



1994 Scott Street

Transportation Impact Assessment Strategy Report

DRAFT

September 2025

1994 Scott Street

TIA Strategy Report

prepared for:
City of Ottawa
Affordable Housing Branch – Housing Services
110 Laurier Ave W,
Ottawa, Ontario
K1P 1J1

prepared by:
 **PARSONS**
1223 Michael Street North
Suite 100
Ottawa, ON K1J 7T2

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ORIGINATOR	Basel Ansari, P.Eng
REVIEWER:	Jake Berube, P.Eng
AUTHORIZATION:	
CIRCULATION LIST:	Wally Dubyk
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STRATEGY REPORT

Parsons has been retained by Park River to prepare a Transportation Impact Assessment Report in support of a Zoning By-Law Amendment (ZBLA) Application for a proposed multi-phase mixed-use development at 1994 Scott street. This document follows the TIA process as outlined in the City of Ottawa Transportation Impact Assessment (TIA) Guidelines (2017). The following report represents Step 3 – Strategy Report.

1.0 SCREENING FORM

The Screening Form has been provided in **Appendix A**. The Screening Form confirmed the need for a TIA Report based on the Trip Generation and Safety triggers. The Trip Generation trigger was met as the development is anticipated to generate more than 60 person trips during peak hours. The Safety Trigger was met as the development is located within 150 m of a signalized intersection (Scott/Tweedsmuir and Scott/Athlone) and there may be potential traffic operations or safety concerns may be within 500m of the development (to be verified through analysis).

2.0 SCOPING REPORT

2.1. Existing and Planned Conditions

2.1.1. Proposed Development

The proposed development is located in Ottawa, at the municipal addresses of 1994 Scott St, 324 and 335 Tweedsmuir Ave and 330 Athlone Ave. As per the City of Ottawa Official Plan Schedule B3, the development site is located in an evolving neighbourhood and along a mainstreet corridor (Scott St). The site is currently zoned as a Traditional Mainstreet (TM[102]) zone at the corner of the Scott/Tweedsmuir intersection and as a Residential Fourth Density (R4UB) zone for the remaining majority of the site. This report will review the three-phases of the development in support of rezoning. The local site context is illustrated in **Figure 1**, while the Site Plan is illustrated in **Figure 2** (high quality plan provided in **Appendix A**).

In total, the proposed development will consist of four high-rise residential buildings with 1,206 apartment units and 789 m² (8,488 ft²) of first floor commercial space. All buildings will provide underground parking garages with ramps accessed at the respective boundary roads.

Phase 1 (Buildings A1 and A2) will consist of two high-rise residential buildings that are 40 and 4-storey high, replacing 9 existing residential units and a commercial unit. The existing access to Scott Street will be removed. Building A1 will provide 555 apartment units and a 467 m² (5,023 ft²) first-floor commercial space, while Building A2 will provide 43 apartment units and no commercial space. The two buildings will be bounded primarily by Tweedsmuir Ave to the east, with Building A-1 also bounded by Scott St to the north. As part of Phase 1, an internal east-west pedestrian connection will be provided on the south side of Building A2, connecting Tweedsmuir Ave and Athlone Ave. A vehicle access to underground parking garage will be provided via Tweedsmuir Ave. The buildout year of Phase 1 is assumed to be 2028.

Phase 2 (Building B) will replace 3 existing residential units with a 29-storey high-rise residential building consisting of 290 apartment units and 322 m² (3,465 ft²) first-floor commercial space. Building B is bounded by Athlone Ave on the east side with vehicular access proposed via an underground parking garage ramp. Phase 3 (Building C) will replace 6 existing residential units with a 29-storey high-rise residential building consisting of 318 apartment units and no commercial space. A parkland dedication with a 250 m² (2,690 ft²) area will be located south of Building C. The building will be bounded by Tweedsmuir Ave on the west side, with vehicular access proposed via an underground parking garage ramp. A concurrent Buildout year for Phases 2 and 3 is assumed to occur by 2031.

Figure 1: Local Context

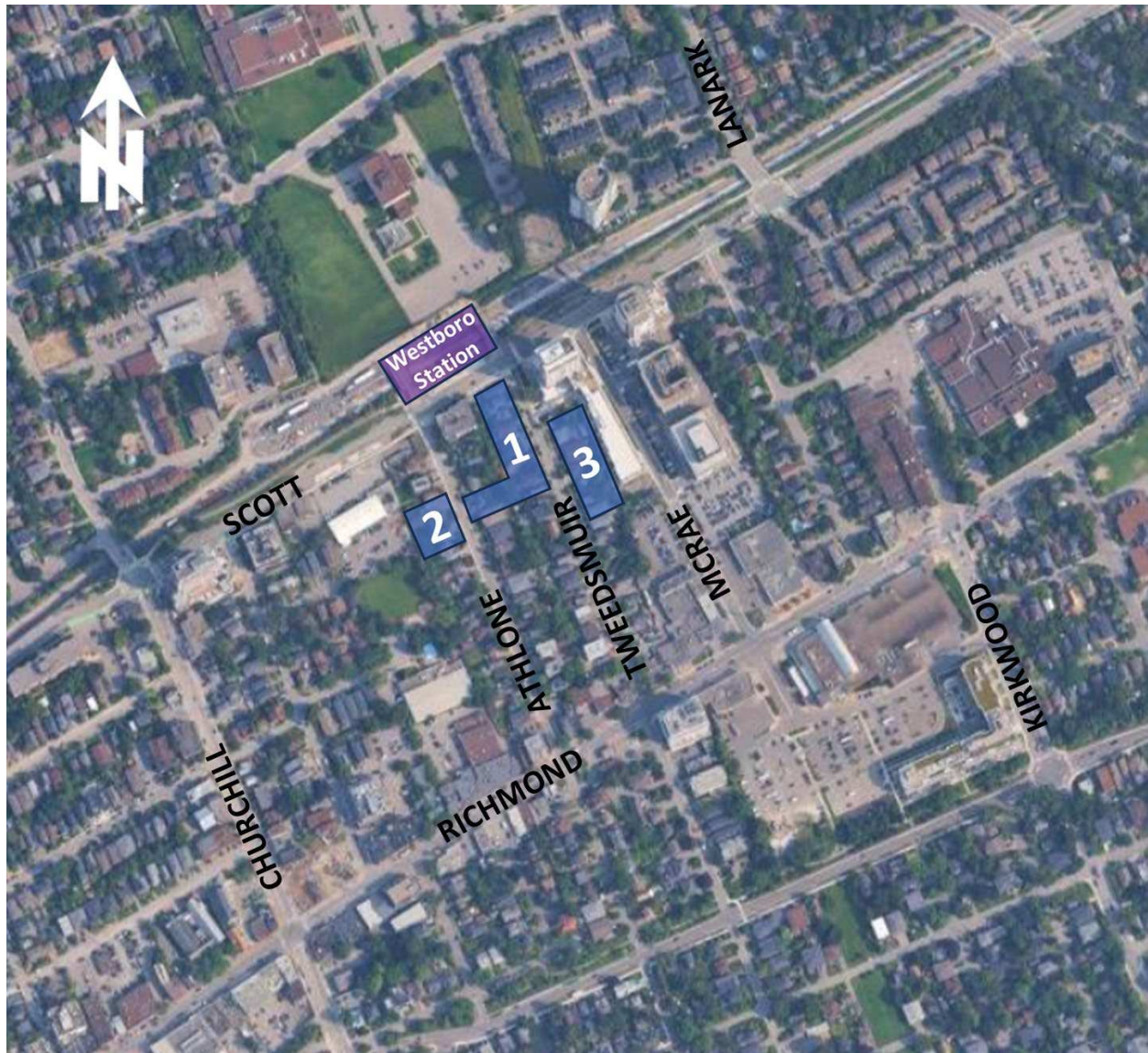
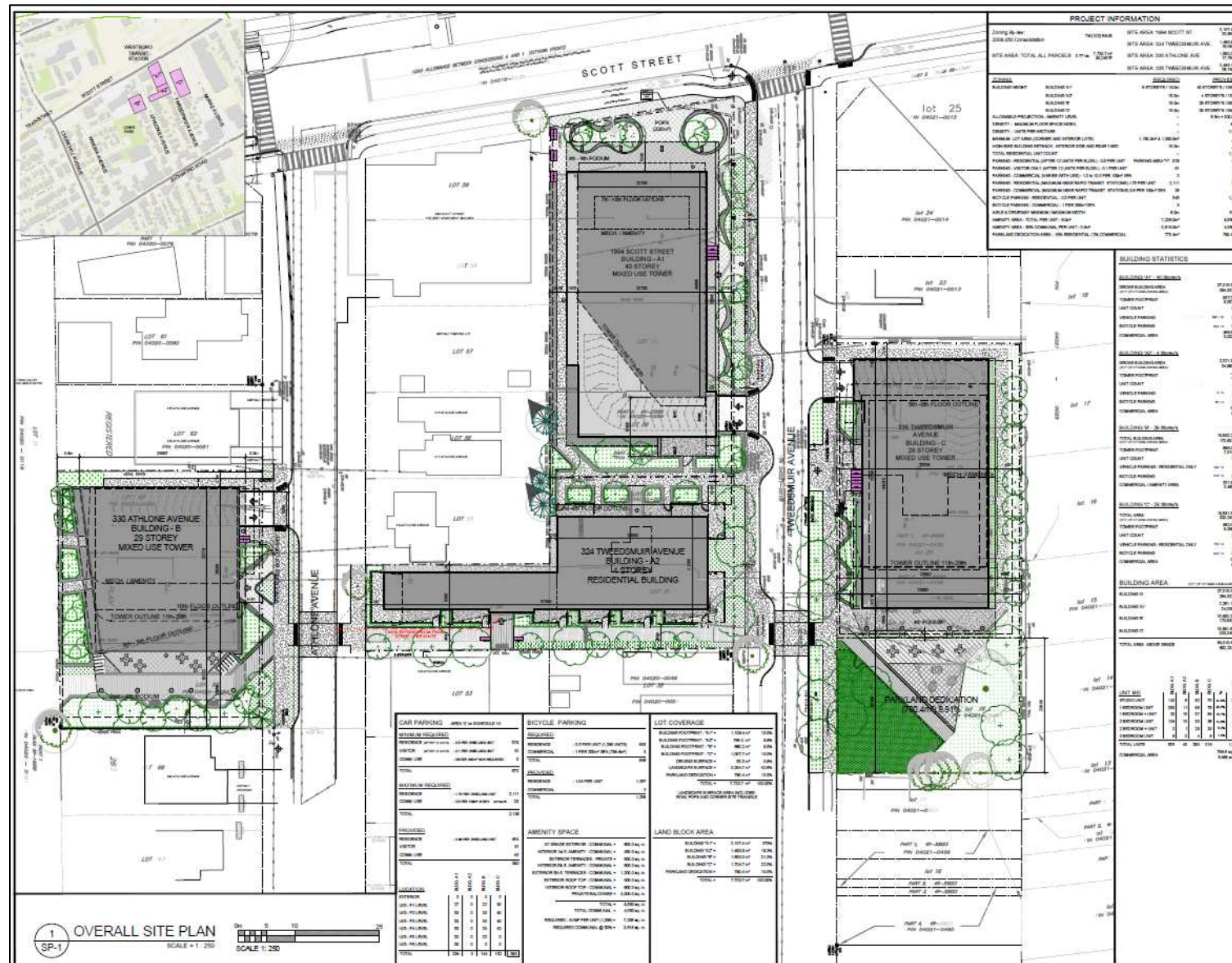


Figure 2: Proposed Site Plan (July 2025)



2.1.2. Existing Conditions

Area Road Network

Description of the roads included in the TIA Report is provided below.

Scott St is an east-west municipal arterial roadway, which extends from Churchill Ave in the west to Bayview Rd in the east, where it continues as Albert St into Ottawa's downtown area. Within the study area, Scott St provides a cross-section consisting of a single travel lane in each direction, with auxiliary turn lanes at some signalized intersections. The posted speed limit is 50 km/h, with a cycle track and sidewalk provided on the south side and a Multi-Use Pathway (MUP) provided on the north side. Based on the Official Plan Schedule C16, Scott St has a protected Right-of-Way (ROW) of 26 m.

Churchill Ave is a north-south major collector roadway south of Richmond Road, an arterial roadway between Richmond Road and Scott Street and a collector roadway north of Scott Street. Within the study area, its cross-section consists of a single travel lane in each direction with on-street parking bays and sidewalks provided along both sides of the roadway. The unposted speed limit is assumed to be 50 km/h.

Richmond Rd is an east-west municipal arterial road that extends from Baseline Rd in the west (where it continues west as Robertson Rd) to Island Park Dr in the east (where it continues east as Wellington St W). Within the study area, the roadway consists of a two-lane cross-section, with on-street parking bays and sidewalks on both sides of the road. The unposted speed limit is assumed to be 50 km/h.

Kirkwood Ave is a north-south municipal road that extends from Wilber Ave in the north to Merivale Rd in the south. The road is classified mostly as an arterial, with local road classification for the short segment between Richmond Rd and Wilber Ave. Within the study area, it consists of a two-lane cross-section and parking spaces on both sides north of Richmond Rd, and a four-lane cross-section with sidewalks on both sides south of thereof. The posted speed limit is 50 km/h.

Athlone Ave is a north-south local municipal roadway that extends from Scott St in the north to 285m south of Wesley Ave. Within the study area, the roadway consists of a two-lane cross-section with sidewalks on the west side and on-street parking permitted on both sides, where parking on the west side is restricted during winter months (December 1st to March 31st). The unposted speed limit is assumed to be 50 km/h.

Tweedsmuir Ave is a north-south municipal local roadway that extends from Scott St in the north to 70m south of Currell Ave. Within the study area, the roadway consists of a two-lane cross-section with sidewalks on the east side and on-street parking permitted on the west side. The unposted speed limit is assumed to be 50 km/h.

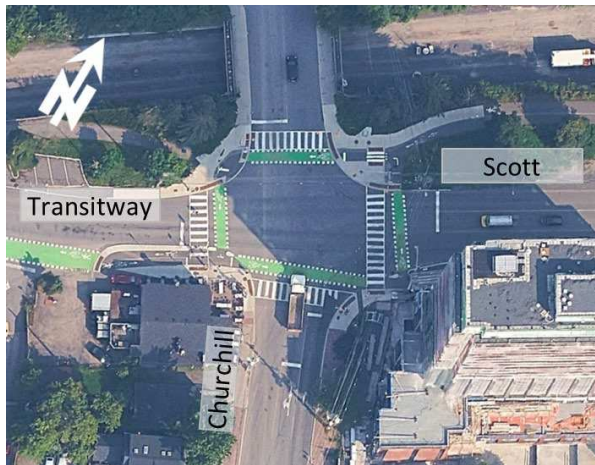
McRae Ave is a north-south municipal local road that extends from Scott St in the north to Richmond Road in the south. Within the study area, the roadway consists of a two-lane cross-section and sidewalks on both sides. The unposted speed limit is assumed to be 50 km/h.

Lanark Ave is a municipal collector road that extends from Churchill Ave in the northwest to Scott St in the southeast, where it continues south of the intersection as **W Village Priv**. The speed limit is 25 km/h south of Scott St and 50 km/h north of thereof.

Existing Study Area Intersections

Scott/Churchill

The Scott/Churchill intersection is a four-legged signalized intersection. The northbound approach consists of a shared through/left-turn lane and an auxiliary right-turn lane. The southbound and eastbound approaches consist of an all-movement lane. The westbound approach consists of a shared through/right-turn lane and an auxiliary left-turn lane. Zebra crosswalks and painted bike crossings with bike signals are provided on all approaches. Eastbound left-turns and northbound right-turns on red are not permitted. The west leg extends to form part of the new transitway alignment to Scott St.



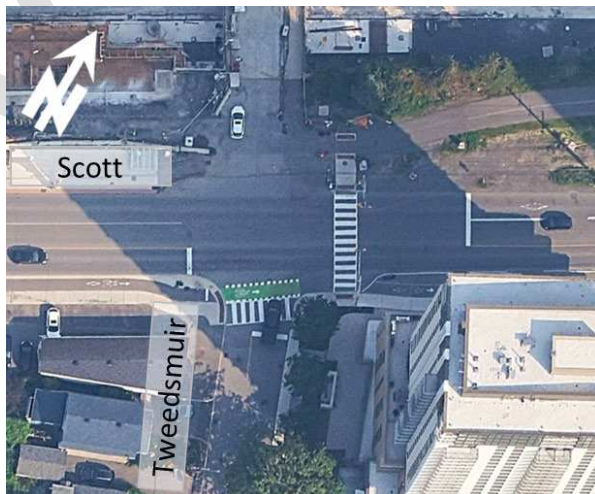
Scott/Athlone

The Scott/Athlone intersection is a four-legged unsignalized intersection, with a pedestrian crossing signal on the west side for east/west through movements and stop control on the south approach; the north leg to Westboro Station is currently closed due to construction. The south and west legs consist of a single all-movement lane, while the east leg consist of a single all movement lane and a transit through lane. Zebra crosswalks are provided on the west and south sides with a painted bike crossing on the south side. Trucks are not permitted to enter Athlone Ave.



