.

Ce circuit sera mis en service le 27 avril 2025, lorsque le réseau L'autobus réinventé entrera en vigueur.

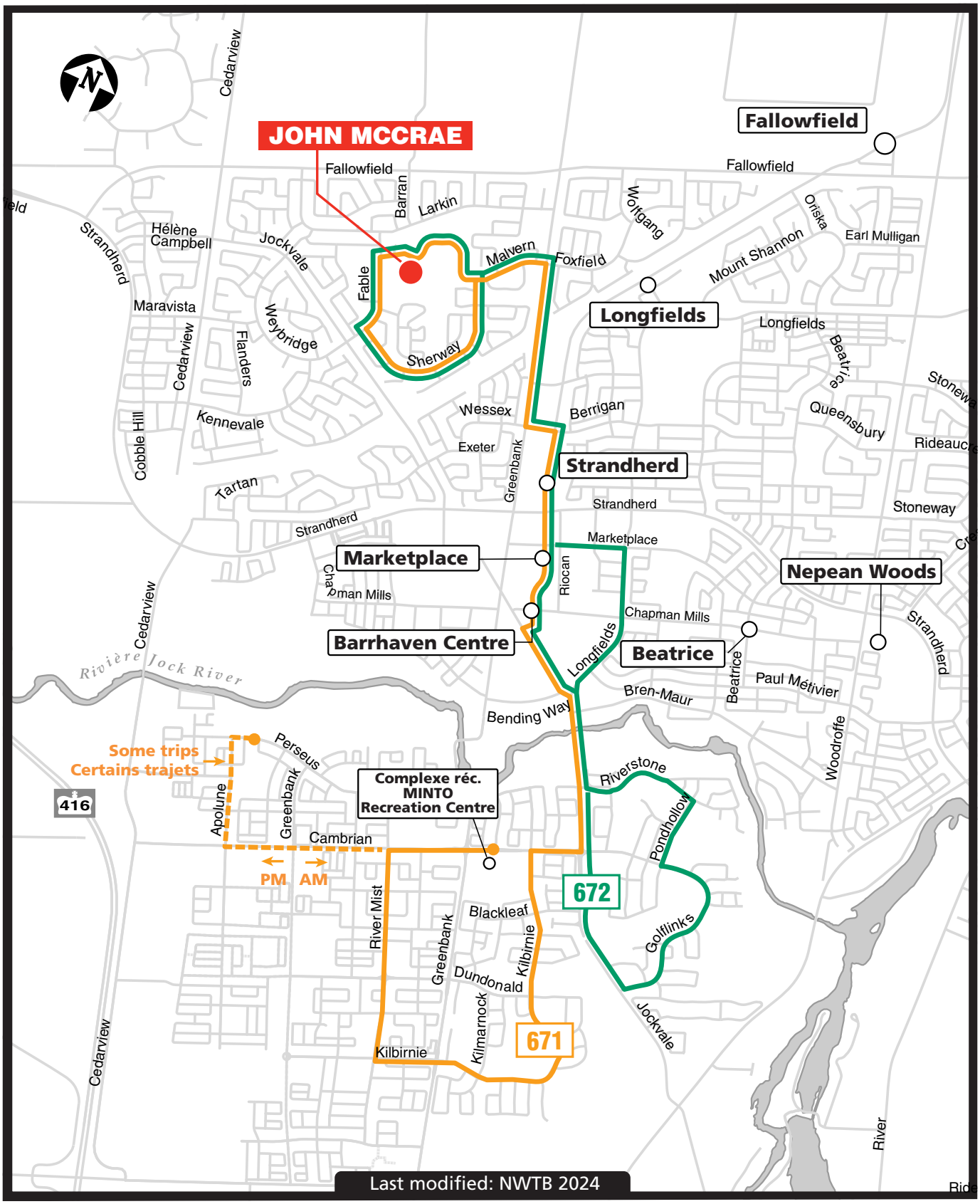
Customer Service / Service à la clientèle **613-560-5000**

Security / Sécurité **613-741-2478**

OC Transpo **octranspo.com**



Fallowfield
Longfields
Longfields-Davidson Heights S.S.
Strandherd
Marketplace
Barrhaven Centre
Beatrice
Nepean Woods
Complexe réc. MINTO Recreation Centre
Riverview
R.C.M.P. G.R.C.
Limebank
673
659
684
PM
AM
Fallowfield
Barran
Larkin
Tripp
Green
Wolfgang
Oriska
Earl Mulligan
Mount Shannon
Jockvale
Fable
Malvern
Foxfield
Weybridge
Sherway
Longfields
Bill Leathem
Leikin
Stoneway
Wessex
Berrigan
Queensbury
Rideaucrest
Exeter
Greenbank
Strandherd
Beatrice
Stoneway
Crestway
Marketplace
Riocan
Chapman Mills
Jockvale
Longfields
Strandherd
Cresthaven
Paul Métivier
Bren-Maur
Bending Way
Woodroffe
Riverstone
Pondhollow
Golflinks
Perseus
Greenbank
Cambrian
River Mist
Blackleaf
Greenbank
Kilbirnie
Dundonald
Merivale
Prince of Wales
Leitrim
River
Canyon Walk
Shoreline
Spratt
Earl Armstrong
Cambie
Borbridge
Spratt
Ralph Hennessy
Last modified: AUG. 2025


JOHN MCCRAE
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Longfields
Strandherd
Marketplace
Barrhaven Centre
Beatrice
Nepean Woods
Complexe réc. MINTO Recreation Centre
Some trips
Certains trajets
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Larkin
Wolfgang
Oriska
Earl Mulligan
Mount Shannon
Malvern
Foxfield
Fable
Sherway
Jockvale
Hélène Campbell
Strandherd
Maravista
Weybridge
Flanders
Kennevale
Cobble Hill
Tartan
Wessex
Exeter
Greenbank
Berrigan
Longfields
Beatrice
Queensbury
Stoneway
Rideauc
Marketplace
Riocan
Chapman Mills
Longfields
Bren-Maur
Paul Métivier
Bending Way
Woodroffe
Riverstone
Pondhollow
Golflinks
Jockvale
Perseus
Apolune
Greenbank
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River Mist
Blackleaf
Kilbirnie
Dundonald
Kilmarnock
Kilbirnie
River
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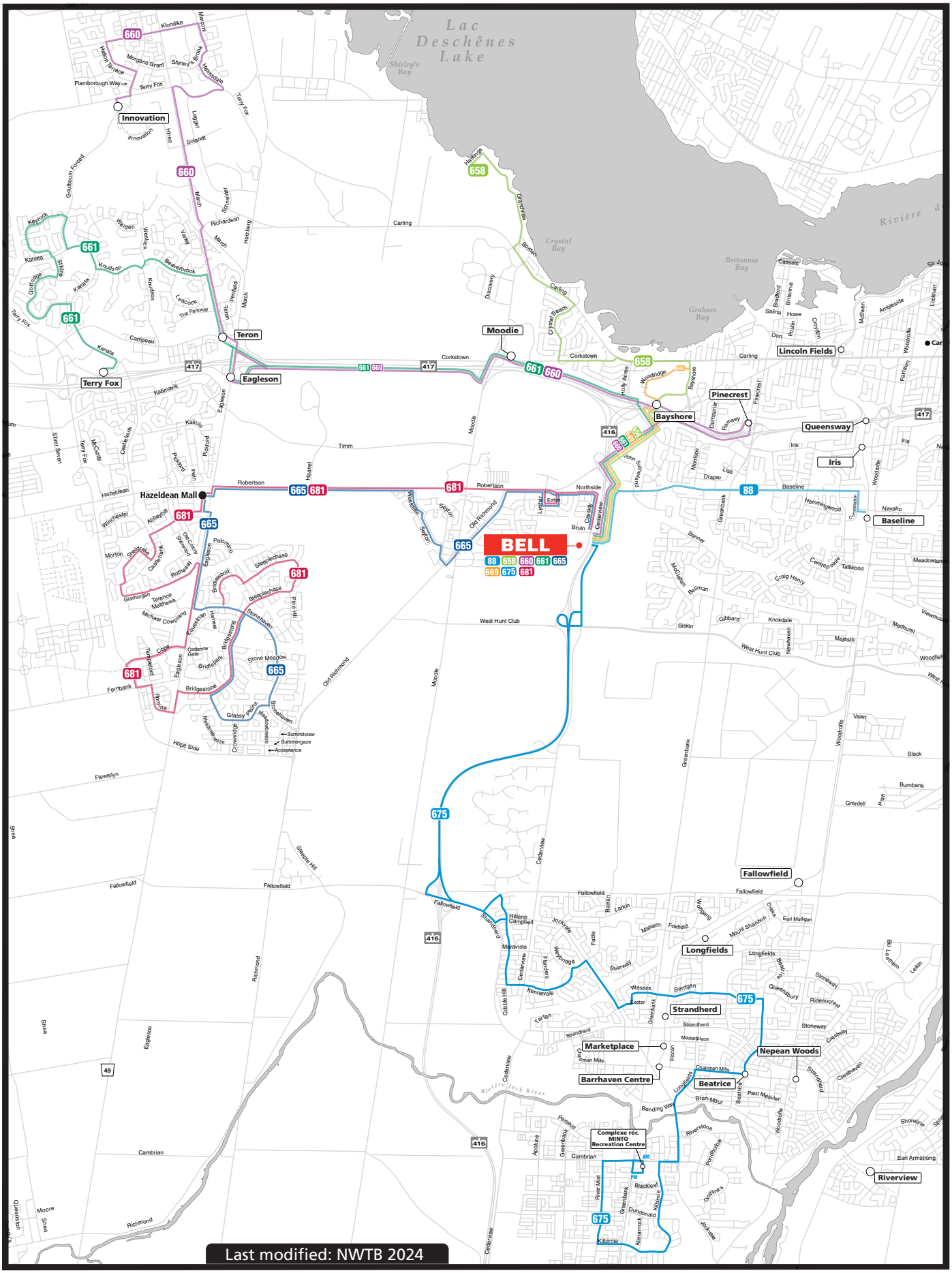
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Innovation
Terry Fox
Eagleson
Teron
Moodie
Bayshore
Pinecrest
Queensway
Iris
Baseline
Lincoln Fields
Hazeldean Mall
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Barrhaven Centre
Nepean Woods
Beatrice
Riverview
Complexe réc. MINTO Recreation Centre
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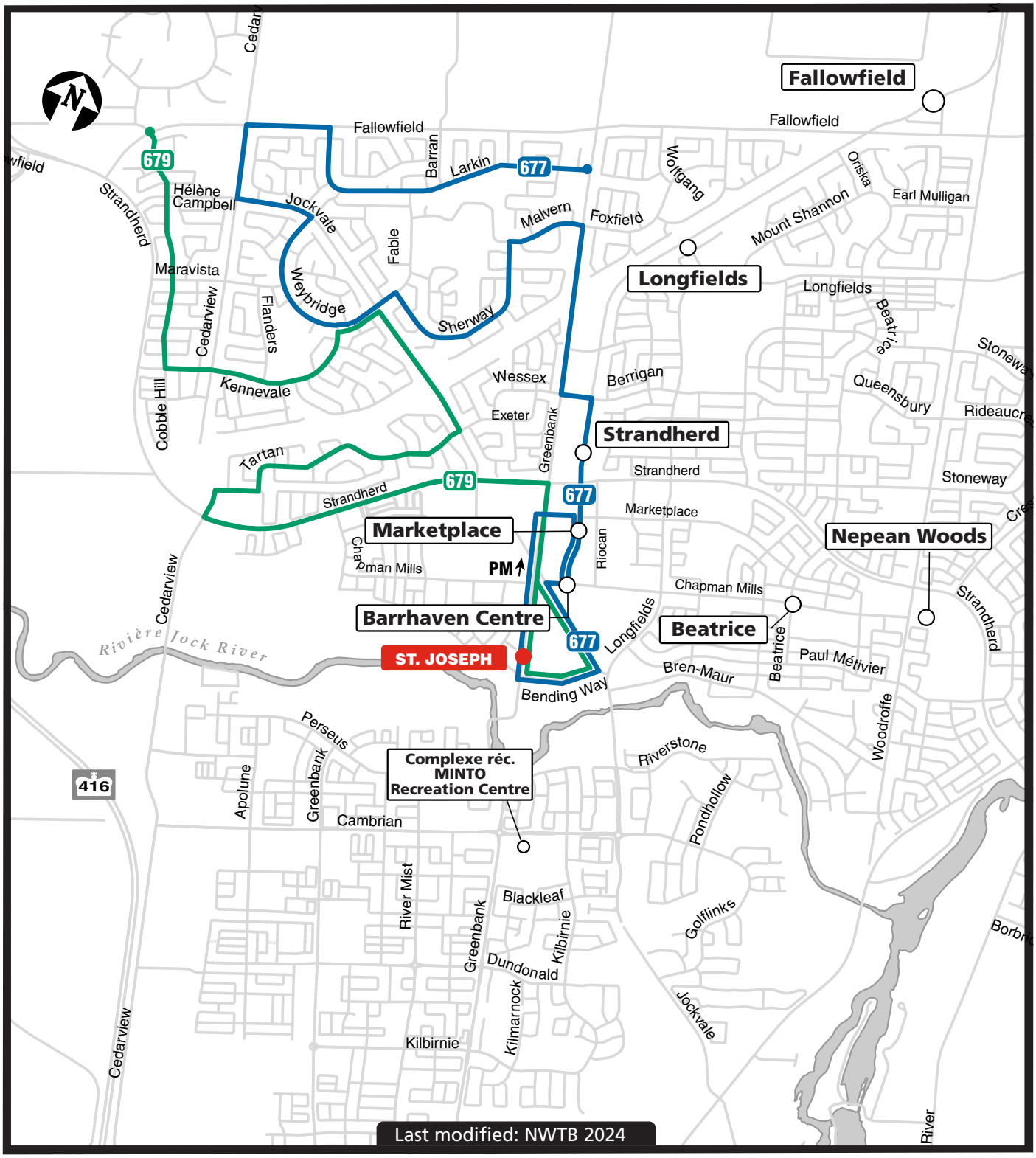
49
Last modified: NWTB 2024


Fallowfield
Longfields
Strandherd
Marketplace
Nepean Woods
Barrhaven Centre
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MINTO
Recreation Centre
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Fallowfield
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Larkin
Wolfgang
Oriska
Earl Mulligan
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Malvern
Foxfield
Hélène
Campbell
Jockvale
Fable
Maravista
Weybridge
Sherway
Flanders
Cedarview
Kennevale
Cobble Hill
Strandherd
Wessex
Berrigan
Exeter
Greenbank
Tartan
Longfields
Beatrice
Queensbury
Stoneway
Rideaucrest
Marketplace
Riocan
Chapman Mills
Rivière Jock River
Bending Way
Bren-Maur
Paul Métivier
Woodroffe
Perseus
Apolune
Cambrian
Riverstone
Pondhollow
Golflinks
Blackleaf
River Mist
Kilbirnie
Dundonald
Kilmarnock
Jockvale
Borbridge
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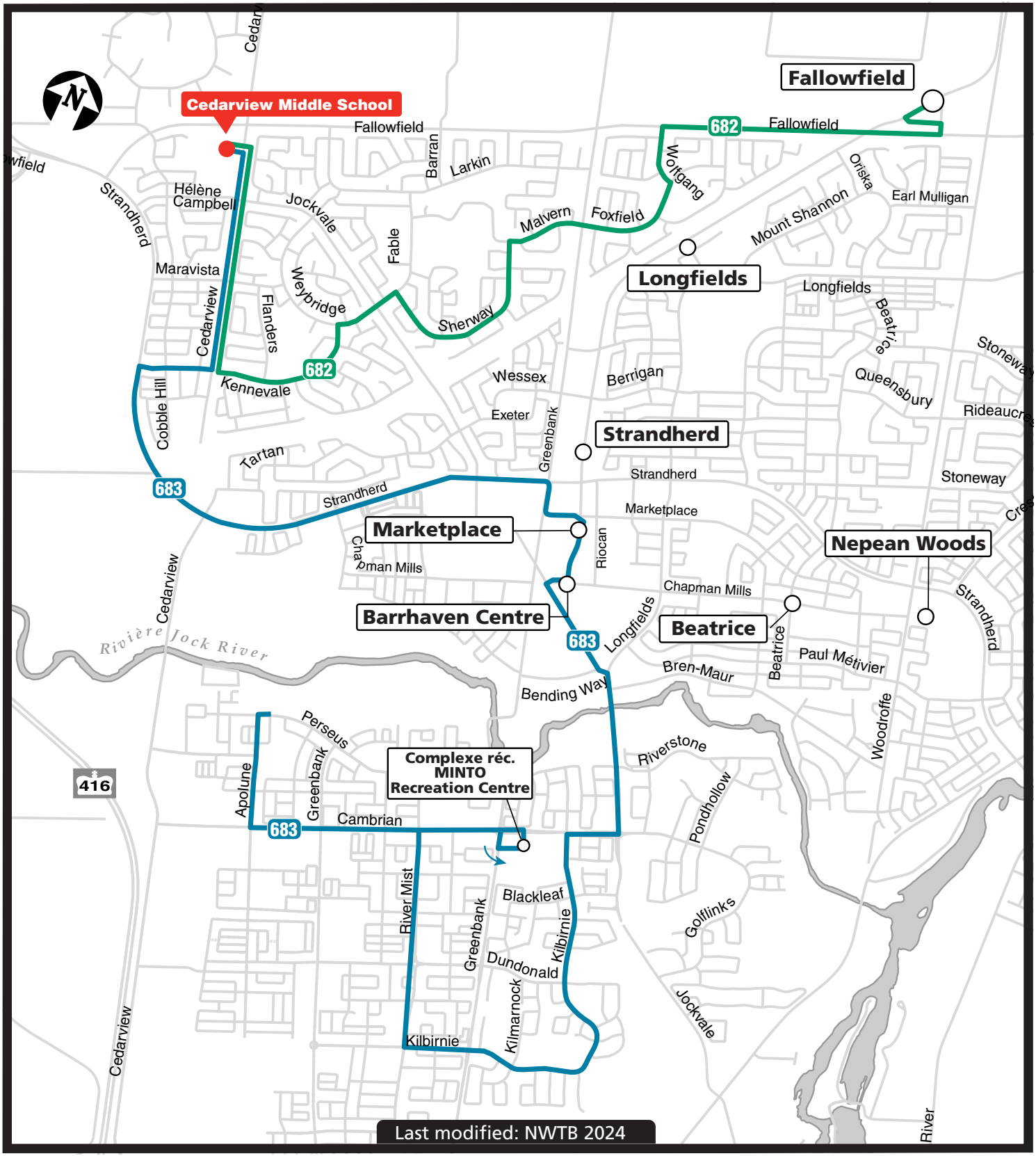
Cedarview Middle School
Fallowfield
Longfields
Strandherd
Marketplace
Barrhaven Centre
Nepean Woods
Beatrice
Complexe réc. MINTO Recreation Centre
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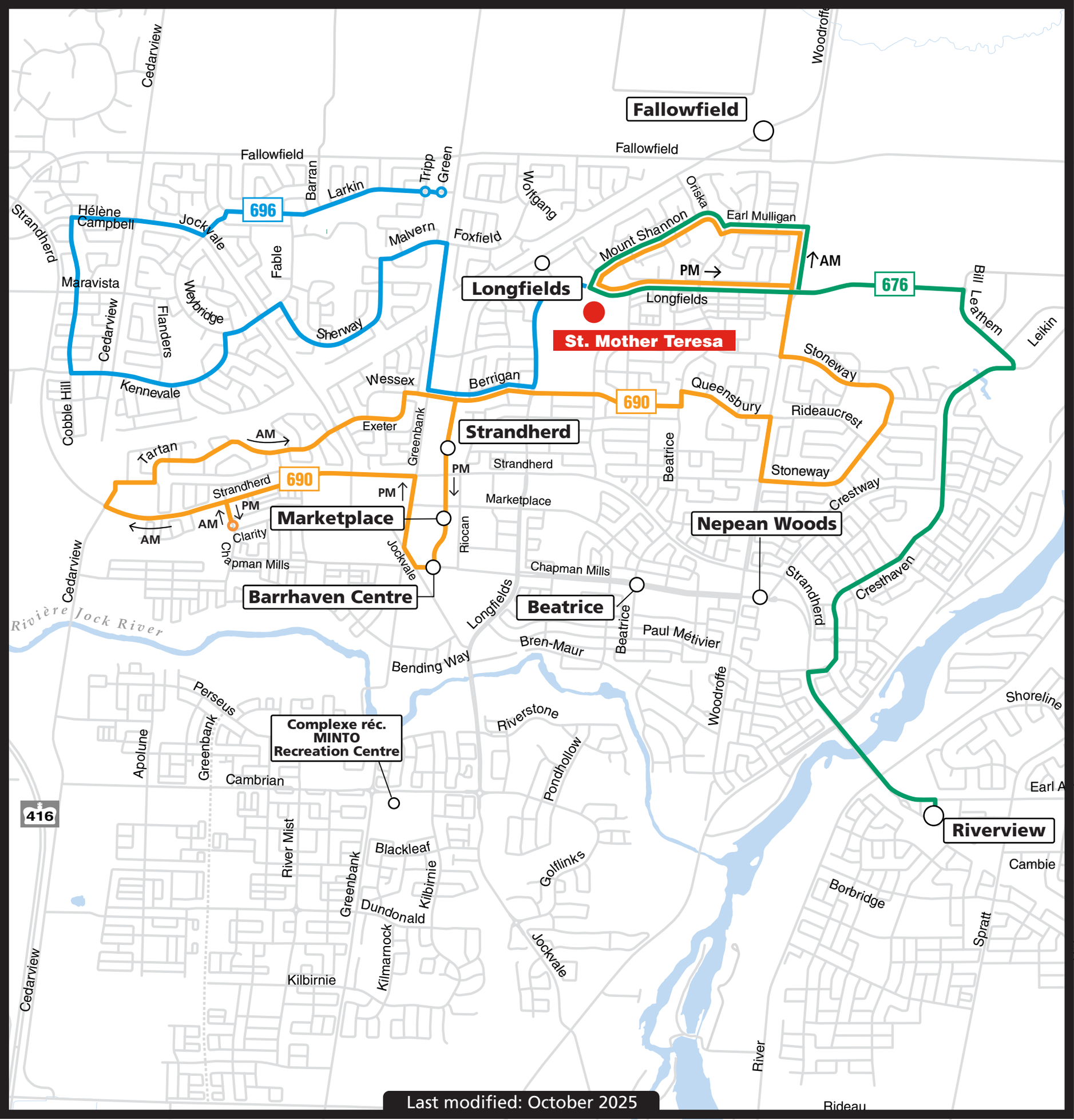
683
416
Hélène Campbell
Jockvale
Barran
Larkin
Wolfgang
Oriska
Earl Mulligan
Mount Shannon
Malvern
Foxfield
Fable
Weybridge
Sherway
Flanders
Cedarview
Maravista
Kennevale
Cobble Hill
Tartan
Wessex
Berrigan
Exeter
Greenbank
Queensbury
Beatrice
Stoneway
Rideaucrest
Riocan
Chapman Mills
Longfields
Bren-Maur
Paul Métivier
Woodroffe
Strandherd
Bending Way
Perseus
Apolune
Cambrian
Riverstone
Pondhollow
Golflinks
Blackleaf
Dundonald
Kilbirnie
Kilmarnock
River Mist
Jockvale
Rivière Jock River
Last modified: NWTB 2024



Fallowfield
Longfields
St. Mother Teresa
Strandherd
Marketplace
Barrhaven Centre
Beatrice
Nepean Woods
Riverview
Complexe réc. MINTO Recreation Centre
696
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676
AM
PM
Fallowfield
Barran
Larkin
Tripp
Green
Wolfgang
Oriska
Earl Mulligan
Mount Shannon
Hélène Campbell
Jockvale
Strandherd
Maravista
Fable
Malvern
Foxfield
Weybridge
Flanders
Sherway
Kennevale
Cobble Hill
Wessex
Berrigan
Queensbury
Rideaucrest
Stoneway
Bill Leathem
Leikin
Exeter
Greenbank
Tartan
Clarity
Chapman Mills
Riocan
Beatrice
Crestway
Cresthaven
Paul Métivier
Bren-Maur
Bending Way
Longfields
Woodroffe
Shoreline
Perseus
Apolune
Cambrian
Riverstone
Pondhollow
Earl A
Cambie
Borbridge
Spratt
River Mist
Blackleaf
Kilbirnie
Dundonald
Kilmarnock
Golflinks
Jockvale
Kilbirnie
River
Rideau
Cedarview
Rivière Jock River
416
Last modified: October 2025

Appendix D: Traffic Count Data

Transportation Services - Traffic Services

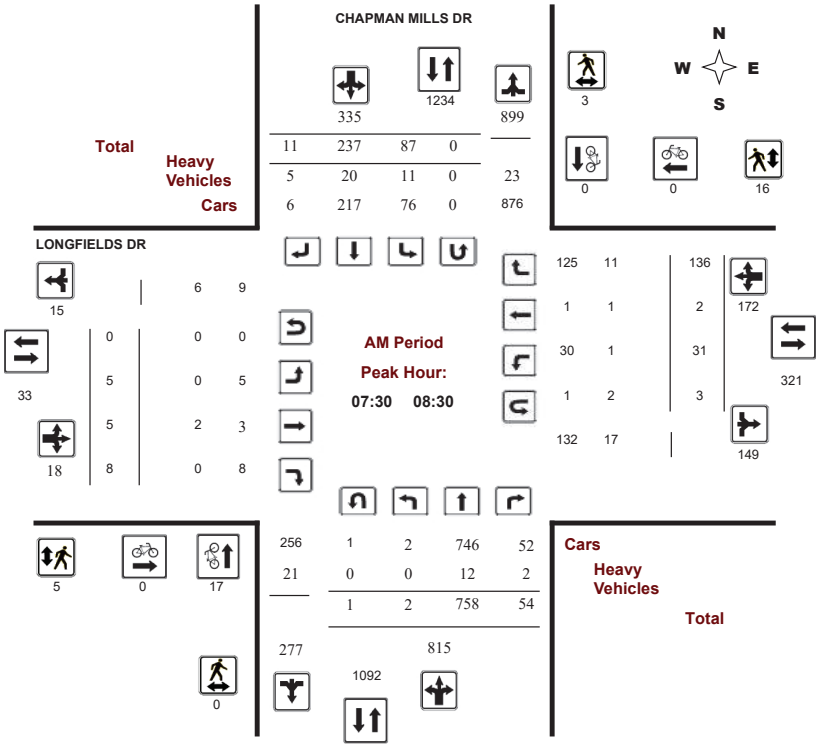
Turning Movement Count - Study Results

CHAPMAN MILLS DR @ LONGFIELDS DR

Survey Date: Tuesday, June 19, 2018 **WO No:** 37883

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

AM Period Peak Hour Diagram



Transportation Services - Traffic Services

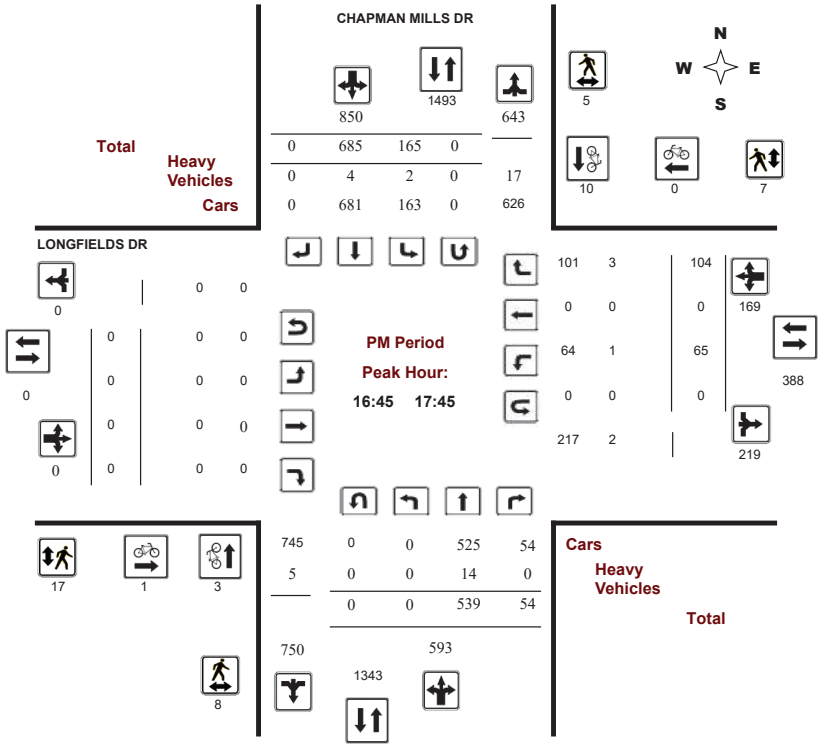
Turning Movement Count - Study Results

CHAPMAN MILLS DR @ LONGFIELDS DR

Survey Date: Tuesday, June 19, 2018 **WO No:** 37883

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

PM Period Peak Hour Diagram



Transportation Services - Traffic Services

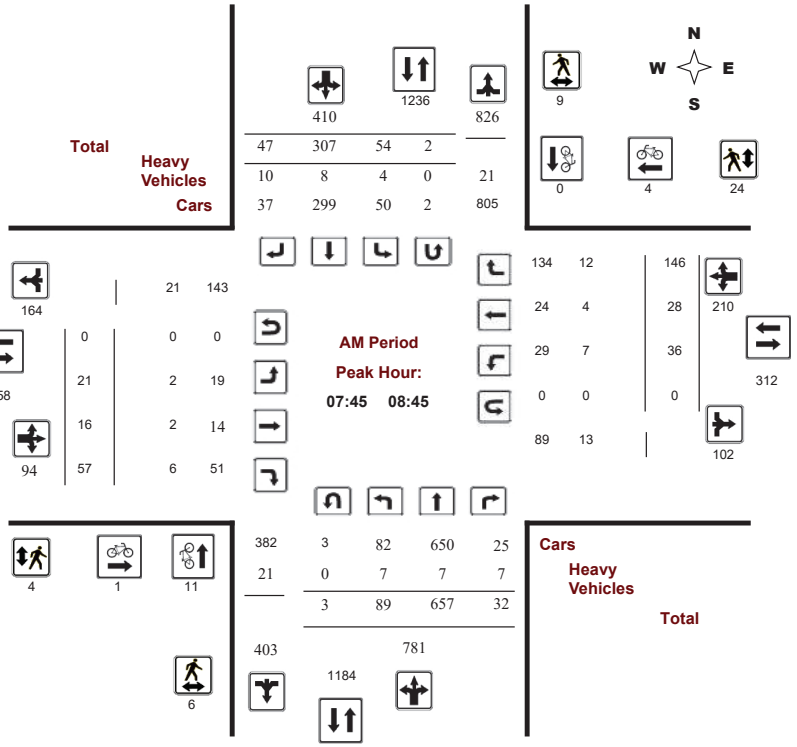
Turning Movement Count - Study Results

CLEARBROOK DR/MARKETPLACE AVE @ LONGFIELDS DR

Survey Date: Tuesday, November 09, 2021 **WO No:** 39961

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

AM Period Peak Hour Diagram



Transportation Services - Traffic Services

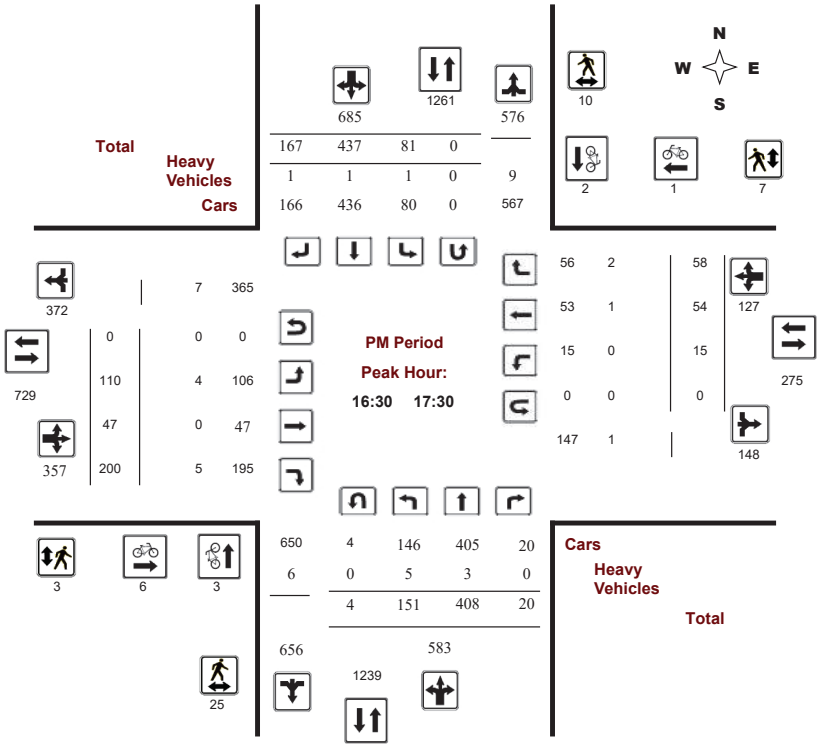
Turning Movement Count - Study Results

CLEARBROOK DR/MARKETPLACE AVE @ LONGFIELDS DR

Survey Date: Tuesday, November 09, 2021 **WO No:** 39961

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

PM Period Peak Hour Diagram



Transportation Services - Traffic Services

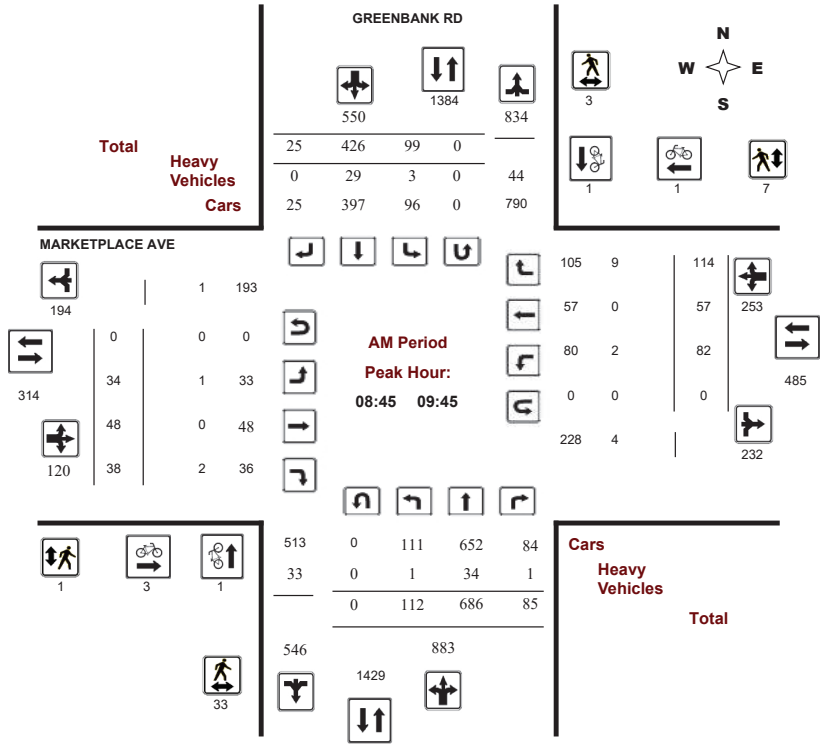
Turning Movement Count - Study Results

GREENBANK RD @ MARKETPLACE AVE

Survey Date: Wednesday, May 21, 2025 **WO No:** 42716

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

AM Period Peak Hour Diagram



Transportation Services - Traffic Services

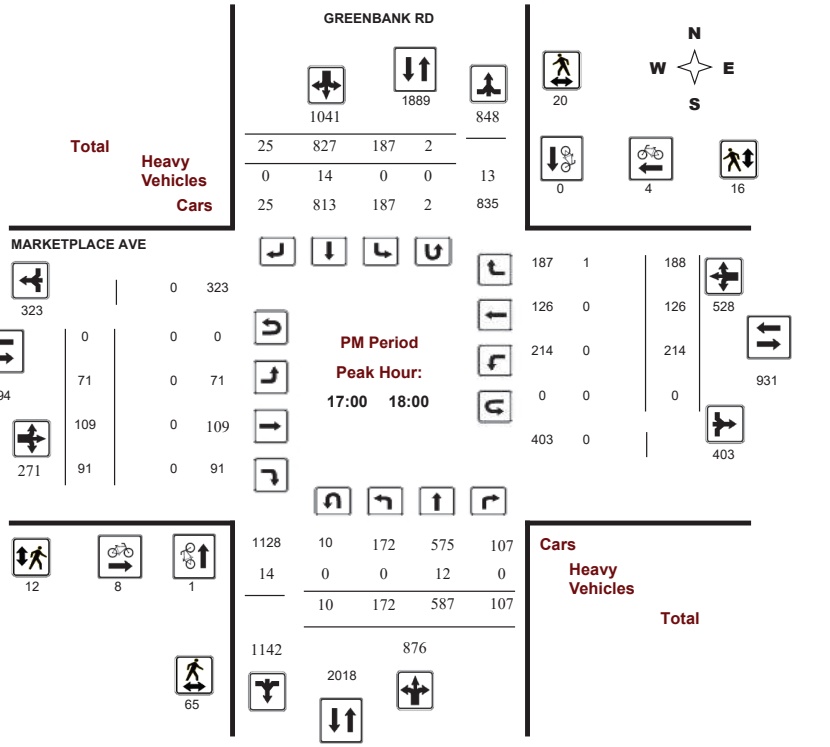
Turning Movement Count - Study Results

GREENBANK RD @ MARKETPLACE AVE

Survey Date: Wednesday, May 21, 2025 **WO No:** 42716

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

PM Period Peak Hour Diagram



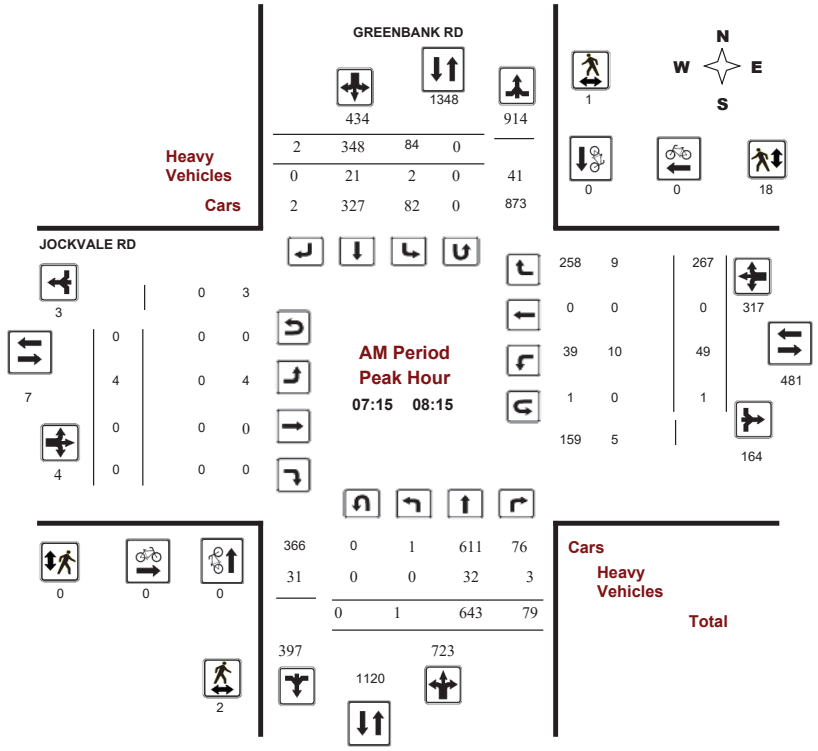
Transportation Services - Traffic Services

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

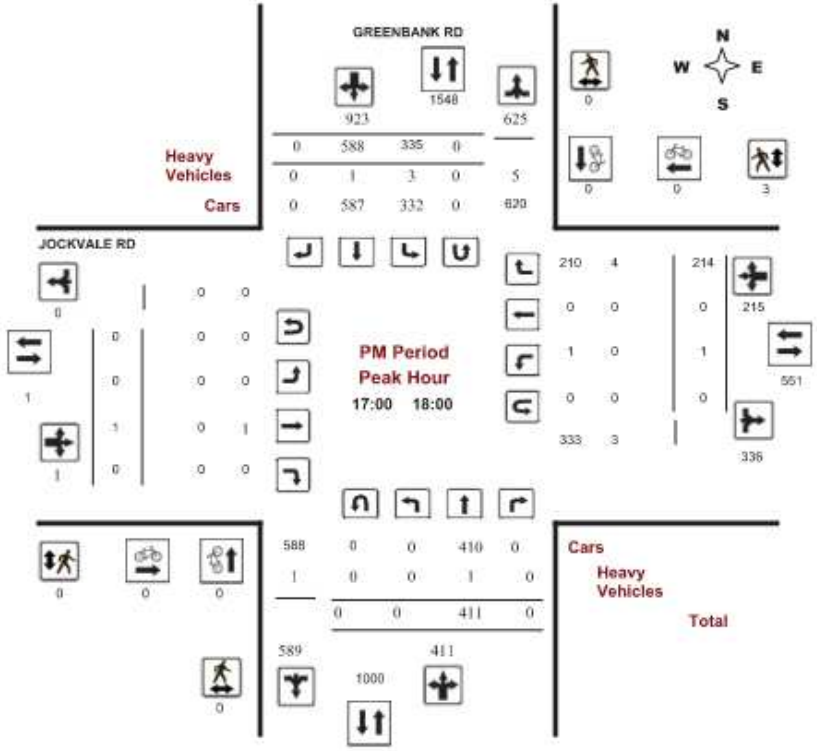
Transportation Services - Traffic Services

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

Appendix E: Long-range Model Snapshots

TRANS Regional Model

Version 1.01 - Assigned December, 2024

AM Peak Hour Total Traffic Volume

Strandherd Dr/ Longfields Dr

2022 Model - Basecase

N/A

User Initials: PMA
Plot Prepared: Nov, 2025
EMME Scenario: 22002

Legend

AM Peak Hour Total Traffic Volume

1000 2000 3000 4000 5000

Distance (m)

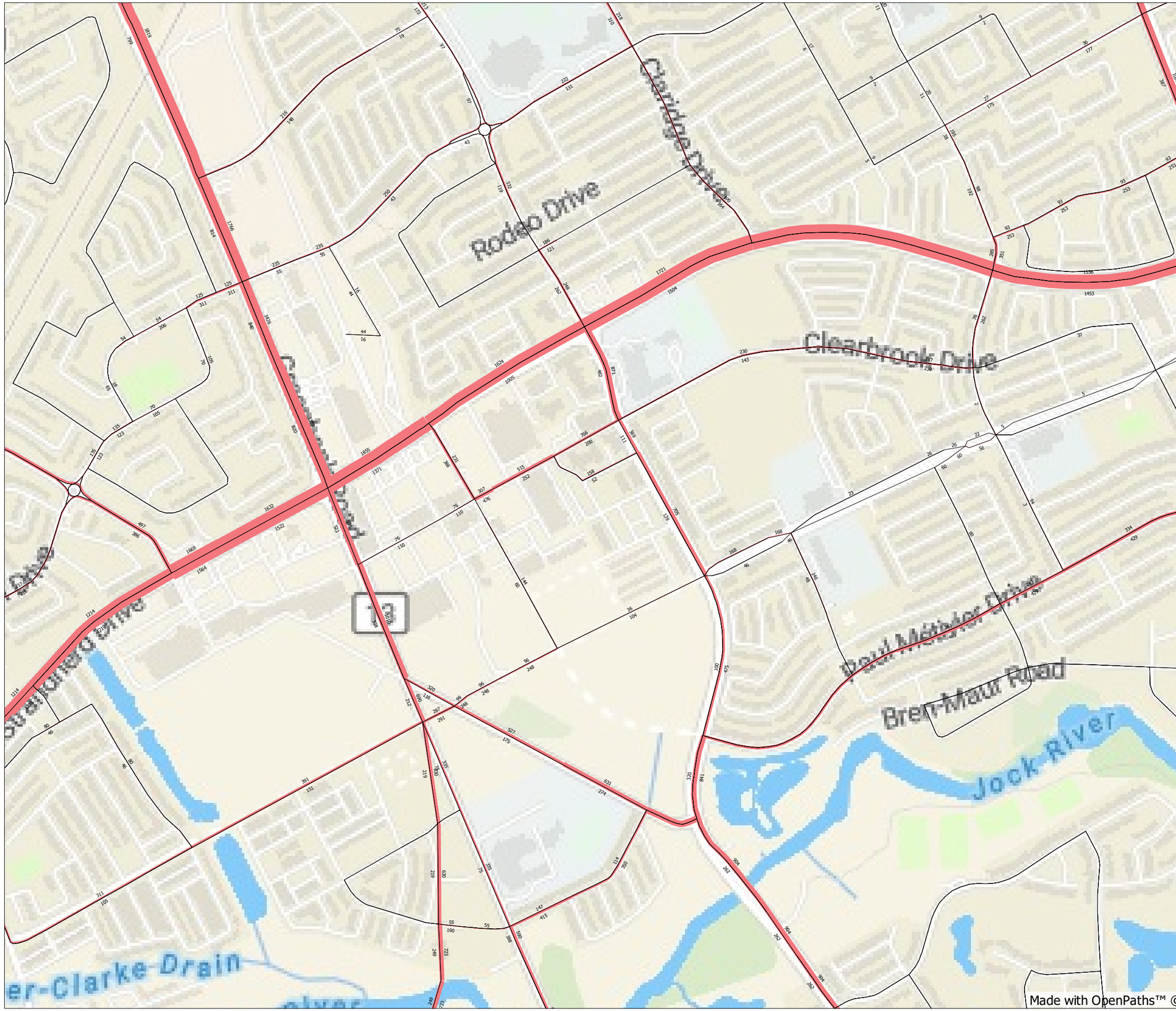
100 200 300 400 500

N

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 Peak Hour Total Traffic Volume

Strandherd Dr/ Longfields Dr

2046 Model - Priority Network

N/A

User Initials: PMA
Plot Prepared: Nov, 2025
EMME Scenario: 46011

Legend

AM Peak Hour Total Traffic Volume

1000 2000 3000 4000 5000

Distance (m)

100 200 300 400 500

N

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: Collision Data

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2019 **To:** December 31, 2024

Location: CHAPMAN MILLS DR @ LONGFIELDS DR

Traffic Control: Traffic signal **Total Collisions:** 8

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2019-Jun-17, Mon,07:49	Clear	Rear end	Non-fatal injury	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2020-Jan-06, Mon,10:50	Snow	Rear end	P.D. only	Loose snow	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2021-Nov-17, Wed,09:54	Clear	Turning movement	Non-fatal injury	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2022-Feb-01, Tue,11:46	Clear	Angle	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2022-Feb-25, Fri,17:10	Clear	Angle	Non-fatal injury	Packed snow	West	Turning right	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2022-Nov-18, Fri,19:45	Snow	SMV other	P.D. only	Loose snow	South	Turning left	Automobile, station wagon	Curb	0
2024-Jun-25, Tue,22:30	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2024-Oct-29, Tue,10:20	Clear	Turning movement	P.D. only	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle	0
					West	Overtaking	Automobile, station wagon	Other motor vehicle	

Location: CLEARBROOK DR/MARKETPLACE AVE @ LONGFIELDS DR

Traffic Control: Traffic signal **Total Collisions:** 24

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2019-Jan-08, Tue,06:45	Freezing Rain	Angle	P.D. only	Loose snow	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Jan-18, Fri,21:30	Clear	Turning movement	P.D. only	Wet	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2019 **To:** December 31, 2024

Location: CLEARBROOK DR/MARKETPLACE AVE @ LONGFIELDS DR

Traffic Control: Traffic signal **Total Collisions:** 24

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2019-Apr-15, Mon,14:51	Rain	Sideswipe	P.D. only	Wet	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Jun-27, Thu,14:50	Clear	Rear end	P.D. only	Dry	South	Going ahead	Pick-up truck	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Nov-05, Tue,18:13	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Nov-17, Sun,17:53	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Pick-up truck	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2020-Jan-18, Sat,17:56	Snow	Rear end	P.D. only	Loose snow	East	Going ahead	Pick-up truck	Other motor vehicle	0
					East	Stopped	Passenger van	Other motor vehicle	
2020-Feb-18, Tue,09:30	Snow	Turning movement	P.D. only	Loose snow	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Pick-up truck	Other motor vehicle	
2020-Feb-19, Wed,10:09	Clear	Angle	Non-fatal injury	Dry	South	Going ahead	Passenger van	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2020-Apr-23, Thu,08:57	Clear	Angle	P.D. only	Dry	North	Going ahead	Pick-up truck	Other motor vehicle	0
					West	Turning right	Truck and trailer	Other motor vehicle	
2020-May-12, Tue,20:34	Clear	Sideswipe	Non-fatal injury	Dry	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Motorcycle	Other motor vehicle	
2021-Mar-05, Fri,11:16	Clear	Angle	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Pick-up truck	Other motor vehicle	
2021-Aug-23, Mon,19:46	Clear	SMV other	Non-fatal injury	Dry	South	Turning left	Automobile, station wagon	Pedestrian	2
2021-Sep-03, Fri,07:28	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Pick-up truck	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2019 **To:** December 31, 2024

Location: CLEARBROOK DR/MARKETPLACE AVE @ LONGFIELDS DR

Traffic Control: Traffic signal **Total Collisions:** 24

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2021-Oct-12, Tue,16:31	Clear	Rear end	Non-fatal injury	Dry	South	Going ahead	Pick-up truck	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
					South	Stopped	Pick-up truck	Other motor vehicle	
2022-Feb-12, Sat,11:30	Freezing Rain	Rear end	P.D. only	Ice	South	Going ahead	Pick-up truck	Other motor vehicle	0
					South	Unknown	Unknown	Other motor vehicle	
2022-Aug-04, Thu,14:27	Clear	Angle	P.D. only	Dry	West	Going ahead	Passenger van	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2022-Oct-21, Fri,17:13	Clear	Turning movement	Non-fatal injury	Dry	South	Turning left	Pick-up truck	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
					West	Stopped	Pick-up truck	Other motor vehicle	
					West	Stopped	Pick-up truck	Other motor vehicle	
2022-Dec-23, Fri,17:00	Snow	Turning movement	P.D. only	Packed snow	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2024-Jun-16, Sun,16:30	Clear	Turning movement	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Turning left	Automobile, station wagon	Other motor vehicle	
2024-Sep-05, Thu,22:24	Clear	Other	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Reversing	Automobile, station wagon	Other motor vehicle	
2024-Oct-09, Wed,08:27	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2024-Oct-20, Sun,10:10	Clear	SMV unattended vehicle	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Unattended vehicle	0
					Unknown	Parked	Automobile, station wagon	Other motor vehicle	
2024-Dec-05, Thu,17:07	Clear	SMV other	Non-fatal injury	Loose snow	East	Turning left	Automobile, station wagon	Pedestrian	1

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2019 **To:** December 31, 2024

Location: GLENROY GILBERT DR @ LONGFIELDS DR

Traffic Control: Stop sign **Total Collisions:** 1

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2019-Feb-21, Thu,17:55	Clear	Sideswipe	P.D. only	Wet	South	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Pick-up truck	Other motor vehicle	

Location: LONGFIELDS DR @ PAUL METIVIER DR

Traffic Control: Traffic signal **Total Collisions:** 5

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2019-Sep-06, Fri,18:51	Clear	Angle	Non-fatal injury	Dry	West	Turning right	Automobile, station wagon	Cyclist	0
					South	Going ahead	Bicycle	Other motor vehicle	
2019-Dec-08, Sun,09:30	Clear	Angle	P.D. only	Dry	North	Turning right	Automobile, station wagon	Skidding/sliding	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2020-Feb-14, Fri,06:20	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2022-Feb-04, Fri,20:32	Clear	Turning movement	P.D. only	Dry	South	Turning left	Unknown	Other motor vehicle	0
					North	Going ahead	Pick-up truck	Other motor vehicle	
2024-Mar-03, Sun,00:05	Fog, mist, smoke, dust	Sideswipe	P.D. only	Wet	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					North	Changing lanes	Automobile, station wagon	Other motor vehicle	

Location: LONGFIELDS DR btwn PAUL METIVIER DR & CHAPMAN MILLS DR

Traffic Control: No control **Total Collisions:** 3

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2020-Jul-13, Mon,13:28	Clear	SMV other	Non-fatal injury	Dry	North	Going ahead	Automobile, station wagon	Pole (sign, parking meter)	0
2024-Aug-14, Wed,18:33	Clear	Rear end	Non-fatal injury	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2019 **To:** December 31, 2024

Location: LONGFIELDS DR btwn PAUL METIVIER DR & CHAPMAN MILLS DR

Traffic Control: No control **Total Collisions:** 3

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2024-Dec-24, Tue,01:30	Drifting Snow	Sideswipe	P.D. only	Packed snow	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2019 **To:** December 31, 2024

Location: GREENBANK RD @ JOCKVALE RD

Traffic Control: Traffic signal **Total Collisions:** 25

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2019-Jan-11, Fri,13:00	Clear	Rear end	P.D. only	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle	0
					West	Turning right	Automobile, station wagon	Other motor vehicle	
2019-Feb-11, Mon,09:57	Clear	Turning movement	Non-fatal injury	Dry	South	Turning right	Truck - dump	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Mar-16, Sat,16:46	Clear	Rear end	P.D. only	Dry	East	Turning right	Unknown	Other motor vehicle	0
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2019-Jun-06, Thu,18:15	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Jun-10, Mon,15:25	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Aug-03, Sat,17:05	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2020-Jan-18, Sat,22:50	Snow	SMV other	P.D. only	Loose snow	South	Turning left	Automobile, station wagon	Skidding/sliding	0
2020-Mar-05, Thu,17:07	Clear	Rear end	P.D. only	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle	0
					West	Turning right	Automobile, station wagon	Other motor vehicle	
2020-Mar-09, Mon,11:09	Clear	Rear end	Non-fatal injury	Mud	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
					North	Slowing or stopping	Passenger van	Other motor vehicle	
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2021-Jan-25, Mon,18:28	Clear	Sideswipe	P.D. only	Packed snow	South	Unknown	Automobile, station wagon	Other motor vehicle	0
					South	Unknown	Automobile, station wagon	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2019 **To:** December 31, 2024

Location: GREENBANK RD @ JOCKVALE RD

Traffic Control: Traffic signal **Total Collisions:** 25

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2021-May-07, Fri,15:30	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Unknown	Other motor vehicle	0
					North	Stopped	Pick-up truck	Other motor vehicle	
2021-Sep-10, Fri,12:02	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Pick-up truck	Other motor vehicle	
2021-Oct-16, Sat,16:30	Clear	Approaching	P.D. only	Wet	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2021-Nov-18, Thu,07:57	Rain	Rear end	P.D. only	Wet	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Pick-up truck	Other motor vehicle	
2021-Dec-14, Tue,15:50	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Pick-up truck	Other motor vehicle	0
					North	Slowing or stopping	Passenger van	Other motor vehicle	
2022-Jan-29, Sat,14:54	Snow	Rear end	P.D. only	Loose snow	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2022-Mar-08, Tue,08:00	Clear	Rear end	P.D. only	Slush	North	Slowing or stopping	Pick-up truck	Skidding/sliding	0
					North	Stopped	Pick-up truck	Other motor vehicle	
2022-Jul-07, Thu,14:11	Clear	Turning movement	P.D. only	Dry	South	Making "U" turn	Pick-up truck	Other motor vehicle	0
					South	Going ahead	Pick-up truck	Other motor vehicle	
2022-Oct-05, Wed,15:29	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2022-Nov-10, Thu,14:30	Clear	Angle	Non-fatal injury	Dry	South	Going ahead	Bicycle	Other motor vehicle	0
					West	Turning right	Automobile, station wagon	Cyclist	
2022-Nov-27, Sun,19:00	Rain	Angle	P.D. only	Wet	East	Stopped	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2019 **To:** December 31, 2024

Location: GREENBANK RD @ JOCKVALE RD

Traffic Control: Traffic signal **Total Collisions:** 25

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2022-Dec-21, Wed,11:36	Clear	Turning movement	Non-fatal injury	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2024-May-09, Thu,14:35	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2024-Sep-18, Wed,16:25	Clear	SMV other	Non-fatal injury	Dry	East	Going ahead	Truck - dump	Other	0
2024-Dec-19, Thu,19:00	Clear	Rear end	P.D. only	Ice	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	

Location: GREENBANK RD @ MARKETPLACE AVE

Traffic Control: Traffic signal **Total Collisions:** 42

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2019-Mar-13, Wed,14:50	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2019-May-09, Thu,17:03	Clear	Sideswipe	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Turning left	Pick-up truck	Other motor vehicle	
2019-Aug-19, Mon,21:08	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2019-Sep-14, Sat,21:30	Clear	Rear end	Non-fatal injury	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Sep-26, Thu,20:03	Clear	Sideswipe	P.D. only	Dry	South	Turning left	Truck and trailer	Other motor vehicle	0
					South	Turning left	Automobile, station wagon	Other motor vehicle	
2019-Nov-13, Wed,20:30	Clear	Rear end	P.D. only	Wet	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2019 **To:** December 31, 2024

Location: GREENBANK RD @ MARKETPLACE AVE

Traffic Control: Traffic signal **Total Collisions:** 42

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2019-Nov-20, Wed,21:00	Clear	Rear end	P.D. only	Dry	West	Going ahead	Pick-up truck	Other motor vehicle	0
					West	Stopped	Passenger van	Other motor vehicle	
2019-Nov-24, Sun,13:15	Clear	Turning movement	P.D. only	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle	0
					East	Turning left	Automobile, station wagon	Other motor vehicle	
2020-May-20, Wed,10:34	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Pick-up truck	Other motor vehicle	
2020-Aug-06, Thu,12:37	Clear	Turning movement	P.D. only	Dry	East	Turning right	Automobile, station wagon	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2020-Aug-09, Sun,16:44	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2020-Oct-05, Mon,13:35	Clear	Angle	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2021-Jan-19, Tue,14:42	Snow	Rear end	P.D. only	Wet	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2021-Feb-26, Fri,17:15	Clear	Turning movement	P.D. only	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle	0
					East	Turning left	Pick-up truck	Other motor vehicle	
2021-Mar-13, Sat,15:30	Clear	Sideswipe	P.D. only	Dry	North	Turning left	Pick-up truck	Other motor vehicle	0
					North	Turning left	Automobile, station wagon	Other motor vehicle	
2021-Mar-30, Tue,13:55	Clear	Turning movement	P.D. only	Dry	North	Turning right	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2021-Jul-16, Fri,17:40	Clear	Rear end	P.D. only	Dry	West	Unknown	Pick-up truck	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2021-Aug-05, Thu,17:20	Clear	Rear end	P.D. only	Dry	West	Unknown	Unknown	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2019 **To:** December 31, 2024

Location: GREENBANK RD @ MARKETPLACE AVE

Traffic Control: Traffic signal **Total Collisions:** 42

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2021-Oct-08, Fri,12:55	Clear	Rear end	P.D. only	Dry	West	Unknown	Unknown	Other motor vehicle	0
					West	Stopped	Passenger van	Other motor vehicle	
					West	Stopped	Pick-up truck	Other motor vehicle	
2021-Nov-02, Tue,21:30	Rain	Turning movement	P.D. only	Wet	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Turning left	Automobile, station wagon	Other motor vehicle	
2021-Dec-14, Tue,14:10	Clear	Turning movement	P.D. only	Dry	West	Turning left	Pick-up truck	Other motor vehicle	0
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2021-Dec-14, Tue,19:12	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2022-Feb-17, Thu,12:58	Rain	Turning movement	P.D. only	Wet	North	Turning right	Delivery van	Other motor vehicle	0
					North	Going ahead	Pick-up truck	Other motor vehicle	
2022-May-16, Mon,10:43	Clear	Rear end	P.D. only	Dry	West	Going ahead	Pick-up truck	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2022-Aug-24, Wed,21:48	Rain	Turning movement	P.D. only	Wet	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2022-Aug-31, Wed,20:00	Rain	Rear end	P.D. only	Wet	West	Unknown	Unknown	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2022-Sep-28, Wed,13:00	Clear	Rear end	P.D. only	Dry	West	Unknown	Unknown	Other motor vehicle	0
					West	Stopped	Pick-up truck	Other motor vehicle	
2022-Sep-29, Thu,18:32	Clear	Turning movement	P.D. only	Dry	North	Turning right	Pick-up truck	Other motor vehicle	0
					North	Turning left	Automobile, station wagon	Other motor vehicle	
2022-Nov-11, Fri,17:08	Rain	SMV other	Non-fatal injury	Wet	South	Turning left	Passenger van	Pedestrian	1
2022-Dec-24, Sat,16:15	Snow	Rear end	P.D. only	Slush	North	Stopped	Automobile, station wagon	Other motor vehicle	0
					North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2019 **To:** December 31, 2024

Location: GREENBANK RD @ MARKETPLACE AVE

Traffic Control: Traffic signal **Total Collisions:** 42

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2024-Jan-06, Sat,16:30	Snow	Rear end	P.D. only	Loose snow	North	Slowing or stopping	Automobile, station wagon		0
					North	Going ahead	Unknown	Other motor vehicle	
2024-Jun-05, Wed,15:30	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2024-Jun-14, Fri,14:20	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2024-Jul-07, Sun,15:43	Clear	Sideswipe	P.D. only	Unknown	South	Stopped	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2024-Jul-13, Sat,11:40	Clear	Turning movement	P.D. only	Dry	North	Turning right	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2024-Jul-19, Fri,17:30	Clear	Turning movement	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Turning left	Automobile, station wagon	Other motor vehicle	
2024-Aug-28, Wed,15:00	Clear	Sideswipe	P.D. only	Dry	North	Merging	Unknown	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2024-Sep-19, Thu,16:00	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Turning left	Pick-up truck	Other motor vehicle	
2024-Sep-20, Fri,17:55	Clear	Turning movement	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2024-Oct-26, Sat,10:05	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2024-Nov-03, Sun,01:45	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2019 **To:** December 31, 2024

Location: GREENBANK RD @ MARKETPLACE AVE

Traffic Control: Traffic signal **Total Collisions:** 42

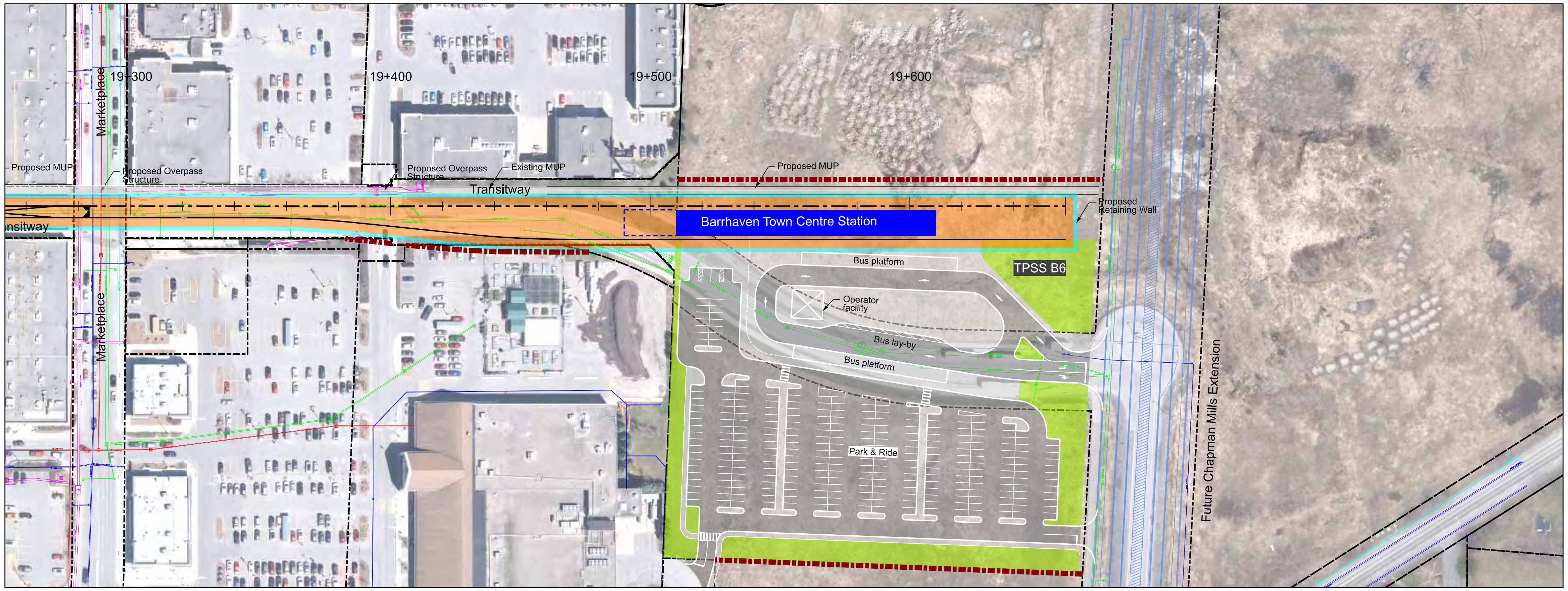
Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2024-Dec-29, Sun,07:20	Fog, mist, smoke, dust	Rear end	P.D. only	Wet	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	

Location: GREENBANK RD btwn MARKETPLACE AVE & JOCKVALE RD

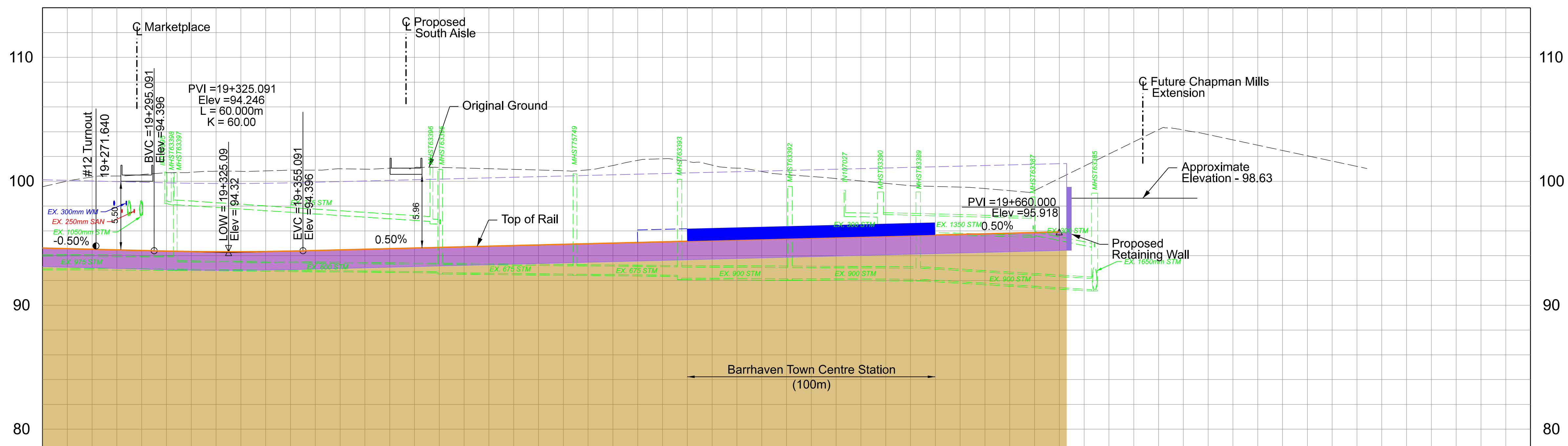
Traffic Control: No control **Total Collisions:** 6

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2020-Jun-06, Sat,19:19	Clear	Turning movement	P.D. only	Dry	South	Making "U" turn	Pick-up truck	Other motor vehicle	0
					South	Going ahead	Pick-up truck	Other motor vehicle	
2020-Nov-18, Wed,20:06	Clear	Turning movement	P.D. only	Dry	South	Making "U" turn	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2020-Dec-01, Tue,10:06	Rain	Rear end	P.D. only	Wet	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Turning left	Pick-up truck	Other motor vehicle	
2022-Jun-10, Fri,07:53	Clear	Angle	Non-fatal injury	Dry	South	Going ahead	Bicycle	Other motor vehicle	0
					West	Turning right	Automobile, station wagon	Cyclist	
2024-Jun-30, Sun,05:40	Clear	Sideswipe	P.D. only	Wet	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Unknown	Other motor vehicle	
2024-Oct-21, Mon,13:50	Clear	Sideswipe	P.D. only	Dry	North	Merging	Passenger van	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	

Appendix G: City Transportation Projects - Functional Designs



Note:
Pathways are conceptual and are subject to change.