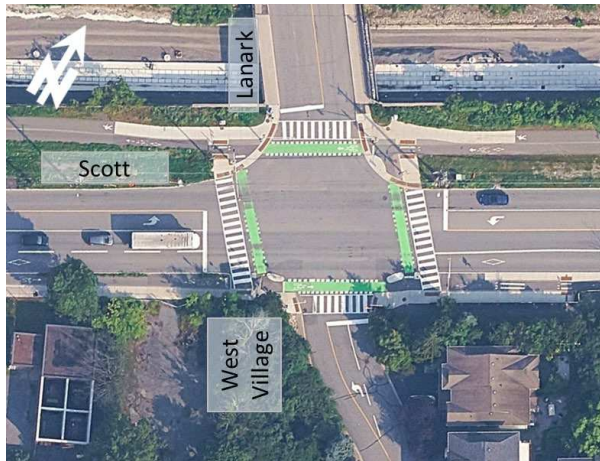
Scott/Tweedsmuir

The Scott/Tweedsmuir intersection is a four-legged unsignalized intersection, with a pedestrian crossing signal on the east side for east/west through movements and stop control on the south approach; the north leg to Westboro Station is currently closed due to construction. The south and west legs consist of a single all-movement lane, while the east leg consist of a single all movement lane and a transit through lane. Zebra crosswalks are provided on the east and south sides with a painted bike crossing on the south side. Trucks are not permitted to enter Tweedsmuir Ave.



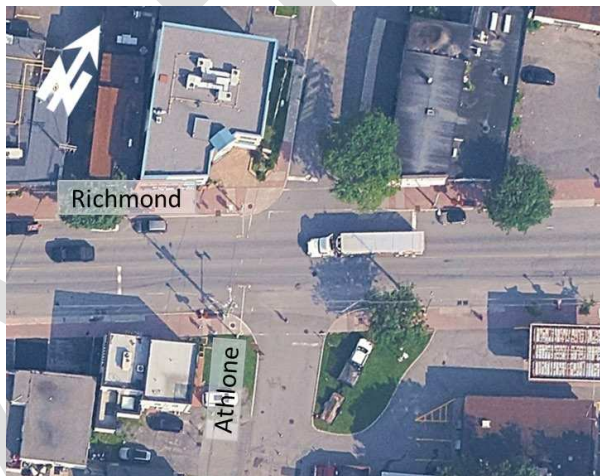
Scott/Lanark/W Village

The Scott/Lanark/W Village intersection is a four-legged signalized intersection. The north, south and west approaches consist of a shared through/right-turn lane and an auxiliary left-turn lane, while the east approach consists of a through lane, an auxiliary left-turn lane and a shared transit/right-turn lane. Zebra crosswalks and painted bike crossings with bike signals are provided on all approaches. There are no restricted movements at this intersection.



Richmond/Athlone

The Richmond/Athlone intersection is a four-legged unsignalized intersection, with a pedestrian crossing signal on the west side for east/west through movements and stop control on the north and south approaches. All legs consist of a single all-movement lane and crosswalks are provided on the north, south and west legs. Trucks are not permitted to enter the north leg.



Richmond/Tweedsmuir

The Richmond/Tweedsmuir intersection is a four-legged unsignalized intersection with stop control on the north and south legs. The north, south and west legs consist of a single all-movement lane, while the east leg consists of a shared through/left-turn lane and a right-turn/parking lane. Trucks are not permitted to enter the north leg.



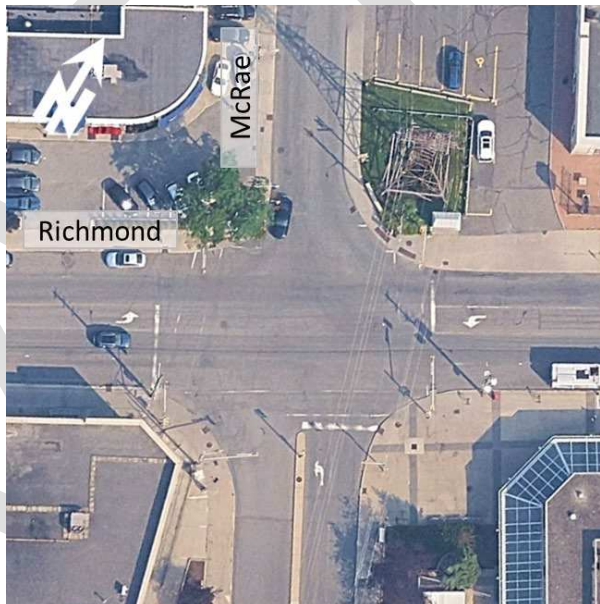
Richmond/Churchill

The Richmond/Churchill intersection is a four-legged signalized intersection. The south, east and west legs consist of an auxiliary left-turn lane and a shared through/right-turn lane, while the north leg consists of an all-movement lane. Zebra crosswalks are provided on all approaches. The southbound left-turn is prohibited on weekdays between 3:30 and 5:30 pm.



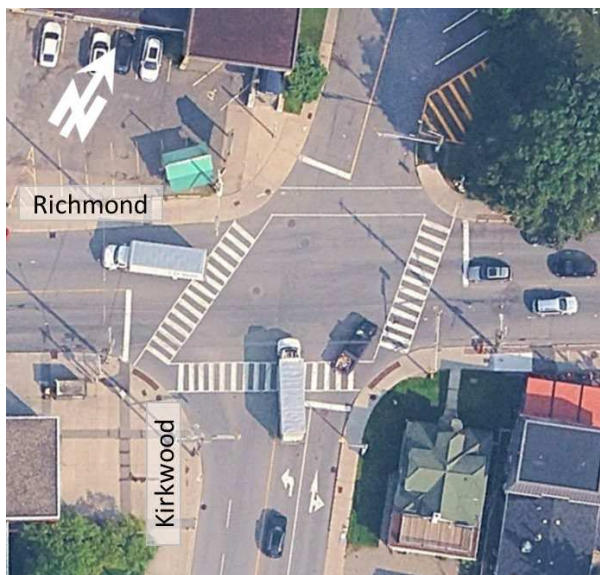
Richmond/McRae

The Richmond/McRae intersection is a four-legged signalized intersection. The east and south legs consist of a shared through/right-turn lane and an auxiliary left-turn lane, while the north leg consists of a single all-movement lane and the west leg consists of a through lane, a shared through/right-turn lane and an auxiliary left-turn lane. Pedestrian crossings are provided on all legs of the intersection. There are no prohibited movements at the intersection.



Richmond/Kirkwood

The Richmond/Kirkwood intersection is a four-legged signalized intersection. The east and west legs consist of a shared through/right-turn lane and a through/left-turn lane, while the south leg consists of a shared through/right-turn lane and an auxiliary left-turn lane and the north leg consists of a single all-movement lane. Pedestrian crossings are provided on all legs of the intersection with zebra markings on the east, west and south legs. There are no prohibited movements at the intersection.



Existing Driveways to Adjacent Developments

Within 200m of the proposed development accesses, there are approximately 21 existing accesses along Tweedsmuir Ave and 29 existing accesses along Athlone Ave. Nearly all accesses are for single or townhome residential units, with some accesses to businesses and restaurants fronting Richmond Rd to the south. Access to a five-storey apartment building is also located along the east side of Athlone Ave, at the Scott St intersection.

Figure 3: Adjacent Driveways within 200m of Site Accesses



Existing Area Traffic Management Measures

Existing area traffic management measures within the study area include:

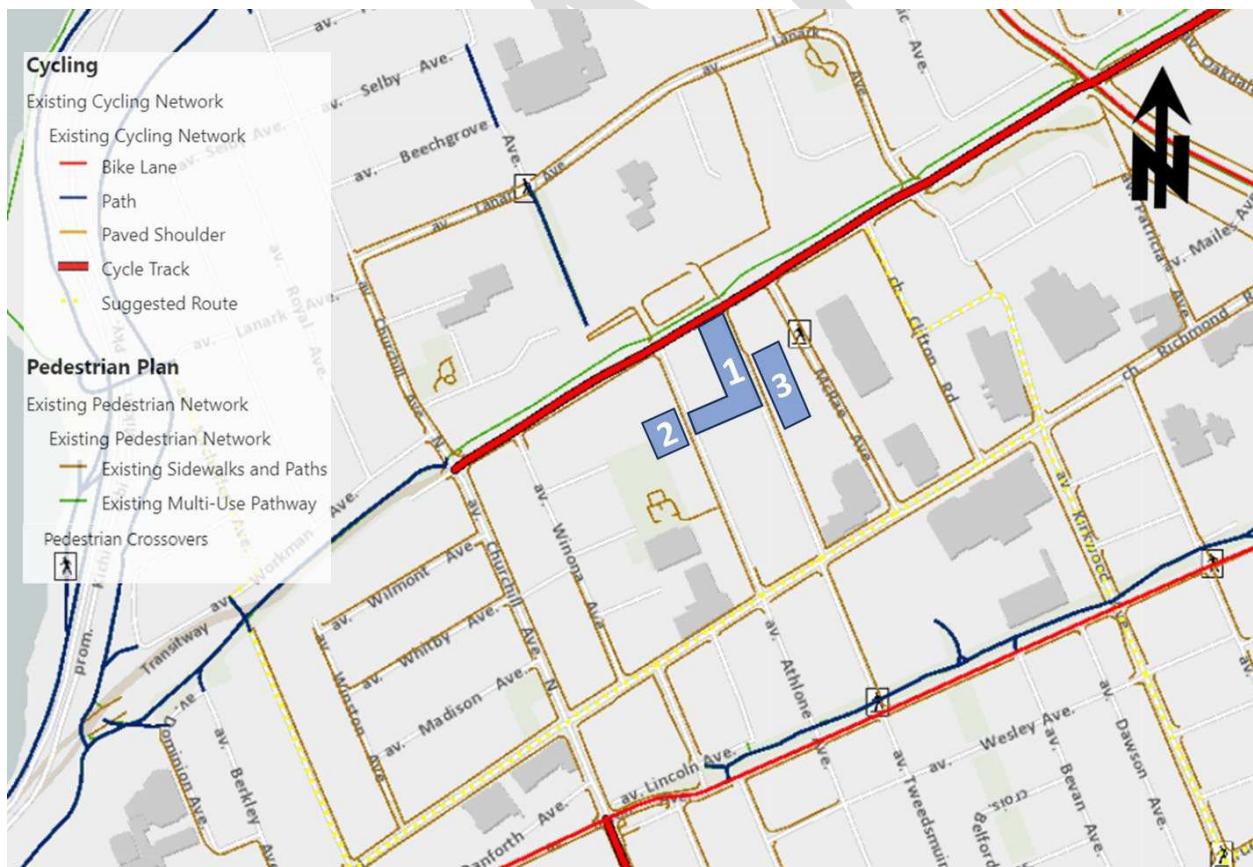
- Pedestrian crossovers (PXO) at some locations (locations identified in next section);
- Pedestrian crossing signals at the intersections of Scott/Athlone, Scott/Tweedsmuir and Richmond/Athlone;
- Zebra crosswalks and painted bike crossings at intersections along Scott St;
- MUP and Cycle tracks along Scott St to separate cyclists from traffic;
- Bike signals at intersections along Scott St;
- WB bus lane queue jump signal at the intersection of Scott/Athlone;
- No right turn on red and fully protected right-turn signal for the NB movement at the intersection of Scott/Churchill; and,
- Stop bar set back for the NB through/left-turn lane at the intersection of Scott/Churchill providing additional space for truck turns.
- Speed humps and curb extensions are provided at several locations along Lanark Ave.
- Curb extensions are provided at several locations along Churchill Ave and Richmond Road, resulting in narrowed roads that reduce speeds, frame on-street parking and provide space for bus platforms.

Existing Pedestrian/Cycling Network

Figure 4 illustrates the existing active transportation (pedestrian and cyclist) facilities in the study area based on the latest information available from GeoOttawa. Active transport facilities are provided as follows:

- Along Scott St, a MUP is provided on the north side and a cycle track and sidewalks on the south side. The MUP on the north side is separated into two halves via tactile delineation, where the northern half is reserved for pedestrians and the southern half is reserved for westbound cycling. At Churchill Ave, the MUP and cycle track connect to a major MUP network that extend to western and eastern locations and connect to a wider MUP network in the City. Note that the City of Ottawa's updated 2023 Active Transportation Network maps illustrate Scott St as a Crosstown Bikeway route.
- Along Richmond Rd, sidewalks are provided on both sides of the road and it is designated as a suggested cycling route.
- Along Lanark Ave, sidewalks are provided on both sides of the road, with a pedestrian crossover (PXO) approximately 200m east of Churchill Ave. A MUP connection is provided between the PXO and Westboro Station.
- Along Churchill Ave, sidewalks are provided on both sides of the road.
- Along McRae Ave, sidewalks are provided on both sides of the road, with a pedestrian crossover approximately 165m south of Scott St.
- Along Athlone Ave, sidewalks are provided on the west side of the road.
- Along Tweedsmuir Ave, sidewalks are provided on the east side of the road.

Figure 4: Existing Study Area Pedestrian and Cycling Facilities (GeoOttawa)



Transit Network

The transit network for the study area is illustrated in **Figure 5** and the transit route maps are provided in **Appendix B**. As illustrated in the figure, since Westboro Station and the existing transitway are currently being reconstructed as part of the new LRT Confederation Corridor (Line 1) west extension, bus routes previously operating along the closed section of the transitway have been rerouted to Scott St via a new alignment, where they will continue to operate until the LRT west extension is completed. A dedicated eastbound bus lane has been provided along Scott St from west of Lanark Ave to east of Island Park Dr, along with a dedicated westbound bus lane from McRae Ave to a short distance west of Athlone Ave.

Given the proximity of the development site to the transitway and Westboro Station, many bus routes previously operated and currently operate at the site frontage on Scott St, including the following:

- **Frequent bus routes (service every 15 minutes or less on weekdays, 7 days a week):** Bus routes 57, 61, 62, 63, 74, 75 and 87.
- **Local bus routes (custom routing to local destinations):** Bus routes 58, 60, 66, 67, 73, and 82.
- **Connexion bus routes (quick connections from home to LRT Line 1, during rush hours only):** Bus routes 256, 261, 262, 263, 265, 266, 275, 277, and 279.

In addition to the above bus routes, bus route #81 operates on McRae Ave, Scott St and Churchill Ave, and bus route #11 operates on Richmond Rd. It is also important to note that the LRT Line 1's existing western limit is at Tunney's Pasture Station, which is located along Scott St approximately 1.5km east of the development site.

Figure 6 illustrates the existing bus stop locations. Nearest bus stops to the site include Scott St and McRae Ave within 100m radius of the site and along Richmond Rd within 350m of the site.

Figure 5: Area Transit Network

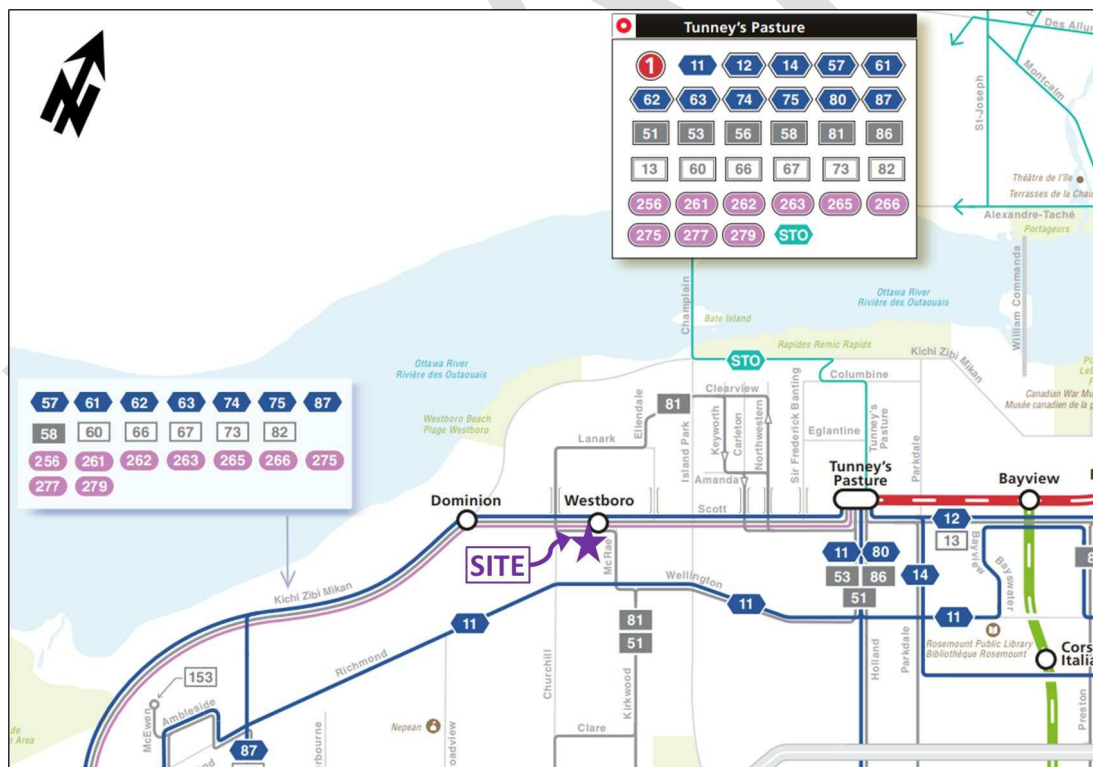
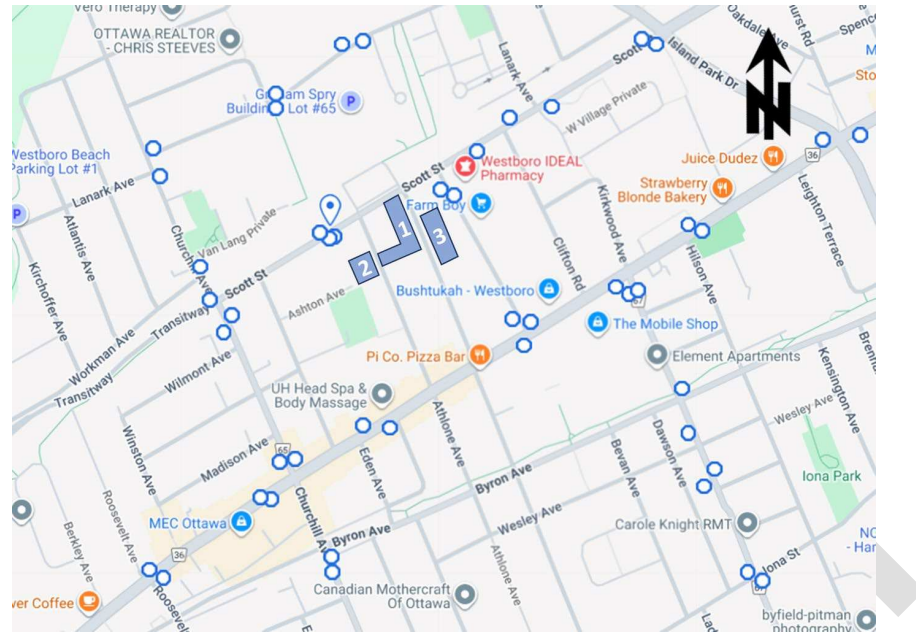


Figure 6: Bus Stop Locations



Peak Hour Travel Demands

The existing peak hour traffic and pedestrian volumes within the study area were obtained for the following intersections:

- Scott/Churchill – conducted by the City of Ottawa on Thursday, November 30th, 2023.
- Scott/Athlone – conducted by the City of Ottawa on Wednesday, November 22nd, 2017.
- Scott/Tweedsmuir – conducted by the City of Ottawa on Tuesday, March 28th, 2017.
- Scott/Lanark/West Village – conducted by the City of Ottawa on Thursday, November 30th, 2023.
- Richmond/Athlone – conducted by the City of Ottawa on Thursday, July 7th, 2022.
- Richmond/Tweedsmuir – conducted by Parsons on Tuesday, December 12th, 2023.
- Richmond/Churchill – conducted by the City of Ottawa on Thursday, January 23rd, 2020.
- Richmond/McRae – conducted by the City of Ottawa on Thursday, January 23rd, 2020.
- Richmond/Kirkwood – conducted by the City of Ottawa on Wednesday, December 20th, 2023.

Traffic volumes at the intersections of Scott/Churchill, Scott/Lanark/West Village and Richmond/Tweedsmuir are relatively recent counts conducted in November and December of 2023. These counts reflect post-COVID conditions where general traffic behaviors have shifted to a higher work from home percentage and Scott St construction had been completed for several months. Therefore, counts at these locations will be used as the baseline conditions and traffic volumes along Scott St will be adjusted accordingly. At the Scott/Athlone and Scott/Tweedsmuir intersections, east/west through volumes were balanced down based on the Scott/Churchill volumes and the heavy vehicle percentage is assumed to be higher due to transitway detour. Difference between volumes at Scott/Lanark/West Village and the intersections to the west is attributed to a number of new developments along McRae Ave, which includes residential towers and a commercial building. East/west through volumes along Richmond Rd were conservatively balanced to the higher volume between the two intersections.

The balanced existing traffic volumes at study area intersections are illustrated in **Figure 7**, with raw traffic count data provided in **Appendix C**. Existing active transportations volumes at intersections have been provided in **Figure 8**. Note that counts conducted during winter months typically record lower pedestrian and cyclist volumes, however, cyclist volumes along Richmond Road were balanced based on volumes at the Richmond/Athlone intersection, which was conducted in July.

Given that counts conducted at the Westboro Station accesses (Scott/Athlone and Scott/Tweedsmuir) were prior to closure of the station for construction, the recorded active transport volumes are reflective of the transit usage by pedestrians and cyclists. Additionally, note that low volumes of pedestrians were recorded crossing at locations where no crosswalks are provided, such as east leg of Scott/Athlone, west leg of Scott/Tweedsmuir, east leg of Richmond/Athlone and east and west legs of Richmond/Tweedsmuir.

It is acknowledged that the traffic count data at the intersections of Scott/Athlone and Scott/Tweedsmuir may be considered outdated. However, for the purpose of this report, conducting new traffic counts at the two intersections is not considered essential for the following reasons:

- The count at the Scott/Churchill intersection was conducted relatively recently (November 30, 2023). The through volumes at the Scott/Athlone and Scott/Tweedsmuir intersections were balanced using the volumes of the Scott/Churchill intersection.
- Both Athlone Ave and Tweedsmuir Ave are local roads with no new accesses to new developments since the traffic counts were conducted. Therefore, no major changes are expected from inbound/outbound traffic volumes along the two roads.
- The TIA Report is also accounting for any recently constructed developments generating traffic along Scott St and through the Athlone Ave and Tweedsmuir Ave intersections, which should account for any potential difference in traffic volumes.
- Considering the ongoing construction surrounding the two intersections, pedestrian and cyclist volumes may be reduced and new counts may not necessarily reflect higher volumes.
- Current traffic volumes at many locations in the City indicate that traffic levels are similar to 2019 (pre-COVID), suggesting that traffic volumes at these intersections may also be similar.

Figure 7: Existing Peak Hour Traffic Volumes

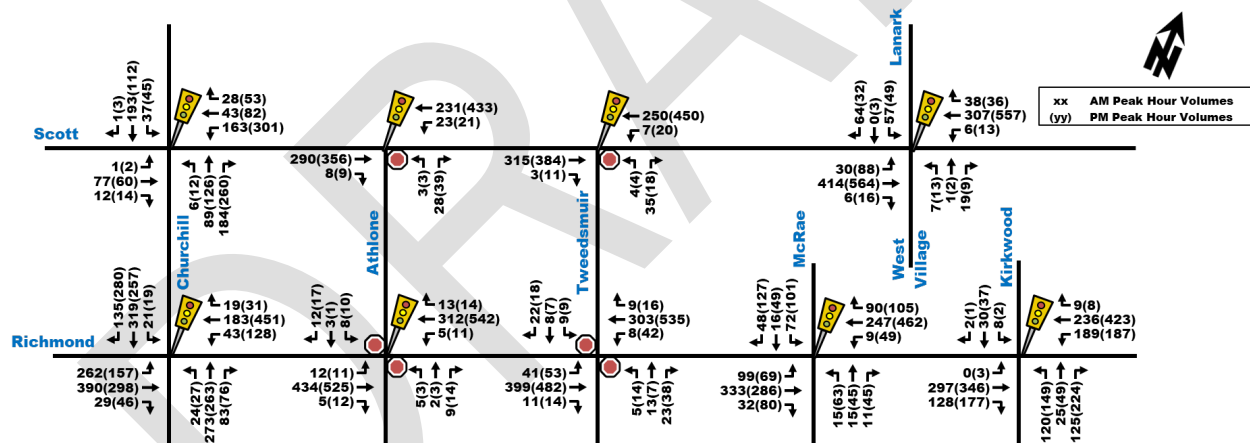
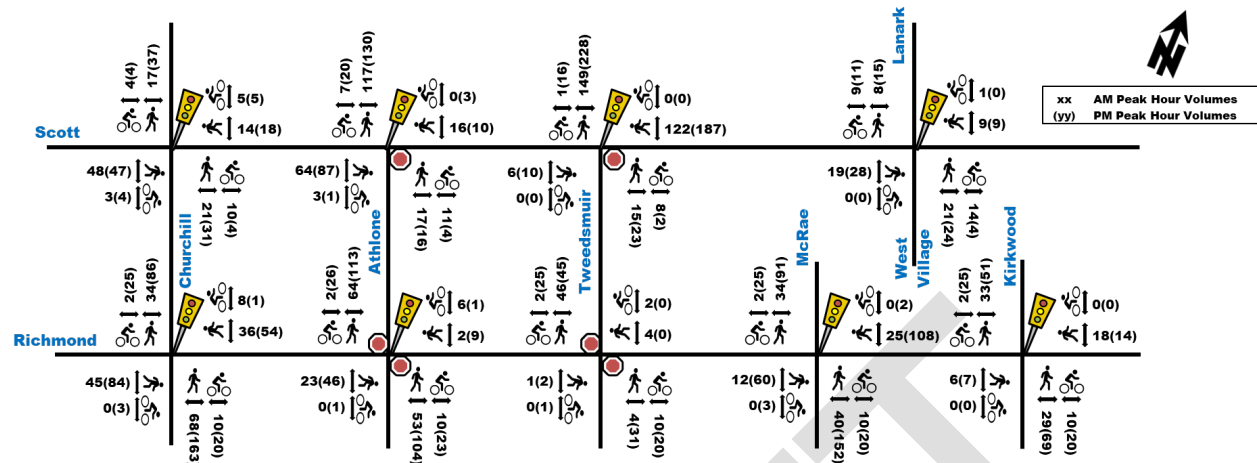


Figure 8: Existing Pedestrian and Cyclists Peak Hour Volumes



Existing Road Safety Conditions

A five-year collision history data (2017-2021, inclusive) was obtained from the City of Ottawa for all study area intersections and road segments on boundary streets (i.e. Scott St, Athlone Ave and Tweedsmuir Ave). Upon review of the collision data, it was determined that a total of 35 collisions have occurred within the five-year period. Of the reported collisions, 11 (31%) single vehicle unattended collisions, 10 (29%) were from angled collisions, 6 (17%) from vehicle (other), 3 (9%) from rear ends, 3 (9%) from sideswipes, and 2 (6%) from turning movements. Furthermore, 25 (71%) collisions resulted in property damage only and 10 (29%) resulted in non-fatal injuries. The detailed collision analysis results have been provided in **Appendix D**.

As per the City of Ottawa TIA Guidelines, a collision pattern exists at a given location when more than 6 collisions occur for any one type of impact completing a maneuver in a particular travel direction. Within the study area, the number of collisions that occurred at study area intersections and midblock segments are as follows:

Intersections

- Scott/Churchill: 4
- Scott/Athlone: 2
- Scott/Lanark/West Village: 2
- Richmond/Athlone: 6
- Richmond/Tweedsmuir: 4

Midblock Segments

- Richmond Rd, between Athlone and Tweedsmuir: 3, (75m)
- Scott St, between Clifton and Lanark: 1, (45m)
- Scott St, between transitway and McRae: 2, (140m)
- Scott St, between Winona and transitway: 1, (180m)
- Athlone Ave, between Scott and Richmond: 6, (300m)
- Tweedsmuir Ave, between transitway and Richmond: 4, (300m)

Based on the five-year collisions data, there are no identifiable collision patterns and the number of collisions documented at the study area intersections and roads are fairly low. With regards to active transportation, the 35 total collisions included the following:

- Two bicycle collisions at the intersection of Scott/Lanark/W Village, which occurred in 2020 and 2021. Note that these collisions were prior to the new cycle track and cycling intersection crossings that have are currently provided along Scott St and at the intersection.
- Four pedestrian collisions, where 2 occurred at the intersection of Scott/Churchill, 1 at Scott/Athlone and 1 along Athlone Ave. The collisions at the Scott St intersections occurred prior to the recent redesign and construction of the road.

2.1.3. Planned Conditions

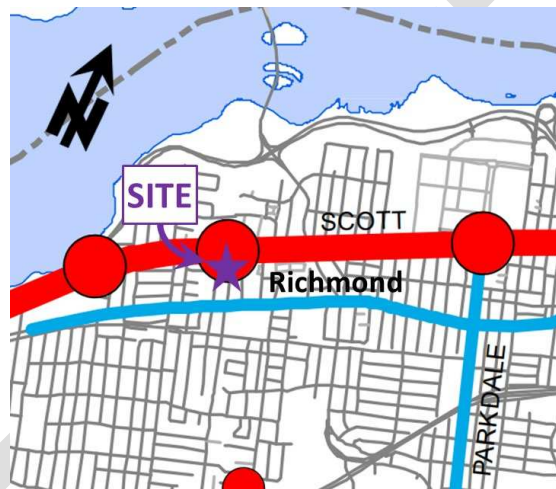
Future Transportation Network Changes

City of Ottawa Transportation Master Plan (TMP)

Within the Updated Active Transportation Projects Lists released as part of the new Transportation Master Plan Update (2023), a feasibility study is expected for the addition of cycling facilities along Churchill Ave, between Byron Ave and Scott St. The timeline for this project is unknown and the project implementation will be based on city funding availability.

Within Schedule C2 Transit Network – Ultimate map of the new Transportation Master Plan, the city has identified Richmond Rd as a transit priority corridor within the study area, as illustrated by the solid blue line in **Figure 9**. The map also illustrates the future LRT with red line and circles to indicate stations.

Figure 9: TMP Ultimate Transit Network Map - Schedule C2



Stage 2 LRT Extensions

The Light Rail Transit (LRT) in the City of Ottawa has entered Stage 2 of its development, which will include the extending of the LRT corridor in the west, east and south directions. The west extension will be from Tunney's Pasture to Moodie and will include a new LRT stop at the existing Westboro Station, which is located within 150m walking distance of the proposed development site. The west extension is expected to be completed by 2026 and will result in significant increase to transit usage in the area. **Figure 10** below illustrates the full expansion of the LRT Stage 2 system.

Richmond Road/Westboro CDP and Secondary Plan

The Richmond Rd/Westboro Community Design Plan (CDP) and Secondary Plan area is bounded by the Ottawa River to the north, Island Park Dr to the east, Byron Ave to the south and Courtenay Ave to the west. The purpose of the two plans is to guide the long-term design and development of the area, taking into account existing land use, urban design, zoning, transportation and streetscape factors, as well as future development and vision for the area. Many improvements in the study area have already taken place which include improvements associated with the public realm and improvements to transit facilities, in support of the ongoing LRT work. The area is expected to continue to evolve and improve pedestrian and cycling facilities in the area, as well as streetscape on Scott St and Richmond Rd and capitalize on the future transit network improvements.

Athlone Ave

Athlone Ave is undergoing an integrated renewal plan, which involves reconstructing sanitary sewers and watermains and redesigning the road. The road will be redesigned to local street standards with speeds of 30km/h and traffic calming measures to be provided, which may include speed humps and curb extensions. A sidewalk is anticipated to be constructed on the east side of the road. Based on City construction and infrastructure projects, the construction is expected in 2-3 years, prior to the full buildout of the proposed development. Additionally, note that the proposed development is not expected to impact the future design of Athlone Ave.

Other Area Developments

A number of adjacent developments have either been recently constructed, are under construction or have an ongoing development application for a future buildout. All these developments have been identified in **Figure 11**. Some of the developments that have been recently constructed are expected to already be accounted for in the 2023 intersection traffic volumes. As such, they are identified in this section for fulsome discussion purposes only.

1 – 2026 Scott Street (future development)

Morley Hoppner is proposing two 40-storey residential buildings with 856 total units. The TIA (prepared by Novatech, 2023) in support of Site Plan Application estimated site generated two-way vehicle trips to be minimal given the trip generation of the existing land use, resulting in up to 20 new vehicle trips in the morning peak hour and no new trips in the afternoon peak hour. Traffic generated by this development will be accounted for in the future background traffic volumes of the study area. The development is assumed to be fully constructed prior to Phase 1 of the 1994 Scott St site.