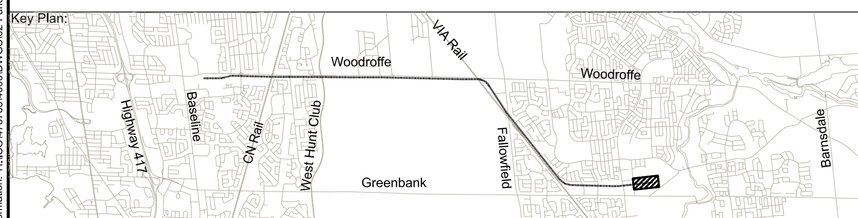


Original Ground	100.02	100.43	100.69	100.81	100.84	100.90	100.97	101.09	101.07	100.96	100.85	101.26	101.82	101.30	100.79	100.39	100.03	99.64	99.53	99.24	100.23	102.19	104.15	103.77	102.91	102.06	101.20
Top of Rail	94.57	94.47	94.37	94.32	94.34	94.42	94.52	94.62	94.72	94.82	94.92	95.02	95.12	95.22	95.32	95.42	95.52	95.62	95.72	95.82	95.92						
Station			19+300					19+400					19+500					19+600					19+700				

Legend:
- Shoring Allowance
- Below-grade
- At-grade
- Elevated
- Yard track
- Hydro
- Sanitary Sewer
- Storm Sewer
- Watermain
- ℄ Northbound Track/Alignment
- ℄ Southbound Track
- Underground Structure
- Open Trench Structure
- Top of Rail
- Original Ground
- Platform
- Existing property Line
- Proposed property Line
- Turnout
- Ballasted Track
- Existing Ground Material
- Fill Material
- Direct Fixation on Concrete Slab
- Portal

April 18, 2023

Key Plan:



Confederation Line Barrhaven LRT Extension

Baseline Station to Barrhaven Town Centre Sation

HORIZONTAL 0m 20 40 80 120 160
VERTICAL 0m 4 8 16 24 32

Ottawa PARSONS

Plan and Profile

Barrhaven Town Centre Station Sta. 19+250 to Limit of LRT

Revision:

Sheet: 18

chemin G R E E N B A N K Road
chemin G R E E N B A N K Road
prom. STRANDHERD Dr.
av. MARKETPLACE Ave.
2+600
2+620
2+640
2+660
2+680
2+700
2+720
2+740
2+760
2+780
2+800
2+820
R/W
3181
1.5
3.5
3.25
3.0
2.0
2.6
0.5
O/H HYDRO
STMH
VC
1050mm ST
Scale / Échelle
Horizontal 1:250
Vertical 1:50
7.5m 3.75 0 2.5 5 10m
1.5m 0.75 0 0.5 1 2m
C/L MARKETPLACE AVENUE
STA. 2+737.9
2+737.190 P.I. 98.031
TOP OF EXISTING PAVEMENT
DESSUS DE LA CHAUSSÉE
EXISTANTE
TOP OF PAVEMENT (GRADE CONTROL)
DESSUS DE LA CHAUSSÉE
(CONTRÔLE DU NIVEAU)
0.5%
EX. 375 ST
EX. 525 ST
EX. 750 WM
EX. 300mm DIA. WATERMAIN
1050 ST
104
103
102
101
100
99
98
97
96
95
94
93
92
91
90
89
88

STATION	C/L PROFILE PROFIL C/L
2+600	
2+610	
2+620	
2+630	
2+640	98.443
2+650	98.236
2+660	98.238
2+670	98.185
2+680	98.152
2+690	98.118
2+700	98.137
2+710	98.113
2+720	98.059
2+730	97.998
2+740	**98.015** 97.977
2+750	**97.957** 97.888
2+760	**97.900** 97.826
2+770	**97.842** 97.793
2+780	**97.785** 97.757
2+790	**97.727** 97.723
2+800	**97.670** 97.694
2+810	**97.612** 97.768
2+820	**97.555** 97.726

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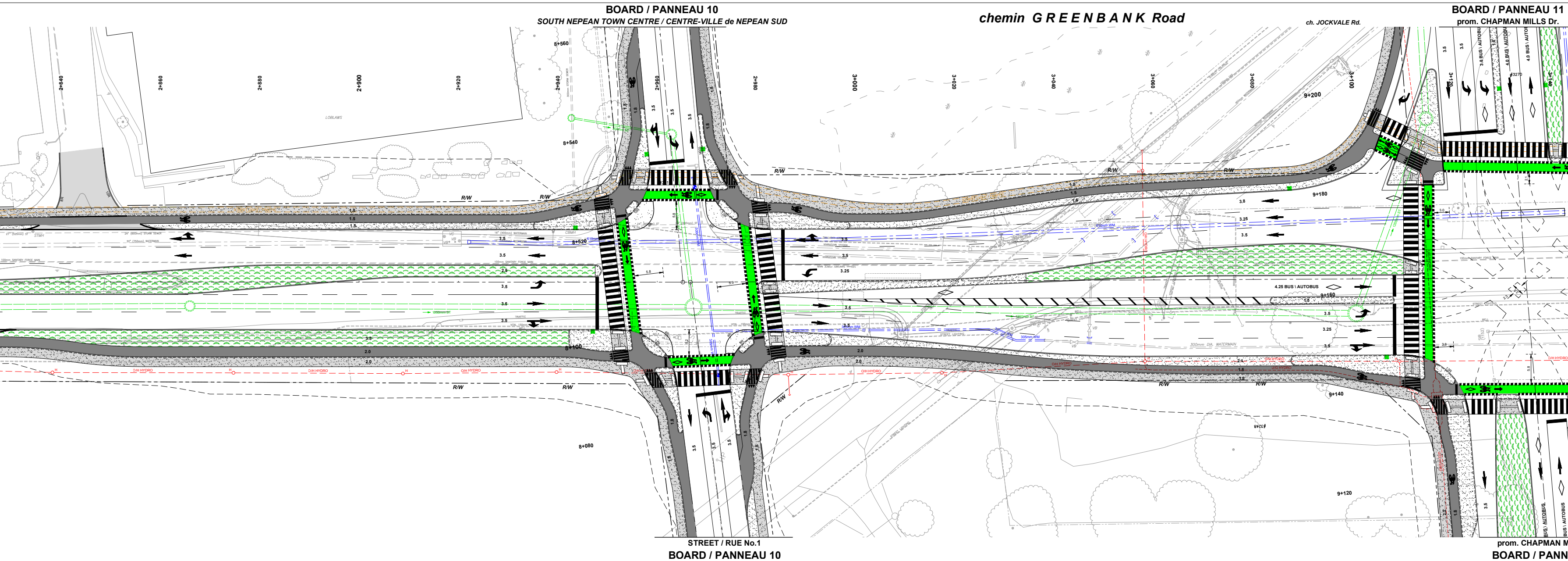
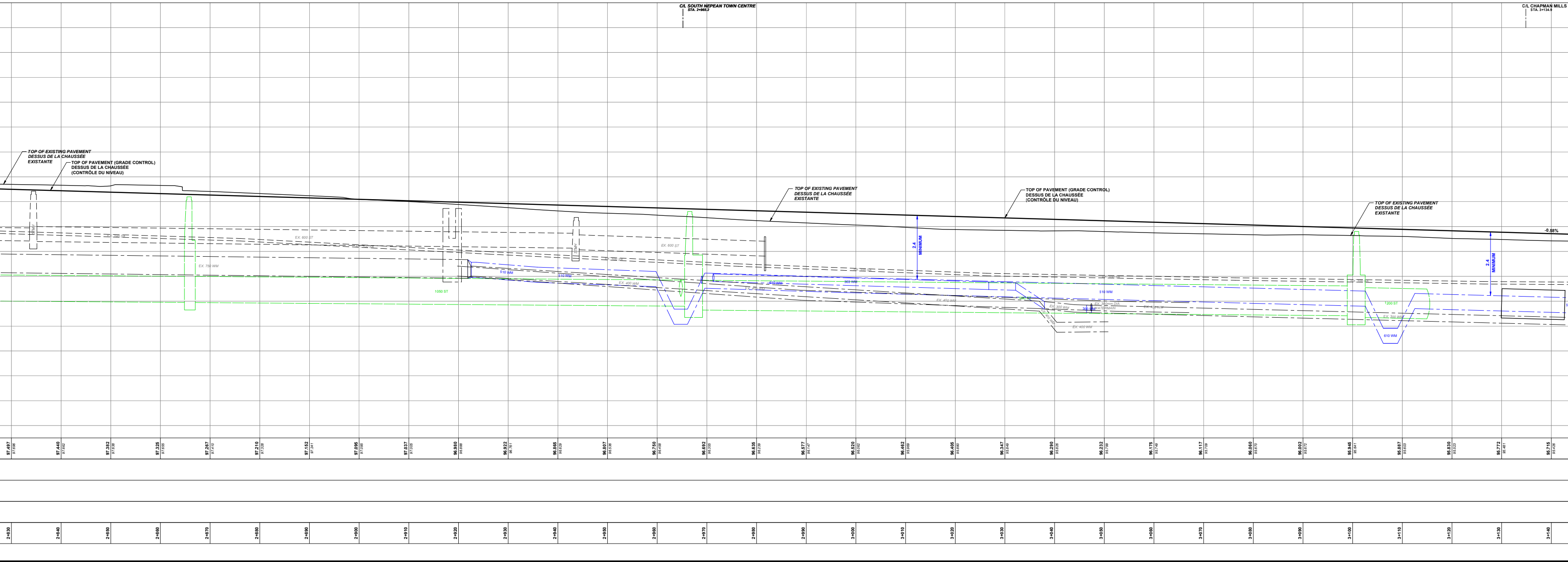
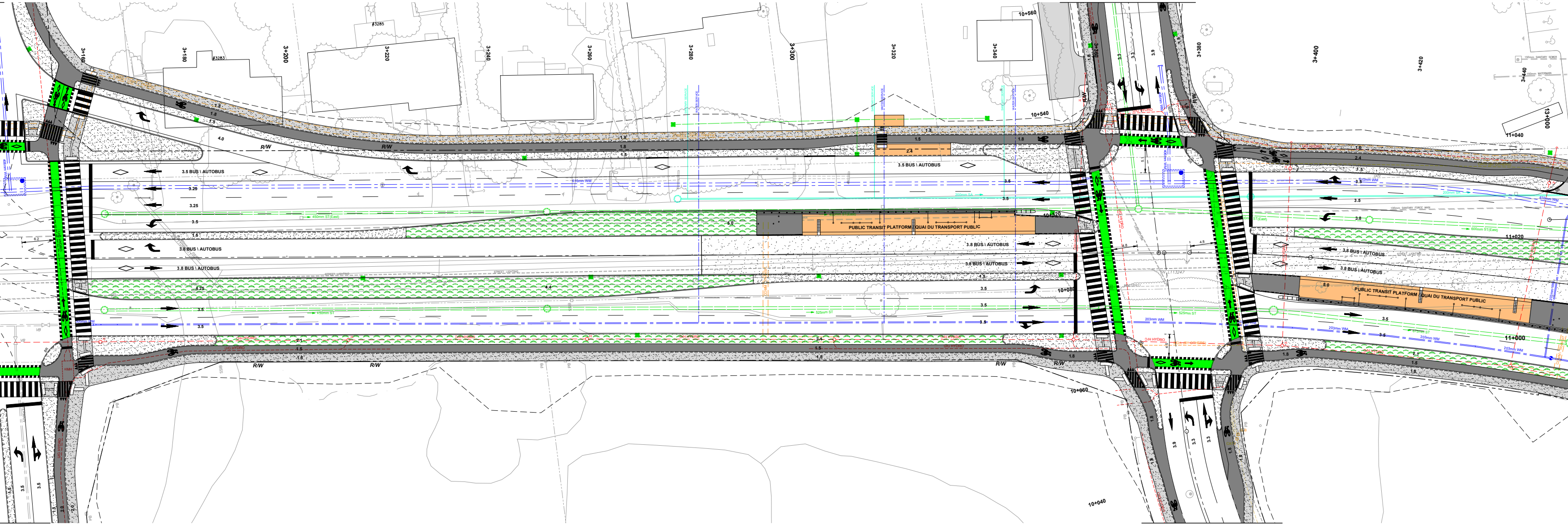

BOARD / PANNEAU 10
SOUTH NEPEAN TOWN CENTRE / CENTRE-VILLE de NEPEAN SUD
chemin G R E E N B A N K Road
ch. JOCKVALE Rd.
BOARD / PANNEAU 11
prom. CHAPMAN MILLS Dr.
LOBLAWS
R/W
O/H HYDRO
2+840
2+860
2+880
2+900
2+920
2+940
2+960
2+980
3+000
3+020
3+040
3+060
3+080
3+100
8+560
8+540
8+520
8+100
8+080
9+200
9+180
9+160
9+140
9+120
4.25 BUS \ AUTOBUS
300mm DIA. WATERMAIN
STREET / RUE No.1
BOARD / PANNEAU 10
prom. CHAPMAN M


C/L SOUTH NEPEAN TOWN CENTRE
STA. 2+965.2
BOARD / PANN
C/L CHAPMAN MILLS
STA. 3+134.9
TOP OF EXISTING PAVEMENT
DESSUS DE LA CHAUSSÉE
EXISTANTE
TOP OF PAVEMENT (GRADE CONTROL)
DESSUS DE LA CHAUSSÉE
(CONTRÔLE DU NIVEAU)
STMH
EX. 600 ST
EX. 750 WM
1050 ST
610 WM
EX. 400 WM
305 WM
1200 ST
2.4
MINIMUM
-0.58%
97.497
97.440
97.382
97.325
97.267
97.210
97.152
97.095
97.037
96.980
96.922
96.865
96.807
96.750
96.692
96.635
96.577
96.520
96.462
96.405
96.347
96.290
96.232
96.175
96.117
96.060
96.002
95.945
95.887
95.830
95.772
95.715
2+830
2+840
2+850
2+860
2+870
2+880
2+890
2+900
2+910
2+920
2+930
2+940
2+950
2+960
2+970
2+980
2+990
3+000
3+010
3+020
3+030
3+040
3+050
3+060
3+070
3+080
3+090
3+100
3+110
3+120
3+130
3+140

chemin G R E E N B A N K Road

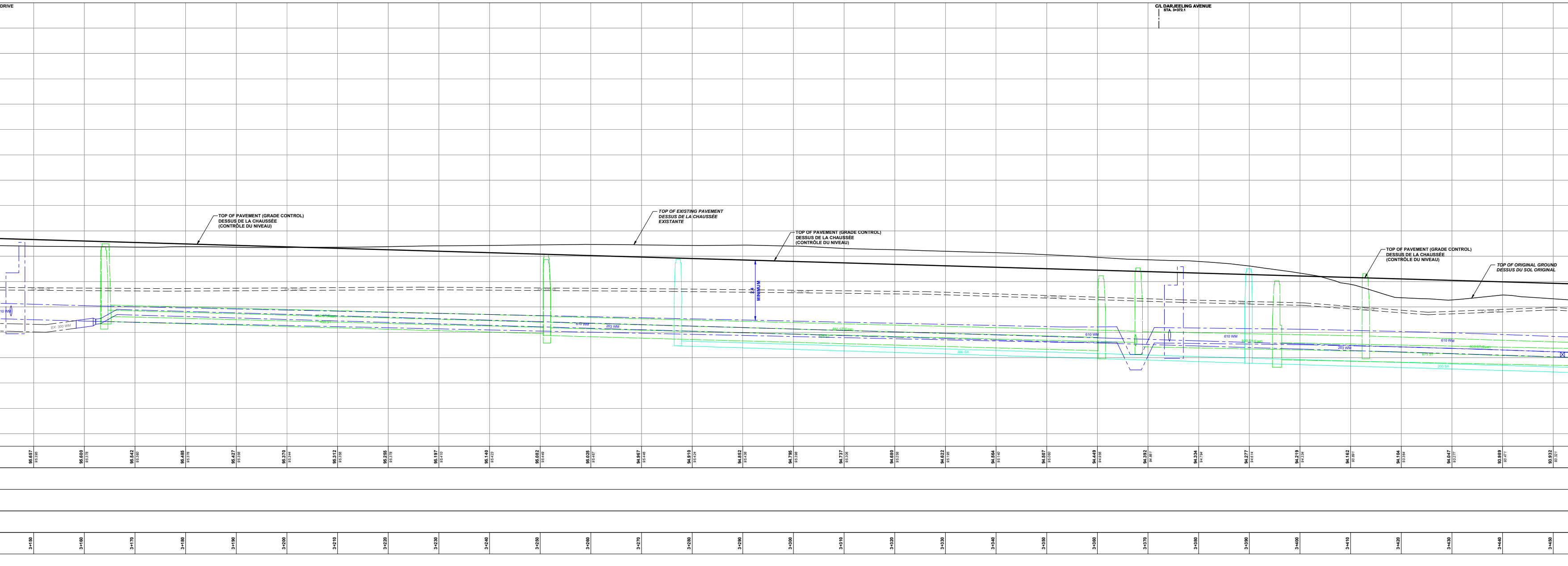
BOARD / PANNEAU 12
av. DARJEELING Ave.


SCHOOL ENTRA
3+160
3+180
3+200
3+220
3+240
3+260
3+280
3+300
3+320
3+340
3+380
3+400
3+420
3+440
10+560
10+540
10+080
10+060
10+040
11+040
11+020
11+000
#3285
#3283
3.5 BUS \ AUTOBUS
3.8 BUS \ AUTOBUS
PUBLIC TRANSIT PLATFORM / QUAI DU TRANSPORT PUBLIC
R/W
610mm WM
203mm WM
525mm ST
O/H HYDRO

ILLS Dr.
EAU 11
DRIVE

Scale / Échelle
Horizontal 1:250 — 7.5m 3.75 0 2.5 5 10m
Vertical 1:50 — 1.5m 0.75 0 0.5 1 2m

av. DARJEELING Ave.
BOARD / PANNEAU 12


C/L DARJEELING AVENUE
STA. 3+372.1
TOP OF PAVEMENT (GRADE CONTROL)
DESSUS DE LA CHAUSSÉE
(CONTRÔLE DU NIVEAU)
TOP OF EXISTING PAVEMENT
DESSUS DE LA CHAUSSÉE
EXISTANTE
TOP OF ORIGINAL GROUND
DESSUS DU SOL ORIGINAL
MINIMUM
610 WM
203 WM
95.657 95.395
95.600 95.378
95.542 95.360
95.485 95.376
95.427 95.356
95.370 95.344
95.312 95.356
95.255 95.378
95.197 95.410
95.140 95.423
95.082 95.449
95.025 95.467
94.967 95.446
94.910 95.424
94.852 95.438
94.795 95.398
94.737 95.306
94.680 95.256
94.622 95.195
94.564 95.140
94.507 95.060
94.449 94.956
94.392 94.861
94.334 94.794
94.277 94.614
94.219 94.334
94.162 93.891
94.104 93.364
94.047 93.277
93.989 93.471
93.932 93.321
3+150
3+160
3+170
3+180
3+190
3+200
3+210
3+220
3+230
3+240
3+250
3+260
3+270
3+280
3+290
3+300
3+310
3+320
3+330
3+340
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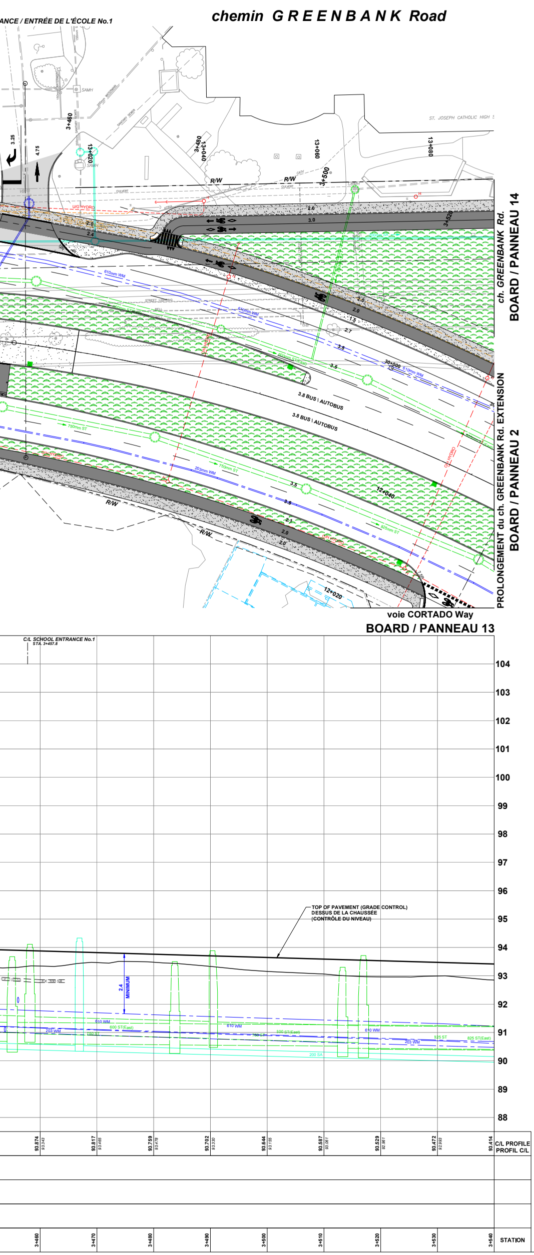
3+420
3+430
3+440
3+450


chemin G R E E N B A N K Road
ANCE / ENTRÉE DE L'ÉCOLE No.1
ST. JOSEPH CATHOLIC HIGH S
3+460
3+480
3+500
3+520
13+020
13+040
13+060
13+080
R/W
U/G HYDRO
610mm WM
3.8 BUS \ AUTOBUS
3.8 BUS \ AUTOBUS
750mm ST
203mm WM
825mm ST
12+040
12+020
30+000
ch. GREENBANK Rd.
BOARD / PANNEAU 14
PROLONGEMENT du ch. GREENBANK Rd. EXTENSION
BOARD / PANNEAU 2
voie CORTADO Way
BOARD / PANNEAU 13
C/L SCHOOL ENTRANCE No.1
STA. 3+457.8
TOP OF PAVEMENT (GRADE CONTROL)
DESSUS DE LA CHAUSSÉE
(CONTRÔLE DU NIVEAU)
2.4 MINIMUM
610 WM
600 ST(East)
203 WM
825 ST(East)
200 SA
104
103
102
101
100
99
98
97
96
95
94
93
92
91
90
89
88
93.874
93.817
93.759
93.702
93.644
93.587
93.529
93.472
93.414
C/L PROFILE
PROFIL C/L
3+460
3+470
3+480
3+490
3+500
3+510
3+520
3+530
3+540
STATION

Ottawa

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

DETAILED DESIGN

BOARD 1

CHEMIN GREENBANK ET PROLONGEMENT DU TRANSITWAY SUD-OUEST
AVENUE MARKETPLACE au CHEMIN BARNSDALE

CONCEPTION DÉTAILLÉE

PANNEAU 1

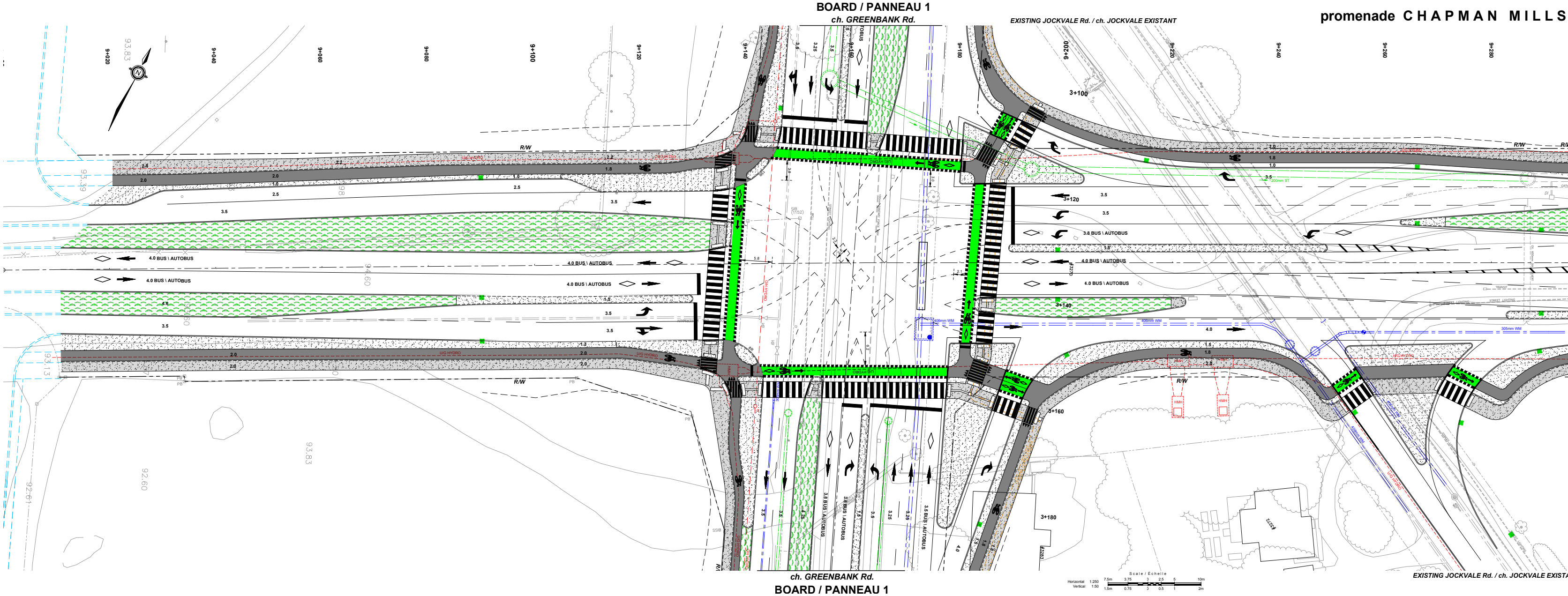
- Greenbank Road will be widened from the existing cross-section at Marketplace Avenue to a full section at Chapman Mills Drive including two median bus lanes, four traffic lanes, cycle tracks and sidewalks;
- The reconfiguration of Jockvale Road is required to accommodate Greenbank Road, Chapman Mills Drive and anticipated development along east side of Greenbank Road;
- Protected intersections will be provided at South Nepean Town Centre, Chapman Mills Drive and Darjeeling Street;
- A median transit station will be provided at Darjeeling Street;
- Coordination with ongoing development is required for intersections, municipal servicing and grading;
- Storm sewers and stormwater facilities will manage corridor drainage prior to outlet to the Jock River;
- Coordination/protection/relocation of utilities will be required.

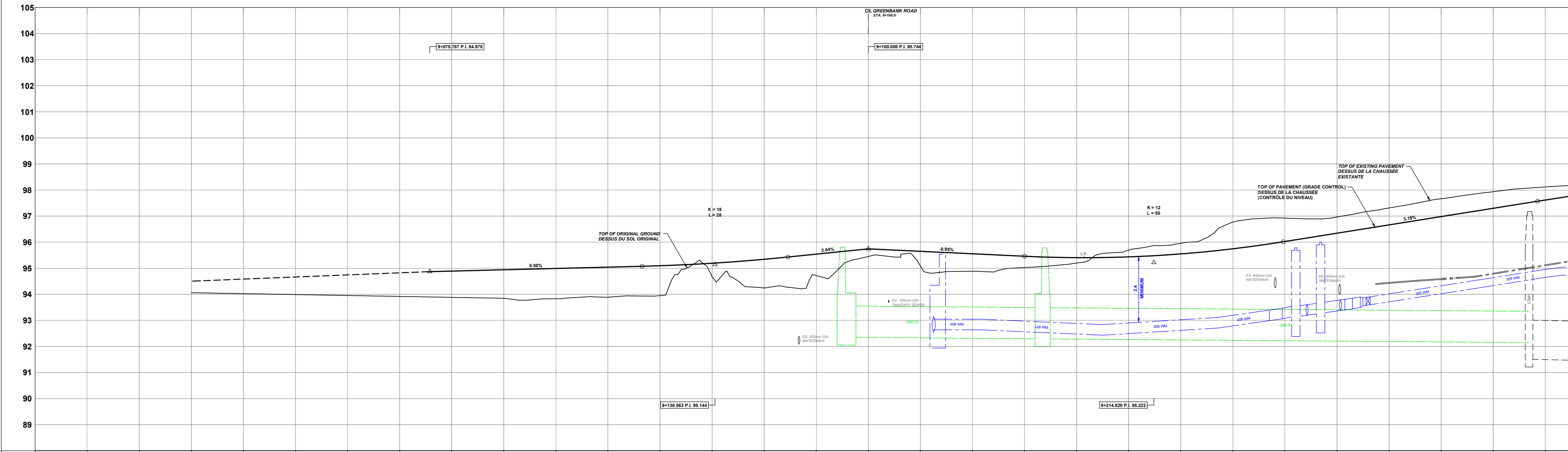
- Le chemin Greenbank sera élargi à partir de la section transversale existante à l'avenue Marketplace jusqu'à une section complète à la promenade Chapman Mills, comprenant deux voies médianes réservées aux autobus, quatre voies pour la circulation, des pistes cyclables et des trottoirs;
- La reconfiguration du chemin Jockvale est nécessaire pour répondre aux besoins du chemin Greenbank, de la promenade Chapman Mills et aux futurs aménagements le long du côté est du chemin Greenbank;
- Des intersections protégées seront établies au Centre-Ville de Nepean Sud, à la promenade Chapman Mills ainsi qu' à la rue Darjeeling;
- Une station de transport en commun sur la voie médiane sera fournie à la rue Darjeeling;
- Une coordination avec les aménagements en cours est requise pour les intersections, la viabilisation municipale et le nivellement;
- Des égouts pluviaux et installations de gestion des eaux pluviales gèreront le drainage du couloir avant le déversement dans la rivière Jock;
- La coordination, la protection et le déplacement des services publics seront requis.

LEGEND:
LÉGENDE:

— — · —	ROAD RIGHT-OF-WAY EMPRISE ROUTIÈRE
▨	SIDEWALK TROTTOIR
▨	BOULEVARD / MEDIAN BOULEVARD / MÉDIANE
▨	CYCLE TRACK PISTE CYCLABLE
🟩	SOD GAZON
200mm SA	PROPOSED SANITARY SEWER ÉGOUT SANITAIRE PROPOSÉ
525mm ST	PROPOSED STORM SEWER ÉGOUT PLUVIAL PROPOSÉ
610mm WM	PROPOSED WATERMAIN CONDUITE D'EAU PRINCIPALE PROPOSÉE

Stantec

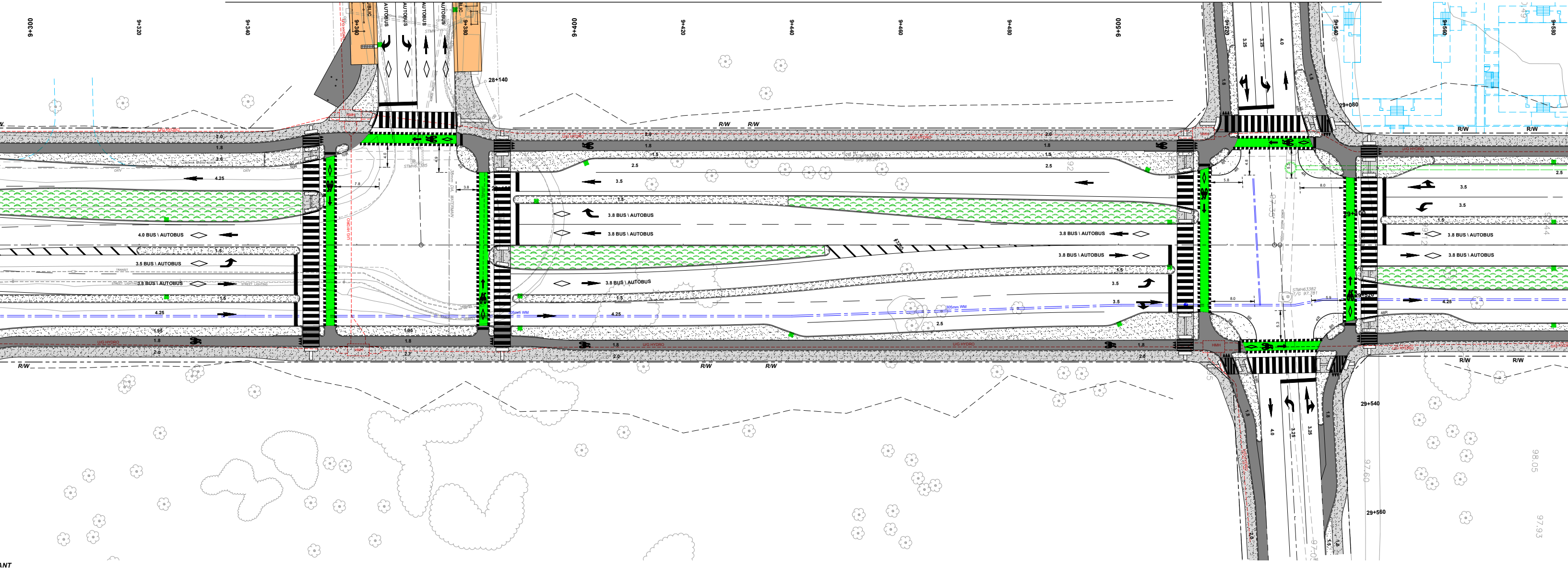

BOARD / PANNEAU 1
ch. GREENBANK Rd.
EXISTING JOCKVALE Rd. / ch. JOCKVALE EXISTANT
promenade C H A P M A N M I L L S
9+020
9+040
9+060
9+080
9+100
9+120
9+140
9+160
9+180
9+200
9+220
9+240
9+260
9+280
3+100
3+120
3+140
3+160
3+180
R/W
4.0 BUS \ AUTOBUS
3.8 BUS \ AUTOBUS
3.5
2.5
2.0
1.8
1.0
406mm WM
305mm WM
ch. GREENBANK Rd.
BOARD / PANNEAU 1
EXISTING JOCKVALE Rd. / ch. JOCKVALE EXISTANT
Scale / Échelle
Horizontal 1:250
Vertical 1:50
7.5m 3.75 0 2.5 5 10m
1.5m 0.75 0 0.5 1 2m

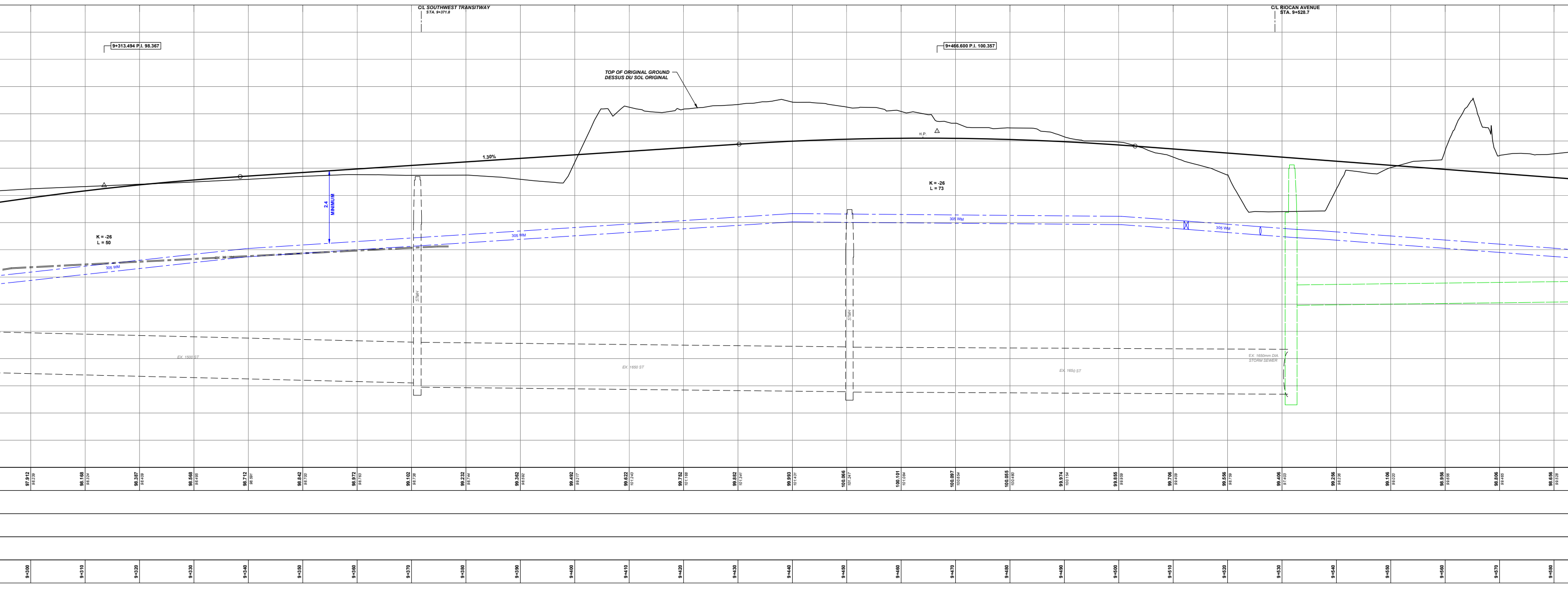


STATION	C/L PROFILE PROFIL C/L
9+000	
9+010	
9+020	
9+030	
9+040	
9+050	
9+060	
9+070	
9+080	94.891
9+090	94.941
9+100	94.991 93.837
9+110	95.041 93.888
9+120	95.094 93.949
9+130	95.191 94.677
9+140	95.342 94.245
9+150	95.540 94.720
9+160	95.744 95.451
9+170	95.649 95.088
9+180	95.554 94.884
9+190	95.459 95.027
9+200	95.405 95.199
9+210	95.435 95.696
9+220	95.548 95.958
9+230	95.745 96.770
9+240	96.025 96.921
9+250	96.343 96.965
9+260	96.662 97.312
9+270	96.981 97.665
9+280	97.300 97.935
9+290	97.618 98.118

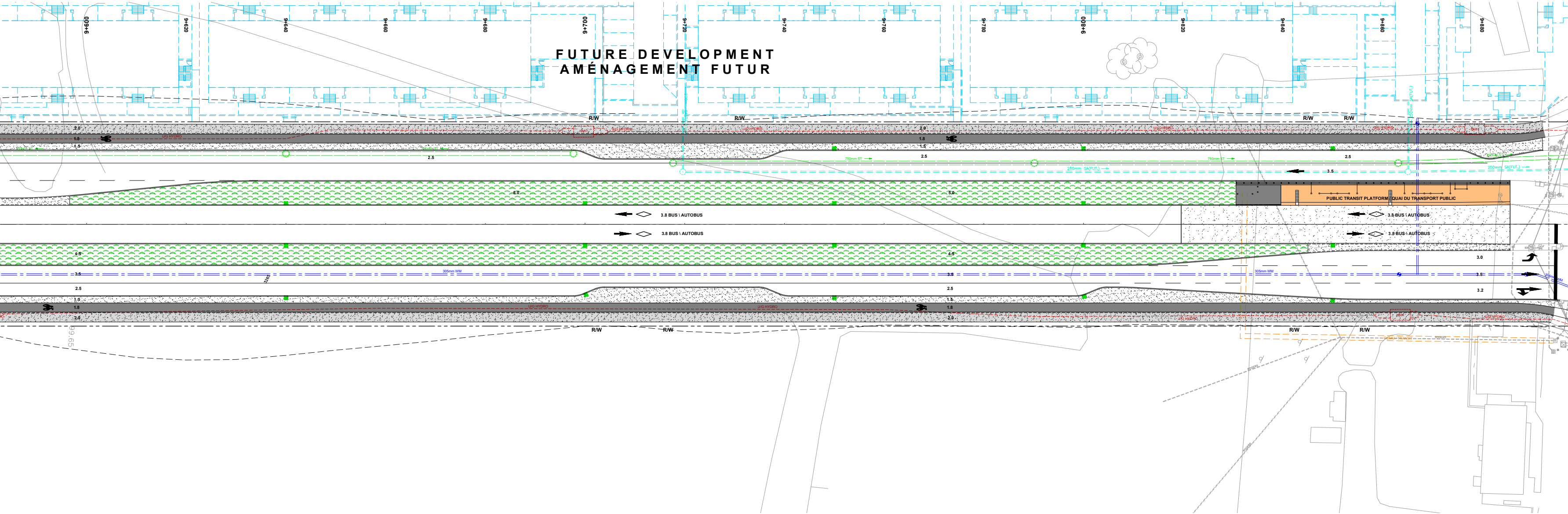
2024-08-19 1:45 PM v:\01-636\active\163601340\06_design\01_drawing\01340-25-on7.dwg

Drive

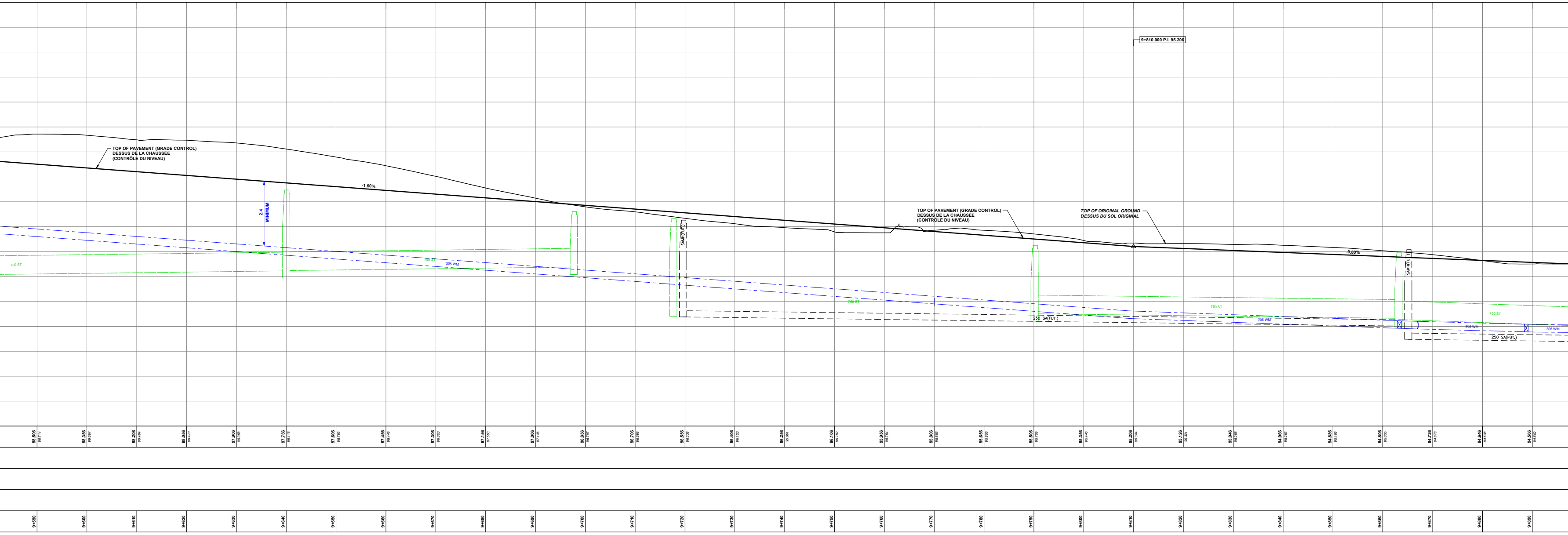

TRANSITWAY
MATCHLINE 'A' / LIGNE DE CORRESPONDANCE 'A'
av. RIOCAN Ave.
9+300
9+320
9+340
9+360
9+380
9+400
9+420
9+440
9+460
9+480
9+500
9+520
9+540
9+560
9+580
28+140
29+080
29+540
29+560
R/W
AUTOBUS
4.0 BUS \ AUTOBUS
3.5 BUS \ AUTOBUS
3.8 BUS \ AUTOBUS
4.25
3.5
2.5
2.0
1.8
1.5
3.25
4.0
U/G HYDRO
305mm WM
ANT


C/L SOUTHWEST TRANSITWAY
STA. 9+371.8
C/L RIOCAN AVENUE
STA. 9+528.7
9+313.494 P.I. 98.367
9+466.600 P.I. 100.357
TOP OF ORIGINAL GROUND
DESSUS DU SOL ORIGINAL
1.30%
H.P.
K = -26
L = 73
K = -26
L = 50
2.4 MINIMUM
305 WM
STMH
EX. 1500 ST
EX. 1650 ST
EX. 1650mm DIA. STORM SEWER
97.912
98.168
98.387
98.568
98.712
98.842
98.972
99.102
99.232
99.362
99.492
99.622
99.752
99.882
99.993
100.066
100.101
100.097
100.055
99.974
99.855
99.706
99.556
99.406
99.256
99.106
98.956
98.806
98.656
9+300
9+310
9+320
9+330
9+340
9+350
9+360
9+370
9+380
9+390
9+400
9+410
9+420
9+430
9+440
9+450
9+460
9+470
9+480
9+490
9+500
9+510
9+520
9+530
9+540
9+550
9+560
9+570
9+580

promenade CHAPMAN MILLS Drive


FUTURE DEVELOPMENT
AMÉNAGEMENT FUTUR
9+600
9+620
9+640
9+660
9+680
9+700
9+720
9+740
9+760
9+780
9+800
9+820
9+840
9+860
9+880
R/W
3.8 BUS \ AUTOBUS
PUBLIC TRANSIT PLATFORM/QUAI DU TRANSPORT PUBLIC
750mm ST
250mm SA(FUT.)
305mm WM
U/G HYDRO
2.0
1.5
2.5
3.5
4.5
6.0
3.0
3.2

Scale / Échelle
Horizontal 1:250 7.5m 3.75 0 2.5 5 10m
Vertical 1:50 1.5m 0.75 0 0.5 1 2m


9+810.000 P.I. 95.206
TOP OF PAVEMENT (GRADE CONTROL)
DESSUS DE LA CHAUSSÉE
(CONTRÔLE DU NIVEAU)
-1.50%
2.4 MINIMUM
TOP OF PAVEMENT (GRADE CONTROL)
DESSUS DE LA CHAUSSÉE
(CONTRÔLE DU NIVEAU)
TOP OF ORIGINAL GROUND
DESSUS DU SOL ORIGINAL
-0.80%
750 ST
305 WM
250 SA(FUT.)
SAN
98.506 99.714
98.356 99.667
98.206 99.484
98.056 99.470
97.906 99.358
97.756 99.115
97.606 98.793
97.456 98.445
97.306 98.020
97.156 97.553
97.006 97.146
96.856 96.797
96.706 96.596
96.556 96.336
96.406 96.120
96.256 95.961
96.106 95.792
95.956 95.754
95.806 95.855
95.656 95.855
95.506 95.709
95.356 95.446
95.206 95.344
95.126 95.321
95.046 95.285
94.966 95.253
94.886 95.166
94.806 95.035
94.726 94.878
94.646 94.638
94.566 94.502
9+590
9+600
9+610
9+620
9+630
9+640
9+650
9+660
9+670
9+680
9+690
9+700
9+710
9+720
9+730
9+740
9+750
9+760
9+770
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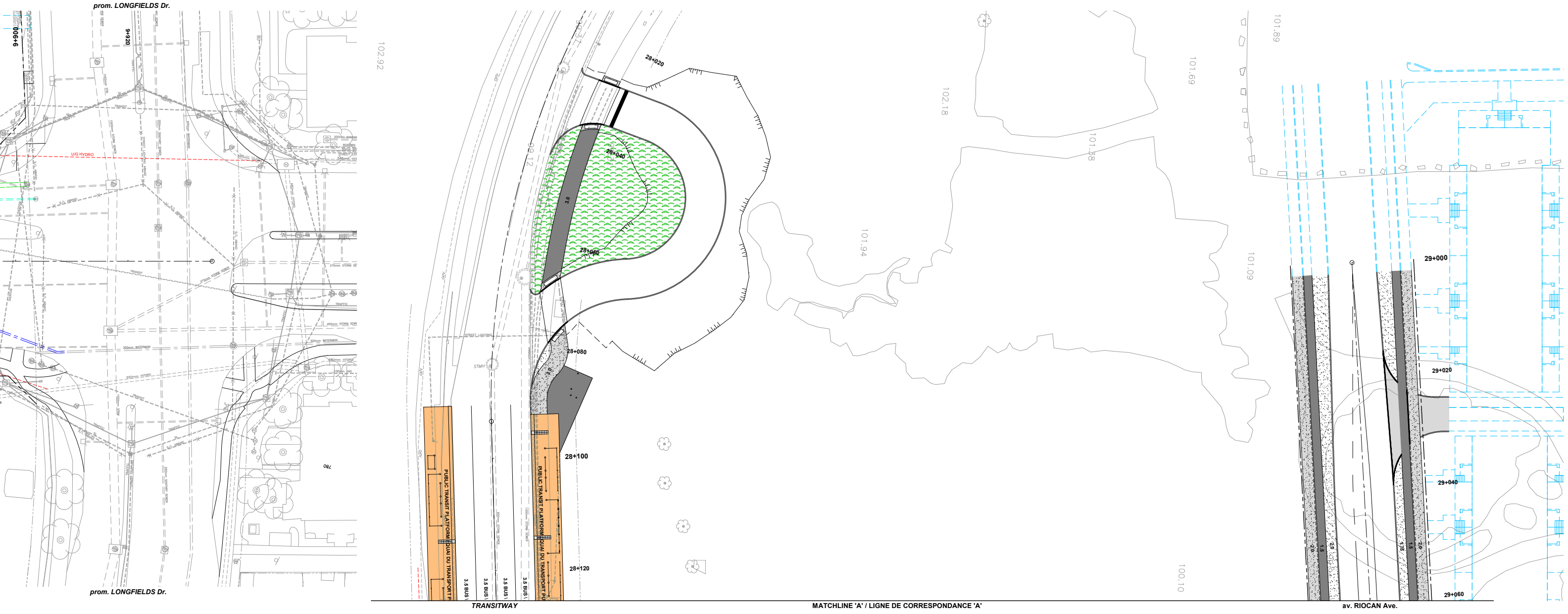
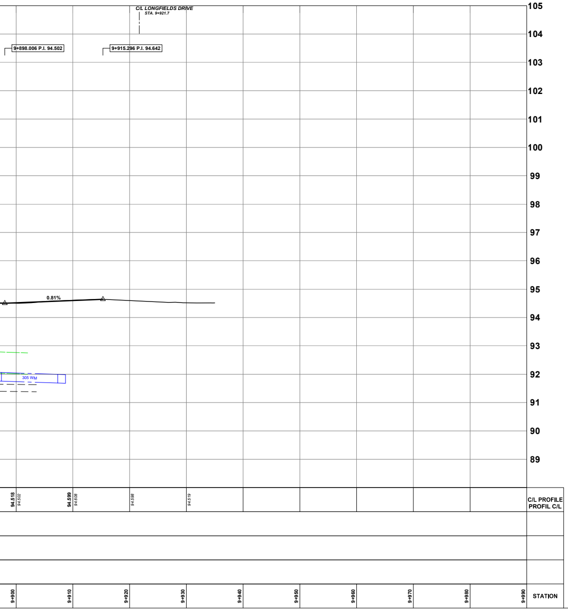
9+860
9+870
9+880
9+890


prom. LONGFIELDS Dr.
9+900
9+920
U/G HYDRO
prom. LONGFIELDS Dr.
102.92
28+020
28+040
28+060
28+080
28+100
28+120
3.0
PUBLIC TRANSIT PLATFORM / QUAI DU TRANSPORT PUBLIC
3.5 BUS
3.5 BUS
3.5 BUS
3.5 BUS
102.18
101.94
101.38
101.69
101.09
101.89
100.10
29+000
29+020
29+040
29+060
TRANSITWAY
MATCHLINE 'A' / LIGNE DE CORRESPONDANCE 'A'
av. RIOCAN Ave.



Ottawa

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

DETAILED DESIGN

BOARD 11

CHEMIN GREENBANK ET PROLONGEMENT DU TRANSITWAY SUD-OUEST
AVENUE MARKETPLACE au CHEMIN BARNSDALE

CONCEPTION DÉTAILLÉE

PANNEAU 11

- **The Chapman Mills Drive Extension includes two bus rapid transit lanes in the median, two road lanes, two parking lanes, cycle tracks, sidewalks;**
- **The reconfiguration of Jockvale Road is required to accommodate Greenbank Road, Chapman Mills Drive and anticipated development along Chapman Mills Drive;**
- **Protected intersections will be provided at Greenbank Road, the Southwest Transitway intersection (Barrhaven Centre) and Riocan Avenue;**
- **A transit station is planned at the Southwest Transitway intersection (Barrhaven Centre). A bus turnaround is included on the Transitway to maintain service in both directions;**
- **Coordination with ongoing development is required for extension of Chapman Mills Drive, intersections, municipal servicing and grading;**
- **Storm sewers will collect corridor drainage and outlet to existing storm sewers;**
- **Coordination/protection/relocation of utilities will be required.**

- **Le prolongement de la promenade Chapman Mills comprend deux voies médianes réservées au transport en commun par autobus rapide, deux voies de circulation, deux voies de stationnement, des pistes cyclables et des trottoirs;**
- **La reconfiguration du chemin Jockvale est nécessaire pour accueillir le chemin Greenbank, la promenade Chapman Mills et les aménagements prévus le long de la promenade Chapman Mills;**
- **Des intersections protégées seront établies au chemin Greenbank, au Transitway Sud-Ouest ainsi qu' à l'avenue Riocan;**
- **Une station de transport en commun est prévue à l'interesction du Transitway Sud-Ouest. Une voie pour virage demi-tour est inclue sur le Transitway pour maintenir un service dans les deux directions.**
- **De la coordination avec les aménagements en cours est nécessaire pour le prolongement de la promenade Chapman Mills, les intersections, la viabilisation municipale et le nivellement;**
- **Des égouts pluviaux recueilleront le drainage du couloir et se déverseront dans les égouts pluviaux existants;**
- **La coordination, la protection et le déplacement des services publics seront requis.**

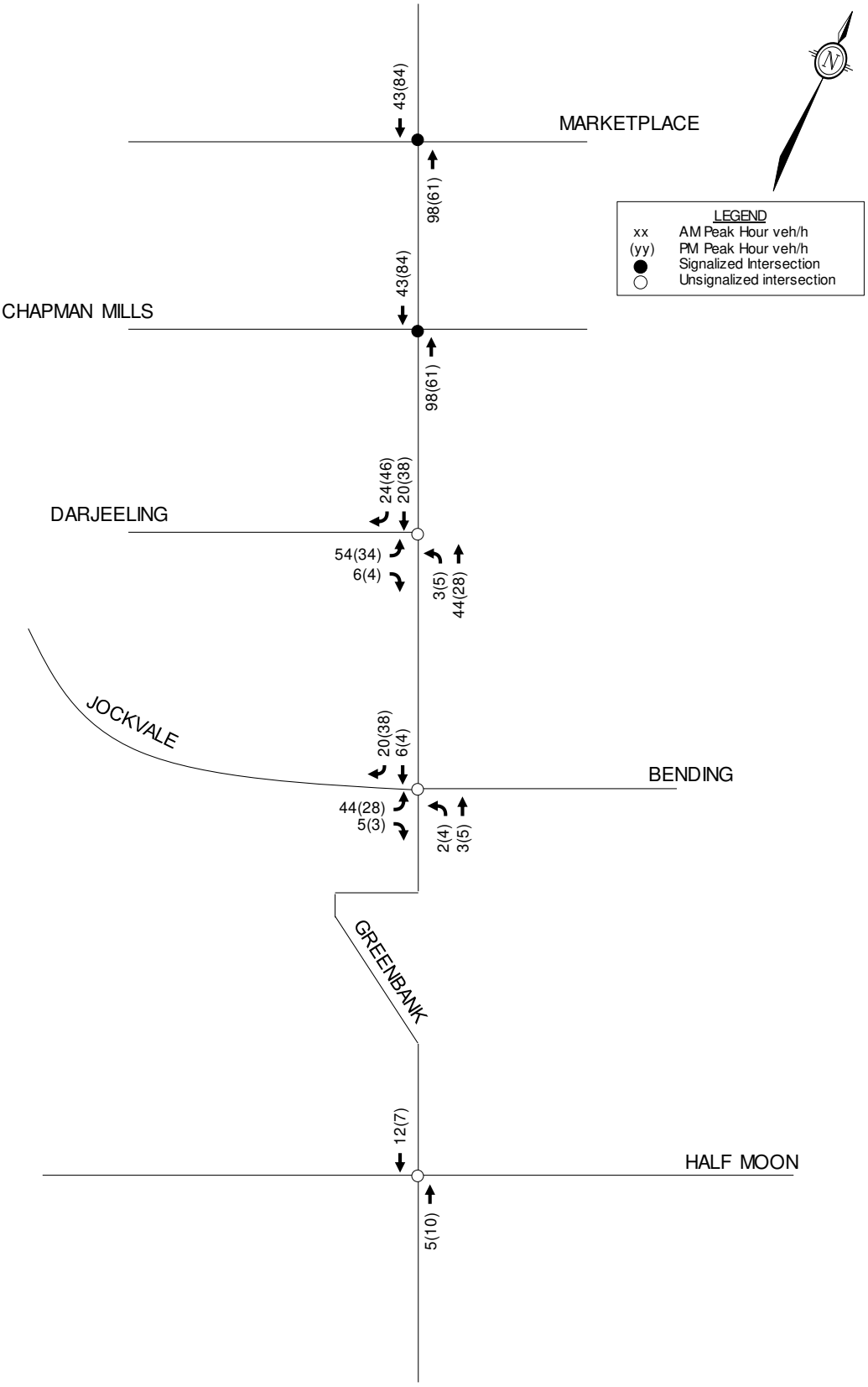
LEGEND:
LÉGENDE:

— – – —	ROAD RIGHT-OF-WAY EMPRISE ROUTIÈRE
▨	SIDEWALK TROTTOIR
▨	BOULEVARD / MEDIAN BOULEVARD / MÉDIANE
▨	CYCLE TRACK PISTE CYCLABLE
🟩	SOD GAZON
200mm SA	PROPOSED SANITARY SEWER ÉGOUT SANITAIRE PROPOSÉ
525mm ST	PROPOSED STORM SEWER ÉGOUT PLUVIAL PROPOSÉ
610mm WM	PROPOSED WATERMAIN CONDUITE D'EAU PRINCIPALE PROPOSÉE

Stantec

Appendix H: Other Area Developments TIA Excerpts

Figure 6: 2033 Site Generated Traffic Volumes



5.4 Trip Assignment

Using the distribution outlined above, turning movement splits, and access to major transportation infrastructure, the trips generated by the site have been assigned to the study area road network. Table 15 summarizes the proportional assignment to the study area roadways. Figure 15 illustrates the new site-generated volumes, and Figure 16 illustrates the pass-by volumes.

Table 15: Trip Assignment

To/From	Inbound Via
North	35% Strandherd Drive (W) 10% Longfields Drive (N) 20% Strandherd Drive (E)
South	10% Longfields Drive (S)
East	10% Strandherd Drive (E) 5% Chapman Mills Drive (E)
West	10% Strandherd Drive (W)
Total	**100%**

Figure 15: New Site Generation Auto Volumes

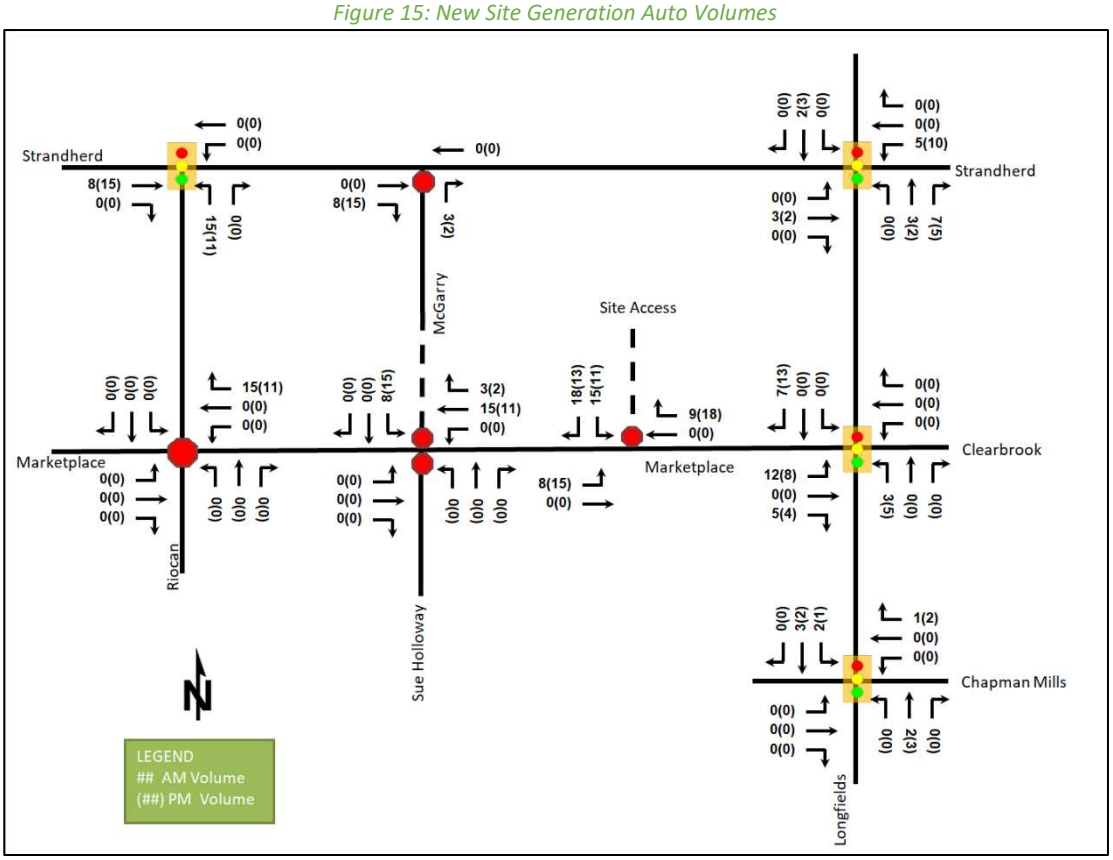
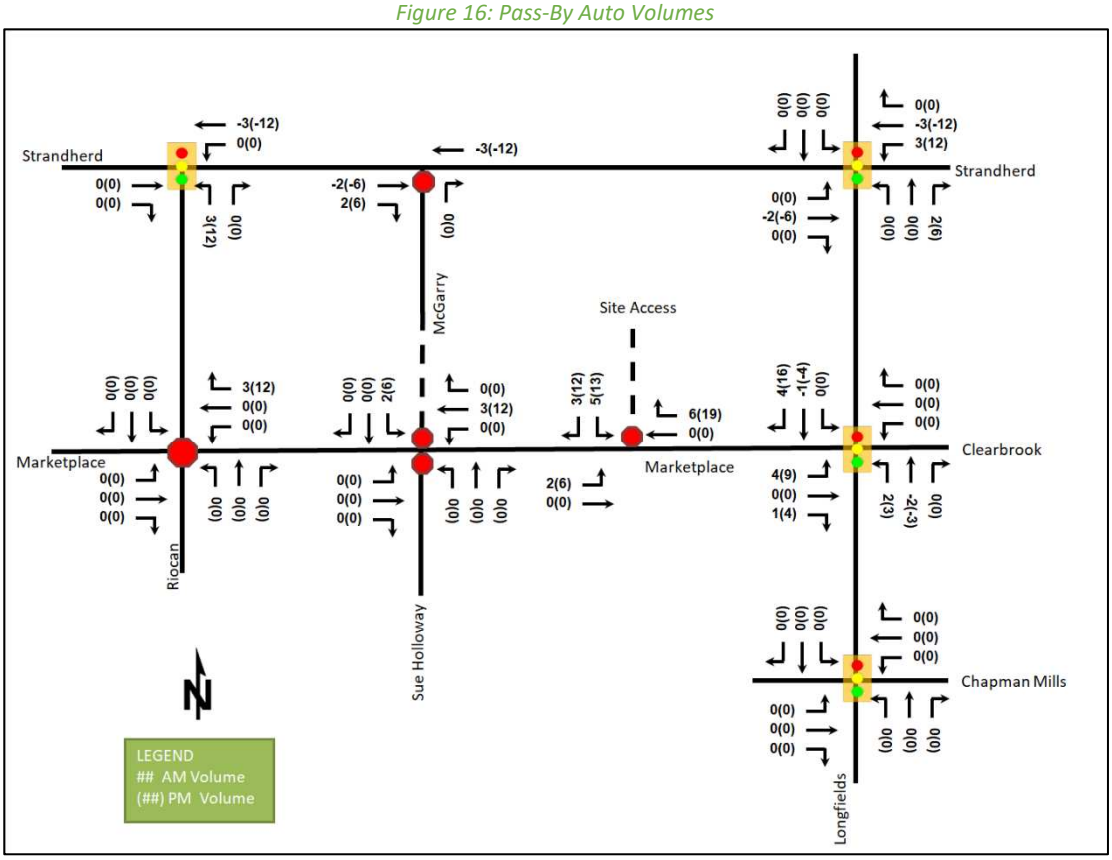


Figure 16: Pass-By Auto Volumes



6 Background Network Travel Demands

6.1 Transportation Network Plans

The transportation network plans were discussed in Section 2.3. The extension of Chapman Mills Drive from Longfields Drive to Greenbank Road is assumed to complete by 2031, although it will not impact the site-generated trips and trips distribution, the background volumes will be redistributed, and background volumes will be consistent with the study area TIAs. The projected associated redistribution of volumes is illustrated in Figure 17.

Figure 10: New Site Generation Auto Volumes

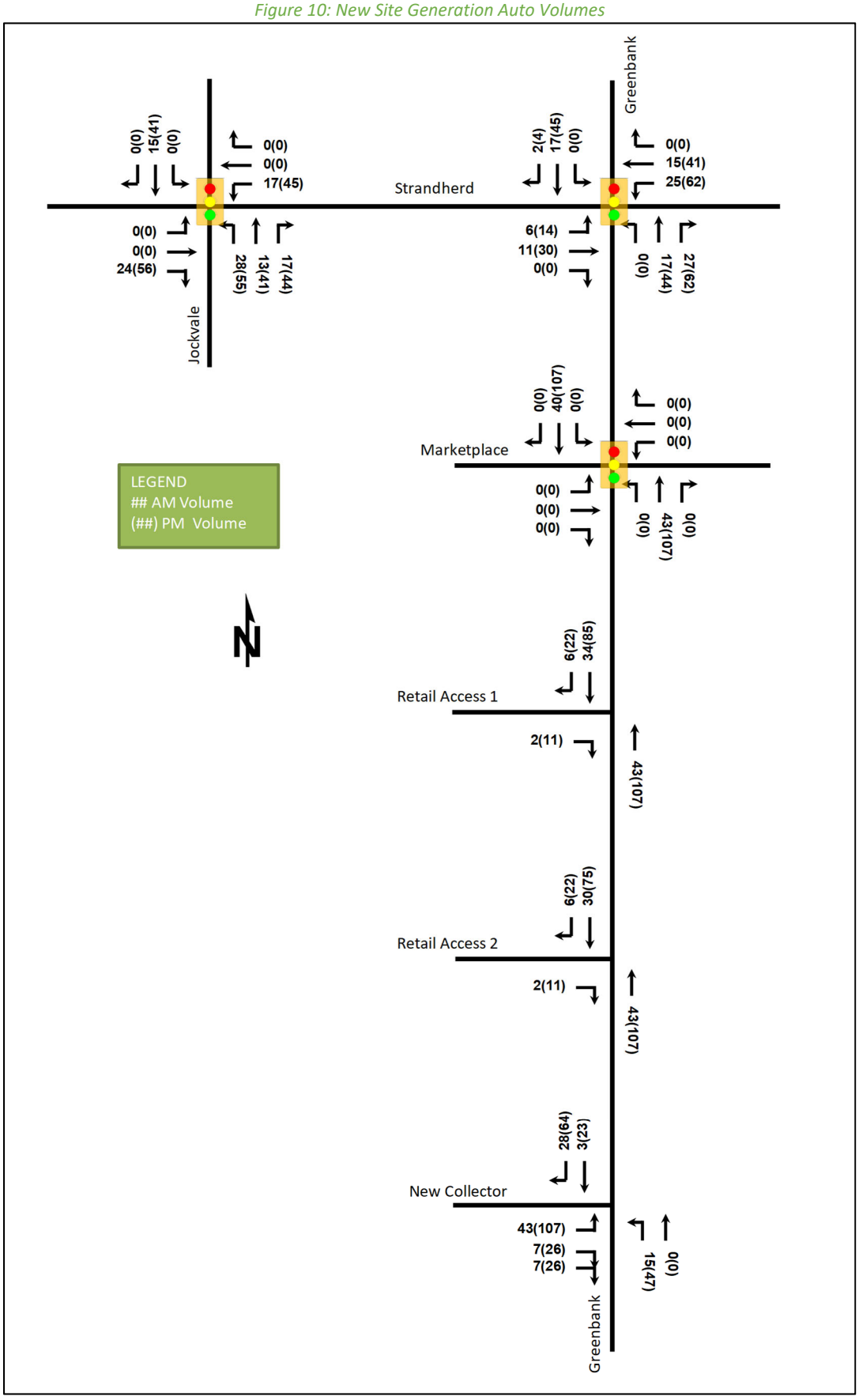


Figure 11: Pass-By Volumes

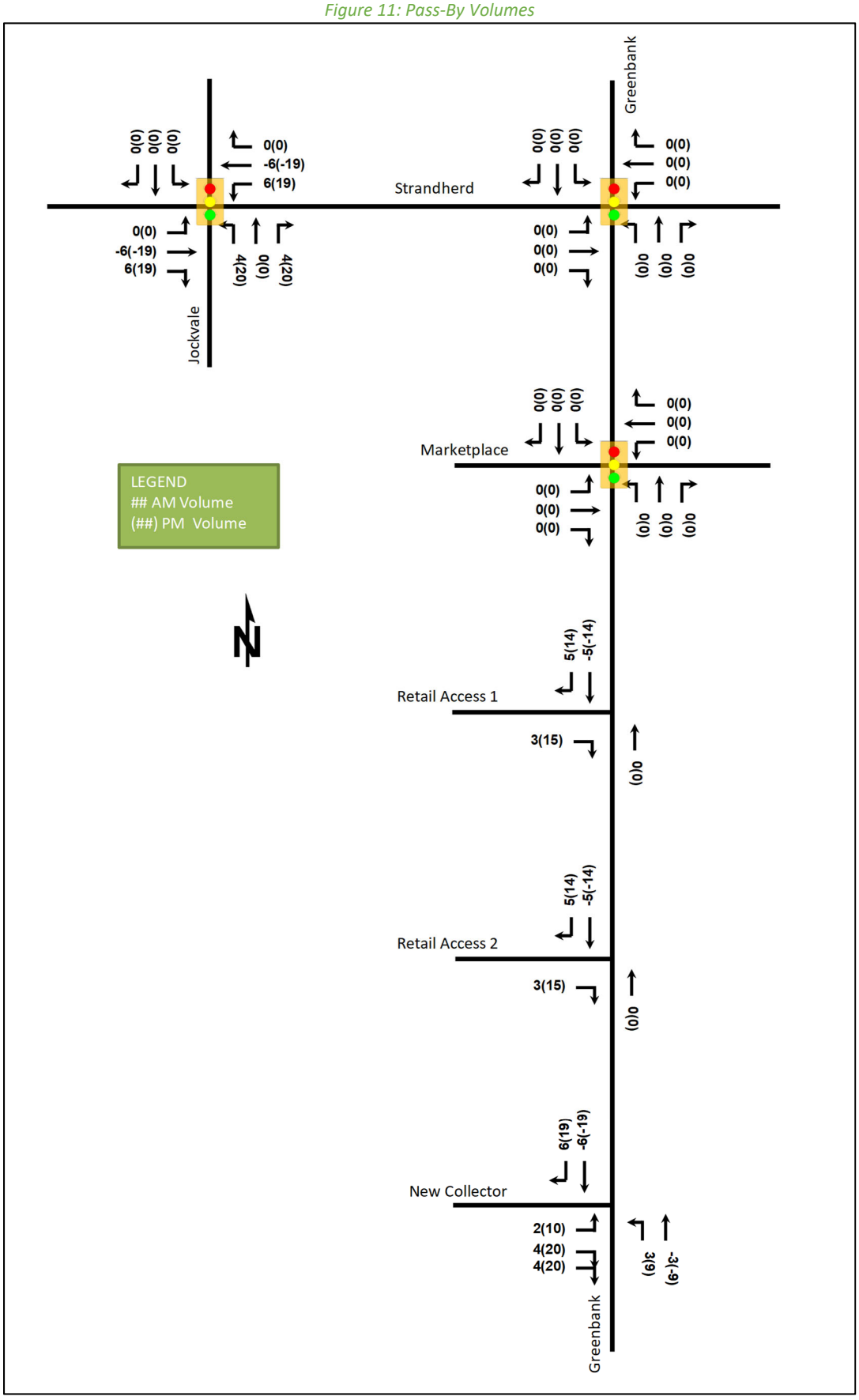


Figure 12: 2026 New Site Generation Auto Volumes

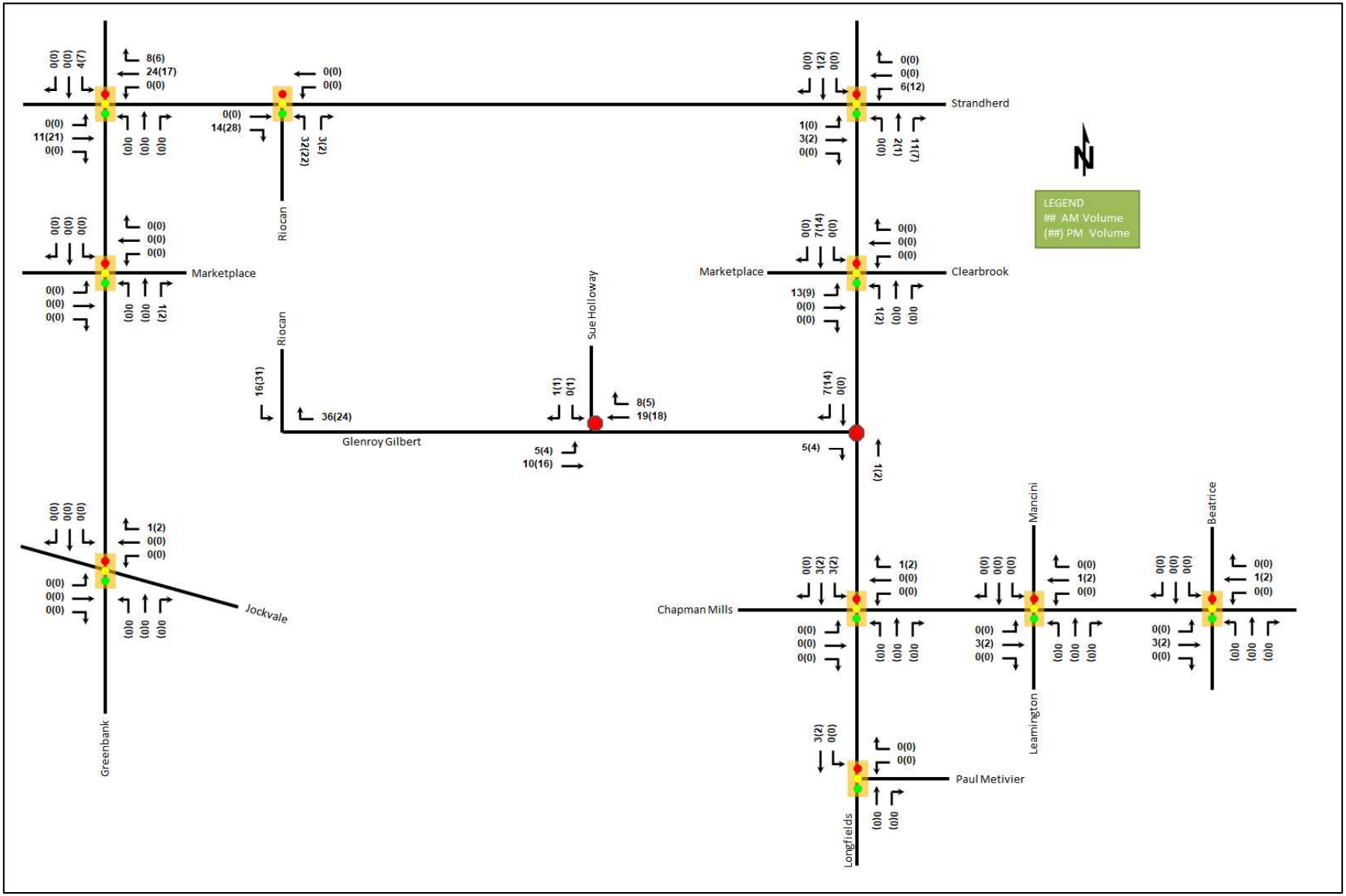


Figure 13: 2031 New Site Generation Auto Volumes

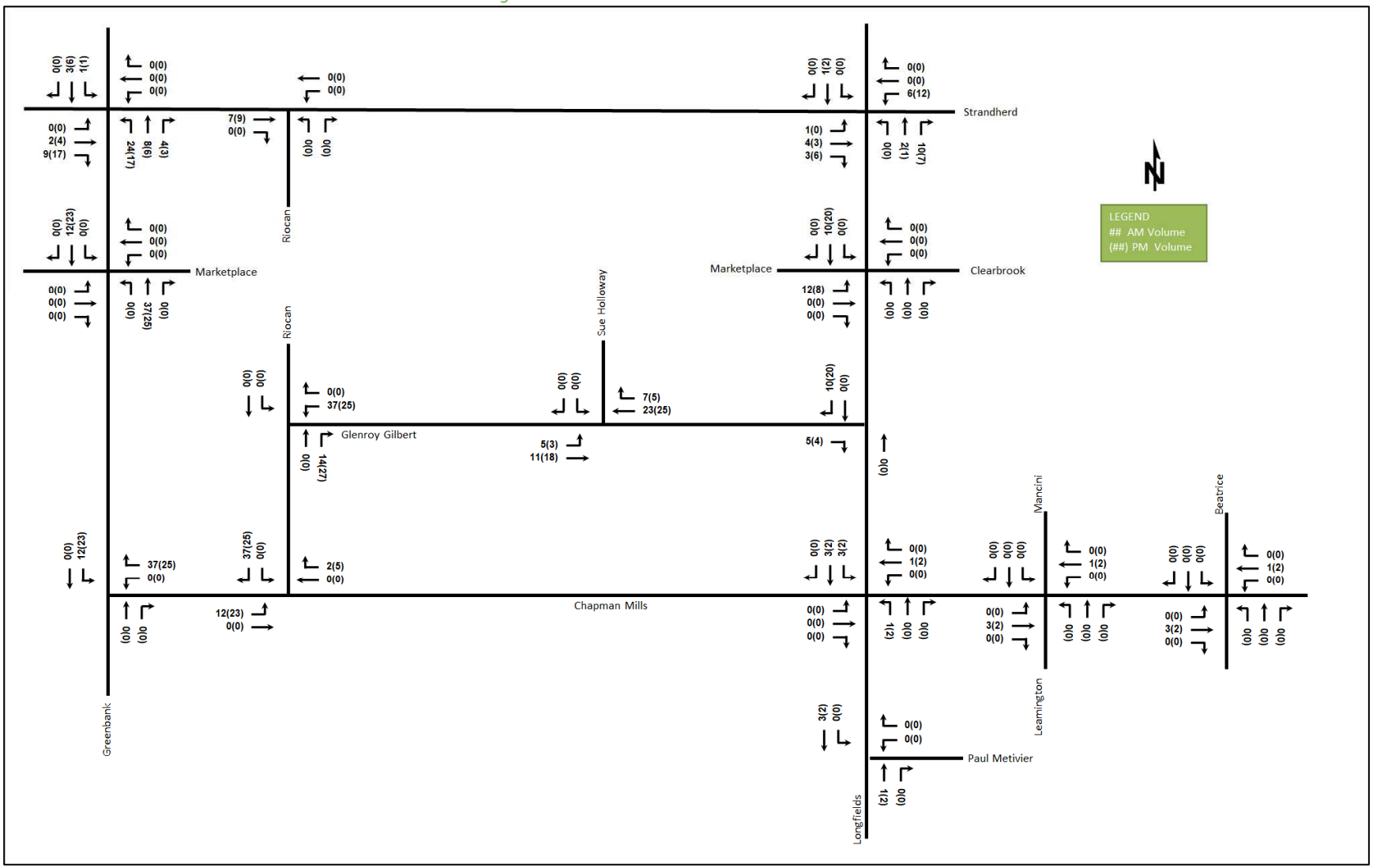
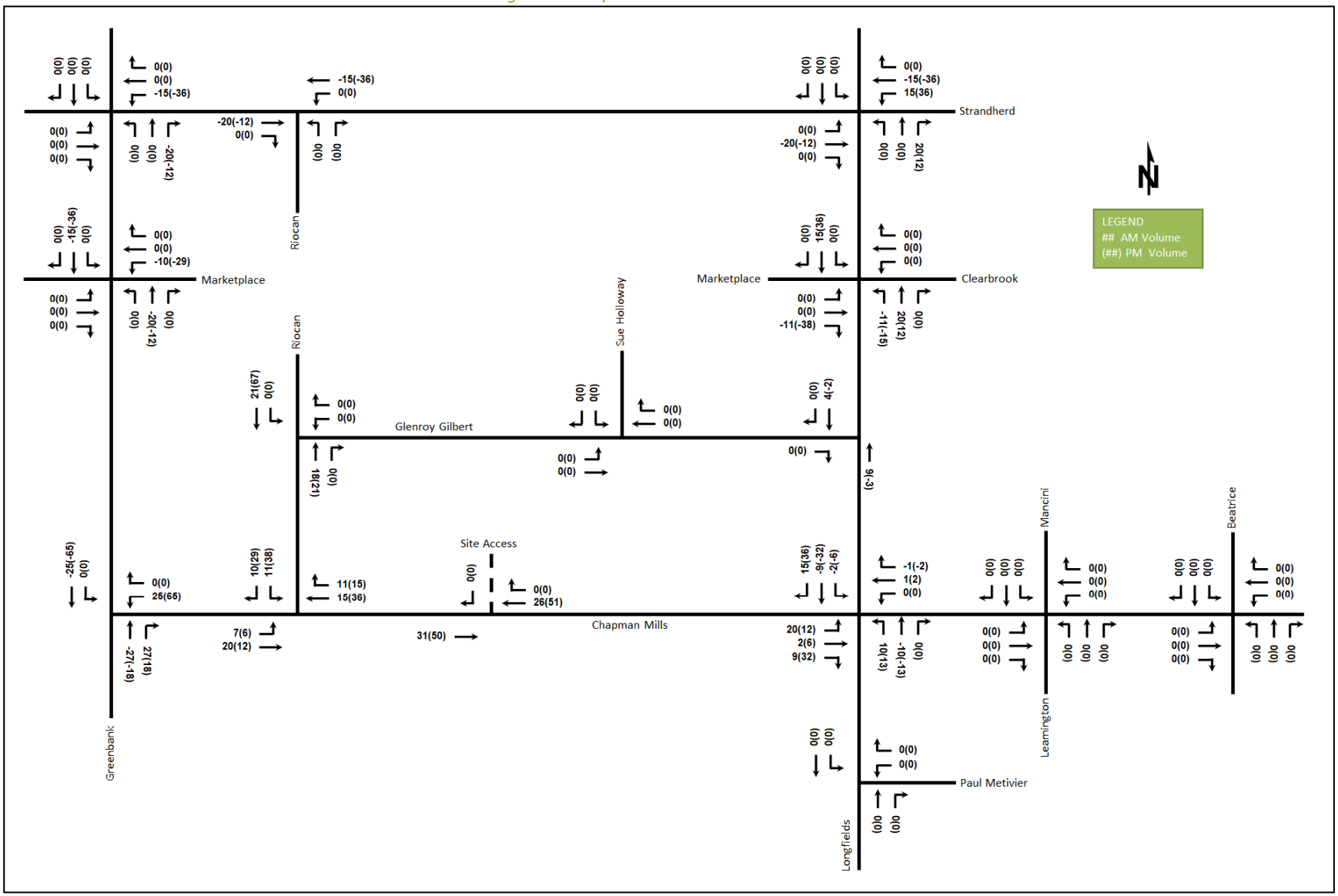
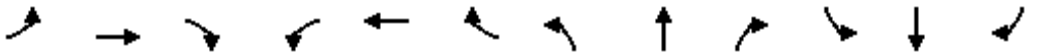


Figure 14: Chapman Mills Drive Redistribution



Appendix I: Synchro Analysis Reports - Existing Conditions



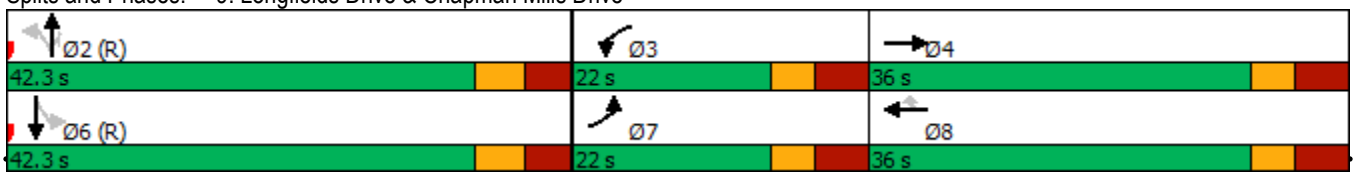
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	5	8	34	2	136	3	758	54	87	237	11
Future Volume (vph)	5	5	8	34	2	136	3	758	54	87	237	11
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	32.0		32.0	0.0		54.0	65.0		0.0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (m)	2.5			37.0			2.5			70.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor	1.00					0.98	1.00		0.94	0.99	1.00	
Frt		0.910				0.850			0.850		0.993	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	1413	0	1586	1213	1432	1695	3390	1488	1530	3129	0
Flt Permitted	0.950			0.950			0.583			0.301		
Satd. Flow (perm)	1690	1413	0	1586	1213	1411	1035	3390	1398	482	3129	0
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)		9				151					5	
Link Speed (k/h)		50			50			60			50	
Link Distance (m)		124.5			173.1			287.5			422.9	
Travel Time (s)		9.0			12.5			17.3			30.4	
Confl. Peds. (#/hr)	3					3	5		16	16		5
Confl. Bikes (#/hr)									17			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	40%	2%	9%	50%	8%	2%	2%	4%	13%	8%	45%
Adj. Flow (vph)	6	6	9	38	2	151	3	842	60	97	263	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	6	15	0	38	2	151	3	842	60	97	275	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			14.0			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Longfields Drive/Chapman Mills Drive
Existing AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases						8	2		2	6		
Detector Phase	7	4		3	8	8	2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	12.3	35.5		12.3	35.5	35.5	42.3	42.3	42.3	42.3	42.3	
Total Split (s)	22.0	36.0		22.0	36.0	36.0	42.3	42.3	42.3	42.3	42.3	
Total Split (%)	21.9%	35.9%		21.9%	35.9%	35.9%	42.2%	42.2%	42.2%	42.2%	42.2%	
Maximum Green (s)	14.7	28.5		14.7	28.5	28.5	35.0	35.0	35.0	35.0	35.0	
Yellow Time (s)	3.3	3.3		3.3	3.3	3.3	3.7	3.7	3.7	3.7	3.7	
All-Red Time (s)	4.0	4.2		4.0	4.2	4.2	3.6	3.6	3.6	3.6	3.6	
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)	7.3	7.5		7.3	7.5	7.5	7.3	7.3	7.3	7.3	7.3	
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	
Walk Time (s)		7.0			7.0	7.0	7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)		21.0			21.0	21.0	28.0	28.0	28.0	28.0	28.0	
Pedestrian Calls (#/hr)		10			10	10	10	10	10	10	10	
Act Effct Green (s)	6.0	13.6		8.4	17.6	17.6	65.0	65.0	65.0	65.0	65.0	
Actuated g/C Ratio	0.06	0.14		0.08	0.18	0.18	0.65	0.65	0.65	0.65	0.65	
v/c Ratio	0.06	0.08		0.29	0.01	0.41	0.00	0.38	0.07	0.31	0.14	
Control Delay	45.4	22.4		47.9	26.5	7.9	14.0	11.9	11.7	17.2	9.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	45.4	22.4		47.9	26.5	7.9	14.0	11.9	11.7	17.2	9.9	
LOS	D	C		D	C	A	B	B	B	B	A	
Approach Delay		29.0			16.0			11.9			11.8	
Approach LOS		C			B			B			B	

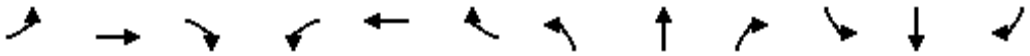
Intersection Summary			
Area Type:	Other		
Cycle Length: 100.3			
Actuated Cycle Length: 100.3			
Offset: 45 (45%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.41			
Intersection Signal Delay: 12.7		Intersection LOS: B	
Intersection Capacity Utilization 66.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 9: Longfields Drive & Chapman Mills Drive



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	16	57	36	28	146	92	657	32	56	307	47
Future Volume (vph)	21	16	57	36	28	146	92	657	32	56	307	47
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	27.0		0.0	25.0		0.0	50.0		0.0	92.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	24.0			3.0			84.0			40.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.99	0.99		1.00	0.98		1.00	1.00		0.98	1.00	
Frt		0.883			0.874			0.993			0.980	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1572	1423	0	1453	1416	0	1601	3314	0	1616	3204	0
Flt Permitted	0.568			0.704			0.463			0.361		
Satd. Flow (perm)	935	1423	0	1072	1416	0	777	3314	0	603	3204	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		63			124			8			20	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		185.4			199.4			422.9			208.9	
Travel Time (s)		13.3			14.4			30.4			15.0	
Confl. Peds. (#/hr)	9		6	6		9	4		24	24		4
Confl. Bikes (#/hr)			1			4			11			
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 (%)	10%	13%	11%	19%	17%	9%	8%	2%	28%	7%	3%	21%
Adj. Flow (vph)	23	18	63	40	31	162	102	730	36	62	341	52
Shared Lane Traffic (%)												
Lane Group Flow (vph)	23	81	0	40	193	0	102	766	0	62	393	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Longfields Drive/Marketplace Avenue/Clearbrook Drive
Existing AM Peak

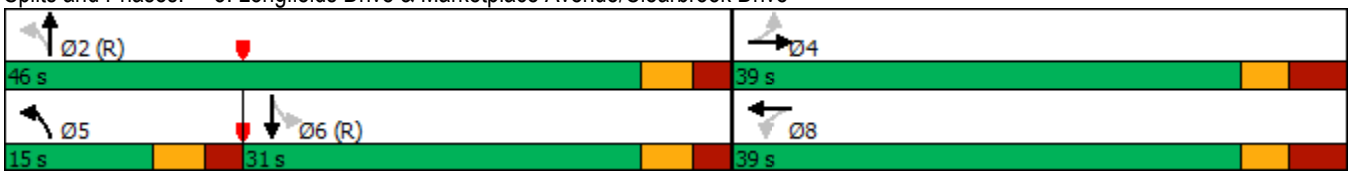


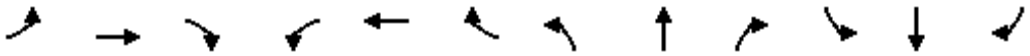
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	10.0		10.0	10.0	
Minimum Split (s)	38.8	38.8		38.8	38.8		10.6	25.8		25.8	25.8	
Total Split (s)	39.0	39.0		39.0	39.0		15.0	46.0		31.0	31.0	
Total Split (%)	45.9%	45.9%		45.9%	45.9%		17.6%	54.1%		36.5%	36.5%	
Maximum Green (s)	32.2	32.2		32.2	32.2		9.4	40.2		25.2	25.2	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.3	3.3		3.3	3.3	
All-Red Time (s)	3.8	3.8		3.8	3.8		2.3	2.5		2.5	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.8	6.8		6.8	6.8		5.6	5.8		5.8	5.8	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0		7.0	7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	25.0			13.0		13.0	13.0	
Pedestrian Calls (#/hr)	10	10		10	10			10		10	10	
Act Effct Green (s)	15.0	15.0		15.0	15.0		57.6	57.4		46.8	46.8	
Actuated g/C Ratio	0.18	0.18		0.18	0.18		0.68	0.68		0.55	0.55	
v/c Ratio	0.14	0.27		0.21	0.55		0.17	0.34		0.19	0.22	
Control Delay	27.3	11.5		29.2	17.0		7.7	7.8		17.5	12.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	27.3	11.5		29.2	17.0		7.7	7.8		17.5	12.7	
LOS	C	B		C	B		A	A		B	B	
Approach Delay		15.0			19.1			7.8			13.3	
Approach LOS		B			B			A			B	
90th %ile Green (s)	32.0	32.0		32.0	32.0		9.6	40.4		25.2	25.2	
90th %ile Term Code	Ped	Ped		Ped	Ped		Max	Coord		Coord	Coord	
70th %ile Green (s)	13.0	13.0		13.0	13.0		7.8	59.4		46.0	46.0	
70th %ile Term Code	Hold	Hold		Gap	Gap		Gap	Coord		Coord	Coord	
50th %ile Green (s)	10.0	10.0		10.0	10.0		7.0	62.4		49.8	49.8	
50th %ile Term Code	Min	Min		Min	Min		Gap	Coord		Coord	Coord	
30th %ile Green (s)	10.0	10.0		10.0	10.0		6.4	62.4		50.4	50.4	
30th %ile Term Code	Min	Min		Min	Min		Gap	Coord		Coord	Coord	
10th %ile Green (s)	10.0	10.0		10.0	10.0		0.0	62.4		62.4	62.4	
10th %ile Term Code	Hold	Hold		Min	Min		Skip	Coord		Coord	Coord	
Queue Length 50th (m)	3.5	2.7		6.1	10.6		3.8	18.1		4.3	13.6	
Queue Length 95th (m)	7.2	10.2		10.6	21.3		17.4	57.1		19.0	37.6	
Internal Link Dist (m)		161.4			175.4			398.9			184.9	
Turn Bay Length (m)	27.0			25.0			50.0			92.0		
Base Capacity (vph)	354	578		406	613		618	2240		331	1771	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.06	0.14		0.10	0.31		0.17	0.34		0.19	0.22	

Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 85			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay: 11.3		Intersection LOS: B	
Intersection Capacity Utilization 63.9%		ICU Level of Service B	
Analysis Period (min) 15			

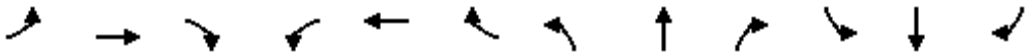
Splits and Phases: 5: Longfields Drive & Marketplace Avenue/Clearbrook Drive





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	48	38	82	57	114	112	686	85	99	426	25
Future Volume (vph)	34	48	38	82	57	114	112	686	85	99	426	25
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	15.0		0.0	53.0		0.0	56.0		85.0	75.0		0.0
Storage Lanes	1		0	1		0	1		1	2		0
Taper Length (m)	15.0			43.0			23.0			33.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.95	0.95
Ped Bike Factor	1.00	0.98		0.96	0.99		1.00	1.00		0.99	1.00	
Frt		0.934			0.900			0.984			0.992	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1679	1604	0	1679	1528	0	1695	3243	0	3257	3210	0
Flt Permitted	0.562			0.602			0.950			0.950		
Satd. Flow (perm)	990	1604	0	1024	1528	0	1693	3243	0	3240	3210	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		31			79			14			6	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		171.9			132.7			300.2			202.6	
Travel Time (s)		12.4			9.6			18.0			12.2	
Confl. Peds. (#/hr)	3		33	33		3	1		7	7		1
Confl. Bikes (#/hr)			3			1			1			1
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	3%	2%	5%	3%	2%	8%	2%	5%	2%	3%	7%	2%
Adj. Flow (vph)	38	53	42	91	63	127	124	762	94	110	473	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	95	0	91	190	0	124	856	0	110	501	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			7.4			7.4	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Greenbank Road/Marketplace Avenue
Existing AM Peak

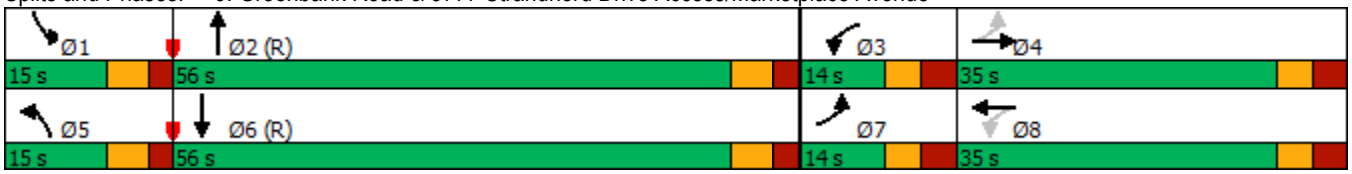


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.5	34.5		11.5	34.5		10.9	31.2		10.9	31.2	
Total Split (s)	14.0	35.0		14.0	35.0		15.0	56.0		15.0	56.0	
Total Split (%)	11.7%	29.2%		11.7%	29.2%		12.5%	46.7%		12.5%	46.7%	
Maximum Green (s)	7.5	28.5		7.5	28.5		9.1	49.8		9.1	49.8	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2		2.2	2.5		2.2	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5		5.9	6.2		5.9	6.2	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		21.0			21.0			18.0			18.0	
Pedestrian Calls (#/hr)		10			10			10			10	
Act Effct Green (s)	23.0	16.1		26.0	21.5		14.3	62.6		8.9	57.1	
Actuated g/C Ratio	0.19	0.13		0.22	0.18		0.12	0.52		0.07	0.48	
v/c Ratio	0.17	0.39		0.35	0.56		0.61	0.50		0.46	0.33	
Control Delay	33.4	34.8		37.7	32.8		64.3	21.1		59.2	21.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	33.4	34.8		37.7	32.8		64.3	21.1		59.2	21.1	
LOS	C	C		D	C		E	C		E	C	
Approach Delay		34.4			34.4			26.5			27.9	
Approach LOS		C			C			C			C	
90th %ile Green (s)	7.5	28.0		7.5	28.0		9.6	49.8		9.6	49.8	
90th %ile Term Code	Max	Ped		Max	Ped		Max	Coord		Max	Coord	
70th %ile Green (s)	7.5	17.8		7.5	17.8		17.4	59.1		10.5	52.2	
70th %ile Term Code	Max	Hold		Max	Gap		Gap	Coord		Gap	Coord	
50th %ile Green (s)	7.5	14.5		7.5	14.5		16.4	63.5		9.4	56.5	
50th %ile Term Code	Max	Hold		Max	Gap		Gap	Coord		Gap	Coord	
30th %ile Green (s)	0.0	10.0		7.5	24.0		15.3	69.1		8.3	62.1	
30th %ile Term Code	Skip	Min		Max	Hold		Gap	Coord		Gap	Coord	
10th %ile Green (s)	0.0	10.0		6.9	23.4		13.0	71.3		6.7	65.0	
10th %ile Term Code	Skip	Min		Gap	Hold		Gap	Coord		Gap	Coord	
Queue Length 50th (m)	7.0	14.0		17.4	25.5		27.6	64.1		12.9	37.4	
Queue Length 95th (m)	13.6	26.7		26.7	44.3		#65.8	102.7		22.1	55.6	
Internal Link Dist (m)		147.9			108.7			276.2			178.6	
Turn Bay Length (m)	15.0			53.0			56.0			75.0		
Base Capacity (vph)	237	404		262	423		202	1697		258	1531	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.16	0.24		0.35	0.45		0.61	0.50		0.43	0.33	

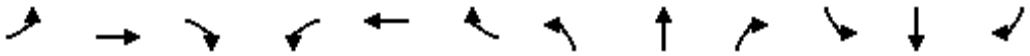
Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 87 (73%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.61			
Intersection Signal Delay: 28.6		Intersection LOS: C	
Intersection Capacity Utilization 71.4%		ICU Level of Service C	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 6: Greenbank Road & 3777 Strandherd Drive Access/Marketplace Avenue



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	0	0	50	0	267	1	643	79	84	348	2
Future Volume (vph)	4	0	0	50	0	267	1	643	79	84	348	2
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	35.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	1		1	0		0	1		0
Taper Length (m)	2.5			48.0			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor		1.00			1.00	0.98		0.99				
Frt						0.850		0.985			0.999	
Flt Protected		0.950			0.950					0.950		
Satd. Flow (prot)	0	1695	0	0	1695	1517	0	1697	0	1679	1716	0
Flt Permitted		0.720			0.755					0.315		
Satd. Flow (perm)	0	1282	0	0	1341	1483	0	1697	0	557	1716	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						170		8				
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		271.2			545.7			362.5			300.2	
Travel Time (s)		19.5			39.3			21.8			18.0	
Confl. Peds. (#/hr)	1		2	2		1			18	18		
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%	2%	2%	2%	20%	2%	2%	5%	4%	3%	6%	2%
Adj. Flow (vph)	4	0	0	56	0	297	1	714	88	93	387	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	4	0	0	56	297	0	803	0	93	389	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			7.4			7.4	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1	6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1	6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

Greenbank Road/Jockvale Road
Existing AM Peak

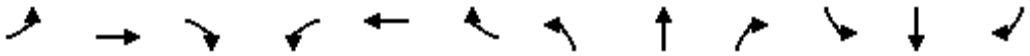


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	Perm	NA		Perm	NA	pm+ov	Perm	NA		pm+pt	NA	
Protected Phases		4			8	1		2		1	6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	8	1	2	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	5.0	10.0	10.0		5.0	10.0	
Minimum Split (s)	34.5	34.5		34.5	34.5	10.9	30.9	30.9		10.9	30.9	
Total Split (s)	34.5	34.5		34.5	34.5	18.0	72.0	72.0		18.0	90.0	
Total Split (%)	27.7%	27.7%		27.7%	27.7%	14.5%	57.8%	57.8%		14.5%	72.3%	
Maximum Green (s)	28.0	28.0		28.0	28.0	12.1	66.1	66.1		12.1	84.1	
Yellow Time (s)	3.3	3.3		3.3	3.3	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2	2.2	2.2	2.2		2.2	2.2	
Lost Time Adjust (s)		0.0			0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)		6.5			6.5	5.9		5.9		5.9	5.9	
Lead/Lag						Lead	Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	C-Max	C-Max		None	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	
Flash Dont Walk (s)	21.0	21.0		21.0	21.0		18.0	18.0			18.0	
Pedestrian Calls (#/hr)	10	10		10	10		10	10			10	
Act Effct Green (s)		14.2			14.2	20.3		87.7		101.2	102.4	
Actuated g/C Ratio		0.11			0.11	0.16		0.70		0.81	0.82	
v/c Ratio		0.03			0.37	0.77		0.67		0.18	0.28	
Control Delay		44.0			55.5	30.9		16.9		4.7	4.8	
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	
Total Delay		44.0			55.5	30.9		16.9		4.7	4.8	
LOS		D			E	C		B		A	A	
Approach Delay		44.0			34.8			16.9			4.8	
Approach LOS		D			C			B			A	
90th %ile Green (s)	28.0	28.0		28.0	28.0	9.7	68.5	68.5		9.7	84.1	
90th %ile Term Code	Ped	Ped		Ped	Ped	Gap	Coord	Coord		Gap	Coord	
70th %ile Green (s)	12.5	12.5		12.5	12.5	8.8	84.9	84.9		8.8	99.6	
70th %ile Term Code	Hold	Hold		Gap	Gap	Gap	Coord	Coord		Gap	Coord	
50th %ile Green (s)	10.5	10.5		10.5	10.5	6.8	88.9	88.9		6.8	101.6	
50th %ile Term Code	Hold	Hold		Gap	Gap	Gap	Coord	Coord		Gap	Coord	
30th %ile Green (s)	10.0	10.0		10.0	10.0	6.4	89.8	89.8		6.4	102.1	
30th %ile Term Code	Hold	Hold		Min	Min	Gap	Coord	Coord		Gap	Coord	
10th %ile Green (s)	0.0	0.0		0.0	0.0	6.2	106.5	106.5		6.2	118.6	
10th %ile Term Code	Skip	Skip		Skip	Skip	Gap	Coord	Coord		Gap	Coord	
Queue Length 50th (m)		0.9			13.3	28.9		94.3		3.5	18.0	
Queue Length 95th (m)		3.9			22.9	47.1		#232.4		12.9	52.3	
Internal Link Dist (m)		247.2			521.7			338.5			276.2	
Turn Bay Length (m)												
Base Capacity (vph)		288			301	434		1198		561	1411	
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		0.01			0.19	0.68		0.67		0.17	0.28	

Intersection Summary		
Area Type:	Other	
Cycle Length: 124.5		
Actuated Cycle Length: 124.5		
Offset: 100 (80%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green		
Natural Cycle: 90		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.77		
Intersection Signal Delay: 17.3		Intersection LOS: B
Intersection Capacity Utilization 85.0%		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: 11: Greenbank Road & Jockvale Road

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	65	0	104	0	539	54	165	685	0
Future Volume (vph)	0	0	0	65	0	104	0	539	54	165	685	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	32.0		32.0	0.0		54.0	65.0		0.0
Storage Lanes	1		0	1		1	1		1	1		0
Taper Length (m)	2.5			37.0			2.5			70.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Ped Bike Factor				0.99		0.98			0.97	1.00		
Frt						0.850			0.850			
Flt Protected				0.950						0.950		
Satd. Flow (prot)	1784	1784	0	1695	1784	1502	1784	3357	1517	1695	3390	0
Flt Permitted				0.950						0.419		
Satd. Flow (perm)	1784	1784	0	1681	1784	1476	1784	3357	1467	745	3390	0
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)						370						
Link Speed (k/h)		50			50			60			50	
Link Distance (m)		124.5			173.1			287.5			422.9	
Travel Time (s)		9.0			12.5			17.3			30.4	
Confl. Peds. (#/hr)	5		8	8		5	17		7	7		17
Confl. Bikes (#/hr)			1						3			10
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%	2%	2%	2%	2%	3%	2%	3%	2%	2%	2%	2%
Adj. Flow (vph)	0	0	0	72	0	116	0	599	60	183	761	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	0	0	72	0	116	0	599	60	183	761	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			14.0			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

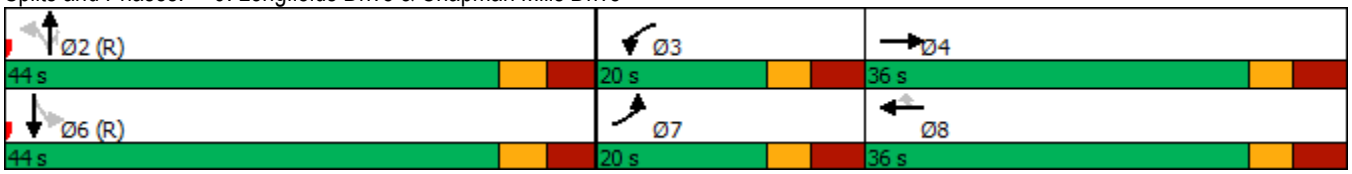


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot			Prot		Perm	Perm	NA	Perm	Perm	NA	
Protected Phases	7	4		3	8			2			6	
Permitted Phases						8	2		2	6		
Detector Phase	7	4		3	8	8	2	2	2	6	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	
Minimum Split (s)	12.3	35.5		12.3	35.5	35.5	42.3	42.3	42.3	42.3	42.3	
Total Split (s)	20.0	36.0		20.0	36.0	36.0	44.0	44.0	44.0	44.0	44.0	
Total Split (%)	20.0%	36.0%		20.0%	36.0%	36.0%	44.0%	44.0%	44.0%	44.0%	44.0%	
Maximum Green (s)	12.7	28.5		12.7	28.5	28.5	36.7	36.7	36.7	36.7	36.7	
Yellow Time (s)	3.3	3.3		3.3	3.3	3.3	3.7	3.7	3.7	3.7	3.7	
All-Red Time (s)	4.0	4.2		4.0	4.2	4.2	3.6	3.6	3.6	3.6	3.6	
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)	7.3	7.5		7.3	7.5	7.5	7.3	7.3	7.3	7.3	7.3	
Lead/Lag	Lead	Lag		Lead	Lag	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	
Walk Time (s)		7.0			7.0	7.0	7.0	7.0	7.0	7.0	7.0	
Flash Dont Walk (s)		21.0			21.0	21.0	28.0	28.0	28.0	28.0	28.0	
Pedestrian Calls (#/hr)		10			10	10	10	10	10	10	10	
Act Effct Green (s)				10.0		17.8		67.4	67.4	67.4	67.4	
Actuated g/C Ratio				0.10		0.18		0.67	0.67	0.67	0.67	
v/c Ratio				0.43		0.20		0.26	0.06	0.36	0.33	
Control Delay				49.4		0.8		9.8	10.7	15.0	10.4	
Queue Delay				0.0		0.0		0.0	0.0	0.0	0.0	
Total Delay				49.4		0.8		9.8	10.7	15.0	10.4	
LOS				D		A		A	B	B	B	
Approach Delay					19.4			9.9			11.3	
Approach LOS					B			A			B	
90th %ile Green (s)	0.0	28.0		12.7	48.0	48.0	37.2	37.2	37.2	37.2	37.2	
90th %ile Term Code	Skip	Ped		Max	Hold	Hold	Coord	Coord	Coord	Coord	Coord	
70th %ile Green (s)	0.0	0.0		11.1	10.9	10.9	74.3	74.3	74.3	74.3	74.3	
70th %ile Term Code	Skip	Skip		Gap	Hold	Hold	Coord	Coord	Coord	Coord	Coord	
50th %ile Green (s)	0.0	0.0		10.2	10.0	10.0	75.2	75.2	75.2	75.2	75.2	
50th %ile Term Code	Skip	Skip		Hold	Min	Min	Coord	Coord	Coord	Coord	Coord	
30th %ile Green (s)	0.0	0.0		10.2	10.0	10.0	75.2	75.2	75.2	75.2	75.2	
30th %ile Term Code	Skip	Skip		Hold	Min	Min	Coord	Coord	Coord	Coord	Coord	
10th %ile Green (s)	0.0	10.0		0.0	10.0	10.0	75.2	75.2	75.2	75.2	75.2	
10th %ile Term Code	Skip	Hold		Skip	Min	Min	Coord	Coord	Coord	Coord	Coord	
Queue Length 50th (m)				13.3		0.0		15.2	2.5	9.7	20.5	
Queue Length 95th (m)				26.2		0.0		61.6	16.0	#59.4	80.9	
Internal Link Dist (m)		100.5			149.1			263.5			398.9	
Turn Bay Length (m)				32.0		32.0			54.0	65.0		
Base Capacity (vph)				215		728		2263	989	502	2285	
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	

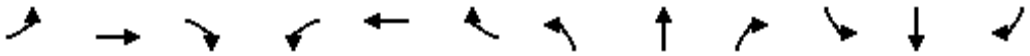
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio				0.33		0.16		0.26	0.06	0.36	0.33	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 33 (33%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.43			
Intersection Signal Delay: 11.7		Intersection LOS: B	
Intersection Capacity Utilization 69.7%		ICU Level of Service C	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 9: Longfields Drive & Chapman Mills Drive



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	110	47	200	15	54	58	155	408	20	81	437	167
Future Volume (vph)	110	47	200	15	54	58	155	408	20	81	437	167
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	27.0		0.0	25.0		0.0	50.0		0.0	92.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	24.0			3.0			84.0			40.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.99	0.97		0.99	0.99		1.00	1.00		0.99	0.99	
Frt		0.878			0.923			0.993			0.958	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1662	1510	0	1695	1621	0	1679	3361	0	1695	3222	0
Flt Permitted	0.677			0.405			0.308			0.480		
Satd. Flow (perm)	1177	1510	0	713	1621	0	543	3361	0	850	3222	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		222			64			8			67	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		185.4			199.4			422.9			208.9	
Travel Time (s)		13.3			14.4			30.4			15.0	
Confl. Peds. (#/hr)	10		25	25		10	3		7	7		3
Confl. Bikes (#/hr)			6			1			3			2
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 (%)	4%	2%	3%	2%	2%	3%	3%	2%	2%	2%	2%	2%
Adj. Flow (vph)	122	52	222	17	60	64	172	453	22	90	486	186
Shared Lane Traffic (%)												
Lane Group Flow (vph)	122	274	0	17	124	0	172	475	0	90	672	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

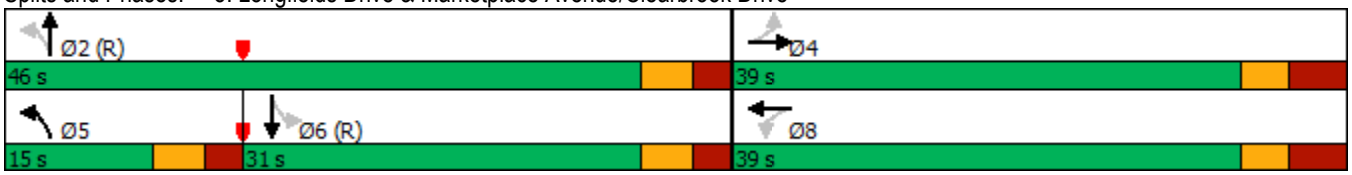


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	10.0		10.0	10.0	
Minimum Split (s)	38.8	38.8		38.8	38.8		10.6	25.8		25.8	25.8	
Total Split (s)	39.0	39.0		39.0	39.0		15.0	46.0		31.0	31.0	
Total Split (%)	45.9%	45.9%		45.9%	45.9%		17.6%	54.1%		36.5%	36.5%	
Maximum Green (s)	32.2	32.2		32.2	32.2		9.4	40.2		25.2	25.2	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.3	3.3		3.3	3.3	
All-Red Time (s)	3.8	3.8		3.8	3.8		2.3	2.5		2.5	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.8	6.8		6.8	6.8		5.6	5.8		5.8	5.8	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0		7.0	7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	25.0			13.0		13.0	13.0	
Pedestrian Calls (#/hr)	10	10		10	10			10		10	10	
Act Effct Green (s)	17.1	17.1		17.1	17.1		55.5	55.3		41.4	41.4	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.65	0.65		0.49	0.49	
v/c Ratio	0.52	0.57		0.12	0.33		0.37	0.22		0.22	0.42	
Control Delay	36.0	11.0		25.0	15.4		10.0	7.7		18.5	15.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	36.0	11.0		25.0	15.4		10.0	7.7		18.5	15.6	
LOS	D	B		C	B		B	A		B	B	
Approach Delay		18.7			16.6			8.3			16.0	
Approach LOS		B			B			A			B	
90th %ile Green (s)	32.0	32.0		32.0	32.0		9.6	40.4		25.2	25.2	
90th %ile Term Code	Ped	Ped		Ped	Ped		Max	Coord		Coord	Coord	
70th %ile Green (s)	17.8	17.8		17.8	17.8		9.9	54.6		39.1	39.1	
70th %ile Term Code	Gap	Gap		Hold	Hold		Gap	Coord		Coord	Coord	
50th %ile Green (s)	14.2	14.2		14.2	14.2		8.5	58.2		44.1	44.1	
50th %ile Term Code	Gap	Gap		Hold	Hold		Gap	Coord		Coord	Coord	
30th %ile Green (s)	11.4	11.4		11.4	11.4		7.4	61.0		48.0	48.0	
30th %ile Term Code	Gap	Gap		Hold	Hold		Gap	Coord		Coord	Coord	
10th %ile Green (s)	10.0	10.0		10.0	10.0		6.3	62.4		50.5	50.5	
10th %ile Term Code	Min	Min		Hold	Hold		Gap	Coord		Coord	Coord	
Queue Length 50th (m)	18.6	7.4		2.4	8.5		8.3	12.5		7.4	29.1	
Queue Length 95th (m)	26.3	21.2		5.9	17.0		27.4	33.2		24.7	63.6	
Internal Link Dist (m)		161.4			175.4			398.9			184.9	
Turn Bay Length (m)	27.0			25.0			50.0			92.0		
Base Capacity (vph)	445	709		270	653		482	2190		414	1602	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.27	0.39		0.06	0.19		0.36	0.22		0.22	0.42	

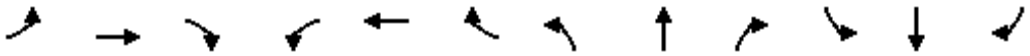
Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 85			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay: 14.0		Intersection LOS: B	
Intersection Capacity Utilization 65.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 5: Longfields Drive & Marketplace Avenue/Clearbrook Drive



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	109	91	214	126	188	172	587	107	189	827	25
Future Volume (vph)	71	109	91	214	126	188	172	587	107	189	827	25
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	15.0		0.0	53.0		0.0	56.0		85.0	75.0		0.0
Storage Lanes	1		0	1		0	1		1	2		0
Taper Length (m)	15.0			43.0			23.0			33.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.95	0.95
Ped Bike Factor	0.99	0.95		0.95	0.98		0.99	0.99		0.99	1.00	
Frt		0.932			0.910			0.977			0.996	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	1587	0	1695	1584	0	1695	3294	0	3288	3372	0
Flt Permitted	0.244			0.431			0.950			0.950		
Satd. Flow (perm)	430	1587	0	727	1584	0	1682	3294	0	3245	3372	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		33			59			19			3	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		171.9			132.7			300.2			202.6	
Travel Time (s)		12.4			9.6			18.0			12.2	
Confl. Peds. (#/hr)	20		65	65		20	12		16	16		12
Confl. Bikes (#/hr)			8			4			1			
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	79	121	101	238	140	209	191	652	119	210	919	28
Shared Lane Traffic (%)												
Lane Group Flow (vph)	79	222	0	238	349	0	191	771	0	210	947	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			7.4			7.4	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