2 – 2050 Scott Street (future development)

Surface Developments is proposing 30-storey residential development with 341 dwelling units. The TIA (prepared by Parsons, 2021) in support of Site Plan Application estimated site generated two-way vehicle trips to be a total of 35 veh/h during peak hours. Traffic generated by this development will be accounted for in the future background traffic volumes of the study area. The development is assumed to be fully constructed prior to Phase 1 of the 1994 Scott St site.

3 – 2070 Scott Street (recently constructed)

Azure Urban Developments constructed a 23-storey residential development with 241 dwelling units. The TIA (prepared by Stantec, 2019) in support of Site Plan Application estimated site generated two-way vehicle trips to be up to a total of 38 veh/h during peak hours. Traffic generated by this development will be accounted for in the future background traffic volumes of the study area. The development is expected to be fully constructed prior to Phase 1 of the 1994 Scott St site.

4 – 320 McRae Avenue, 1976 Scott Street & 315 Tweedsmuir Avenue (recently constructed)

Construction of this development was completed in 2023 and is expected to be already accounted for in the 2023 traffic counts used in this report. The development features a 26-storey and 6-storey residential buildings with approximately 318 and 100 dwelling units with commercial space.

5 – 1950 Scott Street (future development)

EBC is proposing a 20-storey residential development consisting of approximately 141 residential dwelling units. The Transportation Impact Assessment Study (prepared by Parsons, 2019) projected approximately 50 veh/h in the morning and afternoon peak hours. While the current status of this development is unknown, traffic generated by this development will be accounted for in the future background traffic volumes of the study area. The development is assumed to be fully constructed prior to Phase 1 of the 1994 Scott St site.

6 – 1946 Scott Street (future development)

Surface Developments is proposing 12-storey residential development with 48 dwelling units. While the current status of this development is unknown, the Transportation Impact Assessment Study (prepared by Parsons, 2017) anticipated low trip generation given the development does not meet the trip generation trigger of the TIA Guidelines. The development is assumed to be fully constructed prior to Phase 1 of the 1994 Scott St site and is expected to result in minimal difference to traffic volumes within the study area.

7 – 249-255 Richmond Road & 372 Tweedsmuir Avenue (future development)

Young Steet Capital is proposing a 9-storey residential development with 127 dwelling units. The TIA (prepared by Novatech, 2023) in support of Site Plan Application estimated site generated two-way vehicle trips to be minimal given the trip generation of the existing land use, resulting in up to 20 new vehicle trips in the morning peak hour and no new trips in the afternoon peak hour. Traffic generated by this development will be accounted for in the future background traffic volumes of the study area. The development is assumed to be fully constructed prior to Phase 1 of the 1994 Scott St site.

8 – 175 Richmond Road (future development)

Claridge Homes is proposing a 9-storey residential development with 241 dwelling units. The Transportation Brief (prepared by Novatech, 2011) in support of Site Plan Application estimated site generated two-way vehicle trips to be minimal given the trip generation of the existing land use, resulting in up to 40 new vehicle trips in the morning peak hour and 23 new vehicle trips in the afternoon peak hour. The application file seems to be pending and has been on hold since 2012. Given the unknown status of the development, the estimated site generated trips by this development will be excluded from the future background traffic volumes.

9 – 300-306 Elmgrove Avenue (under construction)

A development application to permit the addition of four more units to four low rise apartment dwellings. The units are currently under construction and will result in minimal difference to traffic volumes within the study area.

10 – 378 and 381 Winona Avenue (recently construction)

Azure Winona is proposing a 6-storey residential building with 60 units. A TIA Report was not required for this site given a low number of person trips is anticipated. The number of vehicle trips generated by the development are considered negligible for the purpose of this report and will result in minimal difference to traffic volumes within the study area.

11 – 319 – 327 Richmond Road (future development)

Richmond Churchill Limited Partnership is proposing a 9-storey residential building with 184 dwelling units. The TIA Report (prepared by CGH, 2020) in support of Zoning Bylaw Amendment and Site Plan Control Applications

estimated site-generated traffic two-way vehicle trips to be up to 21 new vehicle trips in the morning peak hour and 30 new vehicle trips in the afternoon peak hour. Traffic generated by this development will be accounted for in the future background traffic volumes of the study area. The development is assumed to be fully constructed prior to Phase 1 of the 1994 Scott St site.

Figure 11: Other Area Developments

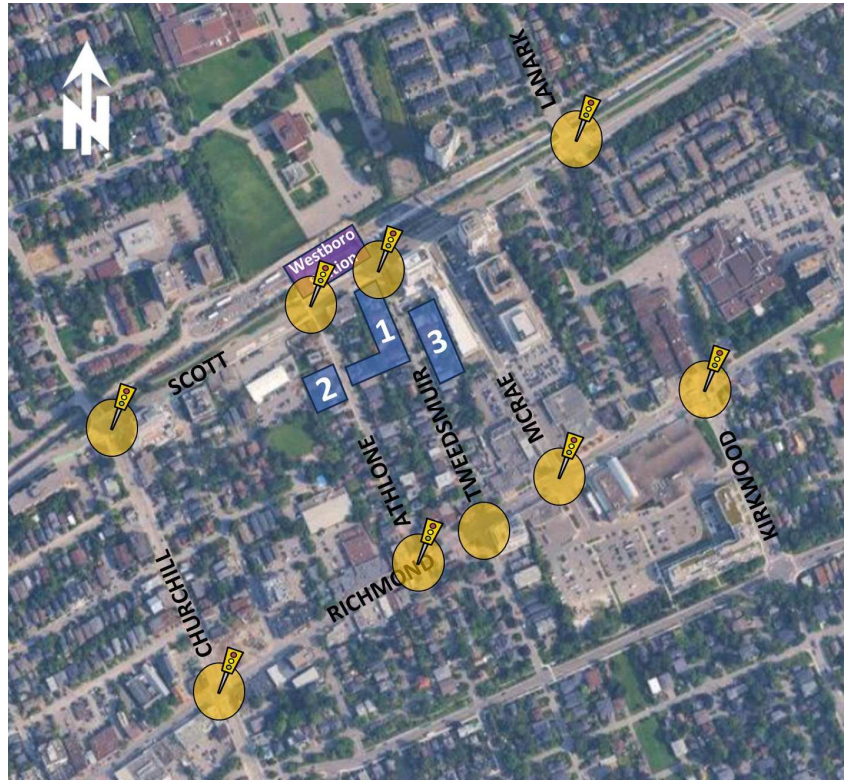


2.2. Study Area and Time Periods

The development is expected to be constructed in multiple phases. Phase 1 is assumed to be constructed by 2028, while Phases 2 and 3 are assumed to be constructed by 2031. Therefore, the 2028 and 2031 horizon years will be analyzed in addition to horizon year 2036 (five-years after full buildout) as per the requirements of the TIA Guidelines. Time periods analyzed will be the morning and afternoon peak hours. The proposed study area intersections that will be analyzed are identified below and illustrated in **Figure 12**.

- Scott/Churchill
- Scott/Athlone
- Scott/Tweedsmuir
- Scott/Lanark/W Village
- Site Accesses
- Richmond/McRae
- Richmond/Athlone
- Richmond/Tweedsmuir
- Richmond/Churchill
- Richmond/Kirkwood

Figure 12: Proposed Study Area



3.0 FORECASTING

3.1. Development Generated Travel Demand

3.1.1. Trip Generation and mode shares

Trip Generation Rates

The proposed development will be constructed in multiple phases. Phase 1 is assumed to be constructed by 2028 and consists of two high-rise buildings with 555 units and 5,023 ft² first-floor commercial in Building A1 and 43 units in Building A2. Phases 2 and 3 are assumed to be constructed by 2031, with Phase 2 consisting of 290 units and 3,465 ft² first-floor commercial space in high-rise Building B and Phase 3 consisting of 318 units in high-rise Building C. These timeline assumptions have been made for the purposes of this TIA analysis only. The trip rates for the land uses are summarized in **Table 1** below.

The appropriate trip generation rates for high-rise apartment units were obtained from the 2020 TRANS Trip Generation Manual. The Manual provides person-trip rates during the peak AM and PM periods (i.e. 7am-9:30am and 3:30pm-6pm). The peak hour trip generation rates for the non-residential land uses were obtained from the ITE Trip Generation Manual (11th edition), assuming the “Retail Strip Plaza (less than 40,000 ft² GFA)” land use for the total retail area.

Table 1: Proposed Development Vehicle Trip Rates – AM and PM Peak Hours

Land Use	ITE/TRANS Designation	Data Source	Trip Rates	
			AM Peak	PM Peak
Residential	“High-Rise Apartments”	TRANS	$T = 0.8(du);$	$T = 0.9(du);$
Commercial	“Retail Strip Plaza”	ITE 822	$T = 0.66\ln(x) + 1.84$	$T = 0.71\ln(x) + 2.72$

Notes:
 T = Average Vehicle Trip Ends
 du = Dwelling unit
 x = Gross Floor Area (1,000 ft²)

Mode Shares

Mode shares for the residential land uses are obtained from the City of Ottawa's 2020 TRANS Trip Generation Manual. Based on the manual, the development site is located in the "Ottawa West" district, which averages mode shares for the different travel modes as provided in **Table 2**. Also provided in the table is rationale for alternative proposed travel modes percentages. The alternative percentages take into account the significant availability of transit at the site frontage, as well as the future extension of the LRT to include Westboro Station. The alternative mode shares would be applied to both AM and PM peak hours.

Table 2: Residential Mode Shares for the Proposed Development– AM and PM Peak Hours

Travel Mode	Residential Mode Shares			Rationale
	TRANS Manual		Proposed Mode Shares	
	AM	PM		
Auto Driver	28%	33%	15%	This is reduced based on the expected increases in the alternative travel modes.
Auto Passenger	11%	11%	3%	As per typical travel patterns, an average vehicle occupancy of around 1.2 is maintained.
Transit	41%	26%	60%	The Development site is located within a short 150m radius of Westboro Station, which is expected to provide LRT service by 2026. Additionally, a large number of bus routes have been detoured from the transitway to Scott St, where they currently operate at site frontage. The high availability of transit services in the area results in significantly more transit usage.
Biking	3%	7%	7%	The study area and the Ottawa West District in general are well developed and provide sidewalks, bike lanes, cycle tracks, and connections to major MUP networks throughout the region. Additionally, the Tunney's Pasture complex is the largest employment generator in the area and is located within a 1.5km walking distance from the development site. Trips are expected to make use of the sidewalk facilities along Scott St and the Crosstown Bikeway designation and facilities along Scott St to access the nearby employment locations.
Walking	16%	23%	15%	

With regards to the first-floor commercial usage of the proposed residential buildings, it is expected that the commercial spaces will mainly provide ancillary use to the local community and will not be major retail destinations. Therefore, the majority of trips will be generated either internally by the residents of the proposed buildings, or by surrounding community through walking and cycling. As such, a small percentage of trips is assumed to be from auto driver, passengers and transit. For the internal trips, a reduction of approximately 60% will be applied to the total commercial person trips prior to applying the mode share breakdown of the different travel modes. **Table 3** below indicates the assumed mode share breakdown percentages.

Table 3: Commercial Space Mode Shares for the Proposed Development

Travel Mode	Assumed Commercial Space Mode Shares
Auto Driver	15%
Auto Passenger	5%
Transit	15%
Cycling	25%
Walking	40%

Residential Trip Generation

Using the respective trip rates in **Table 1**, the total number of peak period person trips generated by the proposed residential land uses of the development are calculated for the morning and afternoon peak periods, as shown below in **Table 4**.

Table 4: Residential Units Peak Period Person Trip Generation

Horizon Year	Building	Dwelling Units	AM Peak Period Person Trips	PM Peak Period Person Trips
2028	Phase 1 Building A1	555	444	500
	Phase 1 Building A2	43	34	39
2031	Phase 2 Building B	290	232	261
	Phase 3 Building C	318	254	286
Total		1,206	964	1,086

The proposed development is anticipated to generate a total of approximately 964 and 1,086 person trips during the morning and afternoon peak periods, respectively. The total peak period person trips in **Table 4** are then divided into different travel modes using the alternative mode share percentages provided in **Table 2**. **Table 5** and **Table 6** provide the travel mode breakdown for the proposed high-rise apartments at each phase and horizon year, respectively.

Table 5: Phase 1 (2028) Peak Period Residential Mode Share Breakdown

Travel Mode	Mode Share	AM Peak Period Person Trip	PM Peak Period Person Trips
Phase 1 – Building A1			
Auto Driver	15%	67	75
Auto Passenger	3%	13	15
Transit	60%	266	300
Cycling	7%	31	35
Walking	15%	67	75
Total Person Trips	100%	444	500
Phase 1 – Building A2			
Auto Driver	15%	5	6
Auto Passenger	3%	1	1
Transit	60%	20	23
Cycling	7%	2	3
Walking	15%	5	6
Total Person Trips	100%	34	39

Table 6: Phase 2 and 3 (2031) Peak Period Residential Mode Share Breakdown

Travel Mode	Mode Share	AM Peak Period Person Trip	PM Peak Period Person Trips
Phase 2 – Building B			
Auto Driver	15%	35	39
Auto Passenger	3%	7	8
Transit	60%	139	157
Cycling	7%	16	18
Walking	15%	35	39
Total Person Trips	100%	232	261
Phase 3 – Building C			
Auto Driver	15%	38	43
Auto Passenger	3%	8	9
Transit	60%	152	172
Cycling	7%	18	20
Walking	15%	38	43
Total Person Trips	100%	254	286

Standard traffic analysis is usually conducted using the morning and afternoon peak hour trips as they represent the most critical times during the weekdays. The 2020 TRANS Manual provides conversions rates from peak

period to peak hours for different mode shares. The conversion rates for both AM and PM are provided in **Table 7** below.

Table 7: Peak Period to Peak Hour Conversion Factors (2020 TRANS Manual)

Travel Mode	Peak Period to Peak Hour Conversion Factors	
	AM	PM
Auto Driver & Auto Passenger	0.48	0.44
Transit	0.55	0.47
Cycling	0.58	0.48
Walking	0.58	0.52

Using the conversion rates in **Table 7** and the peak period person trips for different travel modes in **Table 5** and **Table 6**, the peak hour trips for different travel modes can be calculated for each land use as shown below in **Table 8** and **Table 9**. The total site generated trips from both phases are shown in **Table 10**. Note that inbound and outbound percentages are provided by the TRANS Manual, where 31% are inbound and 69% are outbound during the morning peak hour and 58% are inbound and 42% are outbound during the afternoon peak hour.

Table 8: Phase 1 (2028) Peak Hour Residential Trip Generation – AM and PM Peak Hours

Travel Mode	AM Peak (Person Trips/h)			PM Peak (Person Trips/h)		
	In (31%)	Out (69%)	Total	In (58%)	Out (42%)	Total
Phase 1 – Building A1						
Auto Driver	10	22	32	19	14	33
Auto Passenger	2	4	6	4	3	7
Transit	45	101	146	82	59	141
Cycling	6	12	18	10	7	17
Walking	12	27	39	23	16	39
Total Person Trips	75	166	241	138	99	237
Phase 1 – Building A2						
Auto Driver	1	1	2	2	1	3
Auto Passenger	0	0	0	0	0	0
Transit	3	8	11	6	5	11
Cycling	0	1	1	1	0	1
Walking	1	2	3	2	1	3
Total Person Trips	5	12	17	11	7	18

Table 9: Phase 2 and 3 (2031) Peak Hour Residential Trip Generation

Travel Mode	AM Peak (Person Trips/h)			PM Peak (Person Trips/h)		
	In (31%)	Out (69%)	Total	In (58%)	Out (42%)	Total
Phase 2 – Building B						
Auto Driver	5	12	17	10	7	17
Auto Passenger	1	2	3	2	2	4
Transit	24	52	76	43	31	74
Cycling	3	6	9	5	4	9
Walking	6	14	20	12	8	20
Total Person Trips	39	86	125	72	52	124
Phase 3 – Building C						
Auto Driver	6	12	18	11	8	19
Auto Passenger	1	3	4	2	2	4
Transit	26	58	84	47	34	81
Cycling	3	7	10	6	4	10
Walking	7	15	22	13	9	22
Total Person Trips	43	95	138	79	57	136

Table 10: Total Site Generated Residential Trips– AM and PM Peak Hours

Travel Mode	AM Peak (Person Trips/h)			PM Peak (Person Trips/h)		
	In (31%)	Out (69%)	Total	In (58%)	Out (42%)	Total
Phase 1 (2028)						
Auto Driver	11	23	34	21	15	36
Auto Passenger	2	4	6	4	3	7
Transit	48	109	157	88	64	152
Cycling	6	13	19	11	7	18
Walking	13	29	42	25	17	42
Total Person Trips	80	178	258	149	106	255
Phase 2 and 3 (2031)						
Auto Driver	11	24	35	21	15	36
Auto Passenger	2	5	7	4	4	8
Transit	50	110	160	90	65	155
Cycling	6	13	19	11	8	19
Walking	13	29	42	25	17	42
Total Person Trips	82	181	263	151	109	260
Total						
Auto Driver	22	47	69	42	30	72
Auto Passenger	4	9	13	8	7	15
Transit	98	219	317	178	129	307
Cycling	12	26	38	22	15	37
Walking	26	58	84	50	34	84
Total Person Trips	162	359	521	300	215	515

As shown in **Table 10**, the proposed residential uses are anticipated to generate a total person trips of approximately 255 to 258 at Phase 1 and 260 to 263 at Phases 2 and 3. Vehicle trips are anticipated to generate approximately up to 72 total site trips during the peak hours. Transit trips are anticipated to generate approximately up to 317 total site trips during the peak hours. Active transportation (cycling and walking) trips are anticipated to generate approximately up to 121 total site trips during the peak hours.