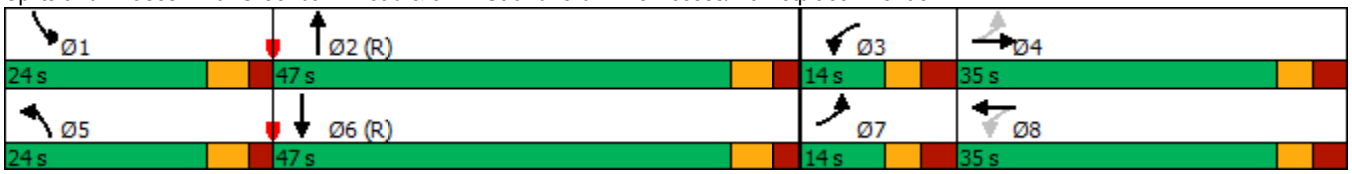
Greenbank Road/Marketplace Avenue
Existing PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.5	34.5		11.5	34.5		10.9	31.2		10.9	31.2	
Total Split (s)	14.0	35.0		14.0	35.0		24.0	47.0		24.0	47.0	
Total Split (%)	11.7%	29.2%		11.7%	29.2%		20.0%	39.2%		20.0%	39.2%	
Maximum Green (s)	7.5	28.5		7.5	28.5		18.1	40.8		18.1	40.8	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2		2.2	2.5		2.2	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5		5.9	6.2		5.9	6.2	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		21.0			21.0			18.0			18.0	
Pedestrian Calls (#/hr)		10			10			10			10	
Act Effct Green (s)	31.7	24.4		33.2	27.2		16.7	50.0		12.9	46.3	
Actuated g/C Ratio	0.26	0.20		0.28	0.23		0.14	0.42		0.11	0.39	
v/c Ratio	0.42	0.64		0.91	0.86		0.81	0.56		0.59	0.73	
Control Delay	34.3	44.6		73.9	58.1		75.9	29.4		57.8	37.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	34.3	44.6		73.9	58.1		75.9	29.4		57.8	37.0	
LOS	C	D		E	E		E	C		E	D	
Approach Delay		41.9			64.5			38.6			40.7	
Approach LOS		D			E			D			D	
90th %ile Green (s)	7.5	28.5		7.5	28.5		18.1	42.3		16.6	40.8	
90th %ile Term Code	Max	Hold		Max	Max		Max	Coord		Gap	Coord	
70th %ile Green (s)	7.5	28.5		7.5	28.5		18.1	44.5		14.4	40.8	
70th %ile Term Code	Max	Hold		Max	Max		Max	Coord		Gap	Coord	
50th %ile Green (s)	7.5	28.5		7.5	28.5		18.1	46.0		12.9	40.8	
50th %ile Term Code	Max	Hold		Max	Max		Max	Coord		Gap	Coord	
30th %ile Green (s)	7.5	24.9		7.5	24.9		16.5	51.1		11.4	46.0	
30th %ile Term Code	Max	Hold		Max	Gap		Gap	Coord		Gap	Coord	
10th %ile Green (s)	0.0	11.8		7.5	25.8		12.5	66.3		9.3	63.1	
10th %ile Term Code	Skip	Gap		Max	Hold		Gap	Coord		Gap	Coord	
Queue Length 50th (m)	12.5	39.2		41.8	66.2		43.6	74.0		24.6	106.7	
Queue Length 95th (m)	23.6	64.4		#81.7	#113.6		#76.5	99.3		35.8	132.7	
Internal Link Dist (m)		147.9			108.7			276.2			178.6	
Turn Bay Length (m)	15.0			53.0			56.0			75.0		
Base Capacity (vph)	193	402		261	421		255	1384		495	1302	
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	0.55		0.91	0.83		0.75	0.56		0.42	0.73	

Intersection Summary		
Area Type:	Other	
Cycle Length: 120		
Actuated Cycle Length: 120		
Offset: 117 (98%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 90		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.91		
Intersection Signal Delay: 44.8		Intersection LOS: D
Intersection Capacity Utilization 90.8%		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: 6: Greenbank Road & 3777 Strandherd Drive Access/Marketplace Avenue



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1	0	1	0	214	0	411	0	335	588	0
Future Volume (vph)	0	1	0	1	0	214	0	411	0	335	588	0
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	0.0		0.0	35.0		0.0	0.0		0.0	0.0		0.0
Storage Lanes	0		0	1		1	0		0	1		0
Taper Length (m)	2.5			48.0			2.5			2.5		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor										1.00		
Frt						0.850						
Flt Protected					0.950					0.950		
Satd. Flow (prot)	0	1784	0	0	1695	1517	0	1784	0	1695	1784	0
Flt Permitted					0.757					0.432		
Satd. Flow (perm)	0	1784	0	0	1351	1517	0	1784	0	769	1784	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						238						
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		271.2			545.7			362.5			300.2	
Travel Time (s)		19.5			39.3			21.8			18.0	
Confl. Peds. (#/hr)									3	3		
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
Adj. Flow (vph)	0	1	0	1	0	238	0	457	0	372	653	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1	0	0	1	238	0	457	0	372	653	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		0.0			0.0			7.4			7.4	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2	1	1	2		1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5	6.1	6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8	6.1	6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type		NA		Perm	NA	pm+ov		NA		pm+pt	NA	

Greenbank Road/Jockvale Road
Existing PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Protected Phases		4			8	1		2		1	6	
Permitted Phases	4			8		8	2			6		
Detector Phase	4	4		8	8	1	2	2		1	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	5.0	10.0	10.0		5.0	10.0	
Minimum Split (s)	34.5	34.5		34.5	34.5	10.9	30.9	30.9		10.9	30.9	
Total Split (s)	34.5	34.5		34.5	34.5	29.0	62.0	62.0		29.0	91.0	
Total Split (%)	27.5%	27.5%		27.5%	27.5%	23.1%	49.4%	49.4%		23.1%	72.5%	
Maximum Green (s)	28.0	28.0		28.0	28.0	23.1	56.1	56.1		23.1	85.1	
Yellow Time (s)	3.3	3.3		3.3	3.3	3.7	3.7	3.7		3.7	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2	2.2	2.2	2.2		2.2	2.2	
Lost Time Adjust (s)		0.0			0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)		6.5			6.5	5.9		5.9		5.9	5.9	
Lead/Lag						Lead	Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None	None	C-Max	C-Max		None	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0			7.0	
Flash Dont Walk (s)	21.0	21.0		21.0	21.0		18.0	18.0			18.0	
Pedestrian Calls (#/hr)	10	10		10	10		10	10			10	
Act Effct Green (s)		13.6			13.6	21.5		92.2		109.4	112.9	
Actuated g/C Ratio		0.11			0.11	0.17		0.73		0.87	0.90	
v/c Ratio		0.01			0.01	0.52		0.35		0.49	0.41	
Control Delay		44.0			44.0	7.4		11.5		5.5	4.6	
Queue Delay		0.0			0.0	0.0		0.0		0.0	0.0	
Total Delay		44.0			44.0	7.4		11.5		5.5	4.6	
LOS		D			D	A		B		A	A	
Approach Delay		44.0			7.5			11.5			4.9	
Approach LOS		D			A			B			A	
90th %ile Green (s)	28.0	28.0		28.0	28.0	23.1	56.1	56.1		23.1	85.1	
90th %ile Term Code	Ped	Ped		Ped	Ped	Max	Coord	Coord		Max	Coord	
70th %ile Green (s)	10.0	10.0		10.0	10.0	13.0	84.2	84.2		13.0	103.1	
70th %ile Term Code	Min	Min		Min	Min	Gap	Coord	Coord		Gap	Coord	
50th %ile Green (s)	0.0	0.0		0.0	0.0	7.1	106.6	106.6		7.1	119.6	
50th %ile Term Code	Skip	Skip		Skip	Skip	Gap	Coord	Coord		Gap	Coord	
30th %ile Green (s)	0.0	0.0		0.0	0.0	6.8	106.9	106.9		6.8	119.6	
30th %ile Term Code	Skip	Skip		Skip	Skip	Gap	Coord	Coord		Gap	Coord	
10th %ile Green (s)	0.0	0.0		0.0	0.0	6.4	107.3	107.3		6.4	119.6	
10th %ile Term Code	Skip	Skip		Skip	Skip	Gap	Coord	Coord		Gap	Coord	
Queue Length 50th (m)		0.2			0.2	0.0		16.8		0.0	0.0	
Queue Length 95th (m)		1.8			1.8	13.8		115.4		49.8	103.2	
Internal Link Dist (m)		247.2			521.7			338.5			276.2	
Turn Bay Length (m)												
Base Capacity (vph)		398			301	577		1310		840	1605	
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		0.00			0.00	0.41		0.35		0.44	0.41	

Intersection Summary

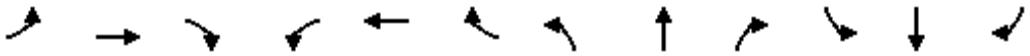
Area Type:	Other		
Cycle Length: 125.5			
Actuated Cycle Length: 125.5			
Offset: 8 (6%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.52			
Intersection Signal Delay: 7.0		Intersection LOS: A	
Intersection Capacity Utilization 79.1%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 11: Greenbank Road & Jockvale Road

Appendix J: Synchro Analysis Reports - 2030 Background Conditions

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	104	7	101	34	4	136	331	788	54	90	246	26
Future Volume (vph)	104	7	101	34	4	136	331	788	54	90	246	26
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	38.0		45.0	32.0		32.0	60.0		54.0	65.0		60.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	41.0			37.0			65.0			70.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00					0.99	1.00		0.94	0.99		0.97
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	1733	1517	1586	1733	1432	1695	3390	1488	1530	3202	1473
Flt Permitted	0.950			0.950			0.599			0.306		
Satd. Flow (perm)	1690	1733	1517	1586	1733	1411	1064	3390	1403	490	3202	1434
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)			133			133						136
Link Speed (k/h)		50			50			60			50	
Link Distance (m)		391.0			173.1			287.5			422.9	
Travel Time (s)		28.2			12.5			17.3			30.4	
Confl. Peds. (#/hr)	3					3	5		16	16		5
Confl. Bikes (#/hr)									17			
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%	5%	2%	9%	5%	8%	2%	2%	4%	13%	8%	5%
Adj. Flow (vph)	104	7	101	34	4	136	331	788	54	90	246	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	104	7	101	34	4	136	331	788	54	90	246	26
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		13.5			13.5			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Longfields Drive/Chapman Mills Drive
BG2030 AM Peak

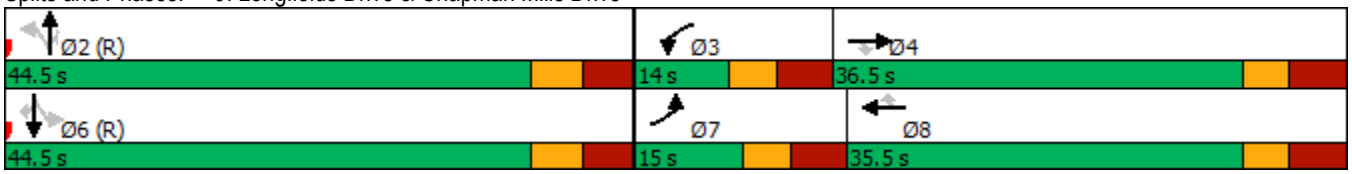


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4			8	2		2	6		6
Detector Phase	7	4	4	3	8	8	2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	12.3	35.5	35.5	12.3	35.5	35.5	42.3	42.3	42.3	42.3	42.3	42.3
Total Split (s)	15.0	36.5	36.5	14.0	35.5	35.5	44.5	44.5	44.5	44.5	44.5	44.5
Total Split (%)	15.8%	38.4%	38.4%	14.7%	37.4%	37.4%	46.8%	46.8%	46.8%	46.8%	46.8%	46.8%
Maximum Green (s)	7.7	29.0	29.0	6.7	28.0	28.0	37.2	37.2	37.2	37.2	37.2	37.2
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	4.0	4.2	4.2	4.0	4.2	4.2	3.6	3.6	3.6	3.6	3.6	3.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.3	7.5	7.5	7.3	7.5	7.5	7.3	7.3	7.3	7.3	7.3	7.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		21.0	21.0		21.0	21.0	28.0	28.0	28.0	28.0	28.0	28.0
Pedestrian Calls (#/hr)		10	10		10	10	10	10	10	10	10	10
Act Effct Green (s)	7.7	20.2	20.2	6.4	13.6	13.6	51.6	51.6	51.6	51.6	51.6	51.6
Actuated g/C Ratio	0.08	0.21	0.21	0.07	0.14	0.14	0.54	0.54	0.54	0.54	0.54	0.54
v/c Ratio	0.76	0.02	0.24	0.32	0.02	0.43	0.57	0.43	0.07	0.34	0.14	0.03
Control Delay	76.9	29.7	3.5	50.5	29.8	10.4	22.0	15.1	13.1	19.7	12.4	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.9	29.7	3.5	50.5	29.8	10.4	22.0	15.1	13.1	19.7	12.4	0.1
LOS	E	C	A	D	C	B	C	B	B	B	B	A
Approach Delay		40.4			18.6			17.0			13.3	
Approach LOS		D			B			B			B	
90th %ile Green (s)	7.7	29.0	29.0	6.7	28.0	28.0	37.2	37.2	37.2	37.2	37.2	37.2
90th %ile Term Code	Max	Hold	Hold	Max	Ped	Ped	Coord	Coord	Coord	Coord	Coord	Coord
70th %ile Green (s)	7.7	11.0	11.0	6.7	10.0	10.0	55.2	55.2	55.2	55.2	55.2	55.2
70th %ile Term Code	Max	Hold	Hold	Max	Min	Min	Coord	Coord	Coord	Coord	Coord	Coord
50th %ile Green (s)	7.7	11.0	11.0	6.7	10.0	10.0	55.2	55.2	55.2	55.2	55.2	55.2
50th %ile Term Code	Max	Hold	Hold	Max	Min	Min	Coord	Coord	Coord	Coord	Coord	Coord
30th %ile Green (s)	7.7	25.0	25.0	0.0	10.0	10.0	55.2	55.2	55.2	55.2	55.2	55.2
30th %ile Term Code	Max	Hold	Hold	Skip	Min	Min	Coord	Coord	Coord	Coord	Coord	Coord
10th %ile Green (s)	7.6	24.9	24.9	0.0	10.0	10.0	55.3	55.3	55.3	55.3	55.3	55.3
10th %ile Term Code	Gap	Hold	Hold	Skip	Min	Min	Coord	Coord	Coord	Coord	Coord	Coord
Queue Length 50th (m)	19.0	1.2	0.0	6.1	0.7	0.5	34.3	38.5	4.0	7.9	10.0	0.0
Queue Length 95th (m)	#45.1	4.0	6.6	15.4	2.9	13.3	#98.3	77.6	13.7	27.7	23.6	0.0
Internal Link Dist (m)		367.0			149.1			263.5			398.9	
Turn Bay Length (m)	38.0		45.0	32.0		32.0	60.0		54.0	65.0		60.0
Base Capacity (vph)	137	529	555	111	510	509	578	1841	762	266	1739	841
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.76	0.01	0.18	0.31	0.01	0.27	0.57	0.43	0.07	0.34	0.14	0.03

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 95			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 19.0		Intersection LOS: B	
Intersection Capacity Utilization 79.7%		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: 9: Longfields Drive & Chapman Mills Drive



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	16	52	36	28	146	86	708	32	56	346	58
Future Volume (vph)	49	16	52	36	28	146	86	708	32	56	346	58
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	27.0		0.0	25.0		0.0	50.0		0.0	92.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	24.0			3.0			84.0			40.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.99	0.99		1.00	0.98		1.00	1.00		0.98	1.00	
Frt		0.885			0.874			0.994			0.978	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1572	1426	0	1453	1416	0	1601	3322	0	1616	3190	0
Flt Permitted	0.615			0.713			0.459			0.371		
Satd. Flow (perm)	1012	1426	0	1086	1416	0	770	3322	0	620	3190	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		52			132			7			23	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		185.4			199.4			422.9			208.9	
Travel Time (s)		13.3			14.4			30.4			15.0	
Confl. Peds. (#/hr)	9		6	6		9	4		24	24		4
Confl. Bikes (#/hr)			1			4			11			
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 (%)	10%	13%	11%	19%	17%	9%	8%	2%	28%	7%	3%	21%
Adj. Flow (vph)	49	16	52	36	28	146	86	708	32	56	346	58
Shared Lane Traffic (%)												
Lane Group Flow (vph)	49	68	0	36	174	0	86	740	0	56	404	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

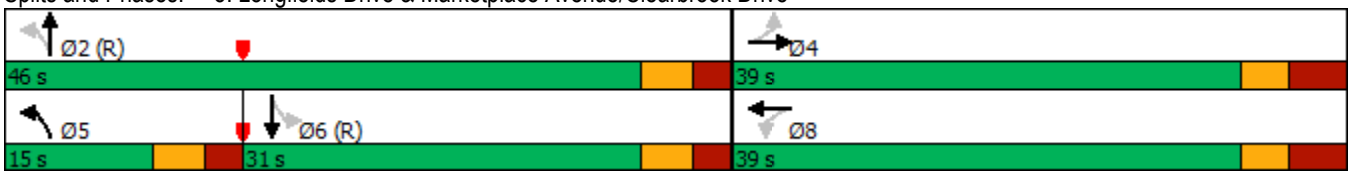
Longfields Drive/Marketplace Avenue/Clearbrook Drive
BG2030 AM Peak

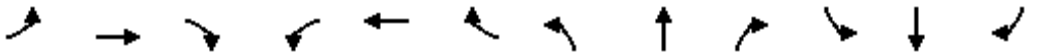
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	10.0		10.0	10.0	
Minimum Split (s)	38.8	38.8		38.8	38.8		10.6	25.8		25.8	25.8	
Total Split (s)	39.0	39.0		39.0	39.0		15.0	46.0		31.0	31.0	
Total Split (%)	45.9%	45.9%		45.9%	45.9%		17.6%	54.1%		36.5%	36.5%	
Maximum Green (s)	32.2	32.2		32.2	32.2		9.4	40.2		25.2	25.2	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.3	3.3		3.3	3.3	
All-Red Time (s)	3.8	3.8		3.8	3.8		2.3	2.5		2.5	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.8	6.8		6.8	6.8		5.6	5.8		5.8	5.8	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0		7.0	7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	25.0			13.0		13.0	13.0	
Pedestrian Calls (#/hr)	10	10		10	10			10		10	10	
Act Effct Green (s)	14.6	14.6		14.6	14.6		58.0	57.8		47.3	47.3	
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.68	0.68		0.56	0.56	
v/c Ratio	0.28	0.24		0.19	0.49		0.14	0.33		0.16	0.23	
Control Delay	31.7	12.1		29.1	13.2		7.4	7.5		16.6	12.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	31.7	12.1		29.1	13.2		7.4	7.5		16.6	12.3	
LOS	C	B		C	B		A	A		B	B	
Approach Delay		20.4			15.9			7.5			12.8	
Approach LOS		C			B			A			B	
90th %ile Green (s)	32.0	32.0		32.0	32.0		9.6	40.4		25.2	25.2	
90th %ile Term Code	Ped	Ped		Ped	Ped		Max	Coord		Coord	Coord	
70th %ile Green (s)	11.2	11.2		11.2	11.2		7.3	61.2		48.3	48.3	
70th %ile Term Code	Gap	Gap		Hold	Hold		Gap	Coord		Coord	Coord	
50th %ile Green (s)	10.0	10.0		10.0	10.0		6.7	62.4		50.1	50.1	
50th %ile Term Code	Min	Min		Min	Min		Gap	Coord		Coord	Coord	
30th %ile Green (s)	10.0	10.0		10.0	10.0		6.2	62.4		50.6	50.6	
30th %ile Term Code	Min	Min		Min	Min		Gap	Coord		Coord	Coord	
10th %ile Green (s)	10.0	10.0		10.0	10.0		0.0	62.4		62.4	62.4	
10th %ile Term Code	Hold	Hold		Min	Min		Skip	Coord		Coord	Coord	
Queue Length 50th (m)	7.5	2.4		5.4	6.3		3.2	17.3		3.8	13.8	
Queue Length 95th (m)	12.5	9.3		9.7	16.9		15.1	54.7		17.3	38.4	
Internal Link Dist (m)		161.4			175.4			398.9			184.9	
Turn Bay Length (m)	27.0			25.0			50.0			92.0		
Base Capacity (vph)	383	572		411	618		617	2259		345	1785	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.13	0.12		0.09	0.28		0.14	0.33		0.16	0.23	

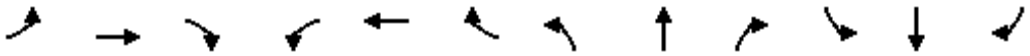
Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 85			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.49			
Intersection Signal Delay: 11.1		Intersection LOS: B	
Intersection Capacity Utilization 75.2%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 5: Longfields Drive & Marketplace Avenue/Clearbrook Drive





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	48	38	72	57	114	112	815	85	99	506	25
Future Volume (vph)	34	48	38	72	57	114	112	815	85	99	506	25
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	15.0		0.0	53.0		0.0	56.0		85.0	75.0		0.0
Storage Lanes	1		0	1		0	1		1	2		0
Taper Length (m)	15.0			43.0			23.0			33.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.95	0.95
Ped Bike Factor	1.00	0.98		0.96	0.99		1.00	1.00		1.00	1.00	
Frt		0.934			0.900			0.986			0.993	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1679	1604	0	1679	1528	0	1695	3249	0	3257	3213	0
Flt Permitted	0.545			0.643			0.950			0.950		
Satd. Flow (perm)	960	1604	0	1093	1528	0	1693	3249	0	3241	3213	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		31			79			11			5	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		171.9			132.7			399.2			202.6	
Travel Time (s)		12.4			9.6			24.0			12.2	
Confl. Peds. (#/hr)	3		33	33		3	1		7	7		1
Confl. Bikes (#/hr)			3			1			1			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 (%)	3%	2%	5%	3%	2%	8%	2%	5%	2%	3%	7%	2%
Adj. Flow (vph)	34	48	38	72	57	114	112	815	85	99	506	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	34	86	0	72	171	0	112	900	0	99	531	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			7.4			7.4	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

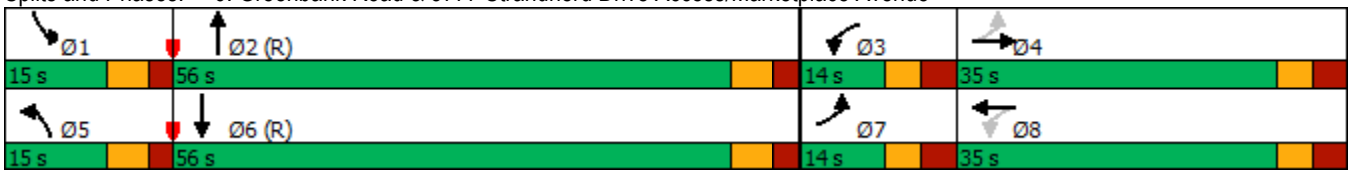


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.5	34.5		11.5	34.5		10.9	31.2		10.9	31.2	
Total Split (s)	14.0	35.0		14.0	35.0		15.0	56.0		15.0	56.0	
Total Split (%)	11.7%	29.2%		11.7%	29.2%		12.5%	46.7%		12.5%	46.7%	
Maximum Green (s)	7.5	28.5		7.5	28.5		9.1	49.8		9.1	49.8	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2		2.2	2.5		2.2	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5		5.9	6.2		5.9	6.2	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		21.0			21.0			18.0			18.0	
Pedestrian Calls (#/hr)		10			10			10			10	
Act Effct Green (s)	21.2	15.4		22.7	18.2		12.8	66.2		8.6	62.0	
Actuated g/C Ratio	0.18	0.13		0.19	0.15		0.11	0.55		0.07	0.52	
v/c Ratio	0.16	0.37		0.30	0.57		0.62	0.50		0.42	0.32	
Control Delay	33.9	33.8		37.4	32.0		76.7	8.7		58.7	19.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	33.9	33.8		37.4	32.0		76.7	8.7		58.7	19.2	
LOS	C	C		D	C		E	A		E	B	
Approach Delay		33.8			33.6			16.2			25.4	
Approach LOS		C			C			B			C	
90th %ile Green (s)	7.5	28.0		7.5	28.0		9.6	49.8		9.6	49.8	
90th %ile Term Code	Max	Ped		Max	Ped		Max	Coord		Max	Coord	
70th %ile Green (s)	7.5	16.1		7.5	16.1		16.2	61.3		10.0	55.1	
70th %ile Term Code	Max	Hold		Max	Gap		Gap	Coord		Gap	Coord	
50th %ile Green (s)	7.4	12.9		7.5	13.0		14.9	65.5		9.0	59.6	
50th %ile Term Code	Gap	Hold		Max	Gap		Gap	Coord		Gap	Coord	
30th %ile Green (s)	0.0	10.0		7.5	24.0		13.1	69.4		8.0	64.3	
30th %ile Term Code	Skip	Min		Max	Hold		Gap	Coord		Gap	Coord	
10th %ile Green (s)	0.0	10.0		0.0	10.0		10.1	84.9		6.5	81.3	
10th %ile Term Code	Skip	Hold		Skip	Min		Gap	Coord		Gap	Coord	
Queue Length 50th (m)	6.4	12.2		13.8	21.0		21.5	66.0		11.6	38.0	
Queue Length 95th (m)	12.5	24.1		22.0	38.4		#59.4	33.0		20.3	59.2	
Internal Link Dist (m)		147.9			108.7			375.2			178.6	
Turn Bay Length (m)	15.0			53.0			56.0			75.0		
Base Capacity (vph)	215	404		243	423		180	1796		254	1663	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.16	0.21		0.30	0.40		0.62	0.50		0.39	0.32	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 87 (73%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.62			
Intersection Signal Delay: 22.3		Intersection LOS: C	
Intersection Capacity Utilization 74.3%		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: 6: Greenbank Road & 3777 Strandherd Drive Access/Marketplace Avenue

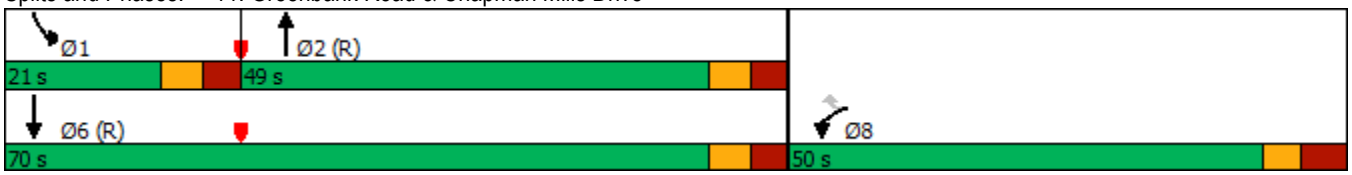


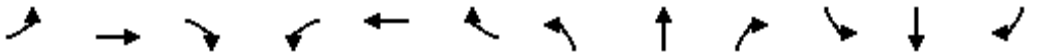
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	75	304	680	106	96	358
Future Volume (vph)	75	304	680	106	96	358
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	66.0	0.0		0.0	65.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	47.0				48.0	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Ped Bike Factor	1.00	0.98	0.99		0.99	
Frt		0.850	0.980			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1441	1517	3211	0	1679	3262
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1438	1484	3211	0	1663	3262
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		304	16			
Link Speed (k/h)	50		50			50
Link Distance (m)	360.0		362.5			399.2
Travel Time (s)	25.9		26.1			28.7
Confl. Peds. (#/hr)	2	1		18	18	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	20%	2%	5%	4%	3%	6%
Adj. Flow (vph)	75	304	680	106	96	358
Shared Lane Traffic (%)						
Lane Group Flow (vph)	75	304	786	0	96	358
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	13.5		3.7			8.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (m)	2.0	2.0	10.0		2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	2.0	0.6		2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Turn Type	Prot	Perm	NA		Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8				
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0		5.0	10.0
Minimum Split (s)	49.6	49.6	45.1		12.1	45.1
Total Split (s)	50.0	50.0	49.0		21.0	70.0
Total Split (%)	41.7%	41.7%	40.8%		17.5%	58.3%
Maximum Green (s)	42.4	42.4	41.9		13.9	62.9
Yellow Time (s)	3.3	3.3	3.7		3.7	3.7
All-Red Time (s)	4.3	4.3	3.4		3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.6	7.6	7.1		7.1	7.1
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	C-Max		None	C-Max
Walk Time (s)	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	35.0	35.0	31.0			31.0
Pedestrian Calls (#/hr)	10	10	10			10
Act Effct Green (s)	23.1	23.1	63.5		11.6	82.2
Actuated g/C Ratio	0.19	0.19	0.53		0.10	0.68
v/c Ratio	0.27	0.57	0.46		0.59	0.16
Control Delay	39.0	7.6	22.3		59.6	20.7
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	39.0	7.6	22.3		59.6	20.7
LOS	D	A	C		E	C
Approach Delay	13.8		22.3			28.9
Approach LOS	B		C			C
90th %ile Green (s)	42.0	42.0	41.9		14.3	63.3
90th %ile Term Code	Ped	Ped	Coord		Max	Coord
70th %ile Green (s)	42.0	42.0	42.1		14.1	63.3
70th %ile Term Code	Ped	Ped	Coord		Gap	Coord
50th %ile Green (s)	11.6	11.6	74.4		12.2	93.7
50th %ile Term Code	Gap	Gap	Coord		Gap	Coord
30th %ile Green (s)	10.0	10.0	78.0		10.2	95.3
30th %ile Term Code	Min	Min	Coord		Gap	Coord
10th %ile Green (s)	10.0	10.0	80.9		7.3	95.3
10th %ile Term Code	Min	Min	Coord		Gap	Coord
Queue Length 50th (m)	17.1	0.0	44.7		22.4	16.3
Queue Length 95th (m)	23.2	18.3	103.7		40.0	57.6
Internal Link Dist (m)	336.0		338.5			375.2
Turn Bay Length (m)	66.0				65.0	
Base Capacity (vph)	509	720	1705		196	2233
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	0.15	0.42	0.46		0.49	0.16

Intersection Summary		
Area Type:	Other	
Cycle Length: 120		
Actuated Cycle Length: 120		
Offset: 71 (59%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 110		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.59		
Intersection Signal Delay: 22.2		Intersection LOS: C
Intersection Capacity Utilization 64.7%		ICU Level of Service C
Analysis Period (min) 15		

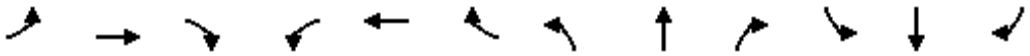
Splits and Phases: 11: Greenbank Road & Chapman Mills Drive





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	183	0	0	332	13	0	0	0	11	0	47
Future Volume (vph)	19	183	0	0	332	13	0	0	0	11	0	47
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	35.0		0.0	36.0		0.0	32.0		0.0	38.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	72.0			42.0			2.5			40.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.994						0.850	
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1695	1784	0	1784	1774	0	1784	1784	0	1695	1517	0
Flt Permitted	0.950									0.757		
Satd. Flow (perm)	1695	1784	0	1784	1774	0	1784	1784	0	1351	1517	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					3						406	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		360.0			391.0			215.1			181.2	
Travel Time (s)		25.9			28.2			15.5			13.0	
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
Adj. Flow (vph)	19	183	0	0	332	13	0	0	0	11	0	47
Shared Lane Traffic (%)												
Lane Group Flow (vph)	19	183	0	0	345	0	0	0	0	11	47	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		13.5			13.5			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm			Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		

Chapman Mills Drive/Riocan Avenue
BG2030 AM Peak

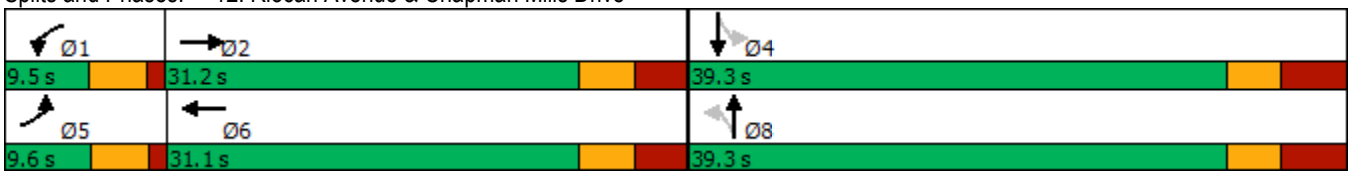


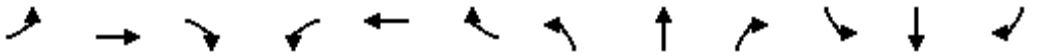
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	9.5	26.5		9.5	26.5		39.3	39.3		39.3	39.3	
Total Split (s)	9.6	31.2		9.5	31.1		39.3	39.3		39.3	39.3	
Total Split (%)	12.0%	39.0%		11.9%	38.9%		49.1%	49.1%		49.1%	49.1%	
Maximum Green (s)	5.1	24.7		5.0	24.6		32.0	32.0		32.0	32.0	
Yellow Time (s)	3.5	3.3		3.5	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.0	3.2		1.0	3.2		4.0	4.0		4.0	4.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	6.5		4.5	6.5		7.3	7.3		7.3	7.3	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		13.0			13.0		25.0	25.0		25.0	25.0	
Pedestrian Calls (#/hr)		10			10		10	10		10	10	
Act Effct Green (s)	5.2	20.9			17.6					32.6	32.6	
Actuated g/C Ratio	0.08	0.31			0.26					0.48	0.48	
v/c Ratio	0.15	0.33			0.75					0.02	0.05	
Control Delay	36.4	18.5			33.8					13.5	0.1	
Queue Delay	0.0	0.0			0.0					0.0	0.0	
Total Delay	36.4	18.5			33.8					13.5	0.1	
LOS	D	B			C					B	A	
Approach Delay		20.2			33.8						2.6	
Approach LOS		C			C						A	
90th %ile Green (s)	5.1	34.2		0.0	24.6		32.0	32.0		32.0	32.0	
90th %ile Term Code	Max	Hold		Skip	Max		MaxR	MaxR		MaxR	MaxR	
70th %ile Green (s)	5.1	32.3		0.0	22.7		32.0	32.0		32.0	32.0	
70th %ile Term Code	Max	Hold		Skip	Gap		MaxR	MaxR		MaxR	MaxR	
50th %ile Green (s)	0.0	17.0		0.0	17.0		32.0	32.0		32.0	32.0	
50th %ile Term Code	Skip	Hold		Skip	Gap		MaxR	MaxR		MaxR	MaxR	
30th %ile Green (s)	0.0	14.4		0.0	14.4		32.0	32.0		32.0	32.0	
30th %ile Term Code	Skip	Hold		Skip	Gap		MaxR	MaxR		MaxR	MaxR	
10th %ile Green (s)	0.0	11.0		0.0	11.0		32.0	32.0		32.0	32.0	
10th %ile Term Code	Skip	Hold		Skip	Gap		MaxR	MaxR		MaxR	MaxR	
Queue Length 50th (m)	2.1	17.1			35.7					0.6	0.0	
Queue Length 95th (m)	9.1	30.2			71.2					3.9	0.0	
Internal Link Dist (m)		336.0			367.0			191.1			157.2	
Turn Bay Length (m)	35.0									38.0		
Base Capacity (vph)	130	741			660					652	942	
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	0.15	0.25			0.52					0.02	0.05	

Intersection Summary	
Area Type:	Other

Cycle Length: 80	
Actuated Cycle Length: 67.6	
Natural Cycle: 80	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 26.2	Intersection LOS: C
Intersection Capacity Utilization 39.1%	ICU Level of Service A
Analysis Period (min) 15	
90th %ile Actuated Cycle: 80	
70th %ile Actuated Cycle: 78.1	
50th %ile Actuated Cycle: 62.8	
30th %ile Actuated Cycle: 60.2	
10th %ile Actuated Cycle: 56.8	

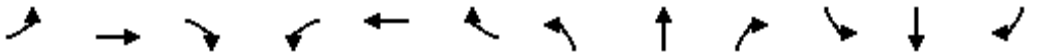
Splits and Phases: 12: Riocan Avenue & Chapman Mills Drive





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	6	367	65	4	104	230	556	54	162	691	36
Future Volume (vph)	12	6	367	65	4	104	230	556	54	162	691	36
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	38.0		45.0	32.0		32.0	60.0		54.0	65.0		60.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	41.0			37.0			65.0			70.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.98	0.99		0.98	0.99		0.97	1.00		0.95
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	1784	1517	1695	1784	1502	1695	3357	1517	1695	3390	1517
Flt Permitted	0.950			0.950			0.338			0.417		
Satd. Flow (perm)	1687	1784	1485	1681	1784	1476	598	3357	1468	741	3390	1439
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)			133			133						136
Link Speed (k/h)		50			50			60			50	
Link Distance (m)		391.0			173.1			287.5			422.9	
Travel Time (s)		28.2			12.5			17.3			30.4	
Confl. Peds. (#/hr)	5		8	8		5	17		7	7		17
Confl. Bikes (#/hr)			1						3			10
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%	2%	2%	2%	2%	3%	2%	3%	2%	2%	2%	2%
Adj. Flow (vph)	12	6	367	65	4	104	230	556	54	162	691	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	6	367	65	4	104	230	556	54	162	691	36
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		13.5			13.5			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Longfields Drive/Chapman Mills Drive
BG2030 PM Peak

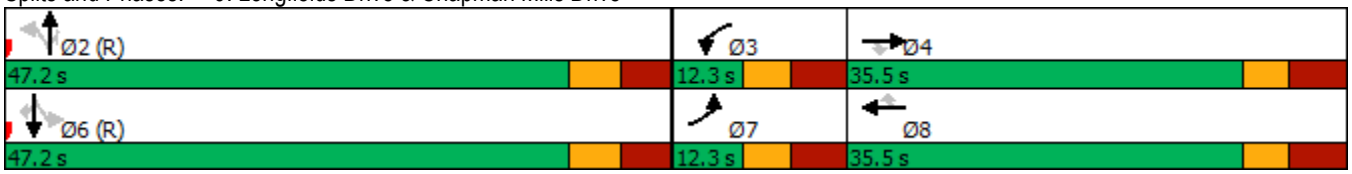


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4			8	2		2	6		6
Detector Phase	7	4	4	3	8	8	2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	12.3	35.5	35.5	12.3	35.5	35.5	42.3	42.3	42.3	42.3	42.3	42.3
Total Split (s)	12.3	35.5	35.5	12.3	35.5	35.5	47.2	47.2	47.2	47.2	47.2	47.2
Total Split (%)	12.9%	37.4%	37.4%	12.9%	37.4%	37.4%	49.7%	49.7%	49.7%	49.7%	49.7%	49.7%
Maximum Green (s)	5.0	28.0	28.0	5.0	28.0	28.0	39.9	39.9	39.9	39.9	39.9	39.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	4.0	4.2	4.2	4.0	4.2	4.2	3.6	3.6	3.6	3.6	3.6	3.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.3	7.5	7.5	7.3	7.5	7.5	7.3	7.3	7.3	7.3	7.3	7.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		21.0	21.0		21.0	21.0	28.0	28.0	28.0	28.0	28.0	28.0
Pedestrian Calls (#/hr)		10	10		10	10	10	10	10	10	10	10
Act Effct Green (s)	5.0	20.8	20.8	5.0	28.2	28.2	49.5	49.5	49.5	49.5	49.5	49.5
Actuated g/C Ratio	0.05	0.22	0.22	0.05	0.30	0.30	0.52	0.52	0.52	0.52	0.52	0.52
v/c Ratio	0.13	0.02	0.86	0.73	0.01	0.20	0.74	0.32	0.07	0.42	0.39	0.04
Control Delay	46.5	25.0	40.9	87.6	21.5	3.4	39.4	15.7	15.4	21.8	16.5	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.5	25.0	40.9	87.6	21.5	3.4	39.4	15.7	15.4	21.8	16.5	0.1
LOS	D	C	D	F	C	A	D	B	B	C	B	A
Approach Delay		40.8			35.4			22.2			16.8	
Approach LOS		D			D			C			B	
90th %ile Green (s)	5.0	28.0	28.0	5.0	28.0	28.0	39.9	39.9	39.9	39.9	39.9	39.9
90th %ile Term Code	Max	Max	Max	Max	Ped	Ped	Coord	Coord	Coord	Coord	Coord	Coord
70th %ile Green (s)	0.0	25.8	25.8	5.0	38.1	38.1	42.1	42.1	42.1	42.1	42.1	42.1
70th %ile Term Code	Skip	Gap	Gap	Max	Hold	Hold	Coord	Coord	Coord	Coord	Coord	Coord
50th %ile Green (s)	0.0	21.7	21.7	5.0	34.0	34.0	46.2	46.2	46.2	46.2	46.2	46.2
50th %ile Term Code	Skip	Gap	Gap	Max	Hold	Hold	Coord	Coord	Coord	Coord	Coord	Coord
30th %ile Green (s)	0.0	17.4	17.4	5.0	29.7	29.7	50.5	50.5	50.5	50.5	50.5	50.5
30th %ile Term Code	Skip	Gap	Gap	Max	Hold	Hold	Coord	Coord	Coord	Coord	Coord	Coord
10th %ile Green (s)	0.0	11.2	11.2	0.0	11.2	11.2	69.0	69.0	69.0	69.0	69.0	69.0
10th %ile Term Code	Skip	Gap	Gap	Skip	Hold	Hold	Coord	Coord	Coord	Coord	Coord	Coord
Queue Length 50th (m)	2.1	0.9	42.0	12.0	0.5	0.0	33.8	31.6	5.1	18.7	41.2	0.0
Queue Length 95th (m)	7.6	3.7	70.0	#33.6	2.9	7.1	#84.7	49.6	12.9	42.1	63.0	0.0
Internal Link Dist (m)		367.0			149.1			263.5			398.9	
Turn Bay Length (m)	38.0		45.0	32.0		32.0	60.0		54.0	65.0		60.0
Base Capacity (vph)	89	525	531	89	592	578	311	1750	765	386	1767	815
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.13	0.01	0.69	0.73	0.01	0.18	0.74	0.32	0.07	0.42	0.39	0.04

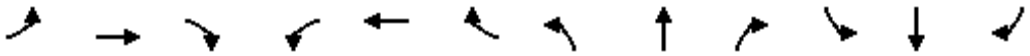
Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 95			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 24.2		Intersection LOS: C	
Intersection Capacity Utilization 76.6%		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: 9: Longfields Drive & Chapman Mills Drive



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	135	47	170	15	54	58	148	437	20	81	511	196
Future Volume (vph)	135	47	170	15	54	58	148	437	20	81	511	196
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	27.0		0.0	25.0		0.0	50.0		0.0	92.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	24.0			3.0			84.0			40.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.99	0.97		0.99	0.99		1.00	1.00		0.99	0.99	
Frt		0.882			0.922			0.993			0.958	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1662	1519	0	1695	1620	0	1679	3361	0	1695	3222	0
Flt Permitted	0.685			0.534			0.292			0.489		
Satd. Flow (perm)	1191	1519	0	939	1620	0	515	3361	0	866	3222	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		170			58			7			67	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		185.4			199.4			422.9			208.9	
Travel Time (s)		13.3			14.4			30.4			15.0	
Confl. Peds. (#/hr)	10		25	25		10	3		7	7		3
Confl. Bikes (#/hr)			6			1			3			2
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 (%)	4%	2%	3%	2%	2%	3%	3%	2%	2%	2%	2%	2%
Adj. Flow (vph)	135	47	170	15	54	58	148	437	20	81	511	196
Shared Lane Traffic (%)												
Lane Group Flow (vph)	135	217	0	15	112	0	148	457	0	81	707	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Longfields Drive/Marketplace Avenue/Clearbrook Drive
BG2030 PM Peak

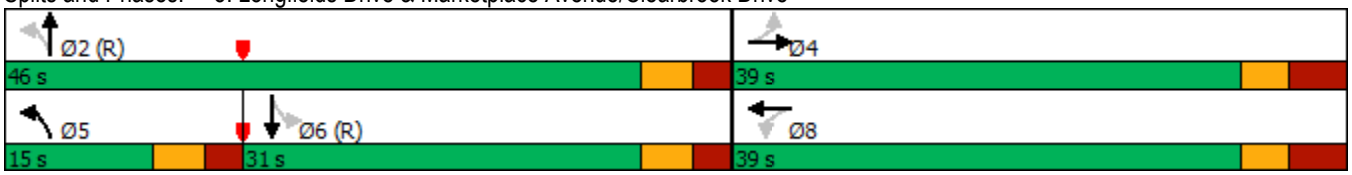


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	10.0		10.0	10.0	
Minimum Split (s)	38.8	38.8		38.8	38.8		10.6	25.8		25.8	25.8	
Total Split (s)	39.0	39.0		39.0	39.0		15.0	46.0		31.0	31.0	
Total Split (%)	45.9%	45.9%		45.9%	45.9%		17.6%	54.1%		36.5%	36.5%	
Maximum Green (s)	32.2	32.2		32.2	32.2		9.4	40.2		25.2	25.2	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.3	3.3		3.3	3.3	
All-Red Time (s)	3.8	3.8		3.8	3.8		2.3	2.5		2.5	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.8	6.8		6.8	6.8		5.6	5.8		5.8	5.8	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0		7.0	7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	25.0			13.0		13.0	13.0	
Pedestrian Calls (#/hr)	10	10		10	10			10		10	10	
Act Effct Green (s)	17.4	17.4		17.4	17.4		55.2	55.0		41.3	41.3	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.65	0.65		0.49	0.49	
v/c Ratio	0.55	0.49		0.08	0.30		0.33	0.21		0.19	0.44	
Control Delay	37.1	10.6		23.4	15.0		9.9	7.7		18.1	16.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	37.1	10.6		23.4	15.0		9.9	7.7		18.1	16.0	
LOS	D	B		C	B		A	A		B	B	
Approach Delay		20.7			16.0			8.2			16.2	
Approach LOS		C			B			A			B	
90th %ile Green (s)	32.0	32.0		32.0	32.0		9.6	40.4		25.2	25.2	
90th %ile Term Code	Ped	Ped		Ped	Ped		Max	Coord		Coord	Coord	
70th %ile Green (s)	17.9	17.9		17.9	17.9		9.3	54.5		39.6	39.6	
70th %ile Term Code	Gap	Gap		Hold	Hold		Gap	Coord		Coord	Coord	
50th %ile Green (s)	15.0	15.0		15.0	15.0		8.1	57.4		43.7	43.7	
50th %ile Term Code	Gap	Gap		Hold	Hold		Gap	Coord		Coord	Coord	
30th %ile Green (s)	12.2	12.2		12.2	12.2		7.1	60.2		47.5	47.5	
30th %ile Term Code	Gap	Gap		Hold	Hold		Gap	Coord		Coord	Coord	
10th %ile Green (s)	10.0	10.0		10.0	10.0		6.1	62.4		50.7	50.7	
10th %ile Term Code	Min	Min		Hold	Hold		Gap	Coord		Coord	Coord	
Queue Length 50th (m)	20.6	6.6		2.1	7.6		7.3	12.4		6.7	31.6	
Queue Length 95th (m)	28.8	18.7		5.2	15.8		23.8	32.0		22.1	67.7	
Internal Link Dist (m)		161.4			175.4			398.9			184.9	
Turn Bay Length (m)	27.0			25.0			50.0			92.0		
Base Capacity (vph)	451	681		355	649		463	2176		421	1601	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.30	0.32		0.04	0.17		0.32	0.21		0.19	0.44	

Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 85			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay: 14.5		Intersection LOS: B	
Intersection Capacity Utilization 67.2%		ICU Level of Service C	
Analysis Period (min) 15			

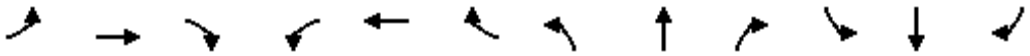
Splits and Phases: 5: Longfields Drive & Marketplace Avenue/Clearbrook Drive



Greenbank Road/Marketplace Avenue
BG2030 PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	109	91	185	126	188	172	766	107	189	1004	25
Future Volume (vph)	71	109	91	185	126	188	172	766	107	189	1004	25
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	15.0		0.0	53.0		0.0	56.0		85.0	75.0		0.0
Storage Lanes	1		0	1		0	1		1	2		0
Taper Length (m)	15.0			43.0			23.0			33.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.95	0.95
Ped Bike Factor	0.99	0.95		0.94	0.98		0.99	1.00		0.99	1.00	
Frt		0.932			0.910			0.982			0.996	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	1587	0	1695	1584	0	1695	3315	0	3288	3373	0
Flt Permitted	0.289			0.461			0.950			0.950		
Satd. Flow (perm)	509	1587	0	775	1584	0	1683	3315	0	3251	3373	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		33			59			14			2	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		171.9			132.7			399.2			202.6	
Travel Time (s)		12.4			9.6			24.0			12.2	
Confl. Peds. (#/hr)	20		65	65		20	12		16	16		12
Confl. Bikes (#/hr)			8			4			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
Adj. Flow (vph)	71	109	91	185	126	188	172	766	107	189	1004	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	71	200	0	185	314	0	172	873	0	189	1029	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			7.4			7.4	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

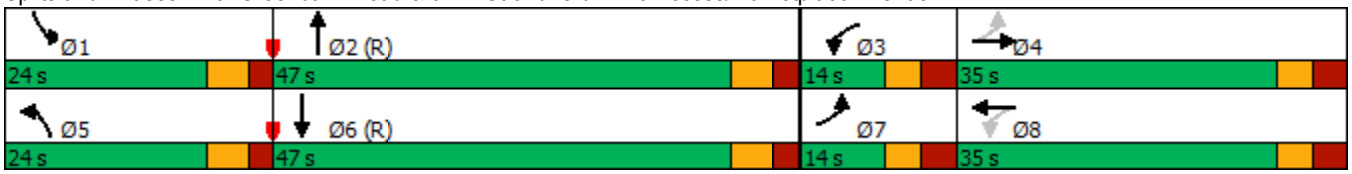
Greenbank Road/Marketplace Avenue
BG2030 PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.5	34.5		11.5	34.5		10.9	31.2		10.9	31.2	
Total Split (s)	14.0	35.0		14.0	35.0		24.0	47.0		24.0	47.0	
Total Split (%)	11.7%	29.2%		11.7%	29.2%		20.0%	39.2%		20.0%	39.2%	
Maximum Green (s)	7.5	28.5		7.5	28.5		18.1	40.8		18.1	40.8	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2		2.2	2.5		2.2	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5		5.9	6.2		5.9	6.2	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		21.0			21.0			18.0			18.0	
Pedestrian Calls (#/hr)		10			10			10			10	
Act Effct Green (s)	30.2	22.9		31.7	25.7		16.0	52.3		12.2	48.5	
Actuated g/C Ratio	0.25	0.19		0.26	0.21		0.13	0.44		0.10	0.40	
v/c Ratio	0.36	0.61		0.71	0.81		0.76	0.60		0.57	0.75	
Control Delay	33.2	43.6		49.0	53.4		70.8	23.3		57.7	36.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	33.2	43.6		49.0	53.4		70.8	23.3		57.7	36.8	
LOS	C	D		D	D		E	C		E	D	
Approach Delay		40.9			51.8			31.2			40.1	
Approach LOS		D			D			C			D	
90th %ile Green (s)	7.5	28.5		7.5	28.5		18.1	43.2		15.7	40.8	
90th %ile Term Code	Max	Hold		Max	Max		Max	Coord		Gap	Coord	
70th %ile Green (s)	7.5	28.5		7.5	28.5		18.1	45.3		13.6	40.8	
70th %ile Term Code	Max	Hold		Max	Max		Max	Coord		Gap	Coord	
50th %ile Green (s)	7.5	25.5		7.5	25.5		17.5	49.7		12.2	44.4	
50th %ile Term Code	Max	Hold		Max	Gap		Gap	Coord		Gap	Coord	
30th %ile Green (s)	7.5	21.6		7.5	21.6		14.9	55.0		10.8	50.9	
30th %ile Term Code	Max	Hold		Max	Gap		Gap	Coord		Gap	Coord	
10th %ile Green (s)	0.0	10.6		7.5	24.6		11.2	68.1		8.7	65.6	
10th %ile Term Code	Skip	Gap		Max	Hold		Gap	Coord		Gap	Coord	
Queue Length 50th (m)	11.7	35.2		32.7	58.5		31.3	93.3		22.2	114.3	
Queue Length 95th (m)	21.6	57.3		50.0	#92.0		#53.3	118.2		32.9	#157.7	
Internal Link Dist (m)		147.9			108.7			375.2			178.6	
Turn Bay Length (m)	15.0			53.0			56.0			75.0		
Base Capacity (vph)	203	402		262	421		255	1451		495	1364	
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	0.50		0.71	0.75		0.67	0.60		0.38	0.75	

Intersection Summary		
Area Type:	Other	
Cycle Length: 120		
Actuated Cycle Length: 120		
Offset: 117 (98%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 100		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.81		
Intersection Signal Delay: 39.0		Intersection LOS: D
Intersection Capacity Utilization 94.2%		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: 6: Greenbank Road & 3777 Strandherd Drive Access/Marketplace Avenue



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	66	239	434	18	358	582
Future Volume (vph)	66	239	434	18	358	582
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	66.0	0.0		0.0	65.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	47.0				48.0	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Ped Bike Factor			1.00		1.00	
Frt		0.850	0.994			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1695	1517	3367	0	1695	3390
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1695	1517	3367	0	1691	3390
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		239	4			
Link Speed (k/h)	50		50			50
Link Distance (m)	360.0		362.5			399.2
Travel Time (s)	25.9		26.1			28.7
Confl. Peds. (#/hr)				3	3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	66	239	434	18	358	582
Shared Lane Traffic (%)						
Lane Group Flow (vph)	66	239	452	0	358	582
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	13.5		3.7			8.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	97	97		97	97	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (m)	2.0	2.0	10.0		2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	2.0	0.6		2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA		Prot	NA

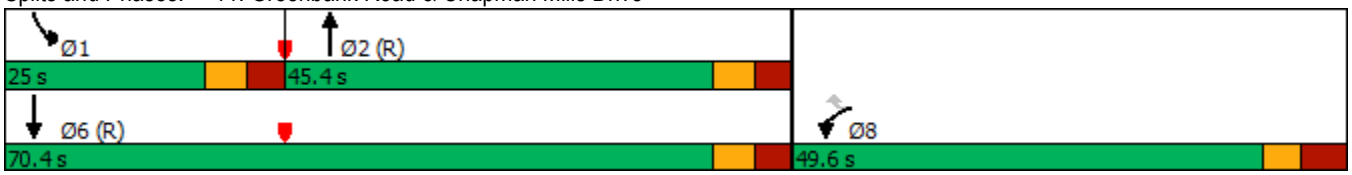
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2		1	6
Permitted Phases		8				
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0		5.0	10.0
Minimum Split (s)	49.6	49.6	45.1		12.1	45.1
Total Split (s)	49.6	49.6	45.4		25.0	70.4
Total Split (%)	41.3%	41.3%	37.8%		20.8%	58.7%
Maximum Green (s)	42.0	42.0	38.3		17.9	63.3
Yellow Time (s)	3.3	3.3	3.7		3.7	3.7
All-Red Time (s)	4.3	4.3	3.4		3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.6	7.6	7.1		7.1	7.1
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	C-Max		None	C-Max
Walk Time (s)	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	35.0	35.0	31.0			31.0
Pedestrian Calls (#/hr)	10	10	10			10
Act Effct Green (s)	22.8	22.8	42.0		33.4	82.5
Actuated g/C Ratio	0.19	0.19	0.35		0.28	0.69
v/c Ratio	0.20	0.50	0.38		0.76	0.25
Control Delay	37.4	7.1	30.4		38.5	7.4
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	37.4	7.1	30.4		38.5	7.4
LOS	D	A	C		D	A
Approach Delay	13.7		30.4			19.2
Approach LOS	B		C			B
90th %ile Green (s)	42.0	42.0	38.3		17.9	63.3
90th %ile Term Code	Ped	Ped	Coord		Max	Coord
70th %ile Green (s)	42.0	42.0	38.3		17.9	63.3
70th %ile Term Code	Ped	Ped	Coord		Max	Coord
50th %ile Green (s)	10.0	10.0	50.2		38.0	95.3
50th %ile Term Code	Min	Min	Coord		Gap	Coord
30th %ile Green (s)	10.0	10.0	45.1		43.1	95.3
30th %ile Term Code	Min	Min	Coord		Gap	Coord
10th %ile Green (s)	10.0	10.0	38.3		49.9	95.3
10th %ile Term Code	Min	Min	Coord		Max	Coord
Queue Length 50th (m)	15.1	0.0	36.6		24.5	0.2
Queue Length 95th (m)	20.5	16.5	58.5		m#175.9	74.2
Internal Link Dist (m)	336.0		338.5			375.2
Turn Bay Length (m)	66.0				65.0	
Base Capacity (vph)	593	686	1182		470	2330
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	0.11	0.35	0.38		0.76	0.25

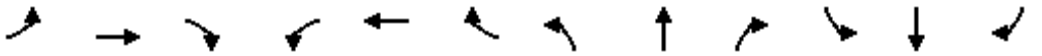
Intersection Summary

Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 77 (64%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 130			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 21.2		Intersection LOS: C	
Intersection Capacity Utilization 79.1%		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.
m Volume for 95th percentile queue is metered by upstream signal.

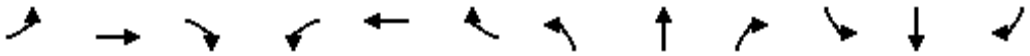
Splits and Phases: 11: Greenbank Road & Chapman Mills Drive





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	348	0	0	251	20	0	0	0	38	0	54
Future Volume (vph)	29	348	0	0	251	20	0	0	0	38	0	54
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	35.0		0.0	36.0		0.0	32.0		0.0	38.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	72.0			42.0			2.5			40.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.989						0.850	
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1695	1784	0	1784	1765	0	1784	1784	0	1695	1517	0
Flt Permitted	0.950									0.757		
Satd. Flow (perm)	1695	1784	0	1784	1765	0	1784	1784	0	1351	1517	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					5						493	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		360.0			391.0			215.1			181.2	
Travel Time (s)		25.9			28.2			15.5			13.0	
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
Adj. Flow (vph)	29	348	0	0	251	20	0	0	0	38	0	54
Shared Lane Traffic (%)												
Lane Group Flow (vph)	29	348	0	0	271	0	0	0	0	38	54	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		13.5			13.5			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	97		97	97		97	97		97	97		97
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm			Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		

Chapman Mills Drive/Riocan Avenue
BG2030 PM Peak

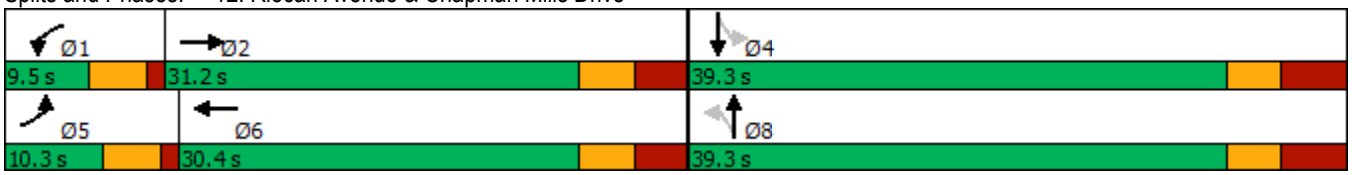


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	9.5	26.5		9.5	26.5		39.3	39.3		39.3	39.3	
Total Split (s)	10.3	31.2		9.5	30.4		39.3	39.3		39.3	39.3	
Total Split (%)	12.9%	39.0%		11.9%	38.0%		49.1%	49.1%		49.1%	49.1%	
Maximum Green (s)	5.8	24.7		5.0	23.9		32.0	32.0		32.0	32.0	
Yellow Time (s)	3.5	3.3		3.5	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.0	3.2		1.0	3.2		4.0	4.0		4.0	4.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	6.5		4.5	6.5		7.3	7.3		7.3	7.3	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		13.0			13.0		25.0	25.0		25.0	25.0	
Pedestrian Calls (#/hr)		10			10		10	10		10	10	
Act Effct Green (s)	5.8	20.3			16.7					32.5	32.5	
Actuated g/C Ratio	0.09	0.30			0.25					0.49	0.49	
v/c Ratio	0.20	0.64			0.61					0.06	0.05	
Control Delay	35.6	25.1			28.8					12.7	0.1	
Queue Delay	0.0	0.0			0.0					0.0	0.0	
Total Delay	35.6	25.1			28.8					12.7	0.1	
LOS	D	C			C					B	A	
Approach Delay		25.9			28.8						5.3	
Approach LOS		C			C						A	
90th %ile Green (s)	5.8	33.4		0.0	23.1		32.0	32.0		32.0	32.0	
90th %ile Term Code	Max	Hold		Skip	Gap		MaxR	MaxR		MaxR	MaxR	
70th %ile Green (s)	5.8	29.0		0.0	18.7		32.0	32.0		32.0	32.0	
70th %ile Term Code	Max	Hold		Skip	Gap		MaxR	MaxR		MaxR	MaxR	
50th %ile Green (s)	0.0	17.2		0.0	17.2		32.0	32.0		32.0	32.0	
50th %ile Term Code	Skip	Gap		Skip	Hold		MaxR	MaxR		MaxR	MaxR	
30th %ile Green (s)	0.0	14.5		0.0	14.5		32.0	32.0		32.0	32.0	
30th %ile Term Code	Skip	Gap		Skip	Hold		MaxR	MaxR		MaxR	MaxR	
10th %ile Green (s)	0.0	11.1		0.0	11.1		32.0	32.0		32.0	32.0	
10th %ile Term Code	Skip	Gap		Skip	Hold		MaxR	MaxR		MaxR	MaxR	
Queue Length 50th (m)	3.2	36.3			26.3					2.1	0.0	
Queue Length 95th (m)	11.9	58.4			55.6					8.9	0.0	
Internal Link Dist (m)		336.0			367.0			191.1			157.2	
Turn Bay Length (m)	35.0									38.0		
Base Capacity (vph)	149	729			644					657	991	
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	0.19	0.48			0.42					0.06	0.05	

Intersection Summary	
Area Type:	Other

Cycle Length: 80	
Actuated Cycle Length: 66.8	
Natural Cycle: 80	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.64	
Intersection Signal Delay: 24.4	Intersection LOS: C
Intersection Capacity Utilization 45.3%	ICU Level of Service A
Analysis Period (min) 15	
90th %ile Actuated Cycle: 79.2	
70th %ile Actuated Cycle: 74.8	
50th %ile Actuated Cycle: 63	
30th %ile Actuated Cycle: 60.3	
10th %ile Actuated Cycle: 56.9	

Splits and Phases: 12: Riocan Avenue & Chapman Mills Drive



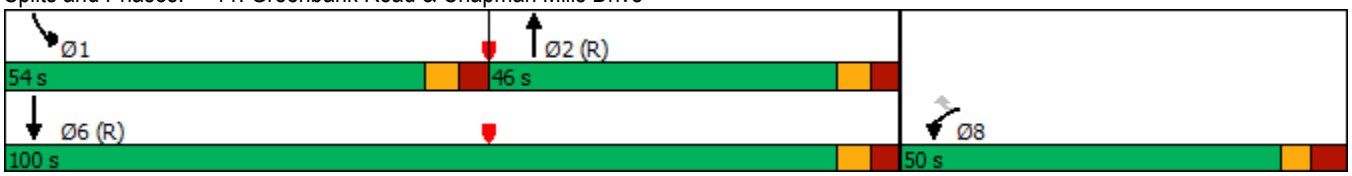
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	66	239	434	18	358	582
Future Volume (vph)	66	239	434	18	358	582
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	66.0	0.0		0.0	65.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	47.0				48.0	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Ped Bike Factor			1.00		1.00	
Frt		0.850	0.994			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1695	1517	3366	0	1695	3390
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1695	1517	3366	0	1690	3390
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		239	3			
Link Speed (k/h)	50		50			50
Link Distance (m)	360.0		362.5			399.2
Travel Time (s)	25.9		26.1			28.7
Confl. Peds. (#/hr)				3	3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	66	239	434	18	358	582
Shared Lane Traffic (%)						
Lane Group Flow (vph)	66	239	452	0	358	582
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	13.5		3.7			8.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	97	97		97	97	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (m)	2.0	2.0	10.0		2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	2.0	0.6		2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA		Prot	NA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2		1	6
Permitted Phases		8				
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0		5.0	10.0
Minimum Split (s)	49.6	49.6	45.1		12.1	45.1
Total Split (s)	50.0	50.0	46.0		54.0	100.0
Total Split (%)	33.3%	33.3%	30.7%		36.0%	66.7%
Maximum Green (s)	42.4	42.4	38.9		46.9	92.9
Yellow Time (s)	3.3	3.3	3.7		3.7	3.7
All-Red Time (s)	4.3	4.3	3.4		3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.6	7.6	7.1		7.1	7.1
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	C-Max		None	C-Max
Walk Time (s)	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	35.0	35.0	31.0			31.0
Pedestrian Calls (#/hr)	10	10	10			10
Act Effct Green (s)	23.0	23.0	68.1		37.0	112.3
Actuated g/C Ratio	0.15	0.15	0.45		0.25	0.75
v/c Ratio	0.25	0.55	0.30		0.86	0.23
Control Delay	53.5	9.7	31.2		72.9	7.9
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	53.5	9.7	31.2		72.9	7.9
LOS	D	A	C		E	A
Approach Delay	19.2		31.2			32.6
Approach LOS	B		C			C
90th %ile Green (s)	42.0	42.0	39.4		46.8	93.3
90th %ile Term Code	Ped	Ped	Coord		Gap	Coord
70th %ile Green (s)	42.0	42.0	44.8		41.4	93.3
70th %ile Term Code	Ped	Ped	Coord		Gap	Coord
50th %ile Green (s)	11.2	11.2	79.7		37.3	124.1
50th %ile Term Code	Gap	Gap	Coord		Gap	Coord
30th %ile Green (s)	10.0	10.0	85.2		33.0	125.3
30th %ile Term Code	Min	Min	Coord		Gap	Coord
10th %ile Green (s)	10.0	10.0	91.5		26.7	125.3
10th %ile Term Code	Min	Min	Coord		Gap	Coord
Queue Length 50th (m)	19.3	0.0	37.0		102.2	15.5
Queue Length 95th (m)	27.3	20.6	77.8		129.2	49.6
Internal Link Dist (m)	336.0		338.5			375.2
Turn Bay Length (m)	66.0				65.0	
Base Capacity (vph)	479	600	1530		529	2536
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	0.14	0.40	0.30		0.68	0.23

Intersection Summary

Area Type:	Other		
Cycle Length: 150			
Actuated Cycle Length: 150			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 130			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 29.8		Intersection LOS: C	
Intersection Capacity Utilization 79.1%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 11: Greenbank Road & Chapman Mills Drive



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	66	239	434	18	358	582
Future Volume (vph)	66	239	434	18	358	582
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	66.0	0.0		0.0	65.0	
Storage Lanes	1	1		0	2	
Taper Length (m)	47.0				48.0	
Lane Util. Factor	1.00	1.00	0.95	0.95	0.97	0.95
Ped Bike Factor			1.00		1.00	
Frt		0.850	0.994			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1695	1517	3367	0	3288	3390
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1695	1517	3367	0	3280	3390
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		239	4			
Link Speed (k/h)	50		50			50
Link Distance (m)	360.0		362.5			399.2
Travel Time (s)	25.9		26.1			28.7
Confl. Peds. (#/hr)				3	3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	66	239	434	18	358	582
Shared Lane Traffic (%)						
Lane Group Flow (vph)	66	239	452	0	358	582
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	13.5		7.4			8.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	97	97		97	97	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (m)	2.0	2.0	10.0		2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	2.0	0.6		2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA		Prot	NA

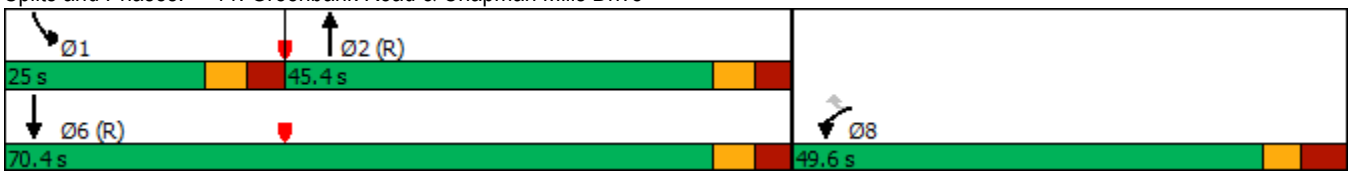
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2		1	6
Permitted Phases		8				
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0		5.0	10.0
Minimum Split (s)	49.6	49.6	45.1		12.1	45.1
Total Split (s)	49.6	49.6	45.4		25.0	70.4
Total Split (%)	41.3%	41.3%	37.8%		20.8%	58.7%
Maximum Green (s)	42.0	42.0	38.3		17.9	63.3
Yellow Time (s)	3.3	3.3	3.7		3.7	3.7
All-Red Time (s)	4.3	4.3	3.4		3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.6	7.6	7.1		7.1	7.1
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	C-Max		None	C-Max
Walk Time (s)	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	35.0	35.0	31.0			31.0
Pedestrian Calls (#/hr)	10	10	10			10
Act Effct Green (s)	22.8	22.8	58.6		16.8	82.5
Actuated g/C Ratio	0.19	0.19	0.49		0.14	0.69
v/c Ratio	0.20	0.50	0.27		0.78	0.25
Control Delay	37.4	7.1	22.2		47.1	7.4
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	37.4	7.1	22.2		47.1	7.4
LOS	D	A	C		D	A
Approach Delay	13.7		22.2			22.5
Approach LOS	B		C			C
90th %ile Green (s)	42.0	42.0	38.3		17.9	63.3
90th %ile Term Code	Ped	Ped	Coord		Max	Coord
70th %ile Green (s)	42.0	42.0	38.3		17.9	63.3
70th %ile Term Code	Ped	Ped	Coord		Max	Coord
50th %ile Green (s)	10.0	10.0	70.0		18.2	95.3
50th %ile Term Code	Min	Min	Coord		Gap	Coord
30th %ile Green (s)	10.0	10.0	71.9		16.3	95.3
30th %ile Term Code	Min	Min	Coord		Gap	Coord
10th %ile Green (s)	10.0	10.0	74.7		13.5	95.3
10th %ile Term Code	Min	Min	Coord		Gap	Coord
Queue Length 50th (m)	15.1	0.0	25.2		31.2	0.2
Queue Length 95th (m)	20.5	16.5	58.5		m56.6	74.2
Internal Link Dist (m)	336.0		338.5			375.2
Turn Bay Length (m)	66.0				65.0	
Base Capacity (vph)	593	686	1647		492	2330
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	0.11	0.35	0.27		0.73	0.25

Intersection Summary

Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 77 (64%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 20.8		Intersection LOS: C	
Intersection Capacity Utilization 68.9%		ICU Level of Service C	
Analysis Period (min) 15			

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

Splits and Phases: 11: Greenbank Road & Chapman Mills Drive



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	66	239	434	18	188	752
Future Volume (vph)	66	239	434	18	188	752
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	66.0	0.0		0.0	65.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	47.0				48.0	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Ped Bike Factor			1.00		1.00	
Frt		0.850	0.994			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1695	1517	3367	0	1695	3390
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1695	1517	3367	0	1691	3390
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		239	4			
Link Speed (k/h)	50		50			50
Link Distance (m)	360.0		362.5			399.2
Travel Time (s)	25.9		26.1			28.7
Confl. Peds. (#/hr)				3	3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	66	239	434	18	188	752
Shared Lane Traffic (%)						
Lane Group Flow (vph)	66	239	452	0	188	752
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	13.5		3.7			8.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	97	97		97	97	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (m)	2.0	2.0	10.0		2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	2.0	0.6		2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA		Prot	NA

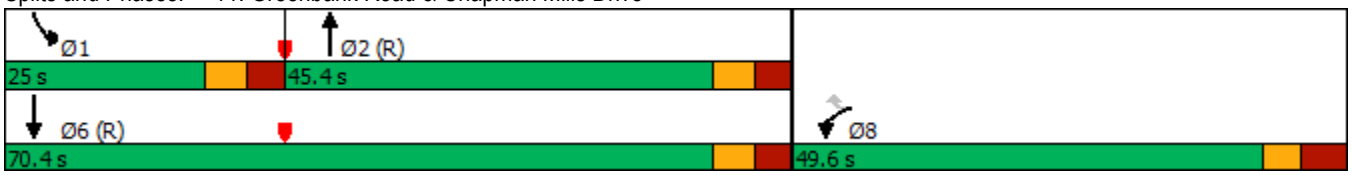
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2		1	6
Permitted Phases		8				
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0		5.0	10.0
Minimum Split (s)	49.6	49.6	45.1		12.1	45.1
Total Split (s)	49.6	49.6	45.4		25.0	70.4
Total Split (%)	41.3%	41.3%	37.8%		20.8%	58.7%
Maximum Green (s)	42.0	42.0	38.3		17.9	63.3
Yellow Time (s)	3.3	3.3	3.7		3.7	3.7
All-Red Time (s)	4.3	4.3	3.4		3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.6	7.6	7.1		7.1	7.1
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	C-Max		None	C-Max
Walk Time (s)	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	35.0	35.0	31.0			31.0
Pedestrian Calls (#/hr)	10	10	10			10
Act Effct Green (s)	22.8	22.8	58.7		16.7	82.5
Actuated g/C Ratio	0.19	0.19	0.49		0.14	0.69
v/c Ratio	0.20	0.50	0.27		0.80	0.32
Control Delay	37.4	7.1	22.2		55.9	8.5
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	37.4	7.1	22.2		55.9	8.5
LOS	D	A	C		E	A
Approach Delay	13.7		22.2			18.0
Approach LOS	B		C			B
90th %ile Green (s)	42.0	42.0	38.3		17.9	63.3
90th %ile Term Code	Ped	Ped	Coord		Max	Coord
70th %ile Green (s)	42.0	42.0	38.3		17.9	63.3
70th %ile Term Code	Ped	Ped	Coord		Max	Coord
50th %ile Green (s)	10.0	10.0	69.2		19.0	95.3
50th %ile Term Code	Min	Min	Coord		Gap	Coord
30th %ile Green (s)	10.0	10.0	71.9		16.3	95.3
30th %ile Term Code	Min	Min	Coord		Gap	Coord
10th %ile Green (s)	10.0	10.0	75.8		12.4	95.3
10th %ile Term Code	Min	Min	Coord		Gap	Coord
Queue Length 50th (m)	15.1	0.0	25.7		30.8	0.2
Queue Length 95th (m)	20.5	16.5	58.5		m#59.4	94.5
Internal Link Dist (m)	336.0		338.5			375.2
Turn Bay Length (m)	66.0				65.0	
Base Capacity (vph)	593	686	1649		255	2330
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	0.11	0.35	0.27		0.74	0.32

Intersection Summary

Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 77 (64%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 18.3		Intersection LOS: B	
Intersection Capacity Utilization 69.2%		ICU Level of Service C	
Analysis Period (min) 15			

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

Splits and Phases: 11: Greenbank Road & Chapman Mills Drive

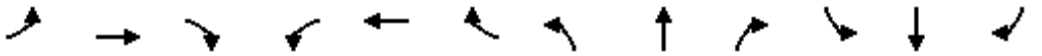


Appendix K: Synchro Analysis Reports - 2035 Background Conditions

Longfields Drive/Chapman Mills Drive
BG2035 AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	104	7	101	34	4	136	331	826	54	90	258	26
Future Volume (vph)	104	7	101	34	4	136	331	826	54	90	258	26
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	38.0		45.0	32.0		32.0	60.0		54.0	65.0		60.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	41.0			37.0			65.0			70.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00					0.99	1.00		0.94	0.99		0.97
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	1733	1517	1586	1733	1432	1695	3390	1488	1530	3202	1473
Flt Permitted	0.950			0.950			0.592			0.288		
Satd. Flow (perm)	1690	1733	1517	1586	1733	1411	1051	3390	1403	461	3202	1434
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)			133			133						136
Link Speed (k/h)		50			50			60			50	
Link Distance (m)		391.0			173.1			287.5			422.9	
Travel Time (s)		28.2			12.5			17.3			30.4	
Confl. Peds. (#/hr)	3					3	5		16	16		5
Confl. Bikes (#/hr)									17			
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%	5%	2%	9%	5%	8%	2%	2%	4%	13%	8%	5%
Adj. Flow (vph)	104	7	101	34	4	136	331	826	54	90	258	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	104	7	101	34	4	136	331	826	54	90	258	26
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		13.5			13.5			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Longfields Drive/Chapman Mills Drive
BG2035 AM Peak

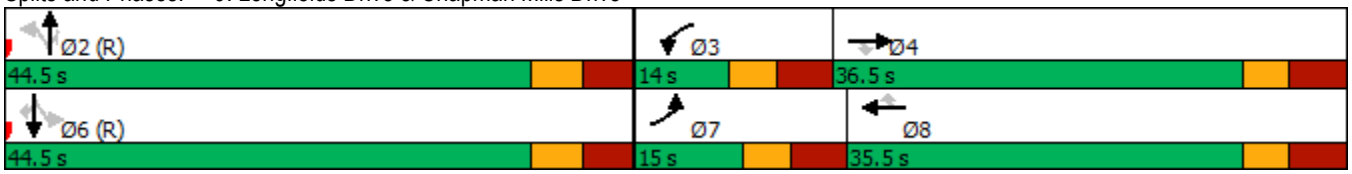


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4			8	2		2	6		6
Detector Phase	7	4	4	3	8	8	2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	12.3	35.5	35.5	12.3	35.5	35.5	42.3	42.3	42.3	42.3	42.3	42.3
Total Split (s)	15.0	36.5	36.5	14.0	35.5	35.5	44.5	44.5	44.5	44.5	44.5	44.5
Total Split (%)	15.8%	38.4%	38.4%	14.7%	37.4%	37.4%	46.8%	46.8%	46.8%	46.8%	46.8%	46.8%
Maximum Green (s)	7.7	29.0	29.0	6.7	28.0	28.0	37.2	37.2	37.2	37.2	37.2	37.2
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	4.0	4.2	4.2	4.0	4.2	4.2	3.6	3.6	3.6	3.6	3.6	3.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.3	7.5	7.5	7.3	7.5	7.5	7.3	7.3	7.3	7.3	7.3	7.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		21.0	21.0		21.0	21.0	28.0	28.0	28.0	28.0	28.0	28.0
Pedestrian Calls (#/hr)		10	10		10	10	10	10	10	10	10	10
Act Effct Green (s)	7.7	20.2	20.2	6.4	13.6	13.6	51.6	51.6	51.6	51.6	51.6	51.6
Actuated g/C Ratio	0.08	0.21	0.21	0.07	0.14	0.14	0.54	0.54	0.54	0.54	0.54	0.54
v/c Ratio	0.76	0.02	0.24	0.32	0.02	0.43	0.58	0.45	0.07	0.36	0.15	0.03
Control Delay	76.9	29.7	3.5	50.5	29.8	10.4	22.3	15.4	13.1	20.7	12.5	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	76.9	29.7	3.5	50.5	29.8	10.4	22.3	15.4	13.1	20.7	12.5	0.1
LOS	E	C	A	D	C	B	C	B	B	C	B	A
Approach Delay		40.4			18.6			17.2			13.6	
Approach LOS		D			B			B			B	
90th %ile Green (s)	7.7	29.0	29.0	6.7	28.0	28.0	37.2	37.2	37.2	37.2	37.2	37.2
90th %ile Term Code	Max	Hold	Hold	Max	Ped	Ped	Coord	Coord	Coord	Coord	Coord	Coord
70th %ile Green (s)	7.7	11.0	11.0	6.7	10.0	10.0	55.2	55.2	55.2	55.2	55.2	55.2
70th %ile Term Code	Max	Hold	Hold	Max	Min	Min	Coord	Coord	Coord	Coord	Coord	Coord
50th %ile Green (s)	7.7	11.0	11.0	6.7	10.0	10.0	55.2	55.2	55.2	55.2	55.2	55.2
50th %ile Term Code	Max	Hold	Hold	Max	Min	Min	Coord	Coord	Coord	Coord	Coord	Coord
30th %ile Green (s)	7.7	25.0	25.0	0.0	10.0	10.0	55.2	55.2	55.2	55.2	55.2	55.2
30th %ile Term Code	Max	Hold	Hold	Skip	Min	Min	Coord	Coord	Coord	Coord	Coord	Coord
10th %ile Green (s)	7.6	24.9	24.9	0.0	10.0	10.0	55.3	55.3	55.3	55.3	55.3	55.3
10th %ile Term Code	Gap	Hold	Hold	Skip	Min	Min	Coord	Coord	Coord	Coord	Coord	Coord
Queue Length 50th (m)	19.0	1.2	0.0	6.1	0.7	0.5	34.5	41.0	4.0	8.0	10.5	0.0
Queue Length 95th (m)	#45.1	4.0	6.6	15.4	2.9	13.3	#99.3	82.2	13.7	28.6	24.7	0.0
Internal Link Dist (m)		367.0			149.1			263.5			398.9	
Turn Bay Length (m)	38.0		45.0	32.0		32.0	60.0		54.0	65.0		60.0
Base Capacity (vph)	137	529	555	111	510	509	570	1841	762	250	1739	841
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.76	0.01	0.18	0.31	0.01	0.27	0.58	0.45	0.07	0.36	0.15	0.03

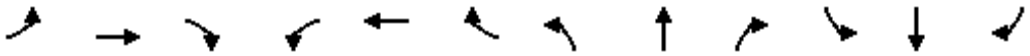
Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 95			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 19.1		Intersection LOS: B	
Intersection Capacity Utilization 79.7%		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: 9: Longfields Drive & Chapman Mills Drive



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	16	52	36	28	146	86	741	32	56	362	58
Future Volume (vph)	49	16	52	36	28	146	86	741	32	56	362	58
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	27.0		0.0	25.0		0.0	50.0		0.0	92.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	24.0			3.0			84.0			40.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.99	0.99		1.00	0.98		1.00	1.00		0.98	1.00	
Frt		0.885			0.874			0.994			0.979	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1572	1426	0	1453	1416	0	1601	3324	0	1616	3197	0
Flt Permitted	0.616			0.713			0.452			0.359		
Satd. Flow (perm)	1013	1426	0	1086	1416	0	759	3324	0	600	3197	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		52			120			7			21	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		185.4			199.4			422.9			208.9	
Travel Time (s)		13.3			14.4			30.4			15.0	
Confl. Peds. (#/hr)	9		6	6		9	4		24	24		4
Confl. Bikes (#/hr)			1			4			11			
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 (%)	10%	13%	11%	19%	17%	9%	8%	2%	28%	7%	3%	21%
Adj. Flow (vph)	49	16	52	36	28	146	86	741	32	56	362	58
Shared Lane Traffic (%)												
Lane Group Flow (vph)	49	68	0	36	174	0	86	773	0	56	420	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Longfields Drive/Marketplace Avenue/Clearbrook Drive
BG2035 AM Peak

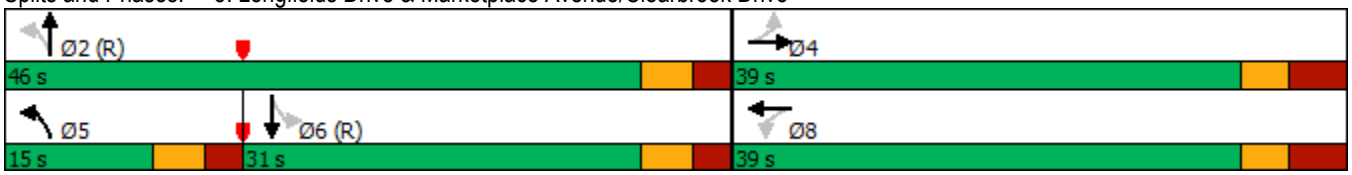


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	10.0		10.0	10.0	
Minimum Split (s)	38.8	38.8		38.8	38.8		10.6	25.8		25.8	25.8	
Total Split (s)	39.0	39.0		39.0	39.0		15.0	46.0		31.0	31.0	
Total Split (%)	45.9%	45.9%		45.9%	45.9%		17.6%	54.1%		36.5%	36.5%	
Maximum Green (s)	32.2	32.2		32.2	32.2		9.4	40.2		25.2	25.2	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.3	3.3		3.3	3.3	
All-Red Time (s)	3.8	3.8		3.8	3.8		2.3	2.5		2.5	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.8	6.8		6.8	6.8		5.6	5.8		5.8	5.8	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0		7.0	7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	25.0			13.0		13.0	13.0	
Pedestrian Calls (#/hr)	10	10		10	10			10		10	10	
Act Effct Green (s)	14.8	14.8		14.8	14.8		57.8	57.6		47.2	47.2	
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.68	0.68		0.56	0.56	
v/c Ratio	0.28	0.23		0.19	0.50		0.15	0.34		0.17	0.24	
Control Delay	31.4	12.0		28.9	15.1		7.5	7.7		16.9	12.5	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	31.4	12.0		28.9	15.1		7.5	7.7		16.9	12.5	
LOS	C	B		C	B		A	A		B	B	
Approach Delay		20.2			17.5			7.7			13.1	
Approach LOS		C			B			A			B	
90th %ile Green (s)	32.0	32.0		32.0	32.0		9.6	40.4		25.2	25.2	
90th %ile Term Code	Ped	Ped		Ped	Ped		Max	Coord		Coord	Coord	
70th %ile Green (s)	11.9	11.9		11.9	11.9		7.4	60.5		47.5	47.5	
70th %ile Term Code	Hold	Hold		Gap	Gap		Gap	Coord		Coord	Coord	
50th %ile Green (s)	10.0	10.0		10.0	10.0		6.7	62.4		50.1	50.1	
50th %ile Term Code	Min	Min		Min	Min		Gap	Coord		Coord	Coord	
30th %ile Green (s)	10.0	10.0		10.0	10.0		6.2	62.4		50.6	50.6	
30th %ile Term Code	Min	Min		Min	Min		Gap	Coord		Coord	Coord	
10th %ile Green (s)	10.0	10.0		10.0	10.0		0.0	62.4		62.4	62.4	
10th %ile Term Code	Hold	Hold		Min	Min		Skip	Coord		Coord	Coord	
Queue Length 50th (m)	7.5	2.4		5.4	8.2		3.2	18.3		3.8	14.6	
Queue Length 95th (m)	12.5	9.3		9.7	18.5		15.1	57.7		17.4	40.2	
Internal Link Dist (m)		161.4			175.4			398.9			184.9	
Turn Bay Length (m)	27.0			25.0			50.0			92.0		
Base Capacity (vph)	383	572		411	610		610	2255		332	1782	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.13	0.12		0.09	0.29		0.14	0.34		0.17	0.24	

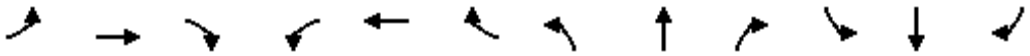
Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 85			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.50			
Intersection Signal Delay: 11.3		Intersection LOS: B	
Intersection Capacity Utilization 76.1%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 5: Longfields Drive & Marketplace Avenue/Clearbrook Drive



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	48	38	72	57	114	112	981	85	99	591	25
Future Volume (vph)	34	48	38	72	57	114	112	981	85	99	591	25
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	15.0		0.0	53.0		0.0	56.0		85.0	75.0		0.0
Storage Lanes	1		0	1		0	1		1	2		0
Taper Length (m)	15.0			43.0			23.0			33.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.95	0.95
Ped Bike Factor	1.00	0.98		0.96	0.99		1.00	1.00		1.00	1.00	
Frt		0.934			0.900			0.988			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1679	1604	0	1679	1528	0	1695	3255	0	3257	3215	0
Flt Permitted	0.545			0.643			0.950			0.950		
Satd. Flow (perm)	960	1604	0	1093	1528	0	1693	3255	0	3244	3215	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		31			79			9			4	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		171.9			132.7			399.2			202.6	
Travel Time (s)		12.4			9.6			24.0			12.2	
Confl. Peds. (#/hr)	3		33	33		3	1		7	7		1
Confl. Bikes (#/hr)			3			1			1			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 (%)	3%	2%	5%	3%	2%	8%	2%	5%	2%	3%	7%	2%
Adj. Flow (vph)	34	48	38	72	57	114	112	981	85	99	591	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	34	86	0	72	171	0	112	1066	0	99	616	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			7.4			7.4	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Greenbank Road/Marketplace Avenue
BG2035 AM Peak

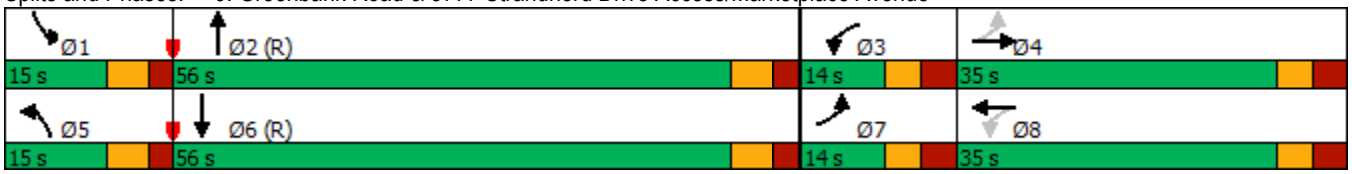


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.5	34.5		11.5	34.5		10.9	31.2		10.9	31.2	
Total Split (s)	14.0	35.0		14.0	35.0		15.0	56.0		15.0	56.0	
Total Split (%)	11.7%	29.2%		11.7%	29.2%		12.5%	46.7%		12.5%	46.7%	
Maximum Green (s)	7.5	28.5		7.5	28.5		9.1	49.8		9.1	49.8	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2		2.2	2.5		2.2	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5		5.9	6.2		5.9	6.2	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		21.0			21.0			18.0			18.0	
Pedestrian Calls (#/hr)		10			10			10			10	
Act Effct Green (s)	21.2	15.4		22.7	18.2		12.8	66.2		8.6	62.0	
Actuated g/C Ratio	0.18	0.13		0.19	0.15		0.11	0.55		0.07	0.52	
v/c Ratio	0.16	0.37		0.30	0.57		0.62	0.59		0.42	0.37	
Control Delay	33.9	33.8		37.4	32.0		77.4	8.6		58.7	20.0	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	33.9	33.8		37.4	32.0		77.4	8.6		58.7	20.0	
LOS	C	C		D	C		E	A		E	B	
Approach Delay		33.8			33.6			15.1			25.4	
Approach LOS		C			C			B			C	
90th %ile Green (s)	7.5	28.0		7.5	28.0		9.6	49.8		9.6	49.8	
90th %ile Term Code	Max	Ped		Max	Ped		Max	Coord		Max	Coord	
70th %ile Green (s)	7.5	16.1		7.5	16.1		16.2	61.3		10.0	55.1	
70th %ile Term Code	Max	Hold		Max	Gap		Gap	Coord		Gap	Coord	
50th %ile Green (s)	7.4	12.9		7.5	13.0		14.9	65.5		9.0	59.6	
50th %ile Term Code	Gap	Hold		Max	Gap		Gap	Coord		Gap	Coord	
30th %ile Green (s)	0.0	10.0		7.5	24.0		13.1	69.4		8.0	64.3	
30th %ile Term Code	Skip	Min		Max	Hold		Gap	Coord		Gap	Coord	
10th %ile Green (s)	0.0	10.0		0.0	10.0		10.1	84.9		6.5	81.3	
10th %ile Term Code	Skip	Hold		Skip	Min		Gap	Coord		Gap	Coord	
Queue Length 50th (m)	6.4	12.2		13.8	21.0		22.4	85.0		11.6	45.7	
Queue Length 95th (m)	12.5	24.1		22.0	38.4		#59.6	33.4		20.3	70.1	
Internal Link Dist (m)		147.9			108.7			375.2			178.6	
Turn Bay Length (m)	15.0			53.0			56.0			75.0		
Base Capacity (vph)	215	404		243	423		180	1799		254	1663	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.16	0.21		0.30	0.40		0.62	0.59		0.39	0.37	

Intersection Summary		
Area Type:	Other	
Cycle Length: 120		
Actuated Cycle Length: 120		
Offset: 87 (73%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 90		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.62		
Intersection Signal Delay: 21.4	Intersection LOS: C	
Intersection Capacity Utilization 79.2%	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: 6: Greenbank Road & 3777 Strandherd Drive Access/Marketplace Avenue

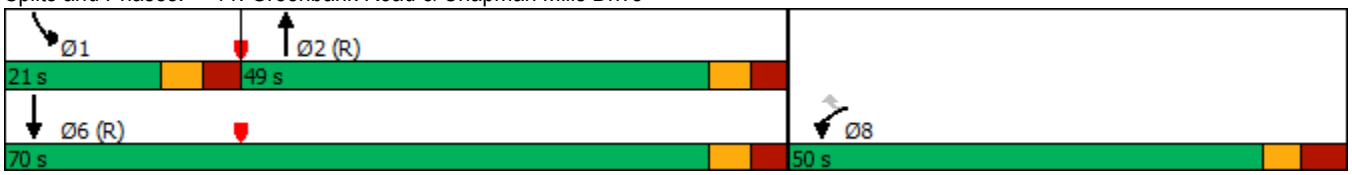


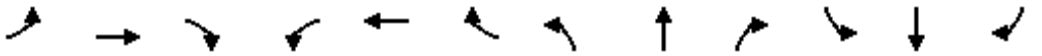
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	75	304	843	106	96	436
Future Volume (vph)	75	304	843	106	96	436
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	66.0	0.0		0.0	65.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	47.0				48.0	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Ped Bike Factor	1.00	0.98	0.99		0.99	
Frt		0.850	0.983			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1441	1517	3223	0	1679	3262
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1438	1484	3223	0	1666	3262
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		299	12			
Link Speed (k/h)	50		50			50
Link Distance (m)	360.0		362.5			399.2
Travel Time (s)	25.9		26.1			28.7
Confl. Peds. (#/hr)	2	1		18	18	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	20%	2%	5%	4%	3%	6%
Adj. Flow (vph)	75	304	843	106	96	436
Shared Lane Traffic (%)						
Lane Group Flow (vph)	75	304	949	0	96	436
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	13.5		3.7			8.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (m)	2.0	2.0	10.0		2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	2.0	0.6		2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Turn Type	Prot	Perm	NA		Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8				
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0		5.0	10.0
Minimum Split (s)	49.6	49.6	45.1		12.1	45.1
Total Split (s)	50.0	50.0	49.0		21.0	70.0
Total Split (%)	41.7%	41.7%	40.8%		17.5%	58.3%
Maximum Green (s)	42.4	42.4	41.9		13.9	62.9
Yellow Time (s)	3.3	3.3	3.7		3.7	3.7
All-Red Time (s)	4.3	4.3	3.4		3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.6	7.6	7.1		7.1	7.1
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	C-Max		None	C-Max
Walk Time (s)	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	35.0	35.0	31.0			31.0
Pedestrian Calls (#/hr)	10	10	10			10
Act Effct Green (s)	23.1	23.1	63.5		11.6	82.2
Actuated g/C Ratio	0.19	0.19	0.53		0.10	0.68
v/c Ratio	0.27	0.58	0.55		0.59	0.20
Control Delay	39.0	8.1	24.4		58.5	21.7
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	39.0	8.1	24.4		58.5	21.7
LOS	D	A	C		E	C
Approach Delay	14.2		24.4			28.4
Approach LOS	B		C			C
90th %ile Green (s)	42.0	42.0	41.9		14.3	63.3
90th %ile Term Code	Ped	Ped	Coord		Max	Coord
70th %ile Green (s)	42.0	42.0	42.1		14.1	63.3
70th %ile Term Code	Ped	Ped	Coord		Gap	Coord
50th %ile Green (s)	11.6	11.6	74.4		12.2	93.7
50th %ile Term Code	Gap	Gap	Coord		Gap	Coord
30th %ile Green (s)	10.0	10.0	78.0		10.2	95.3
30th %ile Term Code	Min	Min	Coord		Gap	Coord
10th %ile Green (s)	10.0	10.0	80.9		7.3	95.3
10th %ile Term Code	Min	Min	Coord		Gap	Coord
Queue Length 50th (m)	17.1	1.1	58.3		22.4	23.6
Queue Length 95th (m)	23.2	19.2	132.9		40.6	69.1
Internal Link Dist (m)	336.0		338.5			375.2
Turn Bay Length (m)	66.0				65.0	
Base Capacity (vph)	509	717	1710		196	2233
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	0.15	0.42	0.55		0.49	0.20

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 71 (59%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.59			
Intersection Signal Delay: 23.5		Intersection LOS: C	
Intersection Capacity Utilization 64.7%		ICU Level of Service C	
Analysis Period (min) 15			

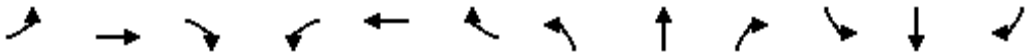
Splits and Phases: 11: Greenbank Road & Chapman Mills Drive





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	183	0	0	332	13	0	0	0	11	0	47
Future Volume (vph)	19	183	0	0	332	13	0	0	0	11	0	47
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	35.0		0.0	36.0		0.0	32.0		0.0	38.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	72.0			42.0			2.5			40.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.994						0.850	
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1695	1784	0	1784	1774	0	1784	1784	0	1695	1517	0
Flt Permitted	0.950									0.757		
Satd. Flow (perm)	1695	1784	0	1784	1774	0	1784	1784	0	1351	1517	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					3						406	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		360.0			391.0			215.1			181.2	
Travel Time (s)		25.9			28.2			15.5			13.0	
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
Adj. Flow (vph)	19	183	0	0	332	13	0	0	0	11	0	47
Shared Lane Traffic (%)												
Lane Group Flow (vph)	19	183	0	0	345	0	0	0	0	11	47	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		13.5			13.5			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm			Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		

Chapman Mills Drive/Riocan Avenue
BG2035 AM Peak

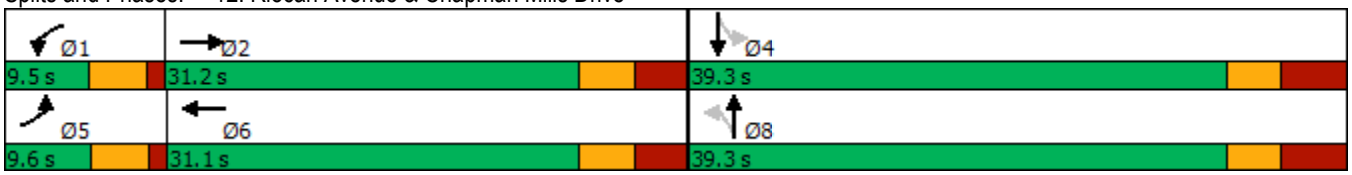


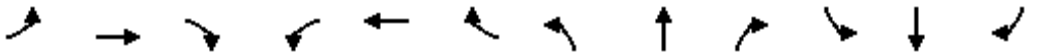
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	9.5	26.5		9.5	26.5		39.3	39.3		39.3	39.3	
Total Split (s)	9.6	31.2		9.5	31.1		39.3	39.3		39.3	39.3	
Total Split (%)	12.0%	39.0%		11.9%	38.9%		49.1%	49.1%		49.1%	49.1%	
Maximum Green (s)	5.1	24.7		5.0	24.6		32.0	32.0		32.0	32.0	
Yellow Time (s)	3.5	3.3		3.5	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.0	3.2		1.0	3.2		4.0	4.0		4.0	4.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	6.5		4.5	6.5		7.3	7.3		7.3	7.3	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		13.0			13.0		25.0	25.0		25.0	25.0	
Pedestrian Calls (#/hr)		10			10		10	10		10	10	
Act Effct Green (s)	5.2	20.9			17.6					32.6	32.6	
Actuated g/C Ratio	0.08	0.31			0.26					0.48	0.48	
v/c Ratio	0.15	0.33			0.75					0.02	0.05	
Control Delay	36.4	18.5			33.8					13.5	0.1	
Queue Delay	0.0	0.0			0.0					0.0	0.0	
Total Delay	36.4	18.5			33.8					13.5	0.1	
LOS	D	B			C					B	A	
Approach Delay		20.2			33.8						2.6	
Approach LOS		C			C						A	
90th %ile Green (s)	5.1	34.2		0.0	24.6		32.0	32.0		32.0	32.0	
90th %ile Term Code	Max	Hold		Skip	Max		MaxR	MaxR		MaxR	MaxR	
70th %ile Green (s)	5.1	32.3		0.0	22.7		32.0	32.0		32.0	32.0	
70th %ile Term Code	Max	Hold		Skip	Gap		MaxR	MaxR		MaxR	MaxR	
50th %ile Green (s)	0.0	17.0		0.0	17.0		32.0	32.0		32.0	32.0	
50th %ile Term Code	Skip	Hold		Skip	Gap		MaxR	MaxR		MaxR	MaxR	
30th %ile Green (s)	0.0	14.4		0.0	14.4		32.0	32.0		32.0	32.0	
30th %ile Term Code	Skip	Hold		Skip	Gap		MaxR	MaxR		MaxR	MaxR	
10th %ile Green (s)	0.0	11.0		0.0	11.0		32.0	32.0		32.0	32.0	
10th %ile Term Code	Skip	Hold		Skip	Gap		MaxR	MaxR		MaxR	MaxR	
Queue Length 50th (m)	2.1	17.1			35.7					0.6	0.0	
Queue Length 95th (m)	9.1	30.2			71.2					3.9	0.0	
Internal Link Dist (m)		336.0			367.0			191.1			157.2	
Turn Bay Length (m)	35.0									38.0		
Base Capacity (vph)	130	741			660					652	942	
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	0.15	0.25			0.52					0.02	0.05	

Intersection Summary	
Area Type:	Other

Cycle Length: 80	
Actuated Cycle Length: 67.6	
Natural Cycle: 80	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 26.2	Intersection LOS: C
Intersection Capacity Utilization 39.1%	ICU Level of Service A
Analysis Period (min) 15	
90th %ile Actuated Cycle: 80	
70th %ile Actuated Cycle: 78.1	
50th %ile Actuated Cycle: 62.8	
30th %ile Actuated Cycle: 60.2	
10th %ile Actuated Cycle: 56.8	

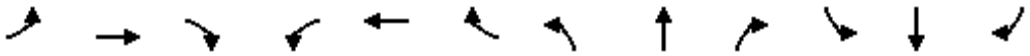
Splits and Phases: 12: Riocan Avenue & Chapman Mills Drive





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	6	367	65	4	104	230	583	54	162	726	36
Future Volume (vph)	12	6	367	65	4	104	230	583	54	162	726	36
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	38.0		45.0	32.0		32.0	60.0		54.0	65.0		60.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	41.0			37.0			65.0			70.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.98	0.99		0.98	0.99		0.97	1.00		0.95
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	1784	1517	1695	1784	1502	1695	3357	1517	1695	3390	1517
Flt Permitted	0.950			0.950			0.320			0.400		
Satd. Flow (perm)	1687	1784	1485	1681	1784	1476	567	3357	1468	711	3390	1439
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)			133			133						136
Link Speed (k/h)		50			50			60			50	
Link Distance (m)		391.0			173.1			287.5			422.9	
Travel Time (s)		28.2			12.5			17.3			30.4	
Confl. Peds. (#/hr)	5		8	8		5	17		7	7		17
Confl. Bikes (#/hr)			1						3			10
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%	2%	2%	2%	2%	3%	2%	3%	2%	2%	2%	2%
Adj. Flow (vph)	12	6	367	65	4	104	230	583	54	162	726	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	12	6	367	65	4	104	230	583	54	162	726	36
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		13.5			13.5			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Longfields Drive/Chapman Mills Drive
BG2035 PM Peak

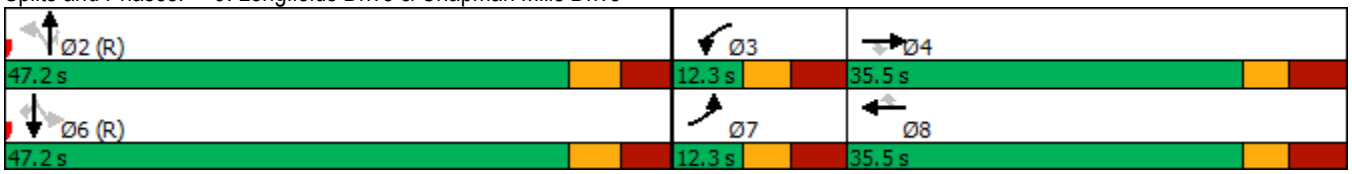


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4			8	2		2	6		6
Detector Phase	7	4	4	3	8	8	2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	12.3	35.5	35.5	12.3	35.5	35.5	42.3	42.3	42.3	42.3	42.3	42.3
Total Split (s)	12.3	35.5	35.5	12.3	35.5	35.5	47.2	47.2	47.2	47.2	47.2	47.2
Total Split (%)	12.9%	37.4%	37.4%	12.9%	37.4%	37.4%	49.7%	49.7%	49.7%	49.7%	49.7%	49.7%
Maximum Green (s)	5.0	28.0	28.0	5.0	28.0	28.0	39.9	39.9	39.9	39.9	39.9	39.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	4.0	4.2	4.2	4.0	4.2	4.2	3.6	3.6	3.6	3.6	3.6	3.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.3	7.5	7.5	7.3	7.5	7.5	7.3	7.3	7.3	7.3	7.3	7.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		21.0	21.0		21.0	21.0	28.0	28.0	28.0	28.0	28.0	28.0
Pedestrian Calls (#/hr)		10	10		10	10	10	10	10	10	10	10
Act Effct Green (s)	5.0	20.8	20.8	5.0	28.2	28.2	49.5	49.5	49.5	49.5	49.5	49.5
Actuated g/C Ratio	0.05	0.22	0.22	0.05	0.30	0.30	0.52	0.52	0.52	0.52	0.52	0.52
v/c Ratio	0.13	0.02	0.86	0.73	0.01	0.20	0.78	0.33	0.07	0.44	0.41	0.04
Control Delay	46.5	25.0	40.9	87.6	21.5	3.4	44.0	15.9	15.4	22.5	16.8	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.5	25.0	40.9	87.6	21.5	3.4	44.0	15.9	15.4	22.5	16.8	0.1
LOS	D	C	D	F	C	A	D	B	B	C	B	A
Approach Delay		40.8			35.4			23.3			17.1	
Approach LOS		D			D			C			B	
90th %ile Green (s)	5.0	28.0	28.0	5.0	28.0	28.0	39.9	39.9	39.9	39.9	39.9	39.9
90th %ile Term Code	Max	Max	Max	Max	Ped	Ped	Coord	Coord	Coord	Coord	Coord	Coord
70th %ile Green (s)	0.0	25.8	25.8	5.0	38.1	38.1	42.1	42.1	42.1	42.1	42.1	42.1
70th %ile Term Code	Skip	Gap	Gap	Max	Hold	Hold	Coord	Coord	Coord	Coord	Coord	Coord
50th %ile Green (s)	0.0	21.7	21.7	5.0	34.0	34.0	46.2	46.2	46.2	46.2	46.2	46.2
50th %ile Term Code	Skip	Gap	Gap	Max	Hold	Hold	Coord	Coord	Coord	Coord	Coord	Coord
30th %ile Green (s)	0.0	17.4	17.4	5.0	29.7	29.7	50.5	50.5	50.5	50.5	50.5	50.5
30th %ile Term Code	Skip	Gap	Gap	Max	Hold	Hold	Coord	Coord	Coord	Coord	Coord	Coord
10th %ile Green (s)	0.0	11.2	11.2	0.0	11.2	11.2	69.0	69.0	69.0	69.0	69.0	69.0
10th %ile Term Code	Skip	Gap	Gap	Skip	Hold	Hold	Coord	Coord	Coord	Coord	Coord	Coord
Queue Length 50th (m)	2.1	0.9	42.0	12.0	0.5	0.0	35.0	33.5	5.1	19.0	43.9	0.0
Queue Length 95th (m)	7.6	3.7	70.0	#33.6	2.9	7.1	#87.2	52.2	12.9	43.1	66.7	0.0
Internal Link Dist (m)		367.0			149.1			263.5			398.9	
Turn Bay Length (m)	38.0		45.0	32.0		32.0	60.0		54.0	65.0		60.0
Base Capacity (vph)	89	525	531	89	592	578	295	1750	765	370	1767	815
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.13	0.01	0.69	0.73	0.01	0.18	0.78	0.33	0.07	0.44	0.41	0.04

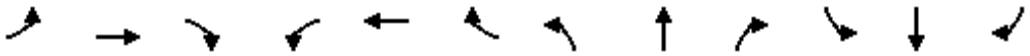
Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 95			
Offset: 33 (35%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 24.6		Intersection LOS: C	
Intersection Capacity Utilization 76.6%		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: 9: Longfields Drive & Chapman Mills Drive



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	135	47	170	15	54	58	148	458	20	81	533	196
Future Volume (vph)	135	47	170	15	54	58	148	458	20	81	533	196
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	27.0		0.0	25.0		0.0	50.0		0.0	92.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	24.0			3.0			84.0			40.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.99	0.97		0.99	0.99		1.00	1.00		0.99	0.99	
Frt		0.882			0.922			0.994			0.960	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1662	1519	0	1695	1620	0	1679	3365	0	1695	3229	0
Flt Permitted	0.685			0.534			0.282			0.479		
Satd. Flow (perm)	1191	1519	0	939	1620	0	498	3365	0	848	3229	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		170			58			7			63	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		185.4			199.4			422.9			208.9	
Travel Time (s)		13.3			14.4			30.4			15.0	
Confl. Peds. (#/hr)	10		25	25		10	3		7	7		3
Confl. Bikes (#/hr)			6			1			3			2
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 (%)	4%	2%	3%	2%	2%	3%	3%	2%	2%	2%	2%	2%
Adj. Flow (vph)	135	47	170	15	54	58	148	458	20	81	533	196
Shared Lane Traffic (%)												
Lane Group Flow (vph)	135	217	0	15	112	0	148	478	0	81	729	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Longfields Drive/Marketplace Avenue/Clearbrook Drive
BG2035 PM Peak

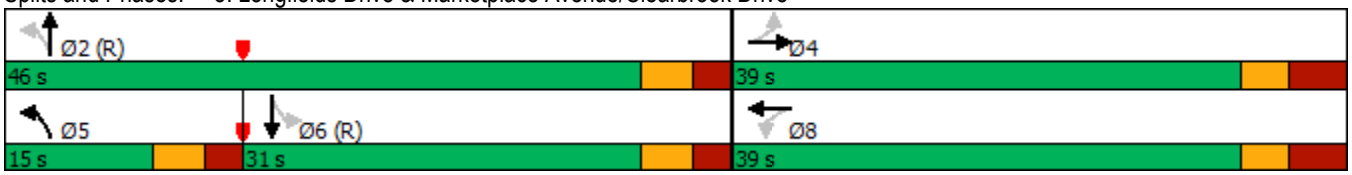


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	10.0		10.0	10.0	
Minimum Split (s)	38.8	38.8		38.8	38.8		10.6	25.8		25.8	25.8	
Total Split (s)	39.0	39.0		39.0	39.0		15.0	46.0		31.0	31.0	
Total Split (%)	45.9%	45.9%		45.9%	45.9%		17.6%	54.1%		36.5%	36.5%	
Maximum Green (s)	32.2	32.2		32.2	32.2		9.4	40.2		25.2	25.2	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.3	3.3		3.3	3.3	
All-Red Time (s)	3.8	3.8		3.8	3.8		2.3	2.5		2.5	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.8	6.8		6.8	6.8		5.6	5.8		5.8	5.8	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0		7.0	7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	25.0			13.0		13.0	13.0	
Pedestrian Calls (#/hr)	10	10		10	10			10		10	10	
Act Effct Green (s)	17.4	17.4		17.4	17.4		55.2	55.0		41.3	41.3	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.65	0.65		0.49	0.49	
v/c Ratio	0.55	0.49		0.08	0.30		0.34	0.22		0.20	0.46	
Control Delay	37.1	10.6		23.4	15.0		10.0	7.8		18.2	16.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	37.1	10.6		23.4	15.0		10.0	7.8		18.2	16.3	
LOS	D	B		C	B		A	A		B	B	
Approach Delay		20.7			16.0			8.3			16.5	
Approach LOS		C			B			A			B	
90th %ile Green (s)	32.0	32.0		32.0	32.0		9.6	40.4		25.2	25.2	
90th %ile Term Code	Ped	Ped		Ped	Ped		Max	Coord		Coord	Coord	
70th %ile Green (s)	17.9	17.9		17.9	17.9		9.3	54.5		39.6	39.6	
70th %ile Term Code	Gap	Gap		Hold	Hold		Gap	Coord		Coord	Coord	
50th %ile Green (s)	15.0	15.0		15.0	15.0		8.1	57.4		43.7	43.7	
50th %ile Term Code	Gap	Gap		Hold	Hold		Gap	Coord		Coord	Coord	
30th %ile Green (s)	12.2	12.2		12.2	12.2		7.1	60.2		47.5	47.5	
30th %ile Term Code	Gap	Gap		Hold	Hold		Gap	Coord		Coord	Coord	
10th %ile Green (s)	10.0	10.0		10.0	10.0		6.1	62.4		50.7	50.7	
10th %ile Term Code	Min	Min		Hold	Hold		Gap	Coord		Coord	Coord	
Queue Length 50th (m)	20.6	6.6		2.1	7.6		7.3	13.1		6.7	33.2	
Queue Length 95th (m)	28.8	18.7		5.2	15.8		23.8	33.5		22.2	70.6	
Internal Link Dist (m)		161.4			175.4			398.9			184.9	
Turn Bay Length (m)	27.0			25.0			50.0			92.0		
Base Capacity (vph)	451	681		355	649		454	2179		412	1602	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.30	0.32		0.04	0.17		0.33	0.22		0.20	0.46	

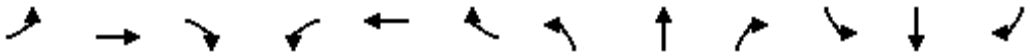
Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 85			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay: 14.6		Intersection LOS: B	
Intersection Capacity Utilization 67.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 5: Longfields Drive & Marketplace Avenue/Clearbrook Drive



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	109	91	185	126	188	172	885	107	189	1170	25
Future Volume (vph)	71	109	91	185	126	188	172	885	107	189	1170	25
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	15.0		0.0	53.0		0.0	56.0		85.0	75.0		0.0
Storage Lanes	1		0	1		0	1		1	2		0
Taper Length (m)	15.0			43.0			23.0			33.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.95	0.95
Ped Bike Factor	0.99	0.95		0.94	0.98		0.99	1.00		0.99	1.00	
Frt		0.932			0.910			0.984			0.997	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	1587	0	1695	1584	0	1695	3323	0	3288	3377	0
Flt Permitted	0.289			0.461			0.950			0.950		
Satd. Flow (perm)	509	1587	0	775	1584	0	1686	3323	0	3257	3377	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		33			59			12			2	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		171.9			132.7			399.2			202.6	
Travel Time (s)		12.4			9.6			24.0			12.2	
Confl. Peds. (#/hr)	20		65	65		20	12		16	16		12
Confl. Bikes (#/hr)			8			4			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
Adj. Flow (vph)	71	109	91	185	126	188	172	885	107	189	1170	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	71	200	0	185	314	0	172	992	0	189	1195	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			7.4			7.4	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	

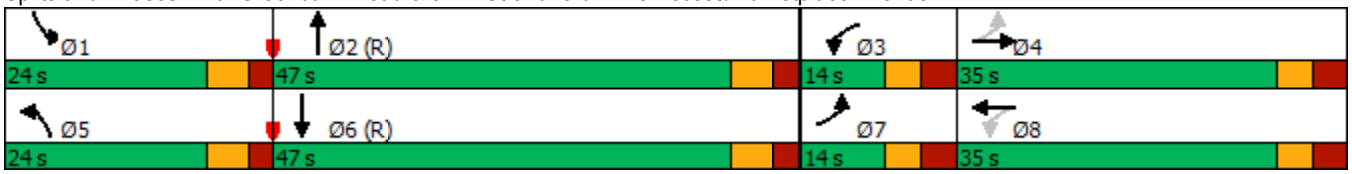
Greenbank Road/Marketplace Avenue
BG2035 PM Peak



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.5	34.5		11.5	34.5		10.9	31.2		10.9	31.2	
Total Split (s)	14.0	35.0		14.0	35.0		24.0	47.0		24.0	47.0	
Total Split (%)	11.7%	29.2%		11.7%	29.2%		20.0%	39.2%		20.0%	39.2%	
Maximum Green (s)	7.5	28.5		7.5	28.5		18.1	40.8		18.1	40.8	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2		2.2	2.5		2.2	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5		5.9	6.2		5.9	6.2	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		21.0			21.0			18.0			18.0	
Pedestrian Calls (#/hr)		10			10			10			10	
Act Effct Green (s)	30.2	22.9		31.7	25.7		16.0	52.3		12.2	48.5	
Actuated g/C Ratio	0.25	0.19		0.26	0.21		0.13	0.44		0.10	0.40	
v/c Ratio	0.36	0.61		0.71	0.81		0.76	0.68		0.57	0.87	
Control Delay	33.2	43.6		49.0	53.4		80.2	23.0		57.7	43.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	33.2	43.6		49.0	53.4		80.2	23.0		57.7	43.1	
LOS	C	D		D	D		F	C		E	D	
Approach Delay		40.9			51.8			31.5			45.1	
Approach LOS		D			D			C			D	
90th %ile Green (s)	7.5	28.5		7.5	28.5		18.1	43.2		15.7	40.8	
90th %ile Term Code	Max	Hold		Max	Max		Max	Coord		Gap	Coord	
70th %ile Green (s)	7.5	28.5		7.5	28.5		18.1	45.3		13.6	40.8	
70th %ile Term Code	Max	Hold		Max	Max		Max	Coord		Gap	Coord	
50th %ile Green (s)	7.5	25.5		7.5	25.5		17.5	49.7		12.2	44.4	
50th %ile Term Code	Max	Hold		Max	Gap		Gap	Coord		Gap	Coord	
30th %ile Green (s)	7.5	21.6		7.5	21.6		14.9	55.0		10.8	50.9	
30th %ile Term Code	Max	Hold		Max	Gap		Gap	Coord		Gap	Coord	
10th %ile Green (s)	0.0	10.6		7.5	24.6		11.2	68.1		8.7	65.6	
10th %ile Term Code	Skip	Gap		Max	Hold		Gap	Coord		Gap	Coord	
Queue Length 50th (m)	11.7	35.2		32.7	58.5		26.5	109.6		22.2	142.7	
Queue Length 95th (m)	21.6	57.3		50.0	#92.0		#59.7	139.0		32.9	#201.9	
Internal Link Dist (m)		147.9			108.7			375.2			178.6	
Turn Bay Length (m)	15.0			53.0			56.0			75.0		
Base Capacity (vph)	203	402		262	421		255	1453		495	1366	
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	0.50		0.71	0.75		0.67	0.68		0.38	0.87	

Intersection Summary		
Area Type:	Other	
Cycle Length: 120		
Actuated Cycle Length: 120		
Offset: 117 (98%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 110		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.87		
Intersection Signal Delay: 41.0		Intersection LOS: D
Intersection Capacity Utilization 99.1%		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: 6: Greenbank Road & 3777 Strandherd Drive Access/Marketplace Avenue



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	66	239	536	18	358	725
Future Volume (vph)	66	239	536	18	358	725
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	66.0	0.0		0.0	65.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	47.0				48.0	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Ped Bike Factor			1.00		1.00	
Frt		0.850	0.995			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1695	1517	3371	0	1695	3390
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1695	1517	3371	0	1691	3390
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		239	3			
Link Speed (k/h)	50		50			50
Link Distance (m)	360.0		362.5			399.2
Travel Time (s)	25.9		26.1			28.7
Confl. Peds. (#/hr)				3	3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	66	239	536	18	358	725
Shared Lane Traffic (%)						
Lane Group Flow (vph)	66	239	554	0	358	725
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	13.5		3.7			8.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	97	97		97	97	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (m)	2.0	2.0	10.0		2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	2.0	0.6		2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA		Prot	NA

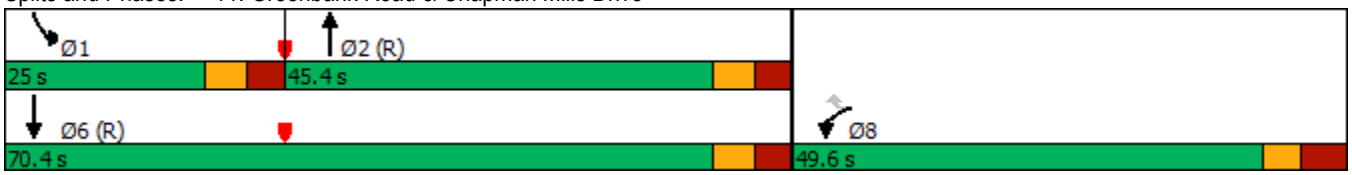
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2		1	6
Permitted Phases		8				
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0		5.0	10.0
Minimum Split (s)	49.6	49.6	45.1		12.1	45.1
Total Split (s)	49.6	49.6	45.4		25.0	70.4
Total Split (%)	41.3%	41.3%	37.8%		20.8%	58.7%
Maximum Green (s)	42.0	42.0	38.3		17.9	63.3
Yellow Time (s)	3.3	3.3	3.7		3.7	3.7
All-Red Time (s)	4.3	4.3	3.4		3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.6	7.6	7.1		7.1	7.1
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	C-Max		None	C-Max
Walk Time (s)	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	35.0	35.0	31.0			31.0
Pedestrian Calls (#/hr)	10	10	10			10
Act Effct Green (s)	22.8	22.8	42.0		33.4	82.5
Actuated g/C Ratio	0.19	0.19	0.35		0.28	0.69
v/c Ratio	0.20	0.50	0.47		0.76	0.31
Control Delay	37.4	7.1	32.0		36.4	11.2
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	37.4	7.1	32.0		36.4	11.2
LOS	D	A	C		D	B
Approach Delay	13.7		32.0			19.5
Approach LOS	B		C			B
90th %ile Green (s)	42.0	42.0	38.3		17.9	63.3
90th %ile Term Code	Ped	Ped	Coord		Max	Coord
70th %ile Green (s)	42.0	42.0	38.3		17.9	63.3
70th %ile Term Code	Ped	Ped	Coord		Max	Coord
50th %ile Green (s)	10.0	10.0	50.2		38.0	95.3
50th %ile Term Code	Min	Min	Coord		Gap	Coord
30th %ile Green (s)	10.0	10.0	45.1		43.1	95.3
30th %ile Term Code	Min	Min	Coord		Gap	Coord
10th %ile Green (s)	10.0	10.0	38.3		49.9	95.3
10th %ile Term Code	Min	Min	Coord		Max	Coord
Queue Length 50th (m)	15.1	0.0	46.6		27.9	0.2
Queue Length 95th (m)	20.5	16.5	72.4		m#148.6	m92.7
Internal Link Dist (m)	336.0		338.5			375.2
Turn Bay Length (m)	66.0				65.0	
Base Capacity (vph)	593	686	1182		470	2330
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	0.11	0.35	0.47		0.76	0.31

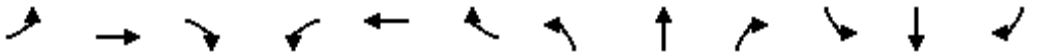
Intersection Summary

Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 82 (68%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 130	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.76	
Intersection Signal Delay: 22.2	Intersection LOS: C
Intersection Capacity Utilization 79.1%	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.
m Volume for 95th percentile queue is metered by upstream signal.