Commercial Trip Generation

Using the respective trip rates in **Table 1**, the total number of peak period person trips generated by the proposed commercial land uses of the development are calculated for the morning and afternoon peak periods, as shown below in **Table 11**. Commercial spaces are anticipated to be provided within Buildings A1 and B. As mentioned previously and shown in the table, the total person trips are assumed to be reduced by 60% to account for the internal trip generation of the residential buildings.

Table 11: First-Floor Commercial Peak Hour Person Trips– AM and PM Peak Hours

Phase		AM Peak (Person Trips/h)			PM Peak (Person Trips/h)		
		In (60%)	Out (40%)	Total	In (50%)	Out (50%)	Total
Phase 1 – Building A1							
First-Floor Commercial	5,023 ft ²	13	10	23	30	31	61
60% Internal Trip Reduction		-8	-6	-14	-18	-19	-37
External Trips Generated by the Retail		5	4	9	12	12	24
Phase 2 – Building B							
First-Floor Commercial	3,465 ft ²	10	8	18	23	24	47
60% Internal Trip Reduction		-6	-5	-11	-14	-14	-28
External Trips Generated by the Retail		4	3	7	9	10	19
Total External Person Trips		9	7	16	21	22	43

Using the proposed commercial mode shares in **Table 3** and the calculated external commercial person trips in **Table 11**, the commercial trips breakdown by travel mode for each building are provided in **Table 12** for Phase 1 and **Table 13** for Phases 2, with the total commercial trip generation of the buildings provided in **Table 14**.

Table 12: Phase 1 (2028) Peak Hour Commercial Trip Generation – AM and PM Peak Hours

Travel Mode	Mode Share	AM Peak (Person Trips/h)			PM Peak (Person Trips/h)		
		In (60%)	Out (40%)	Total	In (50%)	Out (50%)	Total
Phase 1 – Building A1							
Auto Driver	15%	1	0	1	2	2	4
Auto Passenger	5%	0	0	0	1	0	1
Transit	15%	1	0	1	2	2	4
Cycling	25%	1	1	2	3	3	6
Walking	40%	2	1	3	4	5	9
Total Person Trips	100%	5	4	9	12	12	24

Table 13: Phase 2 and 3 (2031) Peak Hour Commercial Trip Generation – AM and PM Peak Hours

Travel Mode	Mode Share	AM Peak (Person Trips/h)			PM Peak (Person Trips/h)		
		In (60%)	Out (40%)	Total	In (50%)	Out (50%)	Total
Phase 2 – Building B							
Auto Driver	15%	0	1	1	1	2	3
Auto Passenger	5%	0	0	0	0	1	1
Transit	15%	1	0	1	1	2	3
Cycling	25%	1	1	2	3	2	5
Walking	40%	2	1	3	4	3	7
Total Person Trips	100%	4	3	7	9	10	19

Table 14: Total Site Generated Commercial Trips – AM and PM Peak Hours

Travel Mode	AM Peak (Person Trips/h)			PM Peak (Person Trips/h)		
	In (60%)	Out (40%)	Total	In (50%)	Out (50%)	Total
Auto Driver	1	1	2	3	4	7
Auto Passenger	0	0	0	1	1	2
Transit	1	1	2	3	4	7
Cycling	3	2	5	6	5	11
Walking	4	3	7	8	8	16
Total Person Trips	9	7	16	21	22	43

As shown in the tables above, the proposed commercial uses are anticipated to generate a total person trips of approximately 9 to 24 at Phase 1 and 7 to 19 at Phase 2. Vehicle trips are anticipated to generate approximately up to 7 total site trips during the peak hours. Transit trips are anticipated to generate approximately up to 7 total site trips during the peak hours. Active transportation (cycling and walking) trips are anticipated to generate approximately up to 27 total site trips during the peak hours.

Total Trips Generated

The total site generated trips with the residential and commercial land uses combined are provided in **Table 15** for each building and in **Table 16** for each phase.

Table 15: Total Residential and Commercial Site Generated Trips by Building- AM and PM Peak Hours

Travel Mode	AM Peak (Person Trips/h)			PM Peak (Person Trips/h)		
	In	Out	Total	In	Out	Total
Phase 1 – Building A1						
Auto Driver	11	22	33	21	16	37
Auto Passenger	2	4	6	5	3	8
Transit	45	102	147	84	61	145
Cycling	8	13	21	13	10	23
Walking	14	29	43	27	21	48
Total Person Trips	80	170	250	150	111	261
Phase 1 – Building A2						
Auto Driver	1	1	2	2	1	3
Auto Passenger	0	0	0	0	0	0
Transit	3	8	11	6	5	11
Cycling	0	1	1	1	0	1
Walking	1	2	3	2	1	3
Total Person Trips	5	12	17	11	7	18
Phase 2 – Building B						
Auto Driver	5	13	18	11	9	20
Auto Passenger	1	2	3	2	3	5
Transit	25	52	77	44	33	77
Cycling	4	7	11	8	6	14
Walking	8	15	23	16	11	27
Total Person Trips	43	89	132	81	62	143
Phase 3 – Building C						
Auto Driver	6	12	18	11	8	19
Auto Passenger	1	3	4	2	2	4
Transit	26	58	84	47	34	81
Cycling	3	7	10	6	4	10
Walking	7	15	22	13	9	22
Total Person Trips	43	95	138	79	57	136

Table 16: Total Residential and Commercial Site Generated Trips by Phase

Travel Mode	AM Peak (Person Trips/h)			PM Peak (Person Trips/h)		
	In	Out	Total	In	Out	Total
Phase 1 (2028)						
Auto Driver	12	23	35	23	17	40
Auto Passenger	2	4	6	5	3	8
Transit	48	110	158	90	66	156
Cycling	8	14	22	14	10	24
Walking	15	31	46	29	22	51
Total Person Trips	85	182	267	161	118	279
Phase 2 and 3 (2031)						
Auto Driver	11	25	36	22	17	39
Auto Passenger	2	5	7	4	5	9
Transit	51	110	161	91	67	158
Cycling	7	14	21	14	10	24
Walking	15	30	45	29	20	49
Total Person Trips	86	184	270	160	119	279
Total						
Auto Driver	23	48	71	45	34	79
Auto Passenger	4	9	13	9	8	17
Transit	99	220	319	181	133	314
Cycling	15	28	43	28	20	48
Walking	30	61	91	58	42	100
Total Person Trips	171	366	537	321	237	558

Based on the above, Building A1 is expected to generate up to 261 person trips, while Building A2 is expected to generate up to 18 person trips, for a total of 279 person trips at Phase 1 (2028). Building B is expected to generate up to 143 person trips, while Building C is expected to generate up to 138 person trips, for a total of

279 person trips at Phases 2 and 3 (2031). Ultimately, the site would generate up to 558 person trips, including up to 79 vehicle trips, 17 auto passenger trips, 319 transit trips and 148 active transport trips.

3.1.2. Trip Distribution and Assignment

Based on the 2011 OD Survey (Ottawa West district) and the location of adjacent arterial roadways and neighbourhoods, the distribution of site-generated traffic volumes was estimated as shown in **Figure 13**. The site generated trips were then assigned to the road network as shown in **Figure 14** for Phase 1 and **Figure 15** for the ultimate site buildout.

Figure 13: Site Generated Traffic Percent Distribution



Figure 14: Phase 1 Site-Generated Traffic- AM (PM) Peak Hours

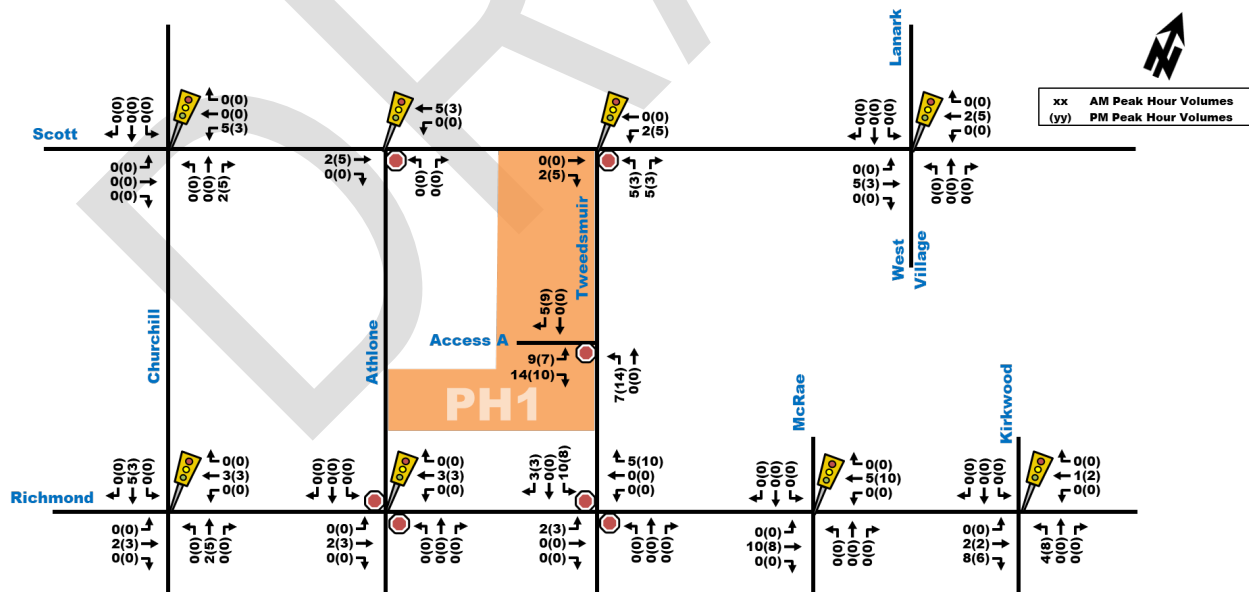
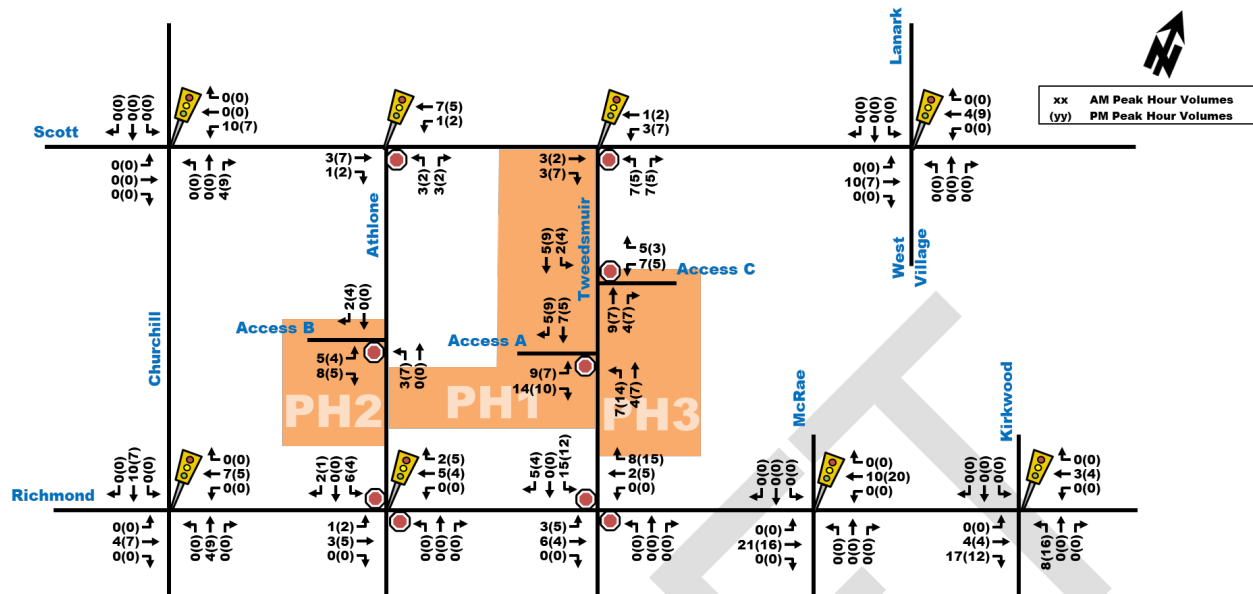


Figure 15: Ultimate Site-Generated Trips – AM (PM) Peak Hours



3.2. Exemption Review

The following modules/elements of the TIA process provided in **Table 17** are recommended to be exempt in the subsequent steps of the TIA process, based on the City's TIA guidelines and the subject site:

Table 17: Exemptions Review Summary

Module	Element	Exemption Consideration
4.1 Development Design	4.1.3 New Street Networks	Only required for plans of subdivision.
4.4 Access Intersections Design	All elements	As per 2023 TIA Guidelines update, this section is removed and combined with Section 4.9.

3.3. Background Network Traffic

3.3.1. Transportation Network Plans

As discussed in detail in **Section 2.1.3 Planned Conditions**, major future network plans include the construction of the LRT Stage 2, which is expected to result in higher transit usage in the area.

Scott Street improvements will also result in improved pedestrian and cyclist facilities that will incentivize a higher active transport travel mode. These improvements are currently ongoing (2025)

3.3.2. Background Growth

As the LRT Stage 2 construction completion is expected by 2026, prior to construction of Phase 1 of the proposed development in 2028, traffic volumes along study area roads are expected to begin decreasing along the major study area roads in favor of transit trips. Improvements within the study area to pedestrian and cyclist facilities, particularly along Scott St will also result in a shift to higher active transport trips. Additionally, anticipated traffic volumes by all currently known future adjacent developments are already being accounted for as part of future background volumes. Given the aforementioned reasons, a future background growth rate of 0% per year along study area roads is considered appropriate.

3.3.3. Other Developments

Detailed description of the proposed future adjacent developments in the study area was provided in **Section 2.1.3 Planned Conditions**. Based on available data and the anticipated future developments, traffic volumes from the following six future developments will be accounted for:

- 2026 Scott St,
- 2050 Scott St,
- 2070 Scott St,
- 1950 Scott St, and
- 249-255 Richmond Road & 372 Tweedsmuir Avenue
- 319-327 Richmond Road

The site-generated traffic volumes of these developments were taken from the respective TIA Report for each development, which have been provided in **Appendix E**. The other area development volumes were then added to the existing volumes in **Figure 7** to create the future background traffic volumes at horizon years 2028 and 2031, as illustrated in **Figure 16** and **Figure 17**, respectively. Note that the difference in volumes between 2028 and 2031 is minimal as the only difference is a slight increase in volumes from the future development at 2026 Scott St. Future background 2036 volumes are assumed to be similar to future background 2031 volumes as no background growth rate has been applied.