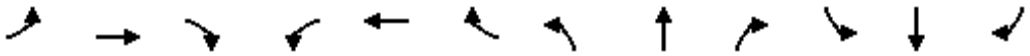
Splits and Phases: 11: Greenbank Road & Chapman Mills Drive





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	348	0	0	251	20	0	0	0	38	0	54
Future Volume (vph)	29	348	0	0	251	20	0	0	0	38	0	54
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	35.0		0.0	36.0		0.0	32.0		0.0	38.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	72.0			42.0			2.5			40.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.989						0.850	
Flt Protected	0.950									0.950		
Satd. Flow (prot)	1695	1784	0	1784	1765	0	1784	1784	0	1695	1517	0
Flt Permitted	0.950									0.757		
Satd. Flow (perm)	1695	1784	0	1784	1765	0	1784	1784	0	1351	1517	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					5						493	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		360.0			391.0			215.1			181.2	
Travel Time (s)		25.9			28.2			15.5			13.0	
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
Adj. Flow (vph)	29	348	0	0	251	20	0	0	0	38	0	54
Shared Lane Traffic (%)												
Lane Group Flow (vph)	29	348	0	0	271	0	0	0	0	38	54	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		13.5			13.5			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	97		97	97		97	97		97	97		97
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm			Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		

Chapman Mills Drive/Riocan Avenue
BG2035 PM Peak

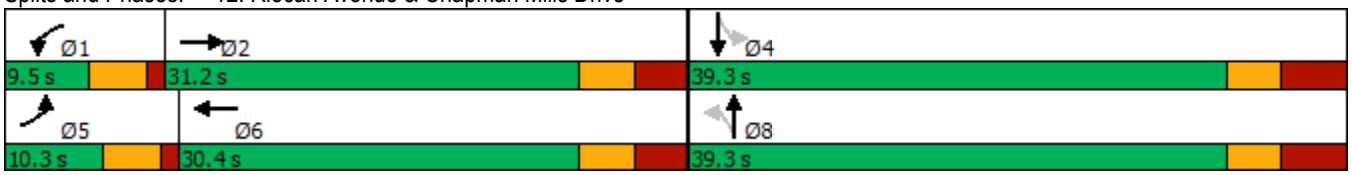


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	9.5	26.5		9.5	26.5		39.3	39.3		39.3	39.3	
Total Split (s)	10.3	31.2		9.5	30.4		39.3	39.3		39.3	39.3	
Total Split (%)	12.9%	39.0%		11.9%	38.0%		49.1%	49.1%		49.1%	49.1%	
Maximum Green (s)	5.8	24.7		5.0	23.9		32.0	32.0		32.0	32.0	
Yellow Time (s)	3.5	3.3		3.5	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.0	3.2		1.0	3.2		4.0	4.0		4.0	4.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	6.5		4.5	6.5		7.3	7.3		7.3	7.3	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		13.0			13.0		25.0	25.0		25.0	25.0	
Pedestrian Calls (#/hr)		10			10		10	10		10	10	
Act Effct Green (s)	5.8	20.3			16.7					32.5	32.5	
Actuated g/C Ratio	0.09	0.30			0.25					0.49	0.49	
v/c Ratio	0.20	0.64			0.61					0.06	0.05	
Control Delay	35.6	25.1			28.8					12.7	0.1	
Queue Delay	0.0	0.0			0.0					0.0	0.0	
Total Delay	35.6	25.1			28.8					12.7	0.1	
LOS	D	C			C					B	A	
Approach Delay		25.9			28.8						5.3	
Approach LOS		C			C						A	
90th %ile Green (s)	5.8	33.4		0.0	23.1		32.0	32.0		32.0	32.0	
90th %ile Term Code	Max	Hold		Skip	Gap		MaxR	MaxR		MaxR	MaxR	
70th %ile Green (s)	5.8	29.0		0.0	18.7		32.0	32.0		32.0	32.0	
70th %ile Term Code	Max	Hold		Skip	Gap		MaxR	MaxR		MaxR	MaxR	
50th %ile Green (s)	0.0	17.2		0.0	17.2		32.0	32.0		32.0	32.0	
50th %ile Term Code	Skip	Gap		Skip	Hold		MaxR	MaxR		MaxR	MaxR	
30th %ile Green (s)	0.0	14.5		0.0	14.5		32.0	32.0		32.0	32.0	
30th %ile Term Code	Skip	Gap		Skip	Hold		MaxR	MaxR		MaxR	MaxR	
10th %ile Green (s)	0.0	11.1		0.0	11.1		32.0	32.0		32.0	32.0	
10th %ile Term Code	Skip	Gap		Skip	Hold		MaxR	MaxR		MaxR	MaxR	
Queue Length 50th (m)	3.2	36.3			26.3					2.1	0.0	
Queue Length 95th (m)	11.9	58.4			55.6					8.9	0.0	
Internal Link Dist (m)		336.0			367.0			191.1			157.2	
Turn Bay Length (m)	35.0									38.0		
Base Capacity (vph)	149	729			644					657	991	
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	0.19	0.48			0.42					0.06	0.05	

Intersection Summary	
Area Type:	Other

Cycle Length: 80	
Actuated Cycle Length: 66.8	
Natural Cycle: 80	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.64	
Intersection Signal Delay: 24.4	Intersection LOS: C
Intersection Capacity Utilization 45.3%	ICU Level of Service A
Analysis Period (min) 15	
90th %ile Actuated Cycle: 79.2	
70th %ile Actuated Cycle: 74.8	
50th %ile Actuated Cycle: 63	
30th %ile Actuated Cycle: 60.3	
10th %ile Actuated Cycle: 56.9	

Splits and Phases: 12: Riocan Avenue & Chapman Mills Drive



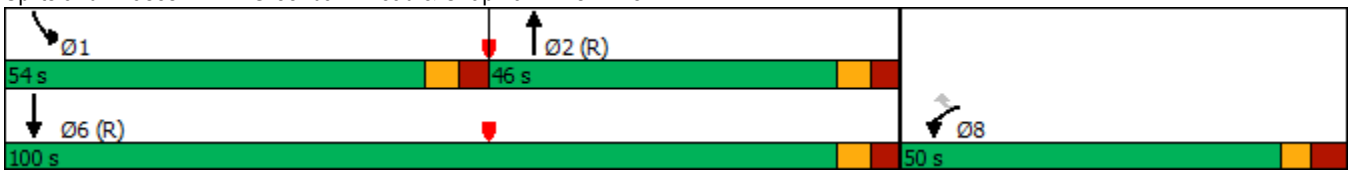
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	66	239	536	18	358	725
Future Volume (vph)	66	239	536	18	358	725
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	66.0	0.0		0.0	65.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	47.0				48.0	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Ped Bike Factor			1.00		1.00	
Frt		0.850	0.995			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1695	1517	3370	0	1695	3390
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1695	1517	3370	0	1690	3390
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		239	2			
Link Speed (k/h)	50		50			50
Link Distance (m)	360.0		362.5			399.2
Travel Time (s)	25.9		26.1			28.7
Confl. Peds. (#/hr)				3	3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	66	239	536	18	358	725
Shared Lane Traffic (%)						
Lane Group Flow (vph)	66	239	554	0	358	725
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	13.5		3.7			8.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	97	97		97	97	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (m)	2.0	2.0	10.0		2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	2.0	0.6		2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA		Prot	NA

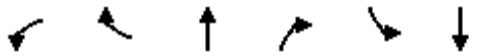
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2		1	6
Permitted Phases		8				
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0		5.0	10.0
Minimum Split (s)	49.6	49.6	45.1		12.1	45.1
Total Split (s)	50.0	50.0	46.0		54.0	100.0
Total Split (%)	33.3%	33.3%	30.7%		36.0%	66.7%
Maximum Green (s)	42.4	42.4	38.9		46.9	92.9
Yellow Time (s)	3.3	3.3	3.7		3.7	3.7
All-Red Time (s)	4.3	4.3	3.4		3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.6	7.6	7.1		7.1	7.1
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	C-Max		None	C-Max
Walk Time (s)	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	35.0	35.0	31.0			31.0
Pedestrian Calls (#/hr)	10	10	10			10
Act Effct Green (s)	23.0	23.0	68.1		37.0	112.3
Actuated g/C Ratio	0.15	0.15	0.45		0.25	0.75
v/c Ratio	0.25	0.55	0.36		0.86	0.29
Control Delay	53.5	9.7	32.4		72.9	8.3
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	53.5	9.7	32.4		72.9	8.3
LOS	D	A	C		E	A
Approach Delay	19.2		32.4			29.7
Approach LOS	B		C			C
90th %ile Green (s)	42.0	42.0	39.4		46.8	93.3
90th %ile Term Code	Ped	Ped	Coord		Gap	Coord
70th %ile Green (s)	42.0	42.0	44.8		41.4	93.3
70th %ile Term Code	Ped	Ped	Coord		Gap	Coord
50th %ile Green (s)	11.2	11.2	79.7		37.3	124.1
50th %ile Term Code	Gap	Gap	Coord		Gap	Coord
30th %ile Green (s)	10.0	10.0	85.2		33.0	125.3
30th %ile Term Code	Min	Min	Coord		Gap	Coord
10th %ile Green (s)	10.0	10.0	91.5		26.7	125.3
10th %ile Term Code	Min	Min	Coord		Gap	Coord
Queue Length 50th (m)	19.3	0.0	47.1		102.2	20.4
Queue Length 95th (m)	27.3	20.6	96.8		129.2	63.7
Internal Link Dist (m)	336.0		338.5			375.2
Turn Bay Length (m)	66.0				65.0	
Base Capacity (vph)	479	600	1531		529	2536
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	0.14	0.40	0.36		0.68	0.29

Intersection Summary

Area Type:	Other		
Cycle Length: 150			
Actuated Cycle Length: 150			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 130			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 28.8		Intersection LOS: C	
Intersection Capacity Utilization 79.1%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 11: Greenbank Road & Chapman Mills Drive





Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	66	239	536	18	358	725
Future Volume (vph)	66	239	536	18	358	725
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	66.0	0.0		0.0	65.0	
Storage Lanes	1	1		0	2	
Taper Length (m)	47.0				48.0	
Lane Util. Factor	1.00	1.00	0.95	0.95	0.97	0.95
Ped Bike Factor			1.00		1.00	
Frt		0.850	0.995			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1695	1517	3371	0	3288	3390
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1695	1517	3371	0	3281	3390
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		239	3			
Link Speed (k/h)	50		50			50
Link Distance (m)	360.0		362.5			399.2
Travel Time (s)	25.9		26.1			28.7
Confl. Peds. (#/hr)				3	3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	66	239	536	18	358	725
Shared Lane Traffic (%)						
Lane Group Flow (vph)	66	239	554	0	358	725
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	13.5		7.4			8.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	97	97		97	97	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (m)	2.0	2.0	10.0		2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	2.0	0.6		2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA		Prot	NA

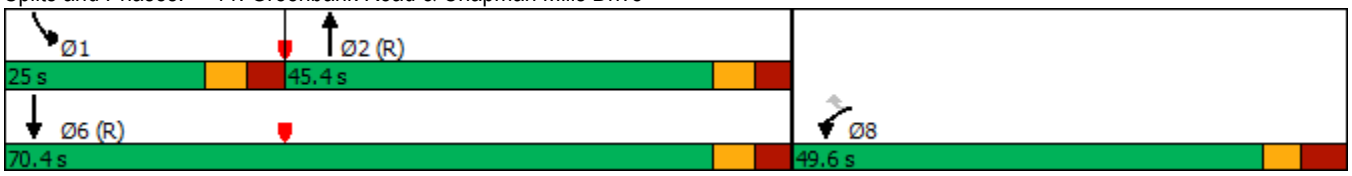
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2		1	6
Permitted Phases		8				
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0		5.0	10.0
Minimum Split (s)	49.6	49.6	45.1		12.1	45.1
Total Split (s)	49.6	49.6	45.4		25.0	70.4
Total Split (%)	41.3%	41.3%	37.8%		20.8%	58.7%
Maximum Green (s)	42.0	42.0	38.3		17.9	63.3
Yellow Time (s)	3.3	3.3	3.7		3.7	3.7
All-Red Time (s)	4.3	4.3	3.4		3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.6	7.6	7.1		7.1	7.1
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	C-Max		None	C-Max
Walk Time (s)	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	35.0	35.0	31.0			31.0
Pedestrian Calls (#/hr)	10	10	10			10
Act Effct Green (s)	22.8	22.8	58.6		16.8	82.5
Actuated g/C Ratio	0.19	0.19	0.49		0.14	0.69
v/c Ratio	0.20	0.50	0.34		0.78	0.31
Control Delay	37.4	7.1	23.1		45.1	11.2
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	37.4	7.1	23.1		45.1	11.2
LOS	D	A	C		D	B
Approach Delay	13.7		23.1			22.4
Approach LOS	B		C			C
90th %ile Green (s)	42.0	42.0	38.3		17.9	63.3
90th %ile Term Code	Ped	Ped	Coord		Max	Coord
70th %ile Green (s)	42.0	42.0	38.3		17.9	63.3
70th %ile Term Code	Ped	Ped	Coord		Max	Coord
50th %ile Green (s)	10.0	10.0	70.0		18.2	95.3
50th %ile Term Code	Min	Min	Coord		Gap	Coord
30th %ile Green (s)	10.0	10.0	71.9		16.3	95.3
30th %ile Term Code	Min	Min	Coord		Gap	Coord
10th %ile Green (s)	10.0	10.0	74.7		13.5	95.3
10th %ile Term Code	Min	Min	Coord		Gap	Coord
Queue Length 50th (m)	15.1	0.0	32.1		33.4	0.2
Queue Length 95th (m)	20.5	16.5	72.4		m54.0	m92.7
Internal Link Dist (m)	336.0		338.5			375.2
Turn Bay Length (m)	66.0				65.0	
Base Capacity (vph)	593	686	1648		492	2330
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	0.11	0.35	0.34		0.73	0.31

Intersection Summary

Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 82 (68%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 21.2		Intersection LOS: C	
Intersection Capacity Utilization 68.9%		ICU Level of Service C	
Analysis Period (min) 15			

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

Splits and Phases: 11: Greenbank Road & Chapman Mills Drive



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	66	239	536	18	213	870
Future Volume (vph)	66	239	536	18	213	870
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	66.0	0.0		0.0	65.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	47.0				48.0	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Ped Bike Factor			1.00		1.00	
Frt		0.850	0.995			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1695	1517	3371	0	1695	3390
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1695	1517	3371	0	1691	3390
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		239	3			
Link Speed (k/h)	50		50			50
Link Distance (m)	360.0		362.5			399.2
Travel Time (s)	25.9		26.1			28.7
Confl. Peds. (#/hr)				3	3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	66	239	536	18	213	870
Shared Lane Traffic (%)						
Lane Group Flow (vph)	66	239	554	0	213	870
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	13.5		3.7			8.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	97	97		97	97	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (m)	2.0	2.0	10.0		2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	2.0	0.6		2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA		Prot	NA

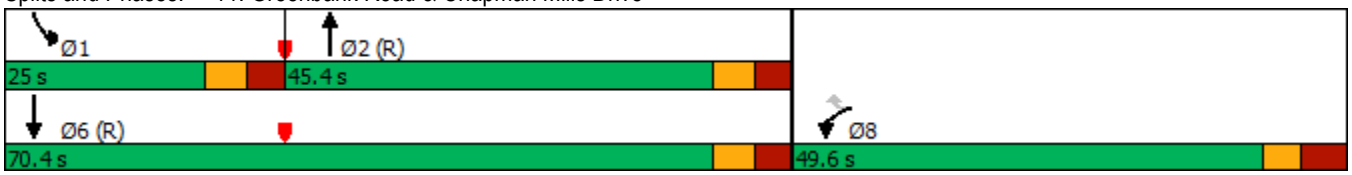
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2		1	6
Permitted Phases		8				
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0		5.0	10.0
Minimum Split (s)	49.6	49.6	45.1		12.1	45.1
Total Split (s)	49.6	49.6	45.4		25.0	70.4
Total Split (%)	41.3%	41.3%	37.8%		20.8%	58.7%
Maximum Green (s)	42.0	42.0	38.3		17.9	63.3
Yellow Time (s)	3.3	3.3	3.7		3.7	3.7
All-Red Time (s)	4.3	4.3	3.4		3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.6	7.6	7.1		7.1	7.1
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	C-Max		None	C-Max
Walk Time (s)	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	35.0	35.0	31.0			31.0
Pedestrian Calls (#/hr)	10	10	10			10
Act Effct Green (s)	22.8	22.8	57.2		18.2	82.5
Actuated g/C Ratio	0.19	0.19	0.48		0.15	0.69
v/c Ratio	0.20	0.50	0.34		0.83	0.37
Control Delay	37.4	7.1	23.7		52.9	12.4
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	37.4	7.1	23.7		52.9	12.4
LOS	D	A	C		D	B
Approach Delay	13.7		23.7			20.4
Approach LOS	B		C			C
90th %ile Green (s)	42.0	42.0	38.3		17.9	63.3
90th %ile Term Code	Ped	Ped	Coord		Max	Coord
70th %ile Green (s)	42.0	42.0	38.3		17.9	63.3
70th %ile Term Code	Ped	Ped	Coord		Max	Coord
50th %ile Green (s)	10.0	10.0	66.6		21.6	95.3
50th %ile Term Code	Min	Min	Coord		Gap	Coord
30th %ile Green (s)	10.0	10.0	69.4		18.8	95.3
30th %ile Term Code	Min	Min	Coord		Gap	Coord
10th %ile Green (s)	10.0	10.0	73.5		14.7	95.3
10th %ile Term Code	Min	Min	Coord		Gap	Coord
Queue Length 50th (m)	15.1	0.0	34.6		35.6	0.2
Queue Length 95th (m)	20.5	16.5	72.4		m#64.2	m114.9
Internal Link Dist (m)	336.0		338.5			375.2
Turn Bay Length (m)	66.0				65.0	
Base Capacity (vph)	593	686	1608		265	2330
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	0.11	0.35	0.34		0.80	0.37

Intersection Summary

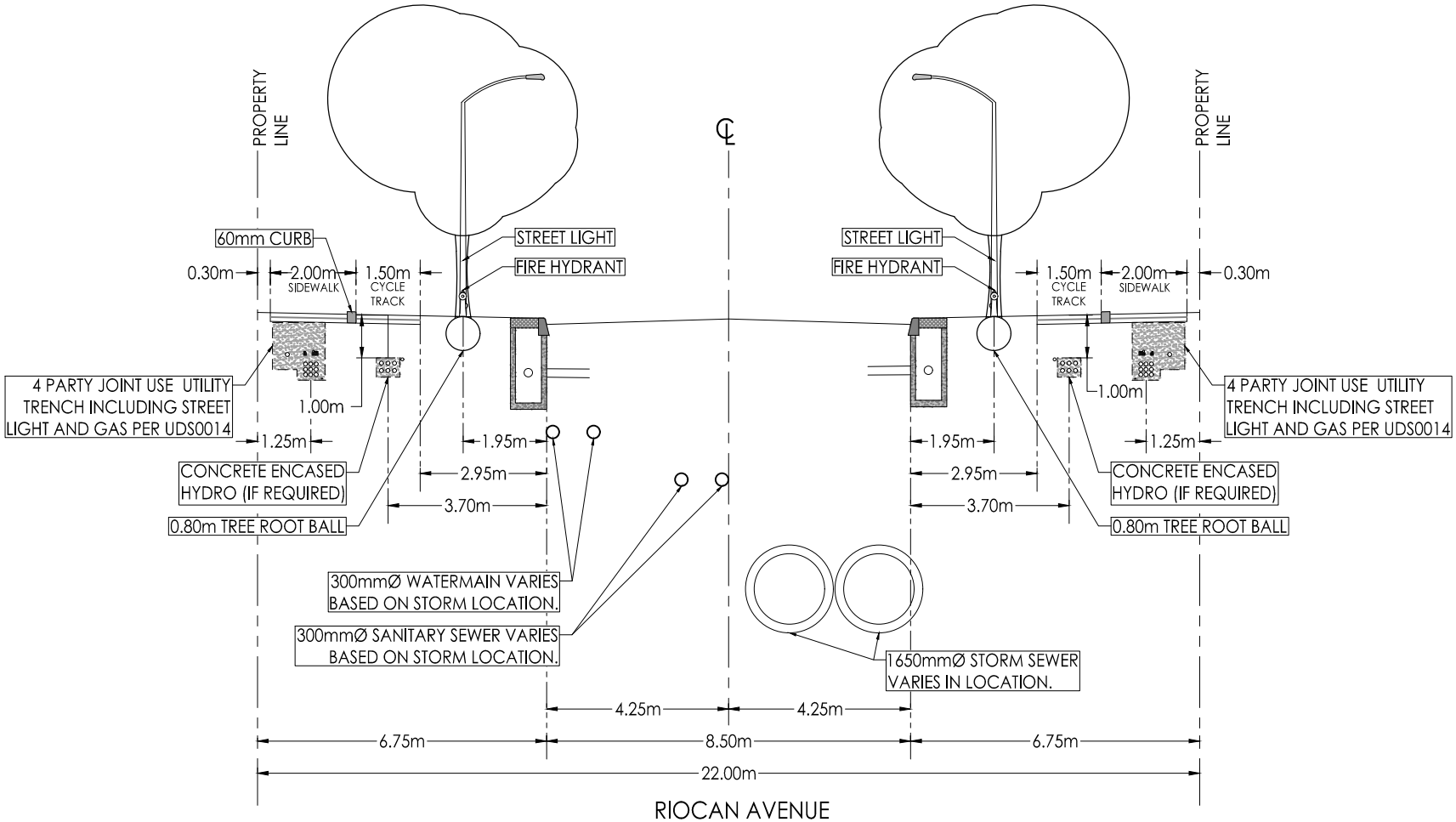
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 82 (68%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay: 20.3		Intersection LOS: C	
Intersection Capacity Utilization 70.6%		ICU Level of Service C	
Analysis Period (min) 15			

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

Splits and Phases: 11: Greenbank Road & Chapman Mills Drive



Appendix L: Proposed Roadway Cross-Sections

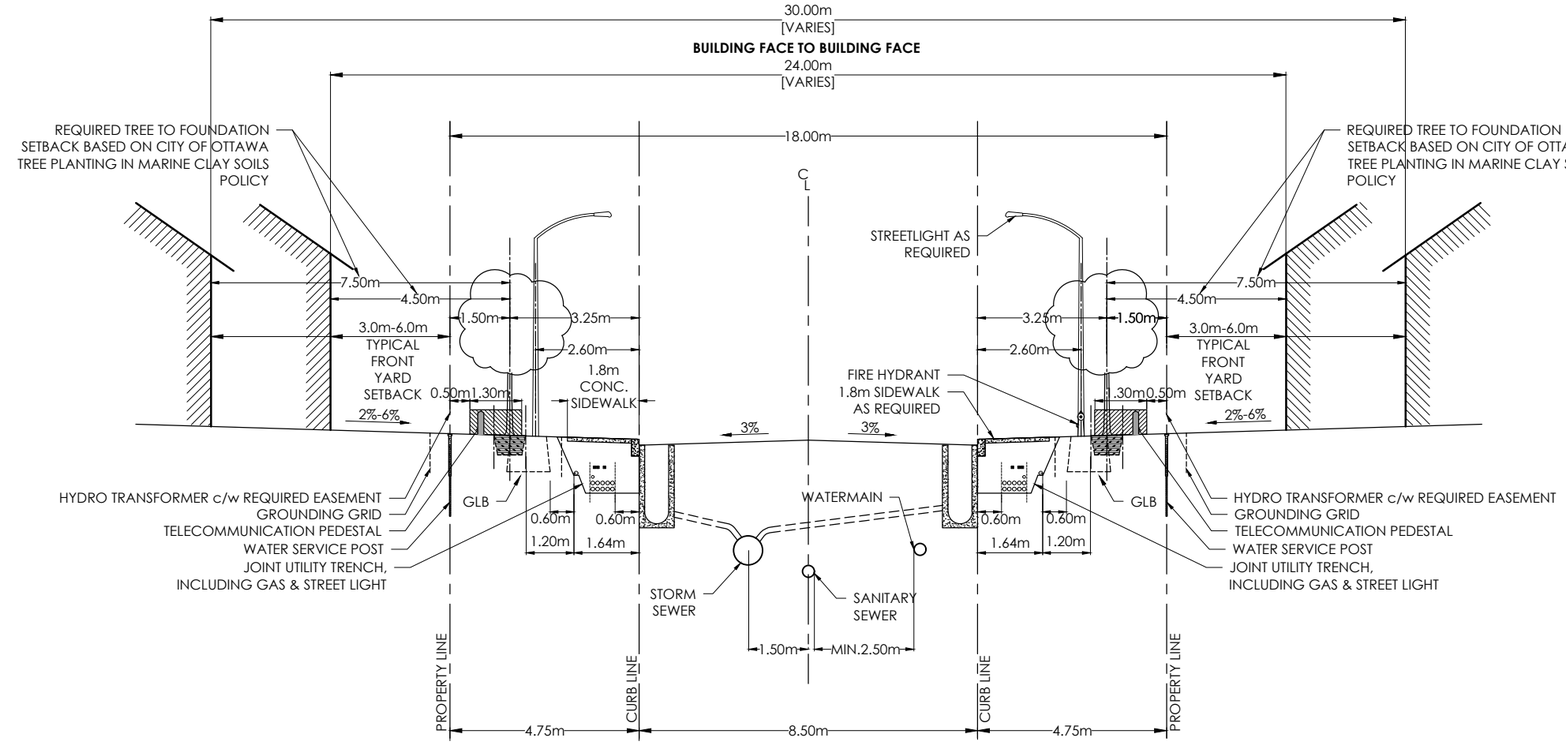


RIOCAN AVENUE
22.0m ROAD ALLOWANCE
4 PARTY JOINT USE TRENCH

1:150

0 1.5 4.5 7.5m

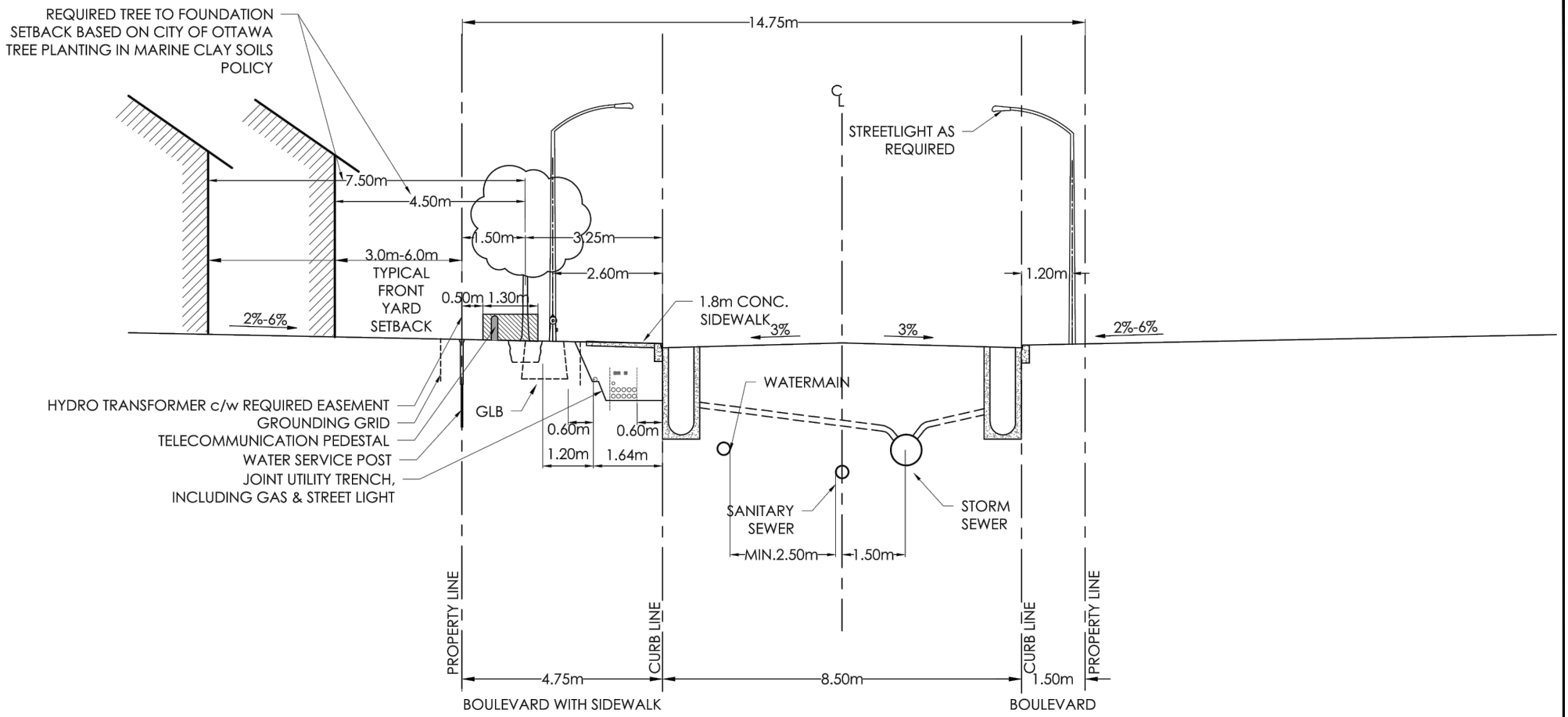
1. STANDARD CROSS-SECTIONS TO BE READ IN CONJUNCTION WITH THE GENERAL STANDARD CROSS-SECTION NOTES AND OTHER APPLICABLE CITY AND UTILITY PLANS AND DETAILS.
2. 18M RIGHT-OF-WAY NOT TO BE USED ON STREETS WITH BUS SERVICE.
3. CONCRETE CURBS TO BE CONSTRUCTED AS PER CITY OF OTTAWA STANDARD DETAILS.
4. TYPICAL FRONT YARD SETBACK IS TO BE CLEAR AND UNENCUMBERED OF ANY SUBSURFACE BUILDING ENCROACHMENTS.
5. FIRE HYDRANTS TO BE LOCATED ON THE WATERMAIN SIDE OF THE STREET.
6. CATCH BASINS TO BE PER CITY OF OTTAWA DETAIL S2.
7. GAS MAIN SHALL HAVE A MINIMUM OF 0.6M CLEARANCE FROM STRUCTURES E.G. CATCH BASINS AND HYDRANTS) AND 1.2 M FROM TREE ROOT BALL.
8. STREETLIGHTS CAN BE LOCATED ON EITHER SIDE OF THE RIGHT-OF-WAY.
9. JOINT-USE UTILITY TRENCH (JUT) UNDER SIDEWALK AS PER DETAIL UDS0049. HELD BY HYDRO OTTAWA.
10. GRADE LEVEL BOX (GLB) AS DRAWN SHOWS GLB3660. EXACT LOCATION TO BE CONFIRMED.
11. THIS CROSS-SECTION CANNOT BE USED WHERE A CONCRETE ENCASED HYDROELECTRIC DUCT OR ANOTHER SEPARATE UTILITY DUCT IS REQUIRED.
12. TREE CLEARANCES TO HYDRO OTTAWA PLANT SHALL FOLLOW GCS0038.
13. CLEARANCES SHOWN ARE MINIMUMS.



18.0m ROW CROSS SECTION

REV.DATE: AUG. 2022

DWG. No. ROW-18.0



NOTES:

1. STANDARD CROSS-SECTIONS TO BE READ IN CONJUNCTION WITH THE GENERAL STANDARD CROSS-SECTION NOTES AND OTHER APPLICABLE CITY AND UTILITY PLANS AND DETAILS
2. 14.75m RIGHT-OF-WAY NOT TO BE USED ON STREETS WITH BUS SERVICE
3. CONCRETE CURBS TO BE CONSTRUCTED AS PER CITY OF OTTAWA STANDARD DETAILS
4. TYPICAL FRONT YARD SETBACKS ARE TO BE CLEAR AND UNENCUMBERED OF ANY SUBSURFACE BUILDING ENCROACHMENTS
5. FIRE HYDRANTS SHALL BE LOCATED ON THE WATERMAIN SIDE OF THE STREET.
6. CATCH BASINS TO BE PER CITY OF OTTAWA DETAIL S2.
7. STREETLIGHTS MAY BE LOCATED ON EITHER SIDE OF THE RIGHT-OF-WAY.
8. GAS MAIN SHALL HAVE A MINIMUM OF 0.6m CLEARANCE FROM STRUCTURES (E.G. CATCH BASINS AND HYDRANTS) AND 1.2m FROM TREE ROOT BALL
9. JOINT-USE UTILITY TRENCH (JUT) UNDER SIDEWALK AS PER DETAIL UDS0049. HELD BY HYDRO OTTAWA
10. GRADE LEVEL BOX (GLB) AS DRAWN SHOWS GLB3660. EXACT LOCATION TO BE CONFIRMED
11. THIS CROSS-SECTION CANNOT BE USED WHERE A CONCRETE ENCASED HYDROELECTRIC DUCT OR ANOTHER SEPARATE UTILITY DUCT IS REQUIRED
12. TREE CLEARANCES TO HYDRO OTTAWA PLANT SHALL FOLLOW GCS0038
13. BOULEVARD MAXIMUM SLOPE 1:3
14. NO RETAINING WALLS WITHIN 2.0m OF THE CURB LINE
15. CLEARANCES SHOWN ARE MINIMUMS

Ottawa	TITLE: 14.75m ROW CROSS SECTION	DATE: AUG 2022 REV: JULY 2024 DWG No: ROW-14.75

Appendix M: MMLOS

Multi-Modal Level of Service - Segments Form

Project: 125109 - 3265 Jockvale Road
Consultant: Novatech Engineering Consultants Ltd
Date:
Scenario:

	Segment Name	**Longfields Drive**			
	OP Transect / Policy Area	**Within 600m of a rapid transit station**			
	Segment Component	**Majority (>50%)**		**Critical**	
	Side of Street	**West**	**East**	**West**	**East**
Pedestrian	**PLOS Inputs**				
	Posted Speed (km/h)	60 km/h		60 km/h	
	Two-Way ADT	13,365		13,365	
	Pedestrian Facility	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?	Yes	Yes	Yes	Yes
	Facility Width (m)	2.00m	2.00m	2.00m	2.00m
	Offset from Motor Vehicle Travel Lanes (m)	≥ 3.0m	≥ 3.0m	≥ 3.0m	1.5-2.99m
	Presence of Adjacent Parking?	No	No	No	-
	General Purpose Curb Lane ADT	-	-	-	> 3000
	Max. Distance between Controlled Crossings (m)	291-400m	291-400m	291-400m	291-400m
	Score	**4.00**	**4.00**	**4.00**	**3.25**
	PLOS	**B**	**B**	**B**	**C**
	Target PLOS	**A**			
Bicycle	**BLOS Inputs**				
	Cycling Route Classification	**Elsewhere**			
	Cycling Facility	Painted or Physically Separated Bike Lanes	Painted or Physically Separated Bike Lanes	Painted or Physically Separated Bike Lanes	Painted or Physically Separated Bike Lanes
	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	Unidirectional	Unidirectional	Unidirectional
	Pedestrian/Cyclist Volume	-	-	-	-
	Facility Width	2.0-2.5m	2.0-2.5m	2.0-2.5m	2.0-2.5m
	Boulevard/Buffer Width (excluding curb)	< 1.0m and no vertical measure or < 0.6m with adjacent parking	< 1.0m and no vertical measure or < 0.6m with adjacent parking	< 1.0m and no vertical measure or < 0.6m with adjacent parking	< 1.0m and no vertical measure or < 0.6m with adjacent parking
	Unsignalized Roadway Crossing Type (where cyclists are required to yield)	None	None	None	None
	Number of Travel Lanes at Crossing	-	-	-	-
	Crossing includes Median Refuge (≥ 2.7m)	-	-	-	-
	Cross-street Posted Speed (km/h)	-	-	-	-
	Cycling Path Blockages (e.g. bus stops and/or loading zones)	Rare	Rare	Rare	Rare
	Score	**2.88**	**2.88**	**2.88**	**2.88**
	BLOS	**C**	**C**	**C**	**C**
	Target BLOS	**B**			
Transit	**TLOS Inputs**				
	Transit Facility	**Mixed Traffic**			
	Facility Type	Mixed Traffic	Mixed Traffic		
	Expected Transit Running Time	Slightly Impeded	Slightly Impeded		
	Transit Travel Speed (if available)	Enter Speed (if available)	Enter Speed (if available)		
	TLOS	**C**	**C**		
	Target TLOS	**E (D for frequent transit routes)**			
Public Realm	**PRLOS Inputs**				
	Context	Mainstreet or active frontage street within a Hub, Special District, or Village	Mainstreet or active frontage street within a Hub, Special District, or Village		
	Inner Boulevard Width	2.0-3.99m	2.0-3.99m		
	Middle Boulevard Width	≤ 0.5m	≤ 0.5m		
	Outer Boulevard (Frontage) Width	-	-		
	Transit Route on Segment?	No	No		
	Bus Stop Elements	-	-		
	Number of Midblock Traffic Lanes (both travel directions)	4			
	Score	**19.50**	**19.50**		
	PRLOS	**C**	**C**		
		C			

Multi-Modal Level of Service - Intersections Form

Project: 125109 - 3265 Jockvale Road
Consultant:
Date:
Scenario: AM Peak

	Intersection Name	**Longfields Drive/Marketplace Avenue/Clearbrook Drive**				**Greenbank Road/Marketplace Avenue**				
	OP Transect / Policy Area	**Within 600m of a rapid transit station**				**Within 600m of a rapid transit station**				
Pedestrian	**PLOS Inputs**									
	Pedestrians Crossing the	**North Leg**	**South Leg**	**East Leg**	**West Leg**	**North Leg**	**South Leg**	**East Leg**	**West Leg**	
	Number of Travel Lanes Crossed	5	5	1-3	1-3	6	5	4	1-3	
	Median Refuge (≥2.7m)	No	No	No	No	No	No	No	No	
	Crosswalk Treatment	Std Transverse Markings	Std Transverse Markings	Std Transverse Markings	Std Transverse Markings	Std Transverse Markings	Std Transverse Markings	Std Transverse Markings	Std Transverse Markings	
	Signal Cycle Length (sec)	85.0				120.0				
	Effective Walk Time (sec)	7.2	7.2	27.2	12.2	7.5	7.5	31.8	31.8	
	Conflict with Right-Turn Vehicles (For PLOS & BLOS)	**WBR**	**EBR**	**NBR**	**SBR**	**WBR**	**EBR**	**NBR**	**SBR**	
	Right-Turn Geometry	Right-Turn With No Channel	Right-Turn With No Channel	Right-Turn With No Channel	Right-Turn With No Channel	Right-Turn With No Channel	Right-Turn With No Channel	Right-Turn With No Channel	Right-Turn With No Channel	
	Right-Turn Signal Phasing	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive	
	Right-Turn Volume	≤ 150 veh/h	≤ 150 veh/h	≤ 150 veh/h	≤ 150 veh/h	≤ 150 veh/h	≤ 150 veh/h	≤ 150 veh/h	≤ 150 veh/h	
	Right-Turn Effective Corner Radius	> 8m	> 8m	> 8m	> 8m	> 8m	> 8m	> 8m	> 8m	
	Cross-street Posted Speed (km/h)	50 km/h		50 km/h		60 km/h		50 km/h		
	Conflict with Left-Turn Vehicles (For PLOS & BLOS)	**EBL**	**WBL**	**SBL**	**NBL**	**EBL**	**WBL**	**SBL**	**NBL**	
	Left-Turn Signal Phasing	Perm or Prot+Perm	Perm or Prot+Perm	Perm or Prot+Perm	Perm or Prot+Perm	Perm or Prot+Perm	Perm or Prot+Perm	Fully Protected	Fully Protected	
	Left-Turn Volume	≤ 50 veh/h	≤ 50 veh/h	> 50 to 100 veh/h	> 50 to 100 veh/h	≤ 50 veh/h	> 50 to 100 veh/h	-	-	
	Left-Turn Opposing Lanes	-	-	≥ 2	≥ 2	-	≤ 1	-	-	
	Score	**3.10**	**3.10**	**4.40**	**4.10**	**2.20**	**2.80**	**3.70**	**4.30**	
	PLOS	**C**	**C**	**B**	**B**	**D**	**C**	**B**	**B**	
		B				**C**				
	Target PLOS	**A**				**A**				
Bicycle	**BLOS Inputs**									
	Cycling Route Classification	**Elsewhere**				**Cross-Town Bikeway**				
	Cyclists Crossing the	**North Leg**	**South Leg**	**East Leg**	**West Leg**	**North Leg**	**South Leg**	**East Leg**	**West Leg**	
	Type of Cycling Facility Across Leg	Bike Lane Through Intersection	Bike Lane Through Intersection	Mixed Traffic	Mixed Traffic	Bike Lane Through Intersection	Mixed Traffic	Mixed Traffic	Mixed Traffic	
	Two-Way ADT (in Cyclist Travel Direction)	15,007		7,805		18,888		7,244		
	Floating Bike Lane or Right-Turn Lane Crossover Approaching the Crossing?	No	No	No	No	No	No	No	No	
	Crossride Operation	-	-	-	-	-	-	-	-	
	Target Crossride Setback Met?	-	-	-	-	-	-	-	-	
	Right-Turn Vehicle Volume from Adjacent Roadway > 100 veh/h?	-	-	-	-	-	-	-	-	
	Cyclist Left-Turn Operation	**WBL**	**EBL**	**NBL**	**SBL**	**WBL**	**EBL**	**NBL**	**SBL**	
	Cyclist Left-Turn Treatment Type	General Purpose Through-Left or Single Left-Turn Lane	General Purpose Through-Left or Single Left-Turn Lane	General Purpose Through-Left or Single Left-Turn Lane	General Purpose Through-Left or Single Left-Turn Lane	General Purpose Through-Left or Single Left-Turn Lane	General Purpose Through-Left or Single Left-Turn Lane	General Purpose Through-Left or Single Left-Turn Lane	General Purpose Through-Left or Single Left-Turn Lane	
	Vehicle Lanes Crossed by Cyclists	One Lane Crossed	One Lane Crossed	Two or More Lanes Crossed	Two or More Lanes Crossed	One Lane Crossed	One Lane Crossed	Two or More Lanes Crossed	Two or More Lanes Crossed	
	Score	**75**	**75**	**0**	**0**	**65**	**40**	**40**	**40**	
	BLOS	**C**	**C**	**F**	**F**	**C**	**D**	**D**	**D**	
		D				**D**				
	Target BLOS	**B**				**A**				
Transit	**TLOS Inputs**									
	Transit Facility	**Mixed Traffic**				**Mixed Traffic**				
	Vehicles Travelling	**Southbound**	**Northbound**	**Westbound**	**Eastbound**	**Southbound**	**Northbound**	**Westbound**	**Eastbound**	
	Average Transit Delay (if available)	11-20 sec	≤ 10 sec		21-35 sec	21-35 sec	21-35 sec			
	Example Transit Priority Treatment	-	-	-	-	-	-	-	-	
	TLOS	**B**	**A**	**-**	**C**	**C**	**C**	**-**	**-**	
		B				**C**				
	Target TLOS	**E (D for frequent transit routes)**				**E (D for frequent transit routes)**				
Auto	**AutoLOS Inputs**									
	Overall Intersection Volume to Capacity Ratio	0 to 0.60				0 to 0.60				
	Individual Movements V/C Ratios and Queue Lengths	See Separate Traffic Operations Table				See Separate Traffic Operations Table				
	AutoLOS	**A**				**A**				
	Target AutoLOS	**E**				**E**				

Multi-Modal Level of Service - Intersections Form

Project: 125109 - 3265 Jockvale Road
Consultant:
Date:
Scenario: PM Peak

	Intersection Name	**Longfields Drive/Marketplace Avenue/Clearbrook Drive**				**Greenbank Road/Marketplace Avenue**				
	OP Transect / Policy Area	**Within 600m of a rapid transit station**				**Within 600m of a rapid transit station**				
Pedestrian	**PLOS Inputs**									
	Pedestrians Crossing the	**North Leg**	**South Leg**	**East Leg**	**West Leg**	**North Leg**	**South Leg**	**East Leg**	**West Leg**	
	Number of Travel Lanes Crossed	5	5	1-3	1-3	6	5	4	1-3	
	Median Refuge (≥2.7m)	No	No	No	No	No	No	No	No	
	Crosswalk Treatment	Std Transverse Markings	Std Transverse Markings	Std Transverse Markings	Std Transverse Markings	Std Transverse Markings	Std Transverse Markings	Std Transverse Markings	Std Transverse Markings	
	Signal Cycle Length (sec)	85.0				120.0				
	Effective Walk Time (sec)	7.2	7.2	27.2	12.2	7.5	7.5	22.8	22.8	
	Conflict with Right-Turn Vehicles (For PLOS & BLOS)	**WBR**	**EBR**	**NBR**	**SBR**	**WBR**	**EBR**	**NBR**	**SBR**	
	Right-Turn Geometry	Right-Turn With No Channel	Right-Turn With No Channel	Right-Turn With No Channel	Right-Turn With No Channel	Right-Turn With No Channel	Right-Turn With No Channel	Right-Turn With No Channel	Right-Turn With No Channel	
	Right-Turn Signal Phasing	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive	Permissive	
	Right-Turn Volume	≤ 150 veh/h	> 150 to 300 veh/h	≤ 150 veh/h	> 150 to 300 veh/h	> 150 to 300 veh/h	≤ 150 veh/h	≤ 150 veh/h	≤ 150 veh/h	
	Right-Turn Effective Corner Radius	> 8m	> 8m	> 8m	> 8m	> 8m	> 8m	> 8m	> 8m	
	Cross-street Posted Speed (km/h)	50 km/h		50 km/h		60 km/h		50 km/h		
	Conflict with Left-Turn Vehicles (For PLOS & BLOS)	**EBL**	**WBL**	**SBL**	**NBL**	**EBL**	**WBL**	**SBL**	**NBL**	
	Left-Turn Signal Phasing	Perm or Prot+Perm	Perm or Prot+Perm	Perm or Prot+Perm	Perm or Prot+Perm	Perm or Prot+Perm	Perm or Prot+Perm	Fully Protected	Fully Protected	
	Left-Turn Volume	> 100 veh/h	≤ 50 veh/h	> 50 to 100 veh/h	> 100 veh/h	> 50 to 100 veh/h	> 100 veh/h	-	-	
	Left-Turn Opposing Lanes	-	-	≥ 2	-	≤ 1	-	-	-	
	Score	**2.90**	**2.65**	**4.40**	**3.65**	**1.90**	**2.60**	**3.70**	**4.30**	
	PLOS	**C**	**C**	**B**	**B**	**D**	**C**	**B**	**B**	
		C				**C**				
	Target PLOS	**A**				**A**				
Bicycle	**BLOS Inputs**									
	Cycling Route Classification	**Elsewhere**				**Cross-Town Bikeway**				
	Cyclists Crossing the	**North Leg**	**South Leg**	**East Leg**	**West Leg**	**North Leg**	**South Leg**	**East Leg**	**West Leg**	
	Type of Cycling Facility Across Leg	Bike Lane Through Intersection	Bike Lane Through Intersection	Mixed Traffic	Mixed Traffic	Bike Lane Through Intersection	Mixed Traffic	Mixed Traffic	Mixed Traffic	
	Two-Way ADT (in Cyclist Travel Direction)	15,007		7,805		18,888		7,244		
	Floating Bike Lane or Right-Turn Lane Crossover Approaching the Crossing?	No	No	No	No	No	No	No	No	
	Crossride Operation	-	-	-	-	-	-	-	-	
	Target Crossride Setback Met?	-	-	-	-	-	-	-	-	
	Right-Turn Vehicle Volume from Adjacent Roadway > 100 veh/h?	-	-	-	-	-	-	-	-	
	Cyclist Left-Turn Operation	**WBL**	**EBL**	**NBL**	**SBL**	**WBL**	**EBL**	**NBL**	**SBL**	
	Cyclist Left-Turn Treatment Type	General Purpose Through-Left or Single Left-Turn Lane	General Purpose Through-Left or Single Left-Turn Lane	General Purpose Through-Left or Single Left-Turn Lane	General Purpose Through-Left or Single Left-Turn Lane	General Purpose Through-Left or Single Left-Turn Lane	General Purpose Through-Left or Single Left-Turn Lane	General Purpose Through-Left or Single Left-Turn Lane	General Purpose Through-Left or Single Left-Turn Lane	
	Vehicle Lanes Crossed by Cyclists	One Lane Crossed	One Lane Crossed	Two or More Lanes Crossed	Two or More Lanes Crossed	One Lane Crossed	One Lane Crossed	Two or More Lanes Crossed	Two or More Lanes Crossed	
	Score	**35**	**45**	**0**	**-30**	**45**	**0**	**40**	**40**	
	BLOS	**D**	**D**	**F**	**F**	**D**	**F**	**D**	**D**	
		F				**D**				
	Target BLOS	**B**				**A**				
Transit	**TLOS Inputs**									
	Transit Facility	**Mixed Traffic**				**Mixed Traffic**				
	Vehicles Travelling	**Southbound**	**Northbound**	**Westbound**	**Eastbound**	**Southbound**	**Northbound**	**Westbound**	**Eastbound**	
	Average Transit Delay (if available)	11-20 sec	≤ 10 sec		36-55 sec	36-55 sec	21-35 sec			
	Example Transit Priority Treatment	-	-	-	-	-	-	-	-	
	TLOS	**B**	**A**	**-**	**D**	**D**	**C**	**-**	**-**	
		B				**C**				
	Target TLOS	**E (D for frequent transit routes)**				**E (D for frequent transit routes)**				
Auto	**AutoLOS Inputs**									
	Overall Intersection Volume to Capacity Ratio	0 to 0.60				0.71 to 0.80				
	Individual Movements V/C Ratios and Queue Lengths	See Separate Traffic Operations Table				See Separate Traffic Operations Table				
	AutoLOS	**A**				**C**				
	Target AutoLOS	**E**				**E**				

Appendix N: TDM Checklist

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

Legend

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

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

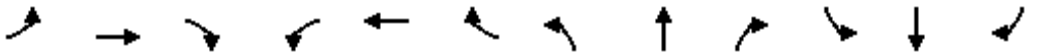
★ — The measure is one of the most dependably effective tools to encourage the use of sustainable modes

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

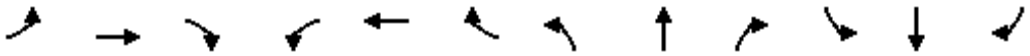
			TDM measures: *Residential developments*	Check if proposed & add descriptions
		3.	**TRANSIT**	
		3.1	**Transit information**	
BASIC		3.1.1	Display relevant transit schedules and route maps at entrances *(multi-family, condominium)*	☑
BETTER		3.1.2	Provide real-time arrival information display at entrances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

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

Appendix O: Synchro Analysis Reports - 2030 Total Conditions



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	118	14	105	34	7	136	333	788	54	90	246	32
Future Volume (vph)	118	14	105	34	7	136	333	788	54	90	246	32
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	38.0		45.0	32.0		32.0	60.0		54.0	65.0		60.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	41.0			37.0			65.0			70.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00					0.99	1.00		0.94	0.99		0.97
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	1733	1517	1586	1733	1432	1695	3390	1488	1530	3202	1473
Flt Permitted	0.950			0.950			0.599			0.306		
Satd. Flow (perm)	1690	1733	1517	1586	1733	1411	1064	3390	1403	490	3202	1434
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)			133			133						136
Link Speed (k/h)		50			50			60			50	
Link Distance (m)		391.0			173.1			287.5			422.9	
Travel Time (s)		28.2			12.5			17.3			30.4	
Confl. Peds. (#/hr)	3					3	5		16	16		5
Confl. Bikes (#/hr)									17			
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%	5%	2%	9%	5%	8%	2%	2%	4%	13%	8%	5%
Adj. Flow (vph)	118	14	105	34	7	136	333	788	54	90	246	32
Shared Lane Traffic (%)												
Lane Group Flow (vph)	118	14	105	34	7	136	333	788	54	90	246	32
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		13.5			13.5			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

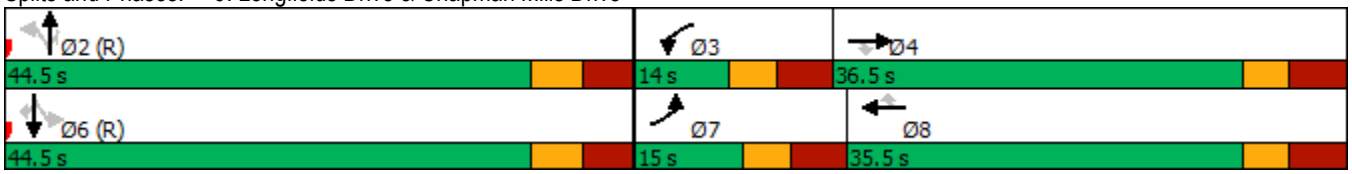


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4			8	2		2	6		6
Detector Phase	7	4	4	3	8	8	2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	12.3	35.5	35.5	12.3	35.5	35.5	42.3	42.3	42.3	42.3	42.3	42.3
Total Split (s)	15.0	36.5	36.5	14.0	35.5	35.5	44.5	44.5	44.5	44.5	44.5	44.5
Total Split (%)	15.8%	38.4%	38.4%	14.7%	37.4%	37.4%	46.8%	46.8%	46.8%	46.8%	46.8%	46.8%
Maximum Green (s)	7.7	29.0	29.0	6.7	28.0	28.0	37.2	37.2	37.2	37.2	37.2	37.2
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	4.0	4.2	4.2	4.0	4.2	4.2	3.6	3.6	3.6	3.6	3.6	3.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.3	7.5	7.5	7.3	7.5	7.5	7.3	7.3	7.3	7.3	7.3	7.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		21.0	21.0		21.0	21.0	28.0	28.0	28.0	28.0	28.0	28.0
Pedestrian Calls (#/hr)		10	10		10	10	10	10	10	10	10	10
Act Effct Green (s)	7.7	20.2	20.2	6.4	13.6	13.6	51.6	51.6	51.6	51.6	51.6	51.6
Actuated g/C Ratio	0.08	0.21	0.21	0.07	0.14	0.14	0.54	0.54	0.54	0.54	0.54	0.54
v/c Ratio	0.86	0.04	0.25	0.32	0.03	0.43	0.58	0.43	0.07	0.34	0.14	0.04
Control Delay	92.1	30.3	4.1	50.5	30.6	10.4	22.1	15.1	13.1	19.7	12.4	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	92.1	30.3	4.1	50.5	30.6	10.4	22.1	15.1	13.1	19.7	12.4	0.1
LOS	F	C	A	D	C	B	C	B	B	B	B	A
Approach Delay		49.5			18.9			17.0			13.1	
Approach LOS		D			B			B			B	
90th %ile Green (s)	7.7	29.0	29.0	6.7	28.0	28.0	37.2	37.2	37.2	37.2	37.2	37.2
90th %ile Term Code	Max	Hold	Hold	Max	Ped	Ped	Coord	Coord	Coord	Coord	Coord	Coord
70th %ile Green (s)	7.7	11.0	11.0	6.7	10.0	10.0	55.2	55.2	55.2	55.2	55.2	55.2
70th %ile Term Code	Max	Hold	Hold	Max	Min	Min	Coord	Coord	Coord	Coord	Coord	Coord
50th %ile Green (s)	7.7	11.0	11.0	6.7	10.0	10.0	55.2	55.2	55.2	55.2	55.2	55.2
50th %ile Term Code	Max	Hold	Hold	Max	Min	Min	Coord	Coord	Coord	Coord	Coord	Coord
30th %ile Green (s)	7.7	25.0	25.0	0.0	10.0	10.0	55.2	55.2	55.2	55.2	55.2	55.2
30th %ile Term Code	Max	Hold	Hold	Skip	Min	Min	Coord	Coord	Coord	Coord	Coord	Coord
10th %ile Green (s)	7.7	25.0	25.0	0.0	10.0	10.0	55.2	55.2	55.2	55.2	55.2	55.2
10th %ile Term Code	Max	Hold	Hold	Skip	Min	Min	Coord	Coord	Coord	Coord	Coord	Coord
Queue Length 50th (m)	21.8	2.3	0.0	6.1	1.2	0.5	34.6	38.5	4.0	7.9	10.0	0.0
Queue Length 95th (m)	#52.4	6.1	7.2	15.4	4.1	13.3	#99.1	77.6	13.7	27.7	23.6	0.0
Internal Link Dist (m)		367.0			149.1			263.5			398.9	
Turn Bay Length (m)	38.0		45.0	32.0		32.0	60.0		54.0	65.0		60.0
Base Capacity (vph)	137	529	555	111	510	509	578	1841	762	265	1739	841
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0

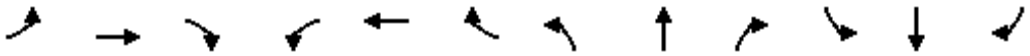
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.86	0.03	0.19	0.31	0.01	0.27	0.58	0.43	0.07	0.34	0.14	0.04

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 95			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 20.4		Intersection LOS: C	
Intersection Capacity Utilization 80.6%		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: 9: Longfields Drive & Chapman Mills Drive



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	16	52	36	28	146	86	722	32	56	352	58
Future Volume (vph)	49	16	52	36	28	146	86	722	32	56	352	58
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	27.0		0.0	25.0		0.0	50.0		0.0	92.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	24.0			3.0			84.0			40.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.99	0.99		1.00	0.98		1.00	1.00		0.98	1.00	
Frt		0.885			0.874			0.994			0.979	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1572	1426	0	1453	1416	0	1601	3323	0	1616	3195	0
Flt Permitted	0.615			0.713			0.456			0.366		
Satd. Flow (perm)	1012	1426	0	1086	1416	0	765	3323	0	611	3195	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		52			127			7			22	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		185.4			199.4			422.9			208.9	
Travel Time (s)		13.3			14.4			30.4			15.0	
Confl. Peds. (#/hr)	9		6	6		9	4		24	24		4
Confl. Bikes (#/hr)			1			4			11			
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 (%)	10%	13%	11%	19%	17%	9%	8%	2%	28%	7%	3%	21%
Adj. Flow (vph)	49	16	52	36	28	146	86	722	32	56	352	58
Shared Lane Traffic (%)												
Lane Group Flow (vph)	49	68	0	36	174	0	86	754	0	56	410	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

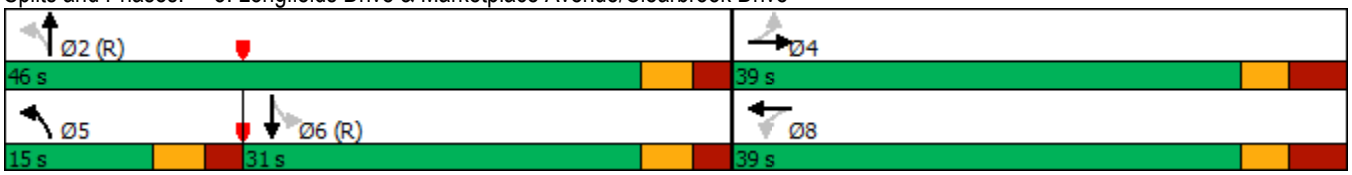


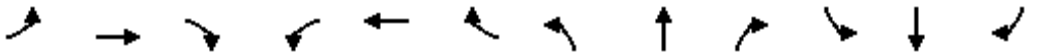
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	10.0		10.0	10.0	
Minimum Split (s)	38.8	38.8		38.8	38.8		10.6	25.8		25.8	25.8	
Total Split (s)	39.0	39.0		39.0	39.0		15.0	46.0		31.0	31.0	
Total Split (%)	45.9%	45.9%		45.9%	45.9%		17.6%	54.1%		36.5%	36.5%	
Maximum Green (s)	32.2	32.2		32.2	32.2		9.4	40.2		25.2	25.2	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.3	3.3		3.3	3.3	
All-Red Time (s)	3.8	3.8		3.8	3.8		2.3	2.5		2.5	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.8	6.8		6.8	6.8		5.6	5.8		5.8	5.8	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0		7.0	7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	25.0			13.0		13.0	13.0	
Pedestrian Calls (#/hr)	10	10		10	10			10		10	10	
Act Effct Green (s)	14.7	14.7		14.7	14.7		57.9	57.7		47.3	47.3	
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.68	0.68		0.56	0.56	
v/c Ratio	0.28	0.24		0.19	0.50		0.15	0.33		0.17	0.23	
Control Delay	31.7	12.1		29.1	14.0		7.5	7.6		16.8	12.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	31.7	12.1		29.1	14.0		7.5	7.6		16.8	12.4	
LOS	C	B		C	B		A	A		B	B	
Approach Delay		20.3			16.6			7.6			12.9	
Approach LOS		C			B			A			B	
90th %ile Green (s)	32.0	32.0		32.0	32.0		9.6	40.4		25.2	25.2	
90th %ile Term Code	Ped	Ped		Ped	Ped		Max	Coord		Coord	Coord	
70th %ile Green (s)	11.4	11.4		11.4	11.4		7.3	61.0		48.1	48.1	
70th %ile Term Code	Hold	Hold		Gap	Gap		Gap	Coord		Coord	Coord	
50th %ile Green (s)	10.0	10.0		10.0	10.0		6.7	62.4		50.1	50.1	
50th %ile Term Code	Min	Min		Min	Min		Gap	Coord		Coord	Coord	
30th %ile Green (s)	10.0	10.0		10.0	10.0		6.2	62.4		50.6	50.6	
30th %ile Term Code	Min	Min		Min	Min		Gap	Coord		Coord	Coord	
10th %ile Green (s)	10.0	10.0		10.0	10.0		0.0	62.4		62.4	62.4	
10th %ile Term Code	Hold	Hold		Min	Min		Skip	Coord		Coord	Coord	
Queue Length 50th (m)	7.5	2.4		5.4	7.1		3.2	17.7		3.8	14.1	
Queue Length 95th (m)	12.5	9.3		9.7	17.5		15.1	56.1		17.3	39.2	
Internal Link Dist (m)		161.4			175.4			398.9			184.9	
Turn Bay Length (m)	27.0			25.0			50.0			92.0		
Base Capacity (vph)	383	572		411	615		613	2258		339	1786	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.13	0.12		0.09	0.28		0.14	0.33		0.17	0.23	

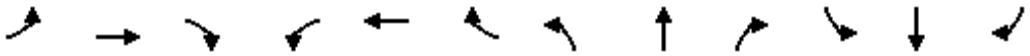
Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 85			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.50			
Intersection Signal Delay: 11.2		Intersection LOS: B	
Intersection Capacity Utilization 75.6%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 5: Longfields Drive & Marketplace Avenue/Clearbrook Drive





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	48	38	72	57	114	112	858	85	99	525	25
Future Volume (vph)	34	48	38	72	57	114	112	858	85	99	525	25
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	15.0		0.0	53.0		0.0	56.0		85.0	75.0		0.0
Storage Lanes	1		0	1		0	1		1	2		0
Taper Length (m)	15.0			43.0			23.0			33.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.95	0.95
Ped Bike Factor	1.00	0.98		0.96	0.99		1.00	1.00		1.00	1.00	
Frt		0.934			0.900			0.986			0.993	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1679	1604	0	1679	1528	0	1695	3249	0	3257	3213	0
Flt Permitted	0.545			0.643			0.950			0.950		
Satd. Flow (perm)	960	1604	0	1093	1528	0	1693	3249	0	3242	3213	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		31			79			11			5	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		171.9			132.7			399.2			202.6	
Travel Time (s)		12.4			9.6			24.0			12.2	
Confl. Peds. (#/hr)	3		33	33		3	1		7	7		1
Confl. Bikes (#/hr)			3			1			1			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 (%)	3%	2%	5%	3%	2%	8%	2%	5%	2%	3%	7%	2%
Adj. Flow (vph)	34	48	38	72	57	114	112	858	85	99	525	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	34	86	0	72	171	0	112	943	0	99	550	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			7.4			7.4	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												