Figure 16: Future Background 2028 Traffic Volumes

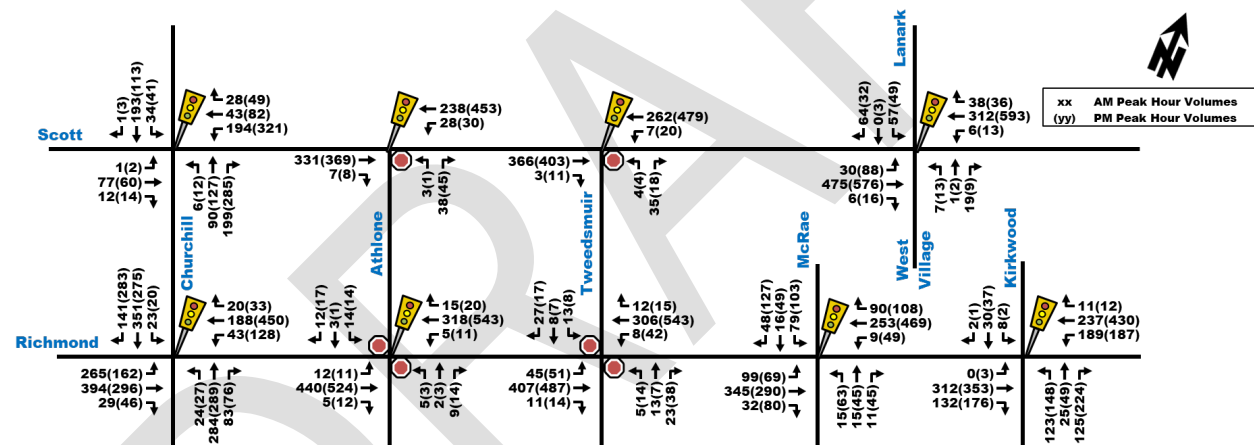
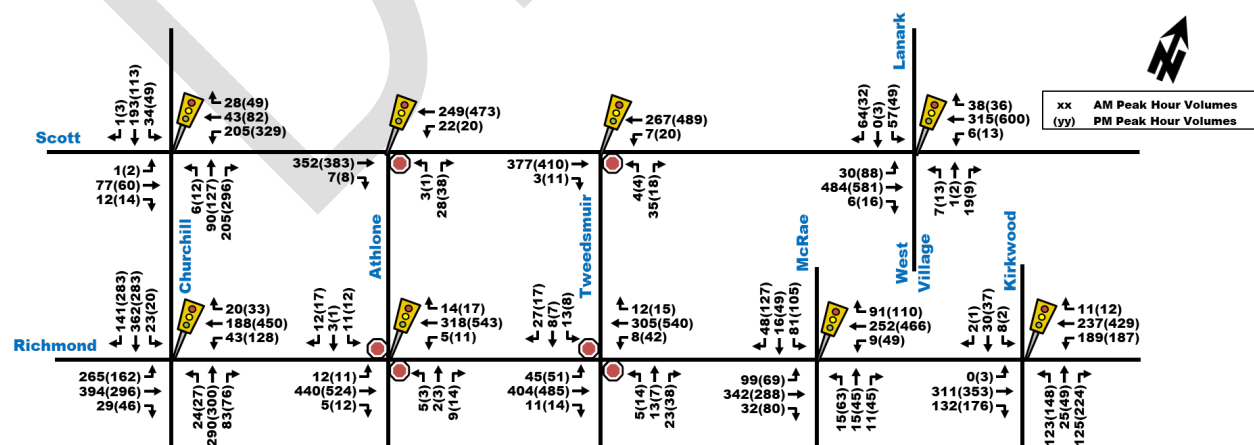


Figure 17: Future Background 2031/2036 Traffic Volumes



3.4. Demand Rationalization

The following section indicates factors that may be used to rationalize the future travel demands in the study area and determine if there are potential capacity limitations and how they may be addressed.

The total projected 2028 (Phase 1) and 2031 (Phases 2 and 3) traffic volumes can be calculated by superimposing the site-generated traffic in **Figure 14** and **Figure 15**, onto the future background traffic in **Figure 16** and **Figure 17**. The total projected 2028 and 2031 traffic volumes are illustrated in **Figure 18** and **Figure 19**, respectively. As mentioned previously, the 2036 (full buildout + 5 years) traffic volumes are assumed to be similar to 2031 as no background growth rate was applied.

The combination of long-term transportation network changes of the study area and broader City of Ottawa investments in transit and active transportation (as discussed in **Section 2.1.3**), are expected to gradually discourage auto use in the Inner Urban Transect (as designated in the City Official Plan). The Richmond Rd/Westboro CDP and Secondary Plan, the Scott St reconstruction and the Athlone Ave integrated renewal plan are all examples of planned and recently implemented transportation improvements for different travel modes. The proposed site proposes to improve active transport facilities as well with wider sidewalks, traffic calming measures such as curb extensions, pedestrian street crossing treatments, an active transport connection between Athlone Ave and Tweedsmuir Ave, and a bike parking ratio exceeding 1 space per dwelling unit. Vehicular usage may be more limited due to consolidated parking garage accesses and reduced parking spaces.

Additionally, the City of Ottawa LRT project is underway, where Stage 1 has already been constructed and in use as of 2019, while Stage 2 is under construction and includes further expansions of the LRT corridor in different directions. Westboro LRT Station will be located along Scott St, within a short radius of approximately 150m from the proposed development site. The LRT is expected to result in significant reductions in background traffic volumes, influencing the area as a whole by promoting increased reliance on transit. The expected completion date of the LRT extensions is 2026, which coincides with assumed construction date of Phase 1 of the proposed development.

Figure 18: Total Projected 2028 Traffic Volumes

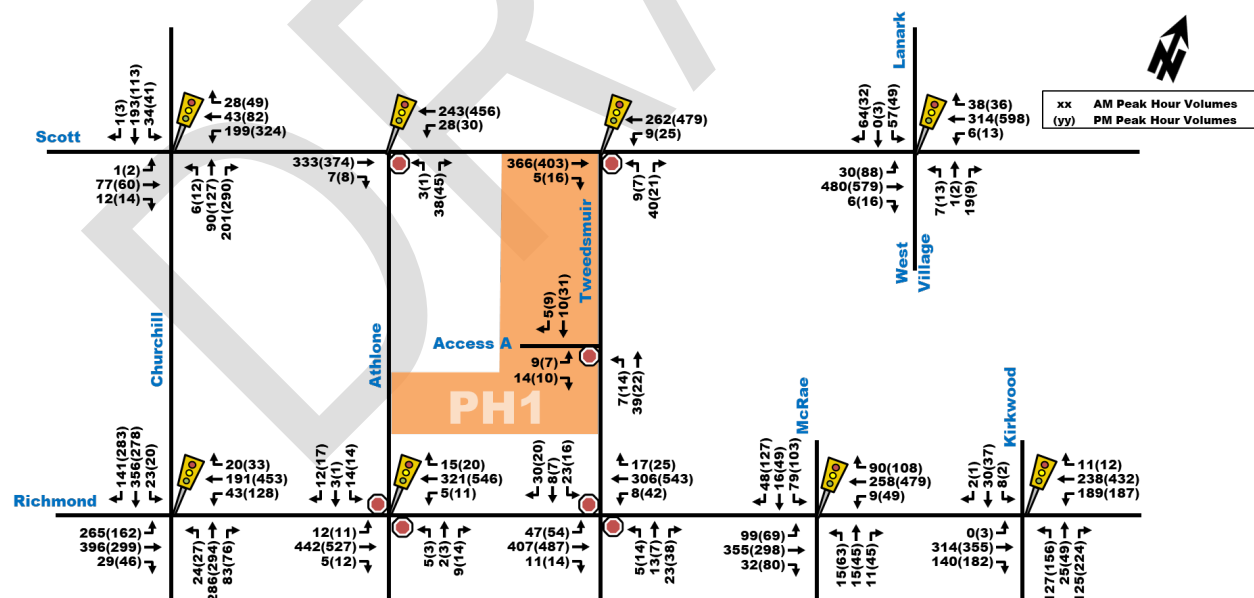
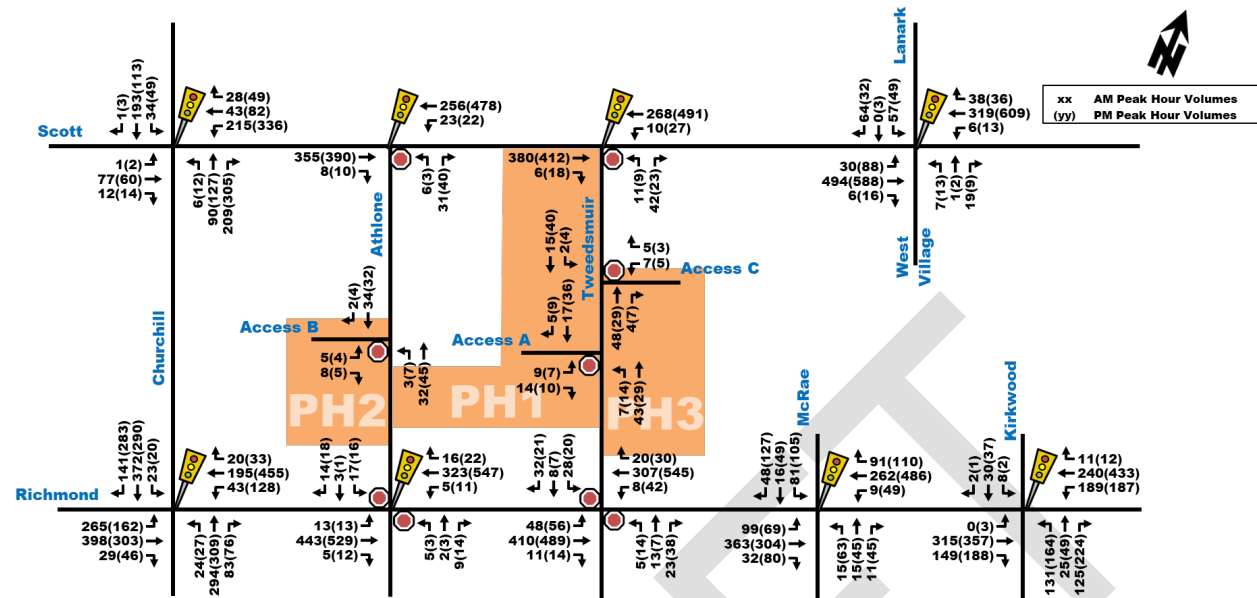


Figure 19: Total Projected 2031/2036 Traffic Volumes



4.0 ANALYSIS

4.1. Development Design

As this development is currently at the zoning application stage, a brief description regarding design elements of the site has been provided. However, a more detailed description will be discussed and confirmed in future Site Plan Control Applications.

The development is expected to provide internal walkways for pedestrians within and surrounding the proposed buildings, including providing wide sidewalks (greater than 2.0m) along the public street frontages. As part of Phase 1, the development is also proposing to provide an east-west active transport connection between Athlone Ave and Tweedsmuir Ave, just below Building A2, and continuing west to Lion's Park on the south side of Building B as part of Phase 2. This connection is to be privately owned. This would form a complete east-west connection for people walking and biking through the community.

The development accesses Tweedsmuir Ave and Athlone Ave. Traffic calming measures have been proposed along each frontage, which include three curb extensions on the west side of Tweedsmuir Ave, which is expected to narrow the road to 6m, and pedestrian crossing treatments on both Tweedsmuir Ave and Athlone Ave. There is an opportunity for these crosswalks to be raised. These traffic calming measures are meant to enforce the developer's commitment to improving safety on the local streets by reducing vehicular speeds. Design details are to be confirmed through RMA/functional design at Site Plan Control.

The proposed development is well served by the future Stage 2 Westboro LRT station. All buildings are located within a 200m walking distance of the LRT. They connect to the LRT and bus routes on Scott Street via sidewalks on Tweedsmuir Ave and Athlone Ave. Route #11 is also accessible on Richmond Road to the south, which is less than a 300m walk to the nearest bus stops.

For vehicles, underground parking lots are proposed to be provided for the buildings, with ramp connections to the respective boundary streets. All vehicle parking spaces are expected to be underground. An on-street layby area for drop-off/pick-up is expected to be provided at the frontage of Building A2 on Tweedsmuir Ave. Vehicle access to Buildings A1 and A2 will be via a single ramp on the west side of Tweedsmuir Ave, while access to

Building B will be via a ramp on the west side of Athlone Ave and access to Building C will be via a ramp on the east side of Tweedsmuir Ave.

There are no bus routes along Athlone Ave or Tweedsmuir Ave that may be impacted by the proposed development. As per the Official Plan, the required ROW protection of 26m on Scott St will be provided by conveying the portion needed from the site to the City.

The City of Ottawa's TDM-Supportive Development Design and Infrastructure has been provided in **Appendix F** and discussed in more detail in **Section 4.5**.

4.2. Parking

4.2.1. Parking Supply

Based on City of Ottawa Parking Provisions, Schedule 1A, the proposed development is located in "Area X". As such, the required number of parking spaces will be calculated based on the rates set out for this area. The proposed development will locate all vehicle and bicycle parking spaces in the underground parking garage of each building. **Table 18** provides a summary of the required and the proposed parking rates for vehicles and **Table 19** for bicycles. It is important to note that the required number of spaces are calculated based on the parking rates in the current zoning by-law, however, these numbers will no longer be applicable once the new by-law comes into effect.

Table 18: Required and Proposed Vehicle Parking Spaces

Land Use	Size	Zoning By-Law Parking Rates		Required Spaces			Proposed Spaces		
		Base	Visitor/Retail	Base	Visitor/Retail	Total	Base	Visitor/Retail	Total
Phase 1 (Building A1 and A2)									
High-Rise Residential	598 Units	0.5 per unit, excluding first 12 units. Reduce required by the lesser of 10 per cent or 20 spaces.	0.1 per unit, excluding first 12 units, 30 spaces max per building	267	33	320	294		
Retail*	467 m ²	-	1.25 per 100 m ²	-	6	6	22		
Phase 1 Total				267	36	326	316		
Phase 2 (Building B)									
High-Rise Residential	290 Units	0.5 per unit, excluding first 12 units per building. Reduce required by the lesser of 10 per cent or 20 spaces.	0.1 per unit, excluding first 12 units, 30 spaces max per building	125	28	167	144		
Retail*	322 m ²	-	1.25 per 100 m ²	-	4	4			
Phase 2 Total				125	32	171			
Phase 3 (Building C)									
High-Rise Residential	318 Units	0.5 per unit, excluding first 12 units per building. Reduce required by the lesser of 10 per cent or 20 spaces.	0.1 per unit, excluding first 12 units, 30 spaces max per building	138	30	183	152		
Phase 3 Total				138	30	183			
Full Buildout Total				530	101	631	612		
*Retail units with an area less than 200 m ² do not require off-street vehicle parking to be provided, as per the Parking Provisions.									

As shown in **Table 18**, the development intends to provide fewer vehicle parking spaces than the minimum requirements of the current zoning by-law by approximately 19 residential parking spaces. While the amount of parking proposed is slightly below the current zoning by-law minimum requirements, it is expected to adhere to

the requirements of the updated zoning by-law once it comes into effect. Additionally, the site is well served by transit such that achieving less parking promotes alternative modes than autos.

Table 19: Required and Proposed Bicycle Parking Spaces

Land Use	Size	Zoning By-Law Parking Rates	Required Spaces	Proposed Spaces
		Bicycle	Bicycle	Bicycle
Phase 1 (Building A1 and A2)				
High-Rise Residential	598 Units	0.5 per unit	299	607
Retail	467 m²	1.0 per 250 m²	2	
Phase 1 Total		301		
Phase 2 (Building B)				
High-Rise Residential	290 Units	0.5 per unit	145	318
Retail	322 m²	1.0 per 250 m²	2	
Phase 2 Total		147		
Phase 3 (Building C)				
High-Rise Residential	318 Units	0.5 per unit	159	322
Phase 3 Total		159		
Full Buildout Total		607	1,247	

The proposed number of bicycle parking spaces exceed the required minimum by more than double the number of spaces, which is expected to help promote cycling use. The majority of bicycle parking is expected to be located indoors, with easy access to elevators and the outside.

4.3. Boundary Street Design

MMLOS analysis for boundary streets to be provided as part of future Site Plan Applications for the proposed development.

4.4. Access Intersection Design

Exempt – refer to Table 17.

4.5. Transportation Demand Management

4.5.1. Context for TDM

Given the proposed land-use of the development as a residential building, it is assumed that most trips generated will be from residents leaving the site in the AM peak to go to work and returning to the site in the PM peak. Sections 3.1.1 and 3.1.2 describe how many trips are anticipated per travel mode and anticipates the likely locations that they will travel to and from based on the 2011 Origin-Destination Survey for Ottawa.

The development is proposing to provide four high-rise residential buildings with 1,206 apartment units and 789 m² (8,488 ft²) of first floor commercial space. Phase 1 (Buildings A1 and A2), with an assumed buildout of 2028, will consist of two buildings with 598 apartment units and a 467 m² (5,023 ft²) total first-floor commercial space. Phases 2 and 3, with an assumed buildout of 2031, will consist of two buildings with 608 apartment units and 322 m² (3,465 ft²) total first-floor commercial space.

The property is owned and will be managed by the property developer, Park River.

4.5.2. Need and Opportunity

The proposed development is located in a well-developed area of the City of Ottawa with multimodal travel options available, with a significantly high volume of OC Transpo bus routes and the availability of both cycling and pedestrian facilities and infrastructure to support active transportation. The future Confederation Line LRT extension will also be operating within a very short 150m from the development buildings and is expected to be highly utilized by the future residents. Transportation Demand Management (TDM) measures, as detailed in Section 4.5.3 below, will need to be utilized as needed to help support the available alternative travel modes.

4.5.3. TDM Program

The TDM Infrastructure and TDM Measures Checklists have been provided in **Appendix F**. The proposed measures in each respective checklist are identified below. Note that preliminary measures are currently indicated, however, additional measures may be considered by the proponent during the future Site Plan Applications.