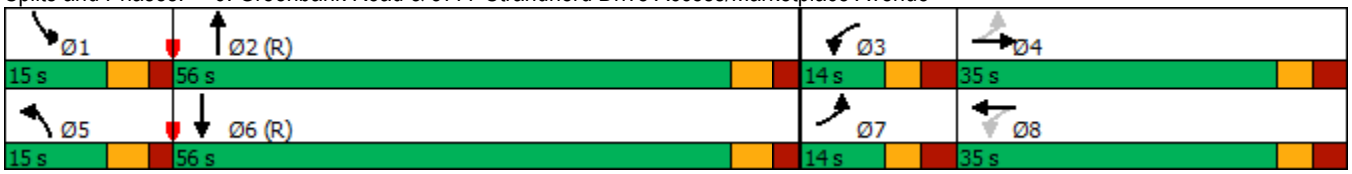
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.5	34.5		11.5	34.5		10.9	31.2		10.9	31.2	
Total Split (s)	14.0	35.0		14.0	35.0		15.0	56.0		15.0	56.0	
Total Split (%)	11.7%	29.2%		11.7%	29.2%		12.5%	46.7%		12.5%	46.7%	
Maximum Green (s)	7.5	28.5		7.5	28.5		9.1	49.8		9.1	49.8	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2		2.2	2.5		2.2	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5		5.9	6.2		5.9	6.2	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		21.0			21.0			18.0			18.0	
Pedestrian Calls (#/hr)		10			10			10			10	
Act Effct Green (s)	21.2	15.4		22.7	18.2		12.8	66.2		8.6	62.0	
Actuated g/C Ratio	0.18	0.13		0.19	0.15		0.11	0.55		0.07	0.52	
v/c Ratio	0.16	0.37		0.30	0.57		0.62	0.53		0.42	0.33	
Control Delay	33.9	33.8		37.4	32.0		78.4	10.9		58.7	19.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	33.9	33.8		37.4	32.0		78.4	10.9		58.7	19.4	
LOS	C	C		D	C		E	B		E	B	
Approach Delay		33.8			33.6			18.0			25.4	
Approach LOS		C			C			B			C	
90th %ile Green (s)	7.5	28.0		7.5	28.0		9.6	49.8		9.6	49.8	
90th %ile Term Code	Max	Ped		Max	Ped		Max	Coord		Max	Coord	
70th %ile Green (s)	7.5	16.1		7.5	16.1		16.2	61.3		10.0	55.1	
70th %ile Term Code	Max	Hold		Max	Gap		Gap	Coord		Gap	Coord	
50th %ile Green (s)	7.4	12.9		7.5	13.0		14.9	65.5		9.0	59.6	
50th %ile Term Code	Gap	Hold		Max	Gap		Gap	Coord		Gap	Coord	
30th %ile Green (s)	0.0	10.0		7.5	24.0		13.1	69.4		8.0	64.3	
30th %ile Term Code	Skip	Min		Max	Hold		Gap	Coord		Gap	Coord	
10th %ile Green (s)	0.0	10.0		0.0	10.0		10.1	84.9		6.5	81.3	
10th %ile Term Code	Skip	Hold		Skip	Min		Gap	Coord		Gap	Coord	
Queue Length 50th (m)	6.4	12.2		13.8	21.0		27.3	44.0		11.6	39.7	
Queue Length 95th (m)	12.5	24.1		22.0	38.4		#59.6	45.6		20.3	61.5	
Internal Link Dist (m)		147.9			108.7			375.2			178.6	
Turn Bay Length (m)	15.0			53.0			56.0			75.0		
Base Capacity (vph)	215	404		243	423		180	1796		254	1663	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.16	0.21		0.30	0.40		0.62	0.53		0.39	0.33	

Intersection Summary		
Area Type:	Other	
Cycle Length: 120		
Actuated Cycle Length: 120		
Offset: 87 (73%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 90		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.62		
Intersection Signal Delay: 23.1	Intersection LOS: C	
Intersection Capacity Utilization 75.6%	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: 6: Greenbank Road & 3777 Strandherd Drive Access/Marketplace Avenue

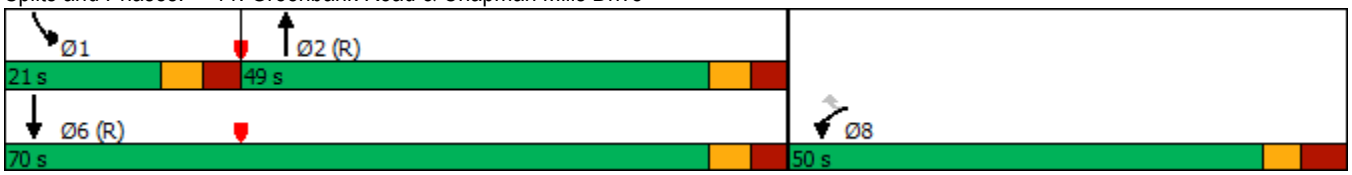


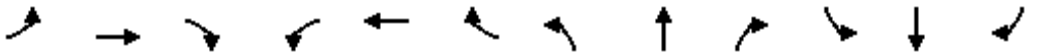
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	79	347	680	108	115	358
Future Volume (vph)	79	347	680	108	115	358
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	66.0	0.0		0.0	65.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	47.0				48.0	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Ped Bike Factor	1.00	0.98	0.99		0.99	
Frt		0.850	0.979			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1441	1517	3207	0	1679	3262
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1438	1484	3207	0	1663	3262
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		325	16			
Link Speed (k/h)	50		50			50
Link Distance (m)	360.0		362.5			399.2
Travel Time (s)	25.9		26.1			28.7
Confl. Peds. (#/hr)	2	1		18	18	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	20%	2%	5%	4%	3%	6%
Adj. Flow (vph)	79	347	680	108	115	358
Shared Lane Traffic (%)						
Lane Group Flow (vph)	79	347	788	0	115	358
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	13.5		3.7			8.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (m)	2.0	2.0	10.0		2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	2.0	0.6		2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Turn Type	Prot	Perm	NA		Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8				
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0		5.0	10.0
Minimum Split (s)	49.6	49.6	45.1		12.1	45.1
Total Split (s)	50.0	50.0	49.0		21.0	70.0
Total Split (%)	41.7%	41.7%	40.8%		17.5%	58.3%
Maximum Green (s)	42.4	42.4	41.9		13.9	62.9
Yellow Time (s)	3.3	3.3	3.7		3.7	3.7
All-Red Time (s)	4.3	4.3	3.4		3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.6	7.6	7.1		7.1	7.1
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	C-Max		None	C-Max
Walk Time (s)	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	35.0	35.0	31.0			31.0
Pedestrian Calls (#/hr)	10	10	10			10
Act Effct Green (s)	23.2	23.2	62.7		12.3	82.1
Actuated g/C Ratio	0.19	0.19	0.52		0.10	0.68
v/c Ratio	0.28	0.63	0.47		0.67	0.16
Control Delay	39.3	9.9	22.7		65.4	15.4
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	39.3	9.9	22.7		65.4	15.4
LOS	D	A	C		E	B
Approach Delay	15.3		22.7			27.6
Approach LOS	B		C			C
90th %ile Green (s)	42.0	42.0	41.9		14.3	63.3
90th %ile Term Code	Ped	Ped	Coord		Max	Coord
70th %ile Green (s)	42.0	42.0	41.9		14.3	63.3
70th %ile Term Code	Ped	Ped	Coord		Max	Coord
50th %ile Green (s)	12.0	12.0	72.7		13.5	93.3
50th %ile Term Code	Gap	Gap	Coord		Gap	Coord
30th %ile Green (s)	10.0	10.0	76.9		11.3	95.3
30th %ile Term Code	Min	Min	Coord		Gap	Coord
10th %ile Green (s)	10.0	10.0	80.0		8.2	95.3
10th %ile Term Code	Min	Min	Coord		Gap	Coord
Queue Length 50th (m)	18.0	4.8	46.8		26.8	7.7
Queue Length 95th (m)	24.1	24.8	104.1		46.2	47.6
Internal Link Dist (m)	336.0		338.5			375.2
Turn Bay Length (m)	66.0				65.0	
Base Capacity (vph)	509	734	1682		196	2231
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	0.16	0.47	0.47		0.59	0.16

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 79 (66%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 22.2		Intersection LOS: C	
Intersection Capacity Utilization 67.1%		ICU Level of Service C	
Analysis Period (min) 15			

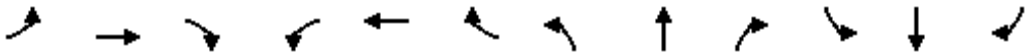
Splits and Phases: 11: Greenbank Road & Chapman Mills Drive





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	183	21	11	332	13	46	0	25	11	0	47
Future Volume (vph)	19	183	21	11	332	13	46	0	25	11	0	47
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	35.0		0.0	36.0		0.0	32.0		0.0	38.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	72.0			42.0			2.5			40.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.985			0.994			0.850			0.850	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	1758	0	1695	1774	0	1695	1517	0	1695	1517	0
Flt Permitted	0.950			0.950			0.726			0.741		
Satd. Flow (perm)	1695	1758	0	1695	1774	0	1295	1517	0	1322	1517	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			3			607			406	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		360.0			391.0			215.1			181.2	
Travel Time (s)		25.9			28.2			15.5			13.0	
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
Adj. Flow (vph)	19	183	21	11	332	13	46	0	25	11	0	47
Shared Lane Traffic (%)												
Lane Group Flow (vph)	19	204	0	11	345	0	46	25	0	11	47	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		13.5			13.5			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		

Chapman Mills Drive/Riocan Avenue
Total2030 AM Peak

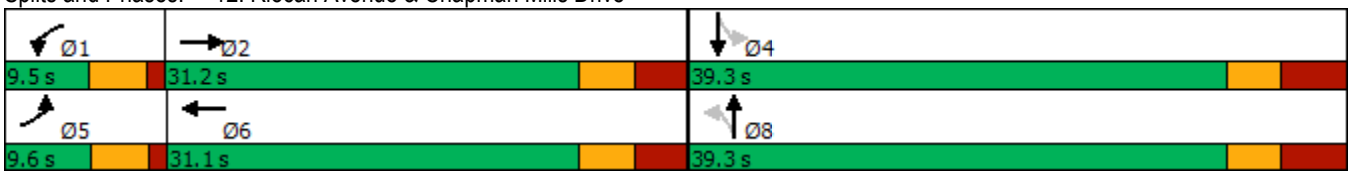


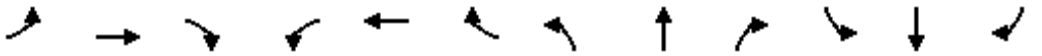
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	9.5	26.5		9.5	26.5		39.3	39.3		39.3	39.3	
Total Split (s)	9.6	31.2		9.5	31.1		39.3	39.3		39.3	39.3	
Total Split (%)	12.0%	39.0%		11.9%	38.9%		49.1%	49.1%		49.1%	49.1%	
Maximum Green (s)	5.1	24.7		5.0	24.6		32.0	32.0		32.0	32.0	
Yellow Time (s)	3.5	3.3		3.5	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.0	3.2		1.0	3.2		4.0	4.0		4.0	4.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	6.5		4.5	6.5		7.3	7.3		7.3	7.3	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		13.0			13.0		25.0	25.0		25.0	25.0	
Pedestrian Calls (#/hr)		10			10		10	10		10	10	
Act Effct Green (s)	5.2	19.3		5.1	17.6		32.6	32.6		32.6	32.6	
Actuated g/C Ratio	0.08	0.29		0.08	0.26		0.48	0.48		0.48	0.48	
v/c Ratio	0.15	0.40		0.09	0.75		0.07	0.02		0.02	0.05	
Control Delay	36.4	21.2		35.5	33.8		13.3	0.0		13.5	0.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	36.4	21.2		35.5	33.8		13.3	0.0		13.5	0.1	
LOS	D	C		D	C		B	A		B	A	
Approach Delay		22.5			33.8			8.6			2.6	
Approach LOS		C			C			A			A	
90th %ile Green (s)	5.1	24.7		5.0	24.6		32.0	32.0		32.0	32.0	
90th %ile Term Code	Max	Hold		Max	Max		MaxR	MaxR		MaxR	MaxR	
70th %ile Green (s)	5.1	32.3		0.0	22.7		32.0	32.0		32.0	32.0	
70th %ile Term Code	Max	Hold		Skip	Gap		MaxR	MaxR		MaxR	MaxR	
50th %ile Green (s)	0.0	17.0		0.0	17.0		32.0	32.0		32.0	32.0	
50th %ile Term Code	Skip	Hold		Skip	Gap		MaxR	MaxR		MaxR	MaxR	
30th %ile Green (s)	0.0	14.4		0.0	14.4		32.0	32.0		32.0	32.0	
30th %ile Term Code	Skip	Hold		Skip	Gap		MaxR	MaxR		MaxR	MaxR	
10th %ile Green (s)	0.0	11.0		0.0	11.0		32.0	32.0		32.0	32.0	
10th %ile Term Code	Skip	Hold		Skip	Gap		MaxR	MaxR		MaxR	MaxR	
Queue Length 50th (m)	2.1	18.7		1.2	35.7		2.5	0.0		0.6	0.0	
Queue Length 95th (m)	9.1	40.7		6.4	71.2		10.6	0.0		4.0	0.0	
Internal Link Dist (m)		336.0			367.0			191.1			157.2	
Turn Bay Length (m)	35.0			36.0			32.0			38.0		
Base Capacity (vph)	130	693		127	660		625	1046		638	942	
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	0.29		0.09	0.52		0.07	0.02		0.02	0.05	

Intersection Summary	
Area Type:	Other

Cycle Length: 80	
Actuated Cycle Length: 67.6	
Natural Cycle: 80	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 25.2	Intersection LOS: C
Intersection Capacity Utilization 40.1%	ICU Level of Service A
Analysis Period (min) 15	
90th %ile Actuated Cycle: 80	
70th %ile Actuated Cycle: 78.1	
50th %ile Actuated Cycle: 62.8	
30th %ile Actuated Cycle: 60.2	
10th %ile Actuated Cycle: 56.8	

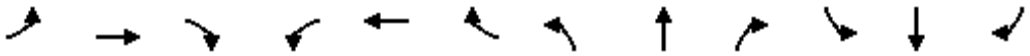
Splits and Phases: 12: Riocan Avenue & Chapman Mills Drive





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	11	369	65	10	104	233	556	54	162	691	48
Future Volume (vph)	22	11	369	65	10	104	233	556	54	162	691	48
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	38.0		45.0	32.0		32.0	60.0		54.0	65.0		60.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	41.0			37.0			65.0			70.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.98	0.99		0.98	0.99		0.97	1.00		0.95
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	1784	1517	1695	1784	1502	1695	3357	1517	1695	3390	1517
Flt Permitted	0.950			0.950			0.343			0.420		
Satd. Flow (perm)	1687	1784	1485	1682	1784	1476	607	3357	1468	746	3390	1439
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)			133			133						136
Link Speed (k/h)		50			50			60			50	
Link Distance (m)		391.0			173.1			287.5			422.9	
Travel Time (s)		28.2			12.5			17.3			30.4	
Confl. Peds. (#/hr)	5		8	8		5	17		7	7		17
Confl. Bikes (#/hr)			1						3			10
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%	2%	2%	2%	2%	3%	2%	3%	2%	2%	2%	2%
Adj. Flow (vph)	22	11	369	65	10	104	233	556	54	162	691	48
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	11	369	65	10	104	233	556	54	162	691	48
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		13.5			13.5			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Longfields Drive/Chapman Mills Drive
Total2030 PM Peak

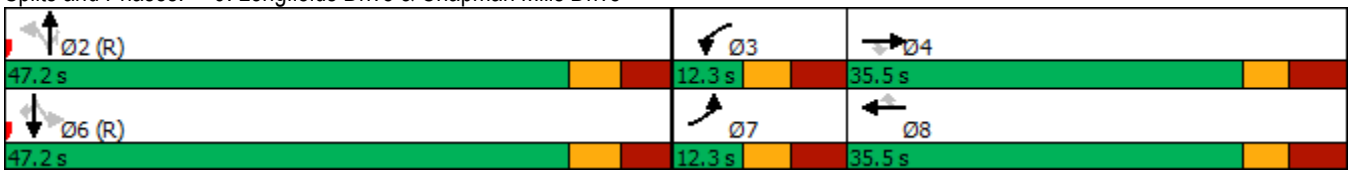


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4			8	2		2	6		6
Detector Phase	7	4	4	3	8	8	2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	12.3	35.5	35.5	12.3	35.5	35.5	42.3	42.3	42.3	42.3	42.3	42.3
Total Split (s)	12.3	35.5	35.5	12.3	35.5	35.5	47.2	47.2	47.2	47.2	47.2	47.2
Total Split (%)	12.9%	37.4%	37.4%	12.9%	37.4%	37.4%	49.7%	49.7%	49.7%	49.7%	49.7%	49.7%
Maximum Green (s)	5.0	28.0	28.0	5.0	28.0	28.0	39.9	39.9	39.9	39.9	39.9	39.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	4.0	4.2	4.2	4.0	4.2	4.2	3.6	3.6	3.6	3.6	3.6	3.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.3	7.5	7.5	7.3	7.5	7.5	7.3	7.3	7.3	7.3	7.3	7.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		21.0	21.0		21.0	21.0	28.0	28.0	28.0	28.0	28.0	28.0
Pedestrian Calls (#/hr)		10	10		10	10	10	10	10	10	10	10
Act Effct Green (s)	5.0	20.9	20.9	5.0	25.8	25.8	49.5	49.5	49.5	49.5	49.5	49.5
Actuated g/C Ratio	0.05	0.22	0.22	0.05	0.27	0.27	0.52	0.52	0.52	0.52	0.52	0.52
v/c Ratio	0.25	0.03	0.86	0.73	0.02	0.21	0.74	0.32	0.07	0.42	0.39	0.06
Control Delay	50.2	25.4	41.2	87.6	23.9	3.6	39.1	15.7	15.4	21.7	16.6	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.2	25.4	41.2	87.6	23.9	3.6	39.1	15.7	15.4	21.7	16.6	0.1
LOS	D	C	D	F	C	A	D	B	B	C	B	A
Approach Delay		41.3			35.2			22.2			16.6	
Approach LOS		D			D			C			B	
90th %ile Green (s)	5.0	28.0	28.0	5.0	28.0	28.0	39.9	39.9	39.9	39.9	39.9	39.9
90th %ile Term Code	Max	Max	Max	Max	Ped	Ped	Coord	Coord	Coord	Coord	Coord	Coord
70th %ile Green (s)	5.0	25.9	25.9	5.0	25.9	25.9	42.0	42.0	42.0	42.0	42.0	42.0
70th %ile Term Code	Max	Gap	Gap	Max	Hold	Hold	Coord	Coord	Coord	Coord	Coord	Coord
50th %ile Green (s)	0.0	21.8	21.8	5.0	34.1	34.1	46.1	46.1	46.1	46.1	46.1	46.1
50th %ile Term Code	Skip	Gap	Gap	Max	Hold	Hold	Coord	Coord	Coord	Coord	Coord	Coord
30th %ile Green (s)	0.0	17.5	17.5	5.0	29.8	29.8	50.4	50.4	50.4	50.4	50.4	50.4
30th %ile Term Code	Skip	Gap	Gap	Max	Hold	Hold	Coord	Coord	Coord	Coord	Coord	Coord
10th %ile Green (s)	0.0	11.2	11.2	0.0	11.2	11.2	69.0	69.0	69.0	69.0	69.0	69.0
10th %ile Term Code	Skip	Gap	Gap	Skip	Hold	Hold	Coord	Coord	Coord	Coord	Coord	Coord
Queue Length 50th (m)	4.0	1.6	42.4	12.0	1.2	0.0	34.3	31.7	5.1	18.8	41.4	0.0
Queue Length 95th (m)	11.4	5.4	70.9	#33.6	5.0	7.1	#85.2	49.6	12.9	41.9	63.0	0.0
Internal Link Dist (m)		367.0			149.1			263.5			398.9	
Turn Bay Length (m)	38.0		45.0	32.0		32.0	60.0		54.0	65.0		60.0
Base Capacity (vph)	89	525	531	89	555	551	316	1748	764	388	1765	814
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0

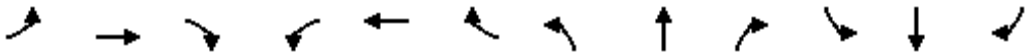
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.25	0.02	0.69	0.73	0.02	0.19	0.74	0.32	0.07	0.42	0.39	0.06

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 95			
Offset: 33 (35%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 24.3		Intersection LOS: C	
Intersection Capacity Utilization 76.7%		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: 9: Longfields Drive & Chapman Mills Drive



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	135	47	170	15	54	58	148	447	20	81	523	196
Future Volume (vph)	135	47	170	15	54	58	148	447	20	81	523	196
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	27.0		0.0	25.0		0.0	50.0		0.0	92.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	24.0			3.0			84.0			40.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.99	0.97		0.99	0.99		1.00	1.00		0.99	0.99	
Frt		0.882			0.922			0.994			0.959	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1662	1519	0	1695	1620	0	1679	3365	0	1695	3226	0
Flt Permitted	0.685			0.534			0.287			0.484		
Satd. Flow (perm)	1191	1519	0	939	1620	0	506	3365	0	857	3226	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		170			58			7			65	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		185.4			199.4			422.9			208.9	
Travel Time (s)		13.3			14.4			30.4			15.0	
Confl. Peds. (#/hr)	10		25	25		10	3		7	7		3
Confl. Bikes (#/hr)			6			1			3			2
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 (%)	4%	2%	3%	2%	2%	3%	3%	2%	2%	2%	2%	2%
Adj. Flow (vph)	135	47	170	15	54	58	148	447	20	81	523	196
Shared Lane Traffic (%)												
Lane Group Flow (vph)	135	217	0	15	112	0	148	467	0	81	719	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

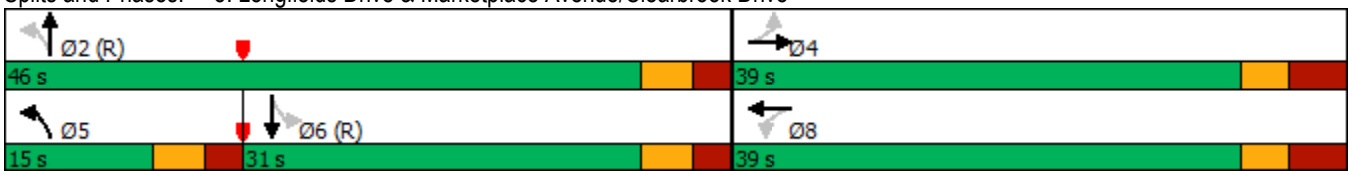


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	10.0		10.0	10.0	
Minimum Split (s)	38.8	38.8		38.8	38.8		10.6	25.8		25.8	25.8	
Total Split (s)	39.0	39.0		39.0	39.0		15.0	46.0		31.0	31.0	
Total Split (%)	45.9%	45.9%		45.9%	45.9%		17.6%	54.1%		36.5%	36.5%	
Maximum Green (s)	32.2	32.2		32.2	32.2		9.4	40.2		25.2	25.2	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.3	3.3		3.3	3.3	
All-Red Time (s)	3.8	3.8		3.8	3.8		2.3	2.5		2.5	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.8	6.8		6.8	6.8		5.6	5.8		5.8	5.8	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0		7.0	7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	25.0			13.0		13.0	13.0	
Pedestrian Calls (#/hr)	10	10		10	10			10		10	10	
Act Effct Green (s)	17.4	17.4		17.4	17.4		55.2	55.0		41.3	41.3	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.65	0.65		0.49	0.49	
v/c Ratio	0.55	0.49		0.08	0.30		0.34	0.21		0.19	0.45	
Control Delay	37.1	10.6		23.4	15.0		9.9	7.8		18.2	16.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	37.1	10.6		23.4	15.0		9.9	7.8		18.2	16.1	
LOS	D	B		C	B		A	A		B	B	
Approach Delay		20.7			16.0			8.3			16.3	
Approach LOS		C			B			A			B	
90th %ile Green (s)	32.0	32.0		32.0	32.0		9.6	40.4		25.2	25.2	
90th %ile Term Code	Ped	Ped		Ped	Ped		Max	Coord		Coord	Coord	
70th %ile Green (s)	17.9	17.9		17.9	17.9		9.3	54.5		39.6	39.6	
70th %ile Term Code	Gap	Gap		Hold	Hold		Gap	Coord		Coord	Coord	
50th %ile Green (s)	15.0	15.0		15.0	15.0		8.1	57.4		43.7	43.7	
50th %ile Term Code	Gap	Gap		Hold	Hold		Gap	Coord		Coord	Coord	
30th %ile Green (s)	12.2	12.2		12.2	12.2		7.1	60.2		47.5	47.5	
30th %ile Term Code	Gap	Gap		Hold	Hold		Gap	Coord		Coord	Coord	
10th %ile Green (s)	10.0	10.0		10.0	10.0		6.1	62.4		50.7	50.7	
10th %ile Term Code	Min	Min		Hold	Hold		Gap	Coord		Coord	Coord	
Queue Length 50th (m)	20.6	6.6		2.1	7.6		7.3	12.7		6.7	32.4	
Queue Length 95th (m)	28.8	18.7		5.2	15.8		23.8	32.6		22.2	69.2	
Internal Link Dist (m)		161.4			175.4			398.9			184.9	
Turn Bay Length (m)	27.0			25.0			50.0			92.0		
Base Capacity (vph)	451	681		355	649		458	2179		416	1602	
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	

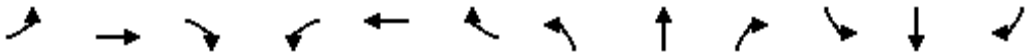
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.30	0.32		0.04	0.17		0.32	0.21		0.19	0.45	

Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 85			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay: 14.5		Intersection LOS: B	
Intersection Capacity Utilization 67.6%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 5: Longfields Drive & Marketplace Avenue/Clearbrook Drive



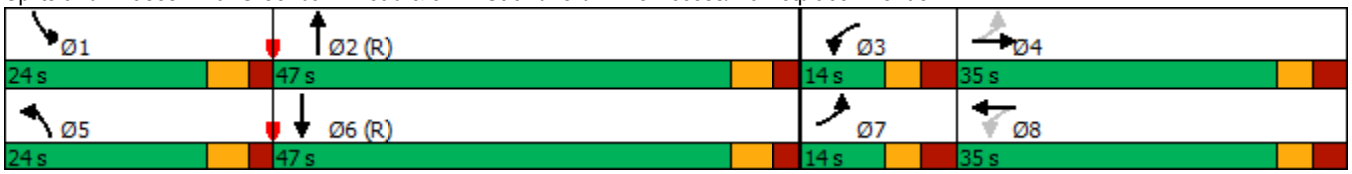
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	109	91	185	126	188	172	795	107	189	1041	25
Future Volume (vph)	71	109	91	185	126	188	172	795	107	189	1041	25
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	15.0		0.0	53.0		0.0	56.0		85.0	75.0		0.0
Storage Lanes	1		0	1		0	1		1	2		0
Taper Length (m)	15.0			43.0			23.0			33.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.95	0.95
Ped Bike Factor	0.99	0.95		0.94	0.98		0.99	1.00		0.99	1.00	
Frt		0.932			0.910			0.982			0.996	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	1587	0	1695	1584	0	1695	3315	0	3288	3373	0
Flt Permitted	0.289			0.461			0.950			0.950		
Satd. Flow (perm)	509	1587	0	775	1584	0	1684	3315	0	3252	3373	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		33			59			13			2	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		171.9			132.7			399.2			202.6	
Travel Time (s)		12.4			9.6			24.0			12.2	
Confl. Peds. (#/hr)	20		65	65		20	12		16	16		12
Confl. Bikes (#/hr)			8			4			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
Adj. Flow (vph)	71	109	91	185	126	188	172	795	107	189	1041	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	71	200	0	185	314	0	172	902	0	189	1066	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			7.4			7.4	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.5	34.5		11.5	34.5		10.9	31.2		10.9	31.2	
Total Split (s)	14.0	35.0		14.0	35.0		24.0	47.0		24.0	47.0	
Total Split (%)	11.7%	29.2%		11.7%	29.2%		20.0%	39.2%		20.0%	39.2%	
Maximum Green (s)	7.5	28.5		7.5	28.5		18.1	40.8		18.1	40.8	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2		2.2	2.5		2.2	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5		5.9	6.2		5.9	6.2	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		21.0			21.0			18.0			18.0	
Pedestrian Calls (#/hr)		10			10			10			10	
Act Effct Green (s)	30.2	22.9		31.7	25.7		16.0	52.3		12.2	48.5	
Actuated g/C Ratio	0.25	0.19		0.26	0.21		0.13	0.44		0.10	0.40	
v/c Ratio	0.36	0.61		0.71	0.81		0.76	0.62		0.57	0.78	
Control Delay	33.2	43.6		49.0	53.4		73.9	23.4		57.7	37.9	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	33.2	43.6		49.0	53.4		73.9	23.4		57.7	37.9	
LOS	C	D		D	D		E	C		E	D	
Approach Delay		40.9			51.8			31.5			40.9	
Approach LOS		D			D			C			D	
90th %ile Green (s)	7.5	28.5		7.5	28.5		18.1	43.2		15.7	40.8	
90th %ile Term Code	Max	Hold		Max	Max		Max	Coord		Gap	Coord	
70th %ile Green (s)	7.5	28.5		7.5	28.5		18.1	45.3		13.6	40.8	
70th %ile Term Code	Max	Hold		Max	Max		Max	Coord		Gap	Coord	
50th %ile Green (s)	7.5	25.5		7.5	25.5		17.5	49.7		12.2	44.4	
50th %ile Term Code	Max	Hold		Max	Gap		Gap	Coord		Gap	Coord	
30th %ile Green (s)	7.5	21.6		7.5	21.6		14.9	55.0		10.8	50.9	
30th %ile Term Code	Max	Hold		Max	Gap		Gap	Coord		Gap	Coord	
10th %ile Green (s)	0.0	10.6		7.5	24.6		11.2	68.1		8.7	65.6	
10th %ile Term Code	Skip	Gap		Max	Hold		Gap	Coord		Gap	Coord	
Queue Length 50th (m)	11.7	35.2		32.7	58.5		27.5	97.2		22.2	120.3	
Queue Length 95th (m)	21.6	57.3		50.0	#92.0		#53.6	122.1		32.9	#167.7	
Internal Link Dist (m)		147.9			108.7			375.2			178.6	
Turn Bay Length (m)	15.0			53.0			56.0			75.0		
Base Capacity (vph)	203	402		262	421		255	1450		495	1364	
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	0.50		0.71	0.75		0.67	0.62		0.38	0.78	

Intersection Summary		
Area Type:	Other	
Cycle Length: 120		
Actuated Cycle Length: 120		
Offset: 117 (98%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 100		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.81		
Intersection Signal Delay: 39.4		Intersection LOS: D
Intersection Capacity Utilization 95.3%		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: 6: Greenbank Road & 3777 Strandherd Drive Access/Marketplace Avenue



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	68	268	434	21	395	582
Future Volume (vph)	68	268	434	21	395	582
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	66.0	0.0		0.0	65.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	47.0				48.0	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Ped Bike Factor			1.00		1.00	
Frt		0.850	0.993			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1695	1517	3363	0	1695	3390
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1695	1517	3363	0	1691	3390
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		268	4			
Link Speed (k/h)	50		50			50
Link Distance (m)	360.0		362.5			399.2
Travel Time (s)	25.9		26.1			28.7
Confl. Peds. (#/hr)				3	3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	68	268	434	21	395	582
Shared Lane Traffic (%)						
Lane Group Flow (vph)	68	268	455	0	395	582
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	13.5		3.7			8.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	97	97		97	97	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (m)	2.0	2.0	10.0		2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	2.0	0.6		2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA		Prot	NA

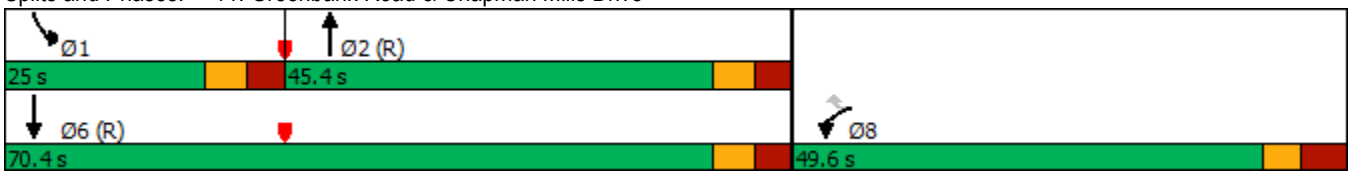
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2		1	6
Permitted Phases		8				
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0		5.0	10.0
Minimum Split (s)	49.6	49.6	45.1		12.1	45.1
Total Split (s)	49.6	49.6	45.4		25.0	70.4
Total Split (%)	41.3%	41.3%	37.8%		20.8%	58.7%
Maximum Green (s)	42.0	42.0	38.3		17.9	63.3
Yellow Time (s)	3.3	3.3	3.7		3.7	3.7
All-Red Time (s)	4.3	4.3	3.4		3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.6	7.6	7.1		7.1	7.1
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	C-Max		None	C-Max
Walk Time (s)	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	35.0	35.0	31.0			31.0
Pedestrian Calls (#/hr)	10	10	10			10
Act Effct Green (s)	22.8	22.8	39.8		35.6	82.5
Actuated g/C Ratio	0.19	0.19	0.33		0.30	0.69
v/c Ratio	0.21	0.53	0.41		0.79	0.25
Control Delay	37.5	7.3	32.1		38.2	7.3
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	37.5	7.3	32.1		38.2	7.3
LOS	D	A	C		D	A
Approach Delay	13.4		32.1			19.8
Approach LOS	B		C			B
90th %ile Green (s)	42.0	42.0	38.3		17.9	63.3
90th %ile Term Code	Ped	Ped	Coord		Max	Coord
70th %ile Green (s)	42.0	42.0	38.3		17.9	63.3
70th %ile Term Code	Ped	Ped	Coord		Max	Coord
50th %ile Green (s)	10.2	10.2	45.6		42.4	95.1
50th %ile Term Code	Gap	Gap	Coord		Gap	Coord
30th %ile Green (s)	10.0	10.0	38.3		49.9	95.3
30th %ile Term Code	Min	Min	Coord		Max	Coord
10th %ile Green (s)	10.0	10.0	38.3		49.9	95.3
10th %ile Term Code	Min	Min	Coord		Max	Coord
Queue Length 50th (m)	15.5	0.0	39.6		23.4	0.2
Queue Length 95th (m)	21.0	17.3	58.7		m#192.9	75.5
Internal Link Dist (m)	336.0		338.5			375.2
Turn Bay Length (m)	66.0				65.0	
Base Capacity (vph)	593	705	1117		502	2329
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	0.11	0.38	0.41		0.79	0.25

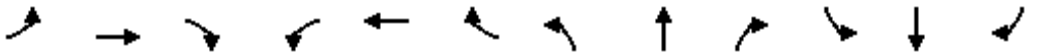
Intersection Summary

Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 77 (64%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 130			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 21.8		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.
m Volume for 95th percentile queue is metered by upstream signal.

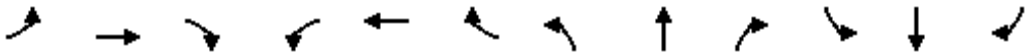
Splits and Phases: 11: Greenbank Road & Chapman Mills Drive





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	348	40	21	251	20	31	0	17	38	0	54
Future Volume (vph)	29	348	40	21	251	20	31	0	17	38	0	54
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	35.0		0.0	36.0		0.0	32.0		0.0	38.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	72.0			42.0			2.5			40.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.985			0.989			0.850			0.850	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	1758	0	1695	1765	0	1695	1517	0	1695	1517	0
Flt Permitted	0.950			0.950			0.722			0.746		
Satd. Flow (perm)	1695	1758	0	1695	1765	0	1288	1517	0	1331	1517	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			5			396			493	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		360.0			391.0			215.1			181.2	
Travel Time (s)		25.9			28.2			15.5			13.0	
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
Adj. Flow (vph)	29	348	40	21	251	20	31	0	17	38	0	54
Shared Lane Traffic (%)												
Lane Group Flow (vph)	29	388	0	21	271	0	31	17	0	38	54	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		13.5			13.5			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	97		97	97		97	97		97	97		97
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		

Chapman Mills Drive/Riocan Avenue
Total2030 PM Peak

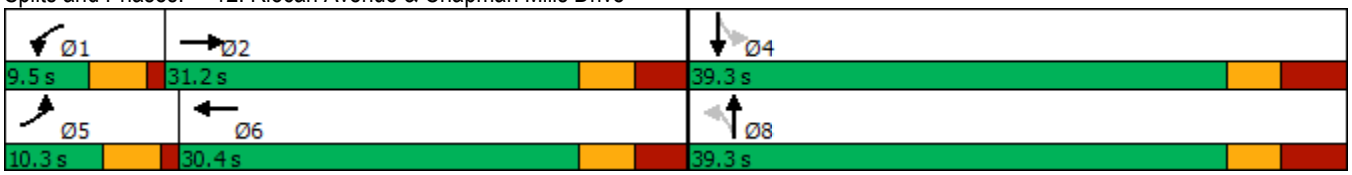


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	9.5	26.5		9.5	26.5		39.3	39.3		39.3	39.3	
Total Split (s)	10.3	31.2		9.5	30.4		39.3	39.3		39.3	39.3	
Total Split (%)	12.9%	39.0%		11.9%	38.0%		49.1%	49.1%		49.1%	49.1%	
Maximum Green (s)	5.8	24.7		5.0	23.9		32.0	32.0		32.0	32.0	
Yellow Time (s)	3.5	3.3		3.5	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.0	3.2		1.0	3.2		4.0	4.0		4.0	4.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	6.5		4.5	6.5		7.3	7.3		7.3	7.3	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		13.0			13.0		25.0	25.0		25.0	25.0	
Pedestrian Calls (#/hr)		10			10		10	10		10	10	
Act Effct Green (s)	5.8	19.0		5.1	18.8		32.6	32.6		32.6	32.6	
Actuated g/C Ratio	0.08	0.28		0.07	0.27		0.47	0.47		0.47	0.47	
v/c Ratio	0.20	0.79		0.17	0.56		0.05	0.02		0.06	0.06	
Control Delay	37.0	35.9		37.5	26.6		13.7	0.1		13.7	0.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	37.0	35.9		37.5	26.6		13.7	0.1		13.7	0.1	
LOS	D	D		D	C		B	A		B	A	
Approach Delay		36.0			27.4			8.9			5.7	
Approach LOS		D			C			A			A	
90th %ile Green (s)	5.8	24.7		5.0	23.9		32.0	32.0		32.0	32.0	
90th %ile Term Code	Max	Max		Max	Hold		MaxR	MaxR		MaxR	MaxR	
70th %ile Green (s)	5.8	24.7		5.0	23.9		32.0	32.0		32.0	32.0	
70th %ile Term Code	Max	Max		Max	Hold		MaxR	MaxR		MaxR	MaxR	
50th %ile Green (s)	0.0	19.0		0.0	19.0		32.0	32.0		32.0	32.0	
50th %ile Term Code	Skip	Gap		Skip	Hold		MaxR	MaxR		MaxR	MaxR	
30th %ile Green (s)	0.0	16.1		0.0	16.1		32.0	32.0		32.0	32.0	
30th %ile Term Code	Skip	Gap		Skip	Hold		MaxR	MaxR		MaxR	MaxR	
10th %ile Green (s)	0.0	12.2		0.0	12.2		32.0	32.0		32.0	32.0	
10th %ile Term Code	Skip	Gap		Skip	Hold		MaxR	MaxR		MaxR	MaxR	
Queue Length 50th (m)	3.3	41.0		2.4	26.3		1.8	0.0		2.2	0.0	
Queue Length 95th (m)	11.9	81.1		9.9	55.4		7.9	0.0		9.1	0.0	
Internal Link Dist (m)		336.0			367.0			191.1			157.2	
Turn Bay Length (m)	35.0			36.0			32.0			38.0		
Base Capacity (vph)	144	645		124	626		608	925		629	976	
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	0.60		0.17	0.43		0.05	0.02		0.06	0.06	

Intersection Summary	
Area Type:	Other

Cycle Length: 80	
Actuated Cycle Length: 68.9	
Natural Cycle: 80	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.79	
Intersection Signal Delay: 28.2	Intersection LOS: C
Intersection Capacity Utilization 45.8%	ICU Level of Service A
Analysis Period (min) 15	
90th %ile Actuated Cycle: 80	
70th %ile Actuated Cycle: 80	
50th %ile Actuated Cycle: 64.8	
30th %ile Actuated Cycle: 61.9	
10th %ile Actuated Cycle: 58	

Splits and Phases: 12: Riocan Avenue & Chapman Mills Drive



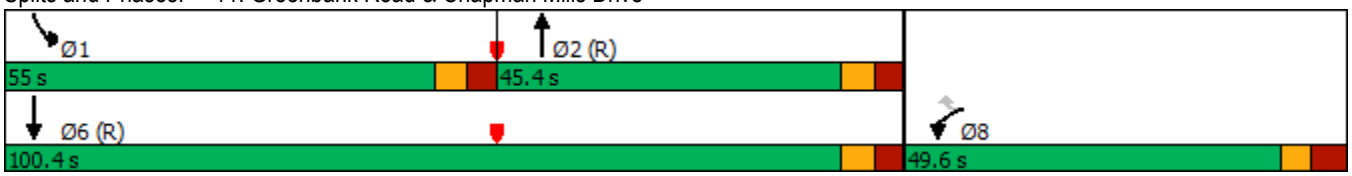
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	68	268	434	21	395	582
Future Volume (vph)	68	268	434	21	395	582
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	66.0	0.0		0.0	65.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	47.0				48.0	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Ped Bike Factor			1.00		1.00	
Frt		0.850	0.993			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1695	1517	3362	0	1695	3390
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1695	1517	3362	0	1690	3390
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		268	3			
Link Speed (k/h)	50		50			50
Link Distance (m)	360.0		362.5			399.2
Travel Time (s)	25.9		26.1			28.7
Confl. Peds. (#/hr)				3	3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	68	268	434	21	395	582
Shared Lane Traffic (%)						
Lane Group Flow (vph)	68	268	455	0	395	582
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	13.5		3.7			8.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	97	97		97	97	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (m)	2.0	2.0	10.0		2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	2.0	0.6		2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA		Prot	NA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2		1	6
Permitted Phases		8				
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0		5.0	10.0
Minimum Split (s)	49.6	49.6	45.1		12.1	45.1
Total Split (s)	49.6	49.6	45.4		55.0	100.4
Total Split (%)	33.1%	33.1%	30.3%		36.7%	66.9%
Maximum Green (s)	42.0	42.0	38.3		47.9	93.3
Yellow Time (s)	3.3	3.3	3.7		3.7	3.7
All-Red Time (s)	4.3	4.3	3.4		3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.6	7.6	7.1		7.1	7.1
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	C-Max		None	C-Max
Walk Time (s)	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	35.0	35.0	31.0			31.0
Pedestrian Calls (#/hr)	10	10	10			10
Act Effct Green (s)	23.1	23.1	65.4		39.7	112.2
Actuated g/C Ratio	0.15	0.15	0.44		0.26	0.75
v/c Ratio	0.26	0.58	0.31		0.88	0.23
Control Delay	53.6	9.8	32.9		73.5	7.9
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	53.6	9.8	32.9		73.5	7.9
LOS	D	A	C		E	A
Approach Delay	18.7		32.9			34.4
Approach LOS	B		C			C
90th %ile Green (s)	42.0	42.0	38.3		47.9	93.3
90th %ile Term Code	Ped	Ped	Coord		Max	Coord
70th %ile Green (s)	42.0	42.0	41.6		44.6	93.3
70th %ile Term Code	Ped	Ped	Coord		Gap	Coord
50th %ile Green (s)	11.4	11.4	76.3		40.5	123.9
50th %ile Term Code	Gap	Gap	Coord		Gap	Coord
30th %ile Green (s)	10.0	10.0	82.1		36.1	125.3
30th %ile Term Code	Min	Min	Coord		Gap	Coord
10th %ile Green (s)	10.0	10.0	88.6		29.6	125.3
10th %ile Term Code	Min	Min	Coord		Gap	Coord
Queue Length 50th (m)	19.8	0.0	39.3		112.5	15.7
Queue Length 95th (m)	28.1	21.5	79.1		143.9	49.6
Internal Link Dist (m)	336.0		338.5			375.2
Turn Bay Length (m)	66.0				65.0	
Base Capacity (vph)	474	617	1467		541	2536
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	0.14	0.43	0.31		0.73	0.23

Intersection Summary

Area Type:	Other		
Cycle Length: 150			
Actuated Cycle Length: 150			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 130			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 31.1		Intersection LOS: C	
Intersection Capacity Utilization 81.3%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 11: Greenbank Road & Chapman Mills Drive



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	68	268	434	21	395	582
Future Volume (vph)	68	268	434	21	395	582
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	66.0	0.0		0.0	65.0	
Storage Lanes	1	1		0	2	
Taper Length (m)	47.0				48.0	
Lane Util. Factor	1.00	1.00	0.95	0.95	0.97	0.95
Ped Bike Factor			1.00		1.00	
Frt		0.850	0.993			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1695	1517	3363	0	3288	3390
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1695	1517	3363	0	3280	3390
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		268	4			
Link Speed (k/h)	50		50			50
Link Distance (m)	360.0		362.5			399.2
Travel Time (s)	25.9		26.1			28.7
Confl. Peds. (#/hr)				3	3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	68	268	434	21	395	582
Shared Lane Traffic (%)						
Lane Group Flow (vph)	68	268	455	0	395	582
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	13.5		7.4			8.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	97	97		97	97	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (m)	2.0	2.0	10.0		2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	2.0	0.6		2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA		Prot	NA

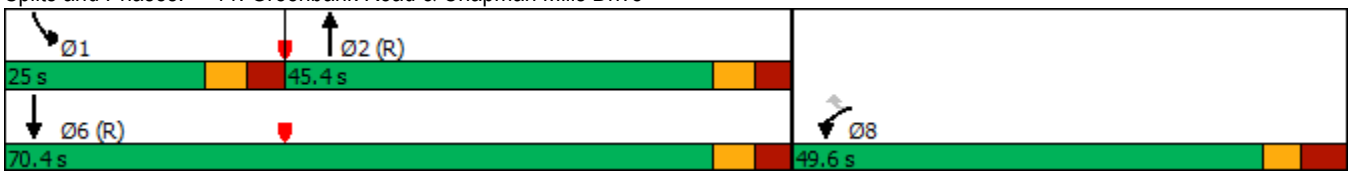
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2		1	6
Permitted Phases		8				
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0		5.0	10.0
Minimum Split (s)	49.6	49.6	45.1		12.1	45.1
Total Split (s)	49.6	49.6	45.4		25.0	70.4
Total Split (%)	41.3%	41.3%	37.8%		20.8%	58.7%
Maximum Green (s)	42.0	42.0	38.3		17.9	63.3
Yellow Time (s)	3.3	3.3	3.7		3.7	3.7
All-Red Time (s)	4.3	4.3	3.4		3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.6	7.6	7.1		7.1	7.1
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	C-Max		None	C-Max
Walk Time (s)	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	35.0	35.0	31.0			31.0
Pedestrian Calls (#/hr)	10	10	10			10
Act Effct Green (s)	22.8	22.8	57.6		17.7	82.5
Actuated g/C Ratio	0.19	0.19	0.48		0.15	0.69
v/c Ratio	0.21	0.53	0.28		0.81	0.25
Control Delay	37.5	7.3	22.7		47.4	7.3
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	37.5	7.3	22.7		47.4	7.3
LOS	D	A	C		D	A
Approach Delay	13.4		22.7			23.5
Approach LOS	B		C			C
90th %ile Green (s)	42.0	42.0	38.3		17.9	63.3
90th %ile Term Code	Ped	Ped	Coord		Max	Coord
70th %ile Green (s)	42.0	42.0	38.3		17.9	63.3
70th %ile Term Code	Ped	Ped	Coord		Max	Coord
50th %ile Green (s)	10.2	10.2	68.1		19.9	95.1
50th %ile Term Code	Gap	Gap	Coord		Gap	Coord
30th %ile Green (s)	10.0	10.0	70.3		17.9	95.3
30th %ile Term Code	Min	Min	Coord		Gap	Coord
10th %ile Green (s)	10.0	10.0	73.2		15.0	95.3
10th %ile Term Code	Min	Min	Coord		Gap	Coord
Queue Length 50th (m)	15.5	0.0	26.5		33.9	0.2
Queue Length 95th (m)	21.0	17.3	58.7		m#68.4	75.5
Internal Link Dist (m)	336.0		338.5			375.2
Turn Bay Length (m)	66.0				65.0	
Base Capacity (vph)	593	705	1617		501	2329
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	0.11	0.38	0.28		0.79	0.25

Intersection Summary

Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 77 (64%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 21.4		Intersection LOS: C	
Intersection Capacity Utilization 70.1%		ICU Level of Service C	
Analysis Period (min) 15			

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

Splits and Phases: 11: Greenbank Road & Chapman Mills Drive



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	68	268	434	21	195	782
Future Volume (vph)	68	268	434	21	195	782
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	66.0	0.0		0.0	65.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	47.0				48.0	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Ped Bike Factor			1.00		1.00	
Frt		0.850	0.993			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1695	1517	3363	0	1695	3390
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1695	1517	3363	0	1691	3390
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		268	4			
Link Speed (k/h)	50		50			50
Link Distance (m)	360.0		362.5			399.2
Travel Time (s)	25.9		26.1			28.7
Confl. Peds. (#/hr)				3	3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	68	268	434	21	195	782
Shared Lane Traffic (%)						
Lane Group Flow (vph)	68	268	455	0	195	782
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	13.5		3.7			8.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	97	97		97	97	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (m)	2.0	2.0	10.0		2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	2.0	0.6		2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA		Prot	NA

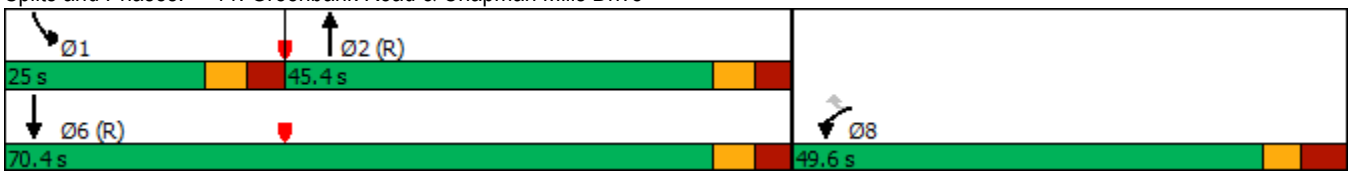
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2		1	6
Permitted Phases		8				
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0		5.0	10.0
Minimum Split (s)	49.6	49.6	45.1		12.1	45.1
Total Split (s)	49.6	49.6	45.4		25.0	70.4
Total Split (%)	41.3%	41.3%	37.8%		20.8%	58.7%
Maximum Green (s)	42.0	42.0	38.3		17.9	63.3
Yellow Time (s)	3.3	3.3	3.7		3.7	3.7
All-Red Time (s)	4.3	4.3	3.4		3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.6	7.6	7.1		7.1	7.1
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	C-Max		None	C-Max
Walk Time (s)	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	35.0	35.0	31.0			31.0
Pedestrian Calls (#/hr)	10	10	10			10
Act Effct Green (s)	22.8	22.8	58.3		17.0	82.5
Actuated g/C Ratio	0.19	0.19	0.49		0.14	0.69
v/c Ratio	0.21	0.53	0.28		0.81	0.34
Control Delay	37.5	7.3	22.4		56.0	8.7
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	37.5	7.3	22.4		56.0	8.7
LOS	D	A	C		E	A
Approach Delay	13.4		22.4			18.1
Approach LOS	B		C			B
90th %ile Green (s)	42.0	42.0	38.3		17.9	63.3
90th %ile Term Code	Ped	Ped	Coord		Max	Coord
70th %ile Green (s)	42.0	42.0	38.3		17.9	63.3
70th %ile Term Code	Ped	Ped	Coord		Max	Coord
50th %ile Green (s)	10.2	10.2	68.4		19.6	95.1
50th %ile Term Code	Gap	Gap	Coord		Gap	Coord
30th %ile Green (s)	10.0	10.0	71.3		16.9	95.3
30th %ile Term Code	Min	Min	Coord		Gap	Coord
10th %ile Green (s)	10.0	10.0	75.3		12.9	95.3
10th %ile Term Code	Min	Min	Coord		Gap	Coord
Queue Length 50th (m)	15.5	0.0	26.4		32.2	0.2
Queue Length 95th (m)	21.0	17.3	58.7		m#65.2	98.6
Internal Link Dist (m)	336.0		338.5			375.2
Turn Bay Length (m)	66.0				65.0	
Base Capacity (vph)	593	705	1636		257	2329
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	0.11	0.38	0.28		0.76	0.34

Intersection Summary

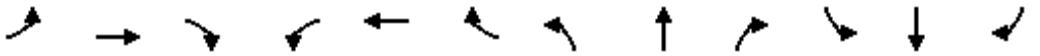
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 77 (64%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 18.3		Intersection LOS: B	
Intersection Capacity Utilization 69.6%		ICU Level of Service C	
Analysis Period (min) 15			

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

Splits and Phases: 11: Greenbank Road & Chapman Mills Drive

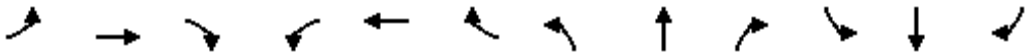


Appendix P: Synchro Analysis Reports - 2035 Total Conditions



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	118	14	105	34	7	136	333	826	54	90	258	32
Future Volume (vph)	118	14	105	34	7	136	333	826	54	90	258	32
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	38.0		45.0	32.0		32.0	60.0		54.0	65.0		60.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	41.0			37.0			65.0			70.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	1.00					0.99	1.00		0.94	0.99		0.97
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	1733	1517	1586	1733	1432	1695	3390	1488	1530	3202	1473
Flt Permitted	0.950			0.950			0.592			0.288		
Satd. Flow (perm)	1690	1733	1517	1586	1733	1411	1051	3390	1403	461	3202	1434
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)			133			133						136
Link Speed (k/h)		50			50			60			50	
Link Distance (m)		391.0			173.1			287.5			422.9	
Travel Time (s)		28.2			12.5			17.3			30.4	
Confl. Peds. (#/hr)	3					3	5		16	16		5
Confl. Bikes (#/hr)									17			
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%	5%	2%	9%	5%	8%	2%	2%	4%	13%	8%	5%
Adj. Flow (vph)	118	14	105	34	7	136	333	826	54	90	258	32
Shared Lane Traffic (%)												
Lane Group Flow (vph)	118	14	105	34	7	136	333	826	54	90	258	32
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		13.5			13.5			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

Longfields Drive/Chapman Mills Drive
Total2035 AM Peak

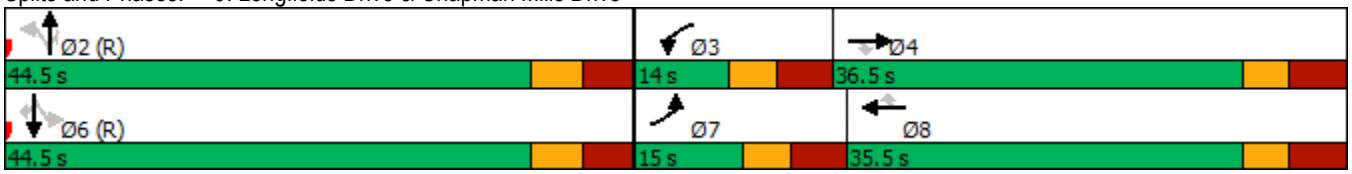


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4			8	2		2	6		6
Detector Phase	7	4	4	3	8	8	2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	12.3	35.5	35.5	12.3	35.5	35.5	42.3	42.3	42.3	42.3	42.3	42.3
Total Split (s)	15.0	36.5	36.5	14.0	35.5	35.5	44.5	44.5	44.5	44.5	44.5	44.5
Total Split (%)	15.8%	38.4%	38.4%	14.7%	37.4%	37.4%	46.8%	46.8%	46.8%	46.8%	46.8%	46.8%
Maximum Green (s)	7.7	29.0	29.0	6.7	28.0	28.0	37.2	37.2	37.2	37.2	37.2	37.2
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	4.0	4.2	4.2	4.0	4.2	4.2	3.6	3.6	3.6	3.6	3.6	3.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.3	7.5	7.5	7.3	7.5	7.5	7.3	7.3	7.3	7.3	7.3	7.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		21.0	21.0		21.0	21.0	28.0	28.0	28.0	28.0	28.0	28.0
Pedestrian Calls (#/hr)		10	10		10	10	10	10	10	10	10	10
Act Effct Green (s)	7.7	20.2	20.2	6.4	13.6	13.6	51.6	51.6	51.6	51.6	51.6	51.6
Actuated g/C Ratio	0.08	0.21	0.21	0.07	0.14	0.14	0.54	0.54	0.54	0.54	0.54	0.54
v/c Ratio	0.86	0.04	0.25	0.32	0.03	0.43	0.58	0.45	0.07	0.36	0.15	0.04
Control Delay	92.1	30.3	4.1	50.5	30.6	10.4	22.4	15.4	13.1	20.7	12.5	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	92.1	30.3	4.1	50.5	30.6	10.4	22.4	15.4	13.1	20.7	12.5	0.1
LOS	F	C	A	D	C	B	C	B	B	C	B	A
Approach Delay		49.5			18.9			17.2			13.4	
Approach LOS		D			B			B			B	
90th %ile Green (s)	7.7	29.0	29.0	6.7	28.0	28.0	37.2	37.2	37.2	37.2	37.2	37.2
90th %ile Term Code	Max	Hold	Hold	Max	Ped	Ped	Coord	Coord	Coord	Coord	Coord	Coord
70th %ile Green (s)	7.7	11.0	11.0	6.7	10.0	10.0	55.2	55.2	55.2	55.2	55.2	55.2
70th %ile Term Code	Max	Hold	Hold	Max	Min	Min	Coord	Coord	Coord	Coord	Coord	Coord
50th %ile Green (s)	7.7	11.0	11.0	6.7	10.0	10.0	55.2	55.2	55.2	55.2	55.2	55.2
50th %ile Term Code	Max	Hold	Hold	Max	Min	Min	Coord	Coord	Coord	Coord	Coord	Coord
30th %ile Green (s)	7.7	25.0	25.0	0.0	10.0	10.0	55.2	55.2	55.2	55.2	55.2	55.2
30th %ile Term Code	Max	Hold	Hold	Skip	Min	Min	Coord	Coord	Coord	Coord	Coord	Coord
10th %ile Green (s)	7.7	25.0	25.0	0.0	10.0	10.0	55.2	55.2	55.2	55.2	55.2	55.2
10th %ile Term Code	Max	Hold	Hold	Skip	Min	Min	Coord	Coord	Coord	Coord	Coord	Coord
Queue Length 50th (m)	21.8	2.3	0.0	6.1	1.2	0.5	34.8	41.0	4.0	8.0	10.5	0.0
Queue Length 95th (m)	#52.4	6.1	7.2	15.4	4.1	13.3	#100.0	82.2	13.7	28.6	24.7	0.0
Internal Link Dist (m)		367.0			149.1			263.5			398.9	
Turn Bay Length (m)	38.0		45.0	32.0		32.0	60.0		54.0	65.0		60.0
Base Capacity (vph)	137	529	555	111	510	509	570	1841	762	250	1739	841
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0

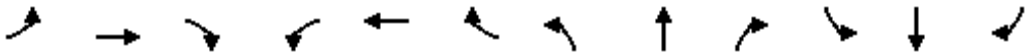
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.86	0.03	0.19	0.31	0.01	0.27	0.58	0.45	0.07	0.36	0.15	0.04

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 95			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 20.4		Intersection LOS: C	
Intersection Capacity Utilization 80.6%		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: 9: Longfields Drive & Chapman Mills Drive



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	49	16	52	36	28	146	86	755	32	56	368	58
Future Volume (vph)	49	16	52	36	28	146	86	755	32	56	368	58
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	27.0		0.0	25.0		0.0	50.0		0.0	92.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	24.0			3.0			84.0			40.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.99	0.99		1.00	0.98		1.00	1.00		0.98	1.00	
Frt		0.885			0.874			0.994			0.980	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1572	1426	0	1453	1416	0	1601	3325	0	1616	3201	0
Flt Permitted	0.616			0.713			0.449			0.354		
Satd. Flow (perm)	1013	1426	0	1086	1416	0	754	3325	0	592	3201	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		52			115			7			21	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		185.4			199.4			422.9			208.9	
Travel Time (s)		13.3			14.4			30.4			15.0	
Confl. Peds. (#/hr)	9		6	6		9	4		24	24		4
Confl. Bikes (#/hr)			1			4			11			
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 (%)	10%	13%	11%	19%	17%	9%	8%	2%	28%	7%	3%	21%
Adj. Flow (vph)	49	16	52	36	28	146	86	755	32	56	368	58
Shared Lane Traffic (%)												
Lane Group Flow (vph)	49	68	0	36	174	0	86	787	0	56	426	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

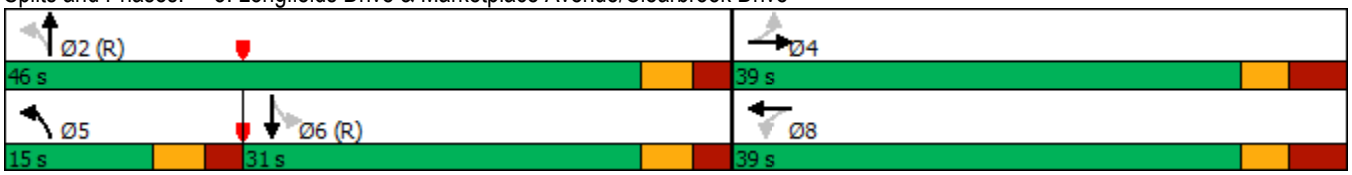


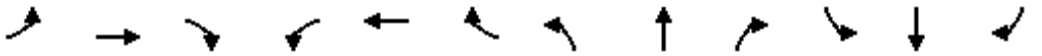
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	10.0		10.0	10.0	
Minimum Split (s)	38.8	38.8		38.8	38.8		10.6	25.8		25.8	25.8	
Total Split (s)	39.0	39.0		39.0	39.0		15.0	46.0		31.0	31.0	
Total Split (%)	45.9%	45.9%		45.9%	45.9%		17.6%	54.1%		36.5%	36.5%	
Maximum Green (s)	32.2	32.2		32.2	32.2		9.4	40.2		25.2	25.2	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.3	3.3		3.3	3.3	
All-Red Time (s)	3.8	3.8		3.8	3.8		2.3	2.5		2.5	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.8	6.8		6.8	6.8		5.6	5.8		5.8	5.8	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0		7.0	7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	25.0			13.0		13.0	13.0	
Pedestrian Calls (#/hr)	10	10		10	10			10		10	10	
Act Effct Green (s)	14.8	14.8		14.8	14.8		57.8	57.6		47.1	47.1	
Actuated g/C Ratio	0.17	0.17		0.17	0.17		0.68	0.68		0.55	0.55	
v/c Ratio	0.28	0.23		0.19	0.51		0.15	0.35		0.17	0.24	
Control Delay	31.3	12.0		28.8	16.0		7.5	7.8		17.1	12.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	31.3	12.0		28.8	16.0		7.5	7.8		17.1	12.6	
LOS	C	B		C	B		A	A		B	B	
Approach Delay		20.1			18.2			7.8			13.1	
Approach LOS		C			B			A			B	
90th %ile Green (s)	32.0	32.0		32.0	32.0		9.6	40.4		25.2	25.2	
90th %ile Term Code	Ped	Ped		Ped	Ped		Max	Coord		Coord	Coord	
70th %ile Green (s)	12.2	12.2		12.2	12.2		7.4	60.2		47.2	47.2	
70th %ile Term Code	Hold	Hold		Gap	Gap		Gap	Coord		Coord	Coord	
50th %ile Green (s)	10.0	10.0		10.0	10.0		6.7	62.4		50.1	50.1	
50th %ile Term Code	Min	Min		Min	Min		Gap	Coord		Coord	Coord	
30th %ile Green (s)	10.0	10.0		10.0	10.0		6.2	62.4		50.6	50.6	
30th %ile Term Code	Min	Min		Min	Min		Gap	Coord		Coord	Coord	
10th %ile Green (s)	10.0	10.0		10.0	10.0		0.0	62.4		62.4	62.4	
10th %ile Term Code	Hold	Hold		Min	Min		Skip	Coord		Coord	Coord	
Queue Length 50th (m)	7.5	2.4		5.4	9.0		3.2	18.8		3.8	14.8	
Queue Length 95th (m)	12.5	9.3		9.7	19.2		15.1	58.9		17.5	40.8	
Internal Link Dist (m)		161.4			175.4			398.9			184.9	
Turn Bay Length (m)	27.0			25.0			50.0			92.0		
Base Capacity (vph)	383	572		411	607		606	2253		327	1783	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.13	0.12		0.09	0.29		0.14	0.35		0.17	0.24	

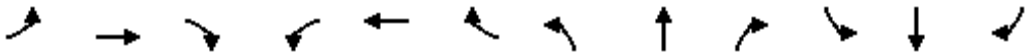
Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 85			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.51			
Intersection Signal Delay: 11.5		Intersection LOS: B	
Intersection Capacity Utilization 76.5%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 5: Longfields Drive & Marketplace Avenue/Clearbrook Drive





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	48	38	72	57	114	112	1024	85	99	610	25
Future Volume (vph)	34	48	38	72	57	114	112	1024	85	99	610	25
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	15.0		0.0	53.0		0.0	56.0		85.0	75.0		0.0
Storage Lanes	1		0	1		0	1		1	2		0
Taper Length (m)	15.0			43.0			23.0			33.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.95	0.95
Ped Bike Factor	1.00	0.98		0.96	0.99		1.00	1.00		1.00	1.00	
Frt		0.934			0.900			0.989			0.994	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1679	1604	0	1679	1528	0	1695	3259	0	3257	3215	0
Flt Permitted	0.545			0.643			0.950			0.950		
Satd. Flow (perm)	960	1604	0	1093	1528	0	1693	3259	0	3245	3215	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		31			79			9			4	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		171.9			132.7			399.2			202.6	
Travel Time (s)		12.4			9.6			24.0			12.2	
Confl. Peds. (#/hr)	3		33	33		3	1		7	7		1
Confl. Bikes (#/hr)			3			1			1			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 (%)	3%	2%	5%	3%	2%	8%	2%	5%	2%	3%	7%	2%
Adj. Flow (vph)	34	48	38	72	57	114	112	1024	85	99	610	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	34	86	0	72	171	0	112	1109	0	99	635	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			7.4			7.4	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												



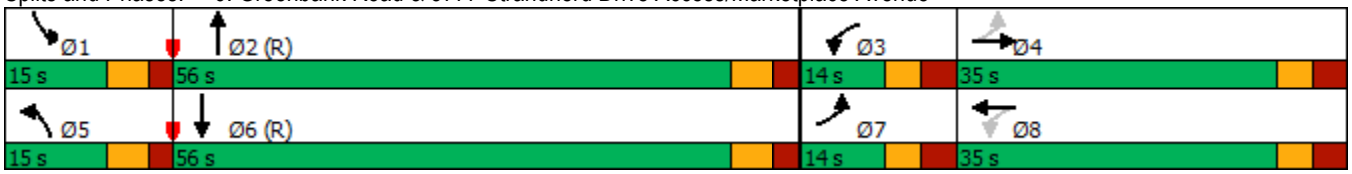
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.5	34.5		11.5	34.5		10.9	31.2		10.9	31.2	
Total Split (s)	14.0	35.0		14.0	35.0		15.0	56.0		15.0	56.0	
Total Split (%)	11.7%	29.2%		11.7%	29.2%		12.5%	46.7%		12.5%	46.7%	
Maximum Green (s)	7.5	28.5		7.5	28.5		9.1	49.8		9.1	49.8	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2		2.2	2.5		2.2	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5		5.9	6.2		5.9	6.2	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		21.0			21.0			18.0			18.0	
Pedestrian Calls (#/hr)		10			10			10			10	
Act Effct Green (s)	21.2	15.4		22.7	18.2		12.8	66.2		8.6	62.0	
Actuated g/C Ratio	0.18	0.13		0.19	0.15		0.11	0.55		0.07	0.52	
v/c Ratio	0.16	0.37		0.30	0.57		0.62	0.62		0.42	0.38	
Control Delay	33.9	33.8		37.4	32.0		77.3	10.0		58.7	20.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	33.9	33.8		37.4	32.0		77.3	10.0		58.7	20.2	
LOS	C	C		D	C		E	B		E	C	
Approach Delay		33.8			33.6			16.2			25.4	
Approach LOS		C			C			B			C	
90th %ile Green (s)	7.5	28.0		7.5	28.0		9.6	49.8		9.6	49.8	
90th %ile Term Code	Max	Ped		Max	Ped		Max	Coord		Max	Coord	
70th %ile Green (s)	7.5	16.1		7.5	16.1		16.2	61.3		10.0	55.1	
70th %ile Term Code	Max	Hold		Max	Gap		Gap	Coord		Gap	Coord	
50th %ile Green (s)	7.4	12.9		7.5	13.0		14.9	65.5		9.0	59.6	
50th %ile Term Code	Gap	Hold		Max	Gap		Gap	Coord		Gap	Coord	
30th %ile Green (s)	0.0	10.0		7.5	24.0		13.1	69.4		8.0	64.3	
30th %ile Term Code	Skip	Min		Max	Hold		Gap	Coord		Gap	Coord	
10th %ile Green (s)	0.0	10.0		0.0	10.0		10.1	84.9		6.5	81.3	
10th %ile Term Code	Skip	Hold		Skip	Min		Gap	Coord		Gap	Coord	
Queue Length 50th (m)	6.4	12.2		13.8	21.0		23.6	93.1		11.6	47.4	
Queue Length 95th (m)	12.5	24.1		22.0	38.4		#59.5	39.8		20.3	72.5	
Internal Link Dist (m)		147.9			108.7			375.2			178.6	
Turn Bay Length (m)	15.0			53.0			56.0			75.0		
Base Capacity (vph)	215	404		243	423		180	1801		254	1663	
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	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.16	0.21		0.30	0.40		0.62	0.62		0.39	0.38	

Intersection Summary		
Area Type:	Other	
Cycle Length: 120		
Actuated Cycle Length: 120		
Offset: 87 (73%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 90		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.62		
Intersection Signal Delay: 21.8	Intersection LOS: C	
Intersection Capacity Utilization 80.4%	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: 6: Greenbank Road & 3777 Strandherd Drive Access/Marketplace Avenue

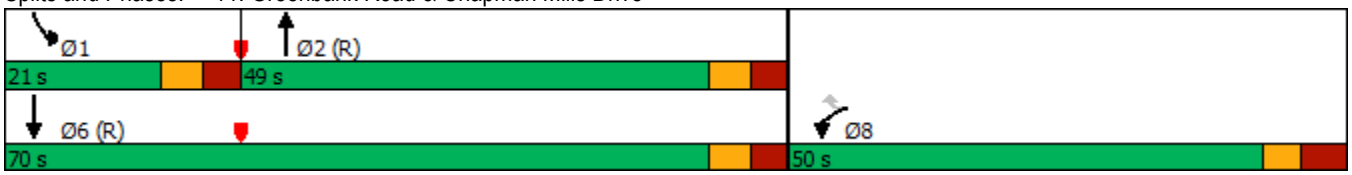


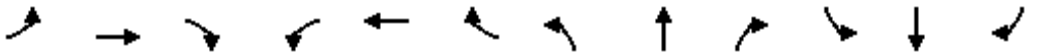
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	79	347	843	108	115	436
Future Volume (vph)	79	347	843	108	115	436
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	66.0	0.0		0.0	65.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	47.0				48.0	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Ped Bike Factor	1.00	0.98	0.99		0.99	
Frt		0.850	0.983			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1441	1517	3223	0	1679	3262
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1438	1484	3223	0	1666	3262
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		299	13			
Link Speed (k/h)	50		50			50
Link Distance (m)	360.0		362.5			399.2
Travel Time (s)	25.9		26.1			28.7
Confl. Peds. (#/hr)	2	1		18	18	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Heavy Vehicles (%)	20%	2%	5%	4%	3%	6%
Adj. Flow (vph)	79	347	843	108	115	436
Shared Lane Traffic (%)						
Lane Group Flow (vph)	79	347	951	0	115	436
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	13.5		3.7			8.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24	14		14	24	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (m)	2.0	2.0	10.0		2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	2.0	0.6		2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Turn Type	Prot	Perm	NA		Prot	NA
Protected Phases	8		2		1	6
Permitted Phases		8				
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0		5.0	10.0
Minimum Split (s)	49.6	49.6	45.1		12.1	45.1
Total Split (s)	50.0	50.0	49.0		21.0	70.0
Total Split (%)	41.7%	41.7%	40.8%		17.5%	58.3%
Maximum Green (s)	42.4	42.4	41.9		13.9	62.9
Yellow Time (s)	3.3	3.3	3.7		3.7	3.7
All-Red Time (s)	4.3	4.3	3.4		3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.6	7.6	7.1		7.1	7.1
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	C-Max		None	C-Max
Walk Time (s)	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	35.0	35.0	31.0			31.0
Pedestrian Calls (#/hr)	10	10	10			10
Act Effct Green (s)	23.2	23.2	62.7		12.3	82.1
Actuated g/C Ratio	0.19	0.19	0.52		0.10	0.68
v/c Ratio	0.28	0.66	0.56		0.67	0.20
Control Delay	39.3	12.4	24.8		62.2	21.9
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	39.3	12.4	24.8		62.2	21.9
LOS	D	B	C		E	C
Approach Delay	17.4		24.8			30.3
Approach LOS	B		C			C
90th %ile Green (s)	42.0	42.0	41.9		14.3	63.3
90th %ile Term Code	Ped	Ped	Coord		Max	Coord
70th %ile Green (s)	42.0	42.0	41.9		14.3	63.3
70th %ile Term Code	Ped	Ped	Coord		Max	Coord
50th %ile Green (s)	12.0	12.0	72.7		13.5	93.3
50th %ile Term Code	Gap	Gap	Coord		Gap	Coord
30th %ile Green (s)	10.0	10.0	76.9		11.3	95.3
30th %ile Term Code	Min	Min	Coord		Gap	Coord
10th %ile Green (s)	10.0	10.0	80.0		8.2	95.3
10th %ile Term Code	Min	Min	Coord		Gap	Coord
Queue Length 50th (m)	18.0	10.7	61.0		26.7	24.4
Queue Length 95th (m)	24.1	31.0	133.2		47.7	69.2
Internal Link Dist (m)	336.0		338.5			375.2
Turn Bay Length (m)	66.0				65.0	
Base Capacity (vph)	509	717	1689		196	2231
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	0.16	0.48	0.56		0.59	0.20

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 71 (59%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 24.7		Intersection LOS: C	
Intersection Capacity Utilization 67.1%		ICU Level of Service C	
Analysis Period (min) 15			

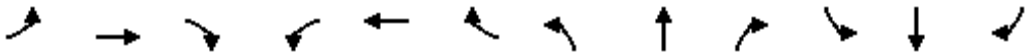
Splits and Phases: 11: Greenbank Road & Chapman Mills Drive





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	183	21	11	332	13	46	0	25	11	0	47
Future Volume (vph)	19	183	21	11	332	13	46	0	25	11	0	47
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	35.0		0.0	36.0		0.0	32.0		0.0	38.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	72.0			42.0			2.5			40.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.985			0.994			0.850			0.850	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	1758	0	1695	1774	0	1695	1517	0	1695	1517	0
Flt Permitted	0.950			0.950			0.726			0.741		
Satd. Flow (perm)	1695	1758	0	1695	1774	0	1295	1517	0	1322	1517	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			3			607			406	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		360.0			391.0			215.1			181.2	
Travel Time (s)		25.9			28.2			15.5			13.0	
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
Adj. Flow (vph)	19	183	21	11	332	13	46	0	25	11	0	47
Shared Lane Traffic (%)												
Lane Group Flow (vph)	19	204	0	11	345	0	46	25	0	11	47	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		13.5			13.5			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		

Chapman Mills Drive/Riocan Avenue
Total2035 AM Peak

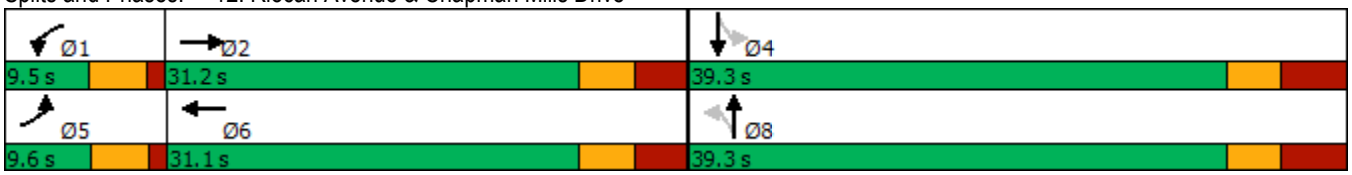


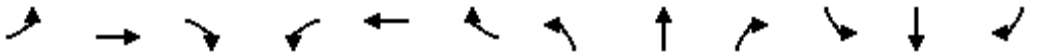
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	9.5	26.5		9.5	26.5		39.3	39.3		39.3	39.3	
Total Split (s)	9.6	31.2		9.5	31.1		39.3	39.3		39.3	39.3	
Total Split (%)	12.0%	39.0%		11.9%	38.9%		49.1%	49.1%		49.1%	49.1%	
Maximum Green (s)	5.1	24.7		5.0	24.6		32.0	32.0		32.0	32.0	
Yellow Time (s)	3.5	3.3		3.5	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.0	3.2		1.0	3.2		4.0	4.0		4.0	4.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	6.5		4.5	6.5		7.3	7.3		7.3	7.3	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		13.0			13.0		25.0	25.0		25.0	25.0	
Pedestrian Calls (#/hr)		10			10		10	10		10	10	
Act Effct Green (s)	5.2	19.3		5.1	17.6		32.6	32.6		32.6	32.6	
Actuated g/C Ratio	0.08	0.29		0.08	0.26		0.48	0.48		0.48	0.48	
v/c Ratio	0.15	0.40		0.09	0.75		0.07	0.02		0.02	0.05	
Control Delay	36.4	21.2		35.5	33.8		13.3	0.0		13.5	0.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	36.4	21.2		35.5	33.8		13.3	0.0		13.5	0.1	
LOS	D	C		D	C		B	A		B	A	
Approach Delay		22.5			33.8			8.6			2.6	
Approach LOS		C			C			A			A	
90th %ile Green (s)	5.1	24.7		5.0	24.6		32.0	32.0		32.0	32.0	
90th %ile Term Code	Max	Hold		Max	Max		MaxR	MaxR		MaxR	MaxR	
70th %ile Green (s)	5.1	32.3		0.0	22.7		32.0	32.0		32.0	32.0	
70th %ile Term Code	Max	Hold		Skip	Gap		MaxR	MaxR		MaxR	MaxR	
50th %ile Green (s)	0.0	17.0		0.0	17.0		32.0	32.0		32.0	32.0	
50th %ile Term Code	Skip	Hold		Skip	Gap		MaxR	MaxR		MaxR	MaxR	
30th %ile Green (s)	0.0	14.4		0.0	14.4		32.0	32.0		32.0	32.0	
30th %ile Term Code	Skip	Hold		Skip	Gap		MaxR	MaxR		MaxR	MaxR	
10th %ile Green (s)	0.0	11.0		0.0	11.0		32.0	32.0		32.0	32.0	
10th %ile Term Code	Skip	Hold		Skip	Gap		MaxR	MaxR		MaxR	MaxR	
Queue Length 50th (m)	2.1	18.7		1.2	35.7		2.5	0.0		0.6	0.0	
Queue Length 95th (m)	9.1	40.7		6.4	71.2		10.6	0.0		4.0	0.0	
Internal Link Dist (m)		336.0			367.0			191.1			157.2	
Turn Bay Length (m)	35.0			36.0			32.0			38.0		
Base Capacity (vph)	130	693		127	660		625	1046		638	942	
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	0.29		0.09	0.52		0.07	0.02		0.02	0.05	

Intersection Summary	
Area Type:	Other

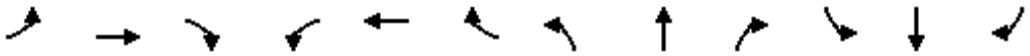
Cycle Length: 80	
Actuated Cycle Length: 67.6	
Natural Cycle: 80	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 25.2	Intersection LOS: C
Intersection Capacity Utilization 40.1%	ICU Level of Service A
Analysis Period (min) 15	
90th %ile Actuated Cycle: 80	
70th %ile Actuated Cycle: 78.1	
50th %ile Actuated Cycle: 62.8	
30th %ile Actuated Cycle: 60.2	
10th %ile Actuated Cycle: 56.8	

Splits and Phases: 12: Riocan Avenue & Chapman Mills Drive





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	22	11	369	65	10	104	233	583	54	162	726	48
Future Volume (vph)	22	11	369	65	10	104	233	583	54	162	726	48
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	38.0		45.0	32.0		32.0	60.0		54.0	65.0		60.0
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (m)	41.0			37.0			65.0			70.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Ped Bike Factor	0.99		0.98	0.99		0.98	0.99		0.97	1.00		0.95
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	1784	1517	1695	1784	1502	1695	3357	1517	1695	3390	1517
Flt Permitted	0.950			0.950			0.325			0.404		
Satd. Flow (perm)	1687	1784	1485	1682	1784	1476	576	3357	1468	718	3390	1439
Right Turn on Red			Yes			Yes			No			Yes
Satd. Flow (RTOR)			133			133						136
Link Speed (k/h)		50			50			60			50	
Link Distance (m)		391.0			173.1			287.5			422.9	
Travel Time (s)		28.2			12.5			17.3			30.4	
Confl. Peds. (#/hr)	5		8	8		5	17		7	7		17
Confl. Bikes (#/hr)			1						3			10
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%	2%	2%	2%	2%	3%	2%	3%	2%	2%	2%	2%
Adj. Flow (vph)	22	11	369	65	10	104	233	583	54	162	726	48
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	11	369	65	10	104	233	583	54	162	726	48
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		13.5			13.5			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2	1	1	2	1	1	2	1	1	2	1
Detector Template	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Leading Detector (m)	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1	6.1	30.5	6.1
Trailing Detector (m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Size(m)	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1	6.1	1.8	6.1
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

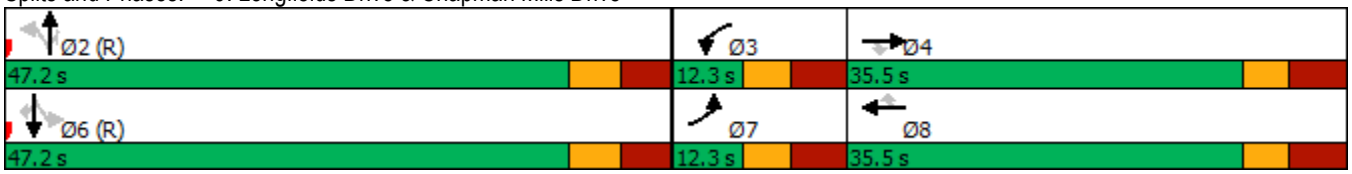


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases			4			8	2		2	6		6
Detector Phase	7	4	4	3	8	8	2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	12.3	35.5	35.5	12.3	35.5	35.5	42.3	42.3	42.3	42.3	42.3	42.3
Total Split (s)	12.3	35.5	35.5	12.3	35.5	35.5	47.2	47.2	47.2	47.2	47.2	47.2
Total Split (%)	12.9%	37.4%	37.4%	12.9%	37.4%	37.4%	49.7%	49.7%	49.7%	49.7%	49.7%	49.7%
Maximum Green (s)	5.0	28.0	28.0	5.0	28.0	28.0	39.9	39.9	39.9	39.9	39.9	39.9
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.7	3.7	3.7	3.7	3.7	3.7
All-Red Time (s)	4.0	4.2	4.2	4.0	4.2	4.2	3.6	3.6	3.6	3.6	3.6	3.6
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	7.3	7.5	7.5	7.3	7.5	7.5	7.3	7.3	7.3	7.3	7.3	7.3
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		21.0	21.0		21.0	21.0	28.0	28.0	28.0	28.0	28.0	28.0
Pedestrian Calls (#/hr)		10	10		10	10	10	10	10	10	10	10
Act Effct Green (s)	5.0	20.9	20.9	5.0	25.8	25.8	49.5	49.5	49.5	49.5	49.5	49.5
Actuated g/C Ratio	0.05	0.22	0.22	0.05	0.27	0.27	0.52	0.52	0.52	0.52	0.52	0.52
v/c Ratio	0.25	0.03	0.86	0.73	0.02	0.21	0.78	0.33	0.07	0.43	0.41	0.06
Control Delay	50.2	25.4	41.2	87.6	23.9	3.6	43.6	15.9	15.4	22.4	16.8	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.2	25.4	41.2	87.6	23.9	3.6	43.6	15.9	15.4	22.4	16.8	0.1
LOS	D	C	D	F	C	A	D	B	B	C	B	A
Approach Delay		41.3			35.2			23.3			16.9	
Approach LOS		D			D			C			B	
90th %ile Green (s)	5.0	28.0	28.0	5.0	28.0	28.0	39.9	39.9	39.9	39.9	39.9	39.9
90th %ile Term Code	Max	Max	Max	Max	Ped	Ped	Coord	Coord	Coord	Coord	Coord	Coord
70th %ile Green (s)	5.0	25.9	25.9	5.0	25.9	25.9	42.0	42.0	42.0	42.0	42.0	42.0
70th %ile Term Code	Max	Gap	Gap	Max	Hold	Hold	Coord	Coord	Coord	Coord	Coord	Coord
50th %ile Green (s)	0.0	21.8	21.8	5.0	34.1	34.1	46.1	46.1	46.1	46.1	46.1	46.1
50th %ile Term Code	Skip	Gap	Gap	Max	Hold	Hold	Coord	Coord	Coord	Coord	Coord	Coord
30th %ile Green (s)	0.0	17.5	17.5	5.0	29.8	29.8	50.4	50.4	50.4	50.4	50.4	50.4
30th %ile Term Code	Skip	Gap	Gap	Max	Hold	Hold	Coord	Coord	Coord	Coord	Coord	Coord
10th %ile Green (s)	0.0	11.2	11.2	0.0	11.2	11.2	69.0	69.0	69.0	69.0	69.0	69.0
10th %ile Term Code	Skip	Gap	Gap	Skip	Hold	Hold	Coord	Coord	Coord	Coord	Coord	Coord
Queue Length 50th (m)	4.0	1.6	42.4	12.0	1.2	0.0	35.5	33.6	5.1	19.0	44.1	0.0
Queue Length 95th (m)	11.4	5.4	70.9	#33.6	5.0	7.1	#87.7	52.2	12.9	42.8	66.7	0.0
Internal Link Dist (m)		367.0			149.1			263.5			398.9	
Turn Bay Length (m)	38.0		45.0	32.0		32.0	60.0		54.0	65.0		60.0
Base Capacity (vph)	89	525	531	89	555	551	299	1748	764	373	1765	814
Starvation Cap Reductn	0	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	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0

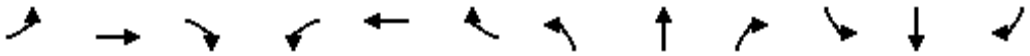
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.25	0.02	0.69	0.73	0.02	0.19	0.78	0.33	0.07	0.43	0.41	0.06

Intersection Summary			
Area Type:	Other		
Cycle Length: 95			
Actuated Cycle Length: 95			
Offset: 33 (35%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.86			
Intersection Signal Delay: 24.7		Intersection LOS: C	
Intersection Capacity Utilization 76.7%		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: 9: Longfields Drive & Chapman Mills Drive



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	135	47	170	15	54	58	148	468	20	81	545	196
Future Volume (vph)	135	47	170	15	54	58	148	468	20	81	545	196
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	27.0		0.0	25.0		0.0	50.0		0.0	92.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	24.0			3.0			84.0			40.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	0.95	0.95
Ped Bike Factor	0.99	0.97		0.99	0.99		1.00	1.00		0.99	0.99	
Frt		0.882			0.922			0.994			0.960	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1662	1519	0	1695	1620	0	1679	3365	0	1695	3230	0
Flt Permitted	0.685			0.534			0.277			0.474		
Satd. Flow (perm)	1191	1519	0	939	1620	0	489	3365	0	839	3230	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		170			58			7			61	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		185.4			199.4			422.9			208.9	
Travel Time (s)		13.3			14.4			30.4			15.0	
Confl. Peds. (#/hr)	10		25	25		10	3		7	7		3
Confl. Bikes (#/hr)			6			1			3			2
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 (%)	4%	2%	3%	2%	2%	3%	3%	2%	2%	2%	2%	2%
Adj. Flow (vph)	135	47	170	15	54	58	148	468	20	81	545	196
Shared Lane Traffic (%)												
Lane Group Flow (vph)	135	217	0	15	112	0	148	488	0	81	741	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												

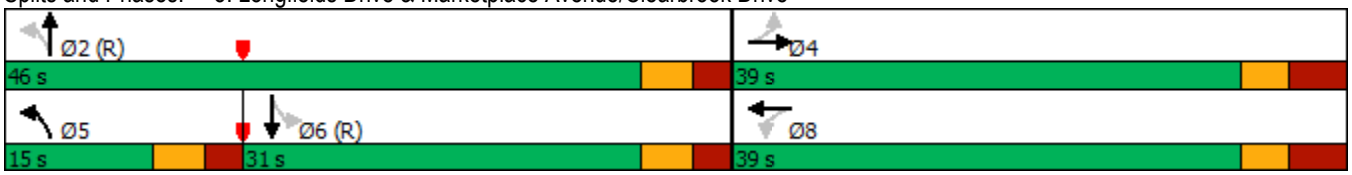


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		pm+pt	NA		Perm	NA	
Protected Phases		4			8		5	2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	10.0		10.0	10.0	
Minimum Split (s)	38.8	38.8		38.8	38.8		10.6	25.8		25.8	25.8	
Total Split (s)	39.0	39.0		39.0	39.0		15.0	46.0		31.0	31.0	
Total Split (%)	45.9%	45.9%		45.9%	45.9%		17.6%	54.1%		36.5%	36.5%	
Maximum Green (s)	32.2	32.2		32.2	32.2		9.4	40.2		25.2	25.2	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.3	3.3		3.3	3.3	
All-Red Time (s)	3.8	3.8		3.8	3.8		2.3	2.5		2.5	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.8	6.8		6.8	6.8		5.6	5.8		5.8	5.8	
Lead/Lag							Lead			Lag	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		C-Max	C-Max	
Walk Time (s)	7.0	7.0		7.0	7.0			7.0		7.0	7.0	
Flash Dont Walk (s)	25.0	25.0		25.0	25.0			13.0		13.0	13.0	
Pedestrian Calls (#/hr)	10	10		10	10			10		10	10	
Act Effct Green (s)	17.4	17.4		17.4	17.4		55.2	55.0		41.3	41.3	
Actuated g/C Ratio	0.20	0.20		0.20	0.20		0.65	0.65		0.49	0.49	
v/c Ratio	0.55	0.49		0.08	0.30		0.34	0.22		0.20	0.46	
Control Delay	37.1	10.6		23.4	15.0		10.0	7.8		18.3	16.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	37.1	10.6		23.4	15.0		10.0	7.8		18.3	16.4	
LOS	D	B		C	B		B	A		B	B	
Approach Delay		20.7			16.0			8.3			16.6	
Approach LOS		C			B			A			B	
90th %ile Green (s)	32.0	32.0		32.0	32.0		9.6	40.4		25.2	25.2	
90th %ile Term Code	Ped	Ped		Ped	Ped		Max	Coord		Coord	Coord	
70th %ile Green (s)	17.9	17.9		17.9	17.9		9.3	54.5		39.6	39.6	
70th %ile Term Code	Gap	Gap		Hold	Hold		Gap	Coord		Coord	Coord	
50th %ile Green (s)	15.0	15.0		15.0	15.0		8.1	57.4		43.7	43.7	
50th %ile Term Code	Gap	Gap		Hold	Hold		Gap	Coord		Coord	Coord	
30th %ile Green (s)	12.2	12.2		12.2	12.2		7.1	60.2		47.5	47.5	
30th %ile Term Code	Gap	Gap		Hold	Hold		Gap	Coord		Coord	Coord	
10th %ile Green (s)	10.0	10.0		10.0	10.0		6.1	62.4		50.7	50.7	
10th %ile Term Code	Min	Min		Hold	Hold		Gap	Coord		Coord	Coord	
Queue Length 50th (m)	20.6	6.6		2.1	7.6		7.3	13.4		6.7	34.0	
Queue Length 95th (m)	28.8	18.7		5.2	15.8		23.8	34.3		22.3	72.2	
Internal Link Dist (m)		161.4			175.4			398.9			184.9	
Turn Bay Length (m)	27.0			25.0			50.0			92.0		
Base Capacity (vph)	451	681		355	649		449	2179		407	1602	
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	

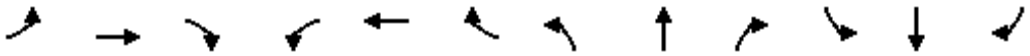
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Reduced v/c Ratio	0.30	0.32		0.04	0.17		0.33	0.22		0.20	0.46	

Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 85			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay: 14.6		Intersection LOS: B	
Intersection Capacity Utilization 68.2%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 5: Longfields Drive & Marketplace Avenue/Clearbrook Drive



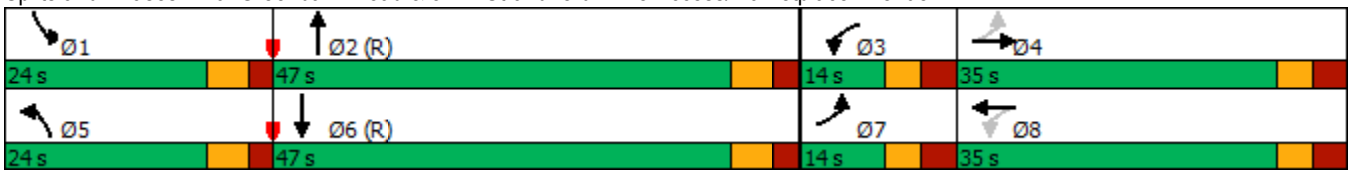
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	71	109	91	185	126	188	172	914	107	189	1207	25
Future Volume (vph)	71	109	91	185	126	188	172	914	107	189	1207	25
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	15.0		0.0	53.0		0.0	56.0		85.0	75.0		0.0
Storage Lanes	1		0	1		0	1		1	2		0
Taper Length (m)	15.0			43.0			23.0			33.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.97	0.95	0.95
Ped Bike Factor	0.99	0.95		0.94	0.98		0.99	1.00		0.99	1.00	
Frt		0.932			0.910			0.984			0.997	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	1587	0	1695	1584	0	1695	3324	0	3288	3377	0
Flt Permitted	0.289			0.461			0.950			0.950		
Satd. Flow (perm)	509	1587	0	775	1584	0	1686	3324	0	3258	3377	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		33			59			11			2	
Link Speed (k/h)		50			50			60			60	
Link Distance (m)		171.9			132.7			399.2			202.6	
Travel Time (s)		12.4			9.6			24.0			12.2	
Confl. Peds. (#/hr)	20		65	65		20	12		16	16		12
Confl. Bikes (#/hr)			8			4			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
Adj. Flow (vph)	71	109	91	185	126	188	172	914	107	189	1207	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	71	200	0	185	314	0	172	1021	0	189	1232	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		3.7			3.7			7.4			7.4	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	24		14	24		14	24		14	24		14
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	6.1	30.5		6.1	30.5		6.1	30.5		6.1	30.5	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	6.1	1.8		6.1	1.8		6.1	1.8		6.1	1.8	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		28.7			28.7			28.7			28.7	
Detector 2 Size(m)		1.8			1.8			1.8			1.8	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Type	pm+pt	NA		pm+pt	NA		Prot	NA		Prot	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	7	4		3	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	11.5	34.5		11.5	34.5		10.9	31.2		10.9	31.2	
Total Split (s)	14.0	35.0		14.0	35.0		24.0	47.0		24.0	47.0	
Total Split (%)	11.7%	29.2%		11.7%	29.2%		20.0%	39.2%		20.0%	39.2%	
Maximum Green (s)	7.5	28.5		7.5	28.5		18.1	40.8		18.1	40.8	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.7	3.7		3.7	3.7	
All-Red Time (s)	3.2	3.2		3.2	3.2		2.2	2.5		2.2	2.5	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	6.5	6.5		6.5	6.5		5.9	6.2		5.9	6.2	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	C-Max		None	C-Max	
Walk Time (s)		7.0			7.0			7.0			7.0	
Flash Dont Walk (s)		21.0			21.0			18.0			18.0	
Pedestrian Calls (#/hr)		10			10			10			10	
Act Effct Green (s)	30.2	22.9		31.7	25.7		16.0	52.3		12.2	48.5	
Actuated g/C Ratio	0.25	0.19		0.26	0.21		0.13	0.44		0.10	0.40	
v/c Ratio	0.36	0.61		0.71	0.81		0.76	0.70		0.57	0.90	
Control Delay	33.2	43.6		49.0	53.4		80.0	23.7		57.7	45.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	33.2	43.6		49.0	53.4		80.0	23.7		57.7	45.4	
LOS	C	D		D	D		F	C		E	D	
Approach Delay		40.9			51.8			31.9			47.0	
Approach LOS		D			D			C			D	
90th %ile Green (s)	7.5	28.5		7.5	28.5		18.1	43.2		15.7	40.8	
90th %ile Term Code	Max	Hold		Max	Max		Max	Coord		Gap	Coord	
70th %ile Green (s)	7.5	28.5		7.5	28.5		18.1	45.3		13.6	40.8	
70th %ile Term Code	Max	Hold		Max	Max		Max	Coord		Gap	Coord	
50th %ile Green (s)	7.5	25.5		7.5	25.5		17.5	49.7		12.2	44.4	
50th %ile Term Code	Max	Hold		Max	Gap		Gap	Coord		Gap	Coord	
30th %ile Green (s)	7.5	21.6		7.5	21.6		14.9	55.0		10.8	50.9	
30th %ile Term Code	Max	Hold		Max	Gap		Gap	Coord		Gap	Coord	
10th %ile Green (s)	0.0	10.6		7.5	24.6		11.2	68.1		8.7	65.6	
10th %ile Term Code	Skip	Gap		Max	Hold		Gap	Coord		Gap	Coord	
Queue Length 50th (m)	11.7	35.2		32.7	58.5		29.9	115.3		22.2	149.7	
Queue Length 95th (m)	21.6	57.3		50.0	#92.0		#57.1	141.8		32.9	#211.8	
Internal Link Dist (m)		147.9			108.7			375.2			178.6	
Turn Bay Length (m)	15.0			53.0			56.0			75.0		
Base Capacity (vph)	203	402		262	421		255	1453		495	1366	
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	0.50		0.71	0.75		0.67	0.70		0.38	0.90	

Intersection Summary		
Area Type:	Other	
Cycle Length: 120		
Actuated Cycle Length: 120		
Offset: 117 (98%), Referenced to phase 2:NBT and 6:SBT, Start of Green		
Natural Cycle: 110		
Control Type: Actuated-Coordinated		
Maximum v/c Ratio: 0.90		
Intersection Signal Delay: 41.9		Intersection LOS: D
Intersection Capacity Utilization 100.1%		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: 6: Greenbank Road & 3777 Strandherd Drive Access/Marketplace Avenue



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	68	268	536	21	395	725
Future Volume (vph)	68	268	536	21	395	725
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	66.0	0.0		0.0	65.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	47.0				48.0	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Ped Bike Factor			1.00		1.00	
Frt		0.850	0.994			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1695	1517	3367	0	1695	3390
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1695	1517	3367	0	1691	3390
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		268	3			
Link Speed (k/h)	50		50			50
Link Distance (m)	360.0		362.5			399.2
Travel Time (s)	25.9		26.1			28.7
Confl. Peds. (#/hr)				3	3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	68	268	536	21	395	725
Shared Lane Traffic (%)						
Lane Group Flow (vph)	68	268	557	0	395	725
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	13.5		3.7			8.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	97	97		97	97	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (m)	2.0	2.0	10.0		2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	2.0	0.6		2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA		Prot	NA

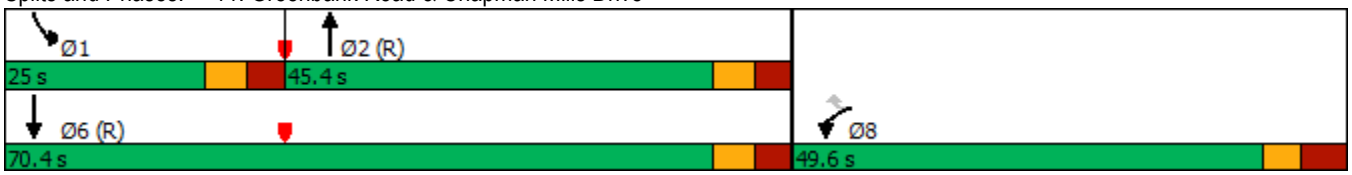
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2		1	6
Permitted Phases		8				
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0		5.0	10.0
Minimum Split (s)	49.6	49.6	45.1		12.1	45.1
Total Split (s)	49.6	49.6	45.4		25.0	70.4
Total Split (%)	41.3%	41.3%	37.8%		20.8%	58.7%
Maximum Green (s)	42.0	42.0	38.3		17.9	63.3
Yellow Time (s)	3.3	3.3	3.7		3.7	3.7
All-Red Time (s)	4.3	4.3	3.4		3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.6	7.6	7.1		7.1	7.1
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	C-Max		None	C-Max
Walk Time (s)	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	35.0	35.0	31.0			31.0
Pedestrian Calls (#/hr)	10	10	10			10
Act Effct Green (s)	22.8	22.8	39.8		35.6	82.5
Actuated g/C Ratio	0.19	0.19	0.33		0.30	0.69
v/c Ratio	0.21	0.53	0.50		0.79	0.31
Control Delay	37.5	7.3	33.9		36.3	10.1
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	37.5	7.3	33.9		36.3	10.1
LOS	D	A	C		D	B
Approach Delay	13.4		33.9			19.3
Approach LOS	B		C			B
90th %ile Green (s)	42.0	42.0	38.3		17.9	63.3
90th %ile Term Code	Ped	Ped	Coord		Max	Coord
70th %ile Green (s)	42.0	42.0	38.3		17.9	63.3
70th %ile Term Code	Ped	Ped	Coord		Max	Coord
50th %ile Green (s)	10.2	10.2	45.6		42.4	95.1
50th %ile Term Code	Gap	Gap	Coord		Gap	Coord
30th %ile Green (s)	10.0	10.0	38.3		49.9	95.3
30th %ile Term Code	Min	Min	Coord		Max	Coord
10th %ile Green (s)	10.0	10.0	38.3		49.9	95.3
10th %ile Term Code	Min	Min	Coord		Max	Coord
Queue Length 50th (m)	15.5	0.0	50.4		20.8	0.1
Queue Length 95th (m)	21.0	17.3	73.0		m#165.0	m89.0
Internal Link Dist (m)	336.0		338.5			375.2
Turn Bay Length (m)	66.0				65.0	
Base Capacity (vph)	593	705	1117		502	2329
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	0.11	0.38	0.50		0.79	0.31

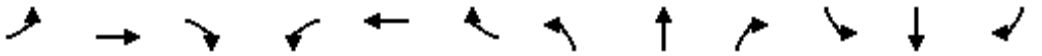
Intersection Summary

Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 80 (67%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 130			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 22.4		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.
m Volume for 95th percentile queue is metered by upstream signal.

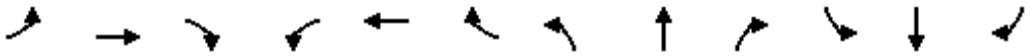
Splits and Phases: 11: Greenbank Road & Chapman Mills Drive





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	348	40	21	251	20	31	0	17	38	0	54
Future Volume (vph)	29	348	40	21	251	20	31	0	17	38	0	54
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Storage Length (m)	35.0		0.0	36.0		0.0	32.0		0.0	38.0		0.0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (m)	72.0			42.0			2.5			40.0		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.985			0.989			0.850			0.850	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1695	1758	0	1695	1765	0	1695	1517	0	1695	1517	0
Flt Permitted	0.950			0.950			0.722			0.746		
Satd. Flow (perm)	1695	1758	0	1695	1765	0	1288	1517	0	1331	1517	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			5			396			493	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		360.0			391.0			215.1			181.2	
Travel Time (s)		25.9			28.2			15.5			13.0	
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
Adj. Flow (vph)	29	348	40	21	251	20	31	0	17	38	0	54
Shared Lane Traffic (%)												
Lane Group Flow (vph)	29	388	0	21	271	0	31	17	0	38	54	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(m)		13.5			13.5			3.7			3.7	
Link Offset(m)		0.0			0.0			0.0			0.0	
Crosswalk Width(m)		1.6			1.6			1.6			1.6	
Two way Left Turn Lane												
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	97		97	97		97	97		97	97		97
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (m)	2.0	10.0		2.0	10.0		2.0	10.0		2.0	10.0	
Trailing Detector (m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Position(m)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Size(m)	2.0	0.6		2.0	0.6		2.0	0.6		2.0	0.6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(m)		9.4			9.4			9.4			9.4	
Detector 2 Size(m)		0.6			0.6			0.6			0.6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA		Perm	NA		Perm	NA	
Protected Phases	5	2		1	6			8			4	
Permitted Phases							8			4		

Chapman Mills Drive/Riocan Avenue
Total2035 PM Peak

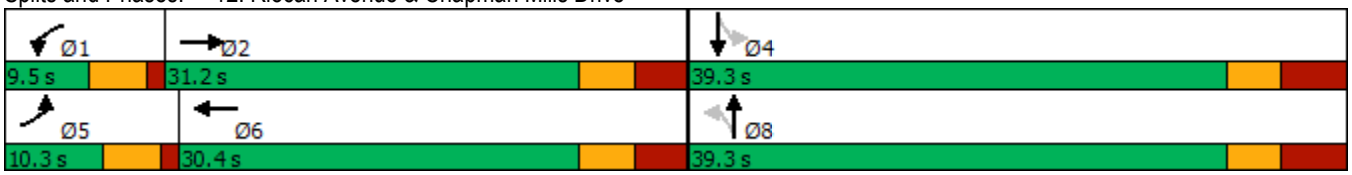


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2		1	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	10.0		5.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	9.5	26.5		9.5	26.5		39.3	39.3		39.3	39.3	
Total Split (s)	10.3	31.2		9.5	30.4		39.3	39.3		39.3	39.3	
Total Split (%)	12.9%	39.0%		11.9%	38.0%		49.1%	49.1%		49.1%	49.1%	
Maximum Green (s)	5.8	24.7		5.0	23.9		32.0	32.0		32.0	32.0	
Yellow Time (s)	3.5	3.3		3.5	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	1.0	3.2		1.0	3.2		4.0	4.0		4.0	4.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	6.5		4.5	6.5		7.3	7.3		7.3	7.3	
Lead/Lag	Lead	Lag		Lead	Lag							
Lead-Lag Optimize?	Yes	Yes		Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		Max	Max		Max	Max	
Walk Time (s)		7.0			7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)		13.0			13.0		25.0	25.0		25.0	25.0	
Pedestrian Calls (#/hr)		10			10		10	10		10	10	
Act Effct Green (s)	5.8	19.0		5.1	18.8		32.6	32.6		32.6	32.6	
Actuated g/C Ratio	0.08	0.28		0.07	0.27		0.47	0.47		0.47	0.47	
v/c Ratio	0.20	0.79		0.17	0.56		0.05	0.02		0.06	0.06	
Control Delay	37.0	35.9		37.5	26.6		13.7	0.1		13.7	0.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	37.0	35.9		37.5	26.6		13.7	0.1		13.7	0.1	
LOS	D	D		D	C		B	A		B	A	
Approach Delay		36.0			27.4			8.9			5.7	
Approach LOS		D			C			A			A	
90th %ile Green (s)	5.8	24.7		5.0	23.9		32.0	32.0		32.0	32.0	
90th %ile Term Code	Max	Max		Max	Hold		MaxR	MaxR		MaxR	MaxR	
70th %ile Green (s)	5.8	24.7		5.0	23.9		32.0	32.0		32.0	32.0	
70th %ile Term Code	Max	Max		Max	Hold		MaxR	MaxR		MaxR	MaxR	
50th %ile Green (s)	0.0	19.0		0.0	19.0		32.0	32.0		32.0	32.0	
50th %ile Term Code	Skip	Gap		Skip	Hold		MaxR	MaxR		MaxR	MaxR	
30th %ile Green (s)	0.0	16.1		0.0	16.1		32.0	32.0		32.0	32.0	
30th %ile Term Code	Skip	Gap		Skip	Hold		MaxR	MaxR		MaxR	MaxR	
10th %ile Green (s)	0.0	12.2		0.0	12.2		32.0	32.0		32.0	32.0	
10th %ile Term Code	Skip	Gap		Skip	Hold		MaxR	MaxR		MaxR	MaxR	
Queue Length 50th (m)	3.3	41.0		2.4	26.3		1.8	0.0		2.2	0.0	
Queue Length 95th (m)	11.9	81.1		9.9	55.4		7.9	0.0		9.1	0.0	
Internal Link Dist (m)		336.0			367.0			191.1			157.2	
Turn Bay Length (m)	35.0			36.0			32.0			38.0		
Base Capacity (vph)	144	645		124	626		608	925		629	976	
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	0.60		0.17	0.43		0.05	0.02		0.06	0.06	

Intersection Summary	
Area Type:	Other

Cycle Length: 80	
Actuated Cycle Length: 68.9	
Natural Cycle: 80	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.79	
Intersection Signal Delay: 28.2	Intersection LOS: C
Intersection Capacity Utilization 45.8%	ICU Level of Service A
Analysis Period (min) 15	
90th %ile Actuated Cycle: 80	
70th %ile Actuated Cycle: 80	
50th %ile Actuated Cycle: 64.8	
30th %ile Actuated Cycle: 61.9	
10th %ile Actuated Cycle: 58	

Splits and Phases: 12: Riocan Avenue & Chapman Mills Drive



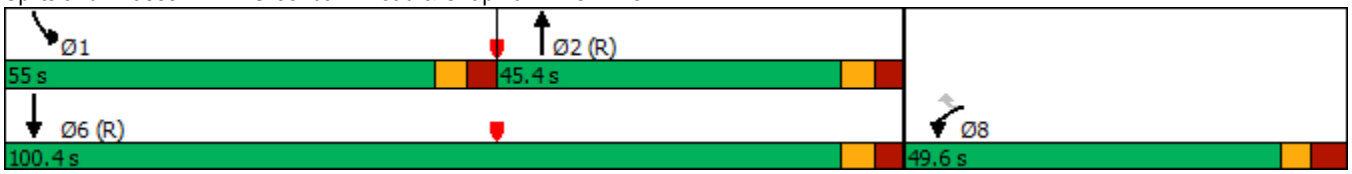
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	68	268	536	21	395	725
Future Volume (vph)	68	268	536	21	395	725
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	66.0	0.0		0.0	65.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	47.0				48.0	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Ped Bike Factor			1.00		1.00	
Frt		0.850	0.994			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1695	1517	3367	0	1695	3390
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1695	1517	3367	0	1690	3390
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		268	2			
Link Speed (k/h)	50		50			50
Link Distance (m)	360.0		362.5			399.2
Travel Time (s)	25.9		26.1			28.7
Confl. Peds. (#/hr)				3	3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	68	268	536	21	395	725
Shared Lane Traffic (%)						
Lane Group Flow (vph)	68	268	557	0	395	725
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	13.5		3.7			8.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	97	97		97	97	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (m)	2.0	2.0	10.0		2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	2.0	0.6		2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA		Prot	NA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2		1	6
Permitted Phases		8				
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0		5.0	10.0
Minimum Split (s)	49.6	49.6	45.1		12.1	45.1
Total Split (s)	49.6	49.6	45.4		55.0	100.4
Total Split (%)	33.1%	33.1%	30.3%		36.7%	66.9%
Maximum Green (s)	42.0	42.0	38.3		47.9	93.3
Yellow Time (s)	3.3	3.3	3.7		3.7	3.7
All-Red Time (s)	4.3	4.3	3.4		3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.6	7.6	7.1		7.1	7.1
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	C-Max		None	C-Max
Walk Time (s)	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	35.0	35.0	31.0			31.0
Pedestrian Calls (#/hr)	10	10	10			10
Act Effct Green (s)	23.1	23.1	65.4		39.7	112.2
Actuated g/C Ratio	0.15	0.15	0.44		0.26	0.75
v/c Ratio	0.26	0.58	0.38		0.88	0.29
Control Delay	53.6	9.8	34.2		73.5	8.3
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	53.6	9.8	34.2		73.5	8.3
LOS	D	A	C		E	A
Approach Delay	18.7		34.2			31.3
Approach LOS	B		C			C
90th %ile Green (s)	42.0	42.0	38.3		47.9	93.3
90th %ile Term Code	Ped	Ped	Coord		Max	Coord
70th %ile Green (s)	42.0	42.0	41.6		44.6	93.3
70th %ile Term Code	Ped	Ped	Coord		Gap	Coord
50th %ile Green (s)	11.4	11.4	76.3		40.5	123.9
50th %ile Term Code	Gap	Gap	Coord		Gap	Coord
30th %ile Green (s)	10.0	10.0	82.1		36.1	125.3
30th %ile Term Code	Min	Min	Coord		Gap	Coord
10th %ile Green (s)	10.0	10.0	88.6		29.6	125.3
10th %ile Term Code	Min	Min	Coord		Gap	Coord
Queue Length 50th (m)	19.8	0.0	50.0		112.5	20.6
Queue Length 95th (m)	28.1	21.5	98.2		143.9	63.7
Internal Link Dist (m)	336.0		338.5			375.2
Turn Bay Length (m)	66.0				65.0	
Base Capacity (vph)	474	617	1468		541	2536
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	0.14	0.43	0.38		0.73	0.29

Intersection Summary

Area Type:	Other		
Cycle Length: 150			
Actuated Cycle Length: 150			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 130			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 30.0		Intersection LOS: C	
Intersection Capacity Utilization 81.3%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 11: Greenbank Road & Chapman Mills Drive



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	68	268	536	21	395	725
Future Volume (vph)	68	268	536	21	395	725
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	66.0	0.0		0.0	65.0	
Storage Lanes	1	1		0	2	
Taper Length (m)	47.0				48.0	
Lane Util. Factor	1.00	1.00	0.95	0.95	0.97	0.95
Ped Bike Factor			1.00		1.00	
Frt		0.850	0.994			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1695	1517	3367	0	3288	3390
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1695	1517	3367	0	3281	3390
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		268	3			
Link Speed (k/h)	50		50			50
Link Distance (m)	360.0		362.5			399.2
Travel Time (s)	25.9		26.1			28.7
Confl. Peds. (#/hr)				3	3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	68	268	536	21	395	725
Shared Lane Traffic (%)						
Lane Group Flow (vph)	68	268	557	0	395	725
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	13.5		7.4			8.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	97	97		97	97	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (m)	2.0	2.0	10.0		2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	2.0	0.6		2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA		Prot	NA

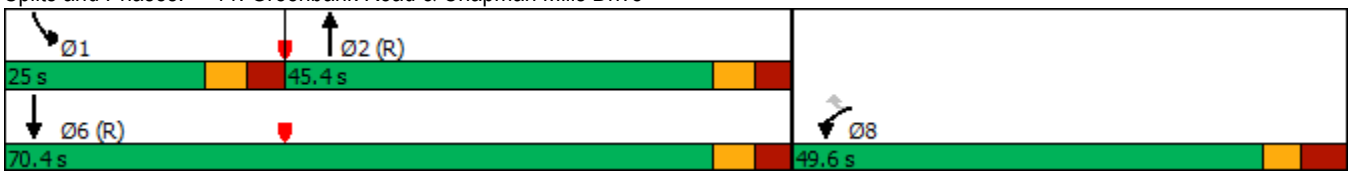
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2		1	6
Permitted Phases		8				
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0		5.0	10.0
Minimum Split (s)	49.6	49.6	45.1		12.1	45.1
Total Split (s)	49.6	49.6	45.4		25.0	70.4
Total Split (%)	41.3%	41.3%	37.8%		20.8%	58.7%
Maximum Green (s)	42.0	42.0	38.3		17.9	63.3
Yellow Time (s)	3.3	3.3	3.7		3.7	3.7
All-Red Time (s)	4.3	4.3	3.4		3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.6	7.6	7.1		7.1	7.1
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	C-Max		None	C-Max
Walk Time (s)	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	35.0	35.0	31.0			31.0
Pedestrian Calls (#/hr)	10	10	10			10
Act Effct Green (s)	22.8	22.8	57.6		17.7	82.5
Actuated g/C Ratio	0.19	0.19	0.48		0.15	0.69
v/c Ratio	0.21	0.53	0.34		0.81	0.31
Control Delay	37.5	7.3	23.5		46.2	10.1
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	37.5	7.3	23.5		46.2	10.1
LOS	D	A	C		D	B
Approach Delay	13.4		23.5			22.8
Approach LOS	B		C			C
90th %ile Green (s)	42.0	42.0	38.3		17.9	63.3
90th %ile Term Code	Ped	Ped	Coord		Max	Coord
70th %ile Green (s)	42.0	42.0	38.3		17.9	63.3
70th %ile Term Code	Ped	Ped	Coord		Max	Coord
50th %ile Green (s)	10.2	10.2	68.1		19.9	95.1
50th %ile Term Code	Gap	Gap	Coord		Gap	Coord
30th %ile Green (s)	10.0	10.0	70.3		17.9	95.3
30th %ile Term Code	Min	Min	Coord		Gap	Coord
10th %ile Green (s)	10.0	10.0	73.2		15.0	95.3
10th %ile Term Code	Min	Min	Coord		Gap	Coord
Queue Length 50th (m)	15.5	0.0	33.8		36.5	0.1
Queue Length 95th (m)	21.0	17.3	73.0		m57.1	m89.0
Internal Link Dist (m)	336.0		338.5			375.2
Turn Bay Length (m)	66.0				65.0	
Base Capacity (vph)	593	705	1618		501	2329
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	0.11	0.38	0.34		0.79	0.31

Intersection Summary

Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 80 (67%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 21.4		Intersection LOS: C	
Intersection Capacity Utilization 70.1%		ICU Level of Service C	
Analysis Period (min) 15			

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

Splits and Phases: 11: Greenbank Road & Chapman Mills Drive

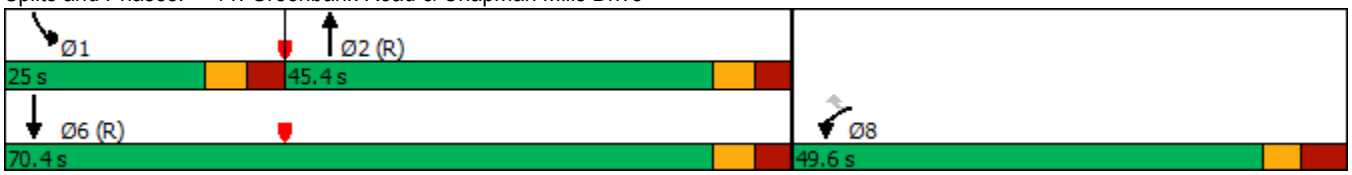


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	68	268	536	21	220	900
Future Volume (vph)	68	268	536	21	220	900
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800
Storage Length (m)	66.0	0.0		0.0	65.0	
Storage Lanes	1	1		0	1	
Taper Length (m)	47.0				48.0	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95
Ped Bike Factor			1.00		1.00	
Frt		0.850	0.994			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1695	1517	3367	0	1695	3390
Flt Permitted	0.950				0.950	
Satd. Flow (perm)	1695	1517	3367	0	1691	3390
Right Turn on Red		Yes		Yes		
Satd. Flow (RTOR)		268	3			
Link Speed (k/h)	50		50			50
Link Distance (m)	360.0		362.5			399.2
Travel Time (s)	25.9		26.1			28.7
Confl. Peds. (#/hr)				3	3	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	68	268	536	21	220	900
Shared Lane Traffic (%)						
Lane Group Flow (vph)	68	268	557	0	220	900
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(m)	13.5		3.7			8.0
Link Offset(m)	0.0		0.0			0.0
Crosswalk Width(m)	1.6		1.6			1.6
Two way Left Turn Lane						
Headway Factor	1.06	1.06	1.06	1.06	1.06	1.06
Turning Speed (k/h)	97	97		97	97	
Number of Detectors	1	1	2		1	2
Detector Template	Left	Right	Thru		Left	Thru
Leading Detector (m)	2.0	2.0	10.0		2.0	10.0
Trailing Detector (m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Position(m)	0.0	0.0	0.0		0.0	0.0
Detector 1 Size(m)	2.0	2.0	0.6		2.0	0.6
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex
Detector 1 Channel						
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0
Detector 2 Position(m)			9.4			9.4
Detector 2 Size(m)			0.6			0.6
Detector 2 Type			Cl+Ex			Cl+Ex
Detector 2 Channel						
Detector 2 Extend (s)			0.0			0.0
Turn Type	Prot	Perm	NA		Prot	NA

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Protected Phases	8		2		1	6
Permitted Phases		8				
Detector Phase	8	8	2		1	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0		5.0	10.0
Minimum Split (s)	49.6	49.6	45.1		12.1	45.1
Total Split (s)	49.6	49.6	45.4		25.0	70.4
Total Split (%)	41.3%	41.3%	37.8%		20.8%	58.7%
Maximum Green (s)	42.0	42.0	38.3		17.9	63.3
Yellow Time (s)	3.3	3.3	3.7		3.7	3.7
All-Red Time (s)	4.3	4.3	3.4		3.4	3.4
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	7.6	7.6	7.1		7.1	7.1
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0
Recall Mode	None	None	C-Max		None	C-Max
Walk Time (s)	7.0	7.0	7.0			7.0
Flash Dont Walk (s)	35.0	35.0	31.0			31.0
Pedestrian Calls (#/hr)	10	10	10			10
Act Effct Green (s)	22.8	22.8	56.7		18.7	82.5
Actuated g/C Ratio	0.19	0.19	0.47		0.16	0.69
v/c Ratio	0.21	0.53	0.35		0.84	0.39
Control Delay	37.5	7.3	24.0		53.0	11.5
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	37.5	7.3	24.0		53.0	11.5
LOS	D	A	C		D	B
Approach Delay	13.4		24.0			19.6
Approach LOS	B		C			B
90th %ile Green (s)	42.0	42.0	38.3		17.9	63.3
90th %ile Term Code	Ped	Ped	Coord		Max	Coord
70th %ile Green (s)	42.0	42.0	38.3		17.9	63.3
70th %ile Term Code	Ped	Ped	Coord		Max	Coord
50th %ile Green (s)	10.2	10.2	65.5		22.5	95.1
50th %ile Term Code	Gap	Gap	Coord		Gap	Coord
30th %ile Green (s)	10.0	10.0	68.6		19.6	95.3
30th %ile Term Code	Min	Min	Coord		Gap	Coord
10th %ile Green (s)	10.0	10.0	72.8		15.4	95.3
10th %ile Term Code	Min	Min	Coord		Gap	Coord
Queue Length 50th (m)	15.5	0.0	35.7		36.8	0.2
Queue Length 95th (m)	21.0	17.3	73.0		m#66.7	m115.9
Internal Link Dist (m)	336.0		338.5			375.2
Turn Bay Length (m)	66.0				65.0	
Base Capacity (vph)	593	705	1592		270	2329
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	0.11	0.38	0.35		0.81	0.39

Intersection Summary

Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 80 (67%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay: 19.8		Intersection LOS: B	
Intersection Capacity Utilization 71.0%		ICU Level of Service C	
Analysis Period (min) 15			

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

Splits and Phases: 11: Greenbank Road & Chapman Mills Drive