Proposed measures identified in the TDM-supportive Development Design and Infrastructure Checklist are:

- Ten (10) out of the ten (10) “Required” measures are expected to be satisfied.
- Seven (7) out of fourteen (14) “Basic” measures related to Walking and Cycling and Parking have been satisfied, namely:
 - Locating building close to the street.
 - Locating building entrances to minimize walk distance to sidewalks and transit.
 - Locating building doors and windows to ensure visibility of pedestrians.
 - Providing safe, direct and attractive walking routes to transit.
 - Ensuring walking routes are secure, visible, and lighted.
 - Providing lighting, landscaping and benches along walking and cycling routes.
 - Providing a designated area for drop-off or pick-up.

Proposed measures identified in the TDM Measures Checklist are:

- Four (4) out of seven (7) “Basic” measures related to Walking and Cycling, Transit, Parking and TDM Marketing have been satisfied. Two (2) of those, which have been designated by an asterisk (*), are considered by TDM Measures to be some of the most dependably effective tools to encourage sustainable travel modes. This includes:
 - Display walking and cycling information at major entrances.
 - Display transit information at major entrances.
 - * Unbundle parking costs from monthly rent.
 - * Provide multi-modal travel information package to new residents.

4.6. Neighbourhood Traffic Calming (NTC)

The proposed development does not meet the NTC module’s threshold. The TIA Guideline 2023 Revisions provide the following criteria, all of which must be met to trigger the NTC Module:

1. Access to Collector or Local -> **Met since Athlone Ave and Tweedsmuir Ave are both local roads.**
2. “Significant sensitive land use presence” exists, where there is at least two of the following adjacent to the subject street segment: -> **Met as Lion’s Park is adjacent to (but not directly fronting) Athlone Ave and both Athlone and Tweedsmuir consist primarily of residential land uses.**
 - School (within 250m walking distance).
 - Park;
 - Retirement / Older Adult Facility (i.e. long-term care and retirement homes);
 - Licenced Child Care Centre; Community Centre; or
 - 50%, or greater, of adjacent property along the route(s) is occupied by residential lands and a minimum of 10 occupied residential units are present on the route.
3. Application is for Zoning By-Law Amendment or Draft Plan of Subdivision -> **Met**
4. At least 75 site-generated auto trips -> **Met, see Table 16.**
5. Site Trip Infiltration is expected. Site traffic will increase peak hour vehicle volumes along the route by 50% or more -> **Not Met, see Table 20 below.**

Site-generated traffic of the proposed development is expected to use local roads Athlone Ave and Tweedsmuir Ave as part of their access route to/from the proposed development. Using the total projected 2031/2036 traffic

volumes in **Figure 19**, future two-way traffic volumes along both roads were compared to existing volumes as shown in **Table 20**.

Table 20: Local Roads Existing and Future Two-Way Volumes

Roadway	Classification	Section	Peak Hour Two-Way Volumes AM (PM)		Traffic Volume Percent Increase AM(PM)
			Existing	Projected	
Athlone Ave	Local	Between Richmond and Scott	62 (72)	77 (89)	24%(24%)
Tweedsmuir Ave	Local	Between Richmond and Scott	102 (110)	149 (141)	46%(28%)

As shown in **Table 20**, the projected volumes by the development are not expected to result in an increase of 50% or more along either road. It is worth noting that Athlone Ave is anticipated to be renewed within 2-3 years, which includes a plan to provide traffic calming measures along the road. While the volumes are not excessive, the traffic calming measures can provide additional mitigations for any traffic concerns.

In regard to Tweedsmuir Ave, for the purpose of mitigating any potential safety concerns, the development is proposing to provide traffic calming measures including three curb extensions and pedestrian crossing treatment on Tweedsmuir Ave.

Intersection traffic operations are modeled and assessed in detail as part of **Section 4.9**.

4.7. Transit

As shown in **Table 16**, the proposed development is anticipated to generate up to 319 total new transit trips during peak hours. These trips will have access to the future LRT at Westboro Station. At this time, it is unclear if the existing bus routes will continue to operate within the study area in the future, once the LRT Stage 2 construction is complete.

It is also noted that as of April 2025, the OC Transpo transit network has been modified as bus routes were altered throughout the city. For the purpose of this report's assessment, the data analyzed reflects ridership data of existing bus routes that was in effect prior to the April 2025 updates, which consisted of the following:

- Previous OC Transpo ridership data was obtained for bus routes 11, 81, 57, 61, 62, 63, 66, 67, 73, 74, 75, 82, 87, 256, 261, 262, 263, and 265.

The transit ridership data was obtained from OC Transpo for six bus stops near the proposed development site, as shown in **Figure 20**. The data, as provided in **Table 21**, is a summary of average bus boarding, alighting and occupancy information for bus routes at each of the respective stop numbers, during morning and afternoon peak hours.

Figure 20: Transit Ridership Data Bus Stop Locations

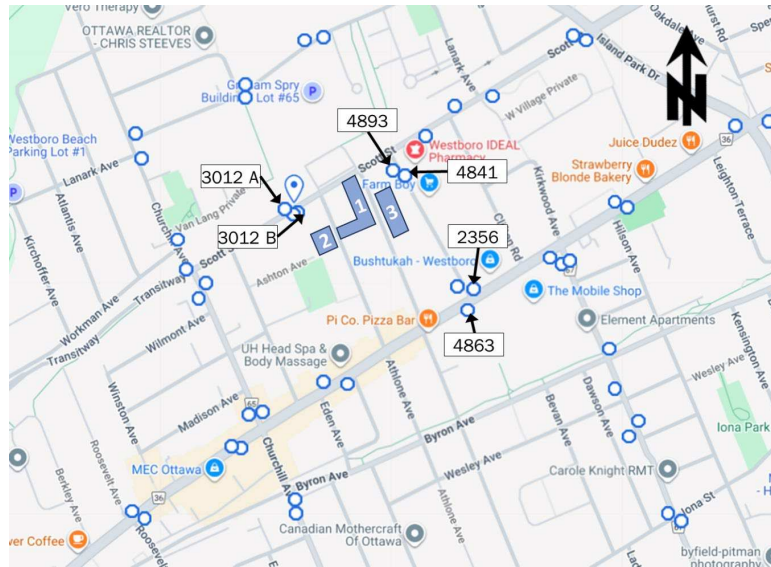


Table 21: Transit Ridership Data (Sep 5, 2023 – Dec 19, 2023)

Stop No.	Location	Route	Direction	AM (06:00-09:00)			PM (15:00-18:00)		
				Boarding	Alighting	Avg. Load at Depart.	Boarding	Alighting	Avg. Load at Depart.
2356	Richmond / McRae	11	WB	9	20	10	28	47	21
		81	EB	0	6	9	7	9	6
3012	Westboro A	57	WB	5	9	8	6	14	22
		61	WB	3	2	12	21	23	23
		62	WB	4	1	14	6	11	20
		63	WB	9	7	10	4	29	23
		66	WB	8	9	16	-	-	-
		67	SB	-	-	-	13	3	20
		73	SB	3	0	7	-	-	-
		74	SB	6	1	10	12	1	24
		75	SB	8	4	14	26	13	32
		82	WB	2	0	5	2	0	7
		87	NB	5	0	4	11	4	14
		256	OB	-	-	-	1	1	20
		261	OB	-	-	-	1	2	17
		262	OB	-	-	-	1	2	15
		263	OB	-	-	-	0	4	13
		265	OB	-	-	-	1	0	6
3012	Westboro B	57	EB	10	10	20	7	14	18
		61	EB	18	1	15	4	6	20
		62	EB	2	0	16	1	6	19
		63	EB	9	0	17	8	6	16
		66	EB	-	-	-	6	4	18
		67	NB	5	2	23	-	-	-
		73	NB	-	-	-	4	6	12
		74	NB	5	10	22	16	14	18
		75	NB	17	8	29	9	13	22
		82	EB	6	5	21	3	3	12
		87	SB	8	2	12	11	10	10
4841	McRae / Scott	81	EB	0	0	9	0	0	6
4863	Richmond / McRae	11	EB	11	9	15	44	13	16
4893	McRae / Scott	81	WB	0	0	4	0	0	14

As shown in **Table 21**, the average load of each bus route at its respective bus stop ranges from about 0 to 32 persons during the peak hours. It should be noted that these bus routes serve their respective stops several times during peak hours, as a number of routes are rapid or frequent routes operating every 15 minutes or less, while local routes operate every 30 minutes or less during the peak hours. The future LRT would be expected at a very frequent schedule of every 5 minutes during peak hours.

Based on information obtained from the OC Transpo website, the person capacity of OC Transpo vehicles, which includes the number of seats on the bus plus the standing capacity, ranges from approximately 57 occupants in its smallest vehicles to approximately 110 occupants in its largest vehicles. The LRT has a significantly higher frequency and ample capacity of up to 420 occupants.

Therefore, based on the current average bus loads and the future Stage 2 LRT extension, the estimated 319 site generated transit trips during the peak hour periods are expected to be adequately accommodated by transit service at full buildout.

4.8. Review of Network Concept

Based on the TRANS Screenline System map, there are no official planning screenlines within or in close proximity of the study area. Screenline analysis typically includes the use of imaginary lines drawn on a road network map, where the line crosses one or more roads with the same travel direction to identify the total road capacity available across the respective screenline. For the purpose of completing this analysis, three nonformal screenlines have been established on the map in **Figure 21** as dashed blue lines.

To determine and compare the baseline and projected traffic volumes at the crossing points, the TRANS Regional Model was requested and obtained from the City of Ottawa for years 2011 (base) and 2031 (projected) during the morning peak hour (TRANS models provided in **Appendix G**). During the morning peak hour, the development generates more outbound trips than inbound. As shown by the orange arrows in **Figure 21**, the outbound travel directions (away from development) from the TRANS model will be included in the screenline analysis, depicting a worst-case scenario from the added development traffic.

Table 22 provides a summary of the analysis, which includes an evaluation of the v/c ratio across the selected screenlines, where the morning peak hour volumes in the TRANS model are divided by respective lane capacities of the roads. Lane capacities were selected for each of the respective roads based on engineering judgement and accepted industry guidelines. For collector roads, lane capacity of 600 veh/h/lane was selected, while for arterial roads, a lane capacity of 800-1,000 veh/h/lane was used depending on the road. Note the following analysis summary:

- The analysis indicates that no v/c ratios exceed 1.0 during the peak hours, both for the individual roads and the total screenline.
- Screenline 1: While Scott St has a near critical v/c ratio with 0.88 based on 2011 volumes, the volumes are expected to decrease based on the TRANS model, decreasing the v/c ratio to 0.77 in 2031. The decrease in volumes is attributed to the LRT reducing traffic in favor of transit trips.
- Screenline 2: Byron Ave indicates very negligible volumes in both years, which is potentially due to an error in the TRANS model. Nonetheless, the overall v/c ratio across the screenline is low, even if Byron Ave is excluded.
- Screenline 3: Island Park Dr v/c ratio increases from 0.81 in 2011 to 0.91 in 2031. However, the average v/c ratio across the screenline is 0.52 in 2031, indicating that ample capacity is available along alternative parallel roads.

Figure 21: Screenlines Map

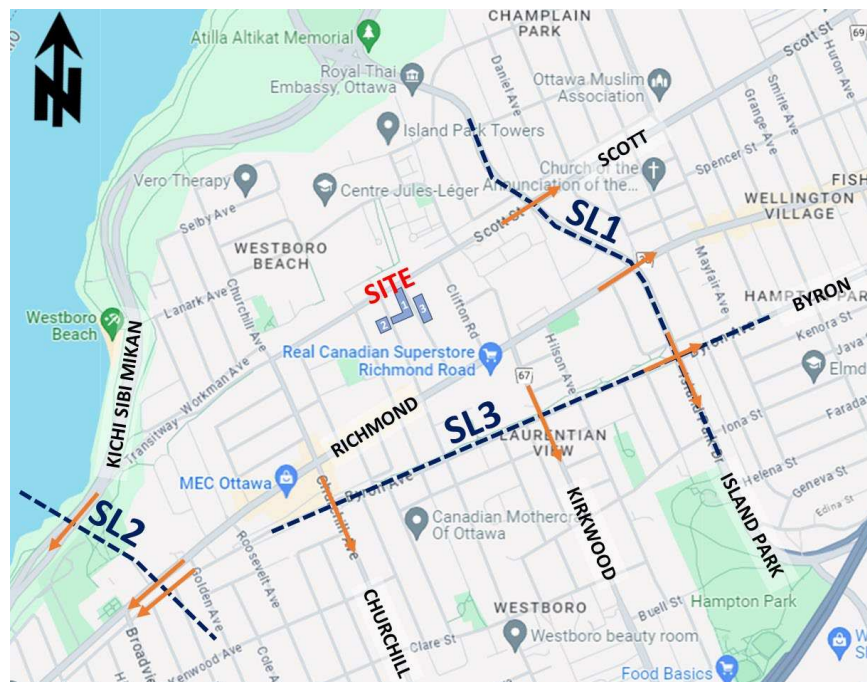


Table 22: Screenline Analysis

Screen-line	Crossing Street	Class	Lane Capacity (vphpl)	# of Lanes	Outbound Direction Capacity	AM Peak Hour Outbound Volume		V/C Ratio	
						2011 Baseline	2031 Projected	2011 Baseline	2031 Projected
SL1: East	Scott	Arterial	800	1	800	701	618	0.88	0.77
	Richmond	Arterial	800	1	800	270	318	0.34	0.40
	Byron	Collector	600	1	600	173	288	0.29	0.48
Total or Average				3	2,200	1,144	1,224	0.50	0.55
SL2: West	Kichi Zibi Mikan	Arterial	1,000	2	2,000	906	1234	0.45	0.62
	Richmond	Arterial	800	1	800	58	70	0.07	0.09
	Byron	Collector	600	1	600	2	2	0.00	0.00
Total or Average				4	3,400	966	1,306	0.18	0.24
SL3: South	Churchill	Collector	600	1	600	188	227	0.31	0.38
	Kirkwood	Arterial	800	1	800	155	225	0.19	0.28
	Island Park	Arterial	800	1	800	651	729	0.81	0.91
Total or Average				3	2,200	994	1,181	0.44	0.52

4.9. Intersection Design

4.9.1. Intersection Control

Stop or Yield control may be considered for traffic exiting the underground parking garage. All other off-site intersection controls in the study area will continue to operate as per existing conditions.

As part of the proposed development, all parking spaces will be provided in underground parking garages. Buildings A1 and A2 garage ramp will be along the west side of Tweedsmuir Ave, located 55m south of Scott St. Building B ramp will be located along the west side of Athlone Ave, 55m south of Scott St. Building C ramp will be located along the east side of Tweedsmuir Ave, 62m south of Scott St. An east-west pedestrian/bike pathway will be provided south of Building A2, between Athlone Ave and Tweedsmuir Ave, as part of the Phase 1 (Buildings A1 and A2) construction and would continue west to Lion's Park on the south side of Building B as part of Phase 2 construction. A more detailed discussion related to the design of the accesses and municipal truck activities will be provided at the time of the future Site Plan Applications for the proposed development.

4.9.2. Intersection Design

Synchro 11 Trafficware was used to analyze intersection performance of intersections within the study area. Critical movements at each of the intersections were assessed based on either the movement with the highest volume-to-capacity ratio (for signalized intersections), or the movement experiencing the highest average delay (for unsignalized intersections). It should be noted that, as per the TIA Guidelines, the Peak Hour Factor (PHF) used for analysis was 0.90 in existing conditions and 1.0 in all future scenario conditions. All Synchro report outputs for existing and future conditions have been provided in **Appendix H**.

MMLOS Analysis for Signalized Intersections

MMLOS analysis for signalized intersections to be provided as part of future Site Plan Applications for the proposed development.

Existing Conditions Intersection Performance

Table 23 below summarizes the intersection performance of study area intersections, based on existing conditions traffic volumes illustrated in **Figure 7**.

Table 23: Existing Conditions Intersection Performance

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection 'As a Whole'		
	LOS	max. v/c or avg. delay (s)	Movement	Delay (s)	LOS	v/c
Signalized Intersections						
Scott/Churchill (S)	C(C)	0.80(0.79)	SBT(NBR)	33.6(27.0)	A(A)	0.48(0.54)
Scott/Lanark/West Village (S)	C(C)	0.75(0.77)	EBT(WBT)	24.1(22.8)	B(B)	0.64(0.67)
Richmond/Churchill (S)	E(F)	0.94(1.21)	SBT(SBT)	33.0(64.5)	C(F)	0.75(1.00)
Richmond/McRae (S)	B(D)	0.62(0.86)	SBT(SBT)	10.7(20.4)	A(B)	0.38(0.65)
Richmond/Kirkwood (S)	B(D)	0.63(0.85)	WBT(WBT)	14.2(19.2)	A(B)	0.59(0.65)
Scott/Athlone Pedestrian Crossing (S) ¹	A(A)	0.29(0.43)	EBT(WBT)	5.4(5.0)	A(A)	0.29(0.43)
Scott/Tweedsmuir Pedestrian Crossing (S) ¹	A(A)	0.31(0.45)	EBT(WBT)	4.8(6.0)	A(A)	0.31(0.45)
Richmond/Athlone Pedestrian Crossing (S) ¹	A(A)	0.36(0.44)	EBT(WBT)	7.2(7.4)	A(A)	0.36(0.44)
Unsignalized Intersections						
Scott/Athlone (U) ²	B(B)	11(12)	NB(NB)	1(1)	A(A)	-
Scott/Tweedsmuir (U) ²	B(C)	13(15)	NB(NB)	1(1)	A(A)	-
Richmond/Athlone (U) ²	C(C)	18(24)	SB(SB)	1(1)	A(A)	-
Richmond/Tweedsmuir (U)	C(C)	16(20)	SB(SB)	2(3)	A(A)	-
Note: Analysis assumes a PHF of 0.9 and a saturation flow rate of 1800 veh/h/lane. (S) – Signalized intersection, movement with highest v/c ratio identified as critical movement. (U) – Unsignalized intersection, movement with highest average delay identified as critical movement. 1. Analysis of pedestrian crossings with traffic signal control for the east-west movement. 2. Analysis of intersections with stop control on minor north-south roads and free-flow on east-west roads.						

As shown in **Table 23**, the signalized intersections 'as a whole' operate at a LOS 'B' or better, with critical movements operating at LOS 'D' or better during the morning and afternoon peak hours. The exception is the intersection of Richmond/Churchill, which currently operates at capacity with LOS 'F' during the afternoon peak hour, with the critical SBT movement operating at LOS 'E' and at capacity (LOS 'F') during the morning and afternoon peak hours, respectively.

The unsignalized intersections operate acceptably with critical movements operating at LOS 'C' or better during peak hours.

Future Background 2028 Intersection Performance

Table 24 below summarizes the intersection performance of study area intersections, based on future background 2028 traffic volumes illustrated in **Figure 16**.

Table 24: Future Background 2028 Conditions Intersection Performance

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection 'As a Whole'		
	LOS	max. v/c or avg. delay (s)	Movement	Delay (s)	LOS	v/c
Signalized Intersections						
Scott/Churchill (S)	C(C)	0.74(0.79)	SBT(NBR)	31.7(26.6)	A(A)	0.44(0.53)
Scott/Lanark/West Village (S)	C(C)	0.75(0.76)	EBT(WBT)	23.3(22.8)	B(B)	0.65(0.66)
Richmond/Churchill (S)	D(E)	0.87(0.97)	SBT(SBT)	28.7(46.6)	B(E)	0.70(0.93)
Richmond/McRae (S)	A(D)	0.60(0.84)	SBT(SBT)	10.2(19.4)	A(A)	0.34(0.60)
Richmond/Kirkwood (S)	A(C)	0.56(0.72)	NBL(WBT)	13.0(16.0)	A(A)	0.52(0.56)
Scott/Athlone Pedestrian Crossing (S) ¹	A(A)	0.30(0.42)	EBT(WBT)	5.4(4.9)	A(A)	0.30(0.42)
Scott/Tweedsmuir Pedestrian Crossing (S) ¹	A(A)	0.33(0.43)	EBT(WBT)	4.7(5.9)	A(A)	0.33(0.43)
Richmond/Athlone Pedestrian Crossing (S) ¹	A(A)	0.33(0.40)	EBT(WBT)	7.4(7.5)	A(A)	0.33(0.40)
Unsignalized Intersections						
Scott/Athlone (U) ²	B(B)	11(11)	NB(NB)	1(1)	A(A)	-
Scott/Tweedsmuir (U) ²	B(C)	13(15)	NB(NB)	1(1)	A(A)	-
Richmond/Athlone (U) ²	C(C)	18(24)	SB(SB)	1(1)	A(A)	-
Richmond/Tweedsmuir (U)	C(C)	16(18)	SB(SB)	2(3)	A(A)	-
Note: Analysis assumes a PHF of 1.0 and a saturation flow rate of 1800 veh/h/lane. (S) – Signalized intersection, movement with highest v/c ratio identified as critical movement. (U) – Unsignalized intersection, movement with highest average delay identified as critical movement. 1. Analysis of pedestrian crossings with traffic signal control for the east-west movement. 2. Analysis of intersections with stop control on minor north-south roads and free-flow on east-west roads.						

As shown in **Table 24** both signalized and unsignalized intersections are projected to operate similar or slightly better than existing conditions. In general, future developments in the area are not expected to result in a significant number of new trips and results show improvements due to increasing the PHF to 1.00 compared to existing PHF of 0.90 as per TIA Guidelines.

Future Background 2031/2036 Intersection Performance

Table 25 below summarizes the intersection performance of study area intersections, based on future background 2031/2036 traffic volumes illustrated in **Figure 17**.

Table 25: Future Background 2031 Conditions Intersection Performance

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection 'As a Whole'		
	LOS	max. v/c or avg. delay (s)	Movement	Delay (s)	LOS	v/c
Signalized Intersections						
Scott/Churchill (S)	C(C)	0.74(0.79)	SBT(NBR)	31.5(26.9)	A(A)	0.44(0.54)
Scott/Lanark/West Village (S)	C(C)	0.75(0.76)	EBT(WBT)	23.0(22.6)	B(B)	0.65(0.66)
Richmond/Churchill (S)	D(E)	0.88(0.98)	SBT(WBT)	29.2(49.1)	C(E)	0.71(0.94)
Richmond/McRae (S)	B(D)	0.61(0.84)	SBT(SBT)	10.7(19.6)	A(A)	0.36(0.60)
Richmond/Kirkwood (S)	A(C)	0.56(0.72)	NBL(WBT)	13.0(16.0)	A(A)	0.52(0.56)
Scott/Athlone Pedestrian Crossing (S) ¹	A(A)	0.32(0.42)	EBT(WBT)	5.5(4.9)	A(A)	0.32(0.42)
Scott/Tweedsmuir Pedestrian Crossing (S) ¹	A(A)	0.34(0.44)	EBT(WBT)	4.7(5.9)	A(A)	0.34(0.44)
Richmond/Athlone Pedestrian Crossing (S) ¹	A(A)	0.33(0.40)	EBT(WBT)	7.4(7.5)	A(A)	0.33(0.40)
Unsignalized Intersections						
Scott/Athlone (U) ²	B(B)	11(11)	NB(NB)	1(1)	A(A)	-
Scott/Tweedsmuir (U) ²	B(C)	13(15)	NB(NB)	1(1)	A(A)	-
Richmond/Athlone (U) ²	C(C)	17(24)	SB(SB)	1(1)	A(A)	-
Richmond/Tweedsmuir (U)	C(C)	16(18)	SB(SB)	2(3)	A(A)	-
Note: Analysis assumes a PHF of 1.0 and a saturation flow rate of 1800 veh/h/lane. (S) – Signalized intersection, movement with highest v/c ratio identified as critical movement. (U) – Unsignalized intersection, movement with highest average delay identified as critical movement. 1. Analysis of pedestrian crossings with traffic signal control for the east-west movement. 2. Analysis of intersections with stop control on minor north-south roads and free-flow on east-west roads.						

As shown in **Table 25**, traffic operations are anticipated to be similar to the future background 2028 conditions, with minor increases to delays or v/c ratios.

Total Projected 2028 Intersection Performance

Table 26 below summarizes the intersection performance of study area intersections, based on total projected 2028 traffic volumes illustrated in **Figure 18**.

Table 26: Total Projected 2028 Conditions Intersection Performance – Phase 1

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection 'As a Whole'		
	LOS	max. v/c or avg. delay (s)	Movement	Delay (s)	LOS	v/c
Signalized Intersections						
Scott/Churchill (S)	C(C)	0.74(0.79)	SBT(NBR)	31.6(26.6)	A(A)	0.44(0.53)
Scott/Lanark/West Village (S)	C(C)	0.75(0.76)	EBT(WBT)	23.1(22.6)	B(B)	0.65(0.66)
Richmond/Churchill (S)	D(E)	0.87(0.99)	SBT(WBT)	28.9(49.1)	C(E)	0.71(0.94)
Richmond/McRae (S)	A(D)	0.60(0.84)	SBT(SBT)	10.2(19.4)	A(A)	0.34(0.60)
Richmond/Kirkwood (S)	A(C)	0.57(0.74)	NBL(WBT)	13.2(16.4)	A(A)	0.53(0.58)
Scott/Athlone Pedestrian Crossing (S) ¹	A(A)	0.30(0.42)	EBT(WBT)	5.5(4.9)	A(A)	0.30(0.42)
Scott/Tweedsmuir Pedestrian Crossing (S) ¹	A(A)	0.33(0.43)	EBT(WBT)	4.7(5.9)	A(A)	0.33(0.43)
Richmond/Athlone Pedestrian Crossing (S) ¹	A(A)	0.33(0.41)	EBT(WBT)	7.4(7.5)	A(A)	0.33(0.41)
Unsignalized Intersections						
Scott/Athlone (U) ²	B(B)	11(11)	NB(NB)	1(1)	A(A)	-
Scott/Tweedsmuir (U) ²	B(C)	13(15)	NB(NB)	1(1)	A(A)	-
Richmond/Athlone (U) ²	C(C)	18(25)	SB(SB)	1(1)	A(A)	-
Richmond/Tweedsmuir (U)	C(C)	18(20)	SB(SB)	3(3)	A(A)	-
Tweedsmuir/Phase 1 Site Access (U)	A(A)	9(9)	EB(EB)	3(3)	A(A)	-
Note: Analysis assumes a PHF of 1.0 and a saturation flow rate of 1800 veh/h/lane. (S) – Signalized intersection, movement with highest v/c ratio identified as critical movement. (U) – Unsignalized intersection, movement with highest average delay identified as critical movement. 1. Analysis of pedestrian crossings with traffic signal control for the east-west movement. 2. Analysis of intersections with stop control on minor north-south roads and free-flow on east-west roads.						

As shown in **Table 26**, the intersections are expected to operate similar to future background conditions with minor changes to delays or v/c ratios. The site access to Buildings A1 and A2 is also expected to operate acceptably with LOS 'A' during both peak hours. The analysis results indicate that Phase 1 will result in minimal impacts to study area intersections.

Total Projected 2031/2036 Intersection Performance

Table 27 below summarizes the intersection performance of study area intersections, based on total projected 2031/2036 traffic volumes illustrated in **Figure 19**.

Table 27: Future Projected 2031/2036 Intersection Performance – Full Buildout

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection 'As a Whole'		
	LOS	max. v/c or avg. delay (s)	Movement	Delay (s)	LOS	v/c
Signalized Intersections						
Scott/Churchill (S)	C(C)	0.74(0.80)	SBT(NBR)	31.3(27.2)	A(A)	0.44(0.55)
Scott/Lanark/West Village (S)	C(C)	0.75(0.77)	EBT(WBT)	22.6(22.4)	B(B)	0.65(0.67)
Richmond/Churchill (S)	D(E)	0.89(0.99)	SBT(WBT)	29.8(50.6)	C(E)	0.73(0.95)
Richmond/McRae (S)	B(D)	0.61(0.84)	SBT(SBT)	10.6(19.6)	A(B)	0.36(0.61)
Richmond/Kirkwood (S)	A(C)	0.57(0.75)	NBL(WBT)	13.3(16.8)	A(A)	0.53(0.58)
Scott/Athlone Pedestrian Crossing (S) ¹	A(A)	0.32(0.43)	EBT(WBT)	5.6(5.0)	A(A)	0.32(0.43)
Scott/Tweedsmuir Pedestrian Crossing (S) ¹	A(A)	0.34(0.45)	EBT(WBT)	4.7(6.0)	A(A)	0.34(0.45)
Richmond/Athlone Pedestrian Crossing (S) ¹	A(A)	0.34(0.41)	EBT(WBT)	7.4(7.4)	A(A)	0.34(0.41)
Unsignalized Intersections						
Scott/Athlone (U) ²	B(B)	11(11)	NB(NB)	1(1)	A(A)	-
Scott/Tweedsmuir (U) ²	B(C)	13(16)	NB(NB)	1(1)	A(A)	-
Richmond/Athlone (U) ²	C(D)	19(25)	SB(SB)	1(2)	A(A)	-
Richmond/Tweedsmuir (U)	C(C)	18(21)	SB(SB)	3(3)	A(A)	-
Tweedsmuir/Phase 1 Site Access (U)	A(A)	9(9)	EB(EB)	3(2)	A(A)	
Athlone/Phase 2 Site Access (U)	A(A)	9(9)	EB(EB)	2(1)	A(A)	
Tweedsmuir/Phase 3 Site Access (U)	A(A)	9(9)	WB(WB)	2(1)	A(A)	
Note: Analysis assumes a PHF of 1.0 and a saturation flow rate of 1800 veh/h/lane.						
(S) – Signalized intersection, movement with highest v/c ratio identified as critical movement.						
(U) – Unsignalized intersection, movement with highest average delay identified as critical movement.						
1. Analysis of pedestrian crossings with traffic signal control for the east-west movement.						
2. Analysis of intersections with stop control on minor north-south roads and free-flow on east-west roads.						

As shown in **Table 27**, the intersections are expected to operate similar to the total projected 2028 conditions with slight increases to delays or v/c ratios. The three vehicular site accesses are also expected to operate acceptably with LOS 'A' during both peak hours. The analysis results indicate that trips generated at full buildout of the development will result in minimal impacts to study area intersections. It is noted that the intersection of Richmond/Churchill is approaching capacity, with the critical WBT movement also operating near capacity during the afternoon peak hour. Movements at this intersection were noted to operate at capacity during the same peak hour of existing conditions.

5.0 FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

Based on the results summarized herein, the following transportation related conclusions are offered:

Existing Conditions

- The site is located at the municipal addresses of 1994 Scott St, 324 and 335 Tweedsmuir Ave and 330 Athlone Ave.
- The site is currently occupied by a mix of low-rise residential and small commercial properties, accessed from Tweedsmuir Avenue and Athlone Avenue.
- The study area has a well-developed pedestrian and cycling network, including recently reconstructed sections of Scott Street with protected intersections at Churchill and Lanark/West Village.
- Significant transit service is available in the study area, with multiple bus routes and the future Westboro LRT Station located within approximately 150 m of the site.
- Collision analysis over a five-year period indicates low overall frequency, with no repeating collision patterns identified on the boundary streets (i.e. Scott St, Tweedsmuir Ave and Athlone Ave).

- Intersection analysis confirms that existing operations are acceptable at most study area intersections, with overall LOS 'D' or better. The exception is the Richmond/Churchill intersection, which currently operates at capacity during the afternoon peak hour.

Proposed Development

- The proposal consists of four high-rise residential buildings with 1,206 dwelling units total and 8,488 ft² of ground-floor commercial space. The development is multi-phases, where Phase 1, consisting of Buildings A1 and A2) is assumed to be constructed by 2028, followed by concurrent construction of Phases 2 and 3 (Buildings B and C) assumed by 2031. Site statistics are as follows:
 - Phase 1 (2028): Buildings A1 (555 units + 5,023 ft² retail) and A2 (43 units), with access from Tweedsmuir Avenue.
 - Phase 2 (2031): Building B (290 units + 3,465 ft² retail), accessed from Athlone Avenue.
 - Phase 3 (2031): Building C (318 units), accessed from Tweedsmuir Avenue, with new parkland dedication to the south.
- All parking will be provided in underground garages, with ramps from Athlone and Tweedsmuir. Vehicle laybys on Tweedsmuir Ave will provide short-term pick-up and drop-off activity. The proposed vehicle parking supply (612 spaces) is slightly below current zoning by-law requirements (631 spaces) but would adhere to the requirements of the new by-law once it comes into effect. Significant bike parking is proposed (1,247 spaces) at a rate greater than 1 space per unit.
- A new east-west pedestrian connection will be provided between Athlone and Tweedsmuir as part of Phase 1, which will extend west to Lion's Park as part of Phase 2.
- Traffic calming measures are proposed on boundary streets, including three curb extensions on west side of Tweedsmuir Ave, which narrow the road to 6m, along with pedestrian crossing treatments on each of Tweedsmuir Ave and Athlone Ave.
- At full buildout in 2031, the site is expected to generate approximately up to 558 person trips during peak hours, including up to 79 vehicle trips, up to 319 transit trips, and up to 148 active transportation trips.
- An extensive list of TDM measures have been proposed for this development, including unbundled parking costs, multimodal travel information for residents and site design elements.

Future Conditions

- Planned projects in the study area will have notable impacts on the study area network:
 - LRT Stage 2 is anticipated to be complete in 2026 for the west extensions, including Westboro Station.
 - Scott Street Reconstruction (Post-LRT): includes removal of bus lanes, improved pedestrian and cycling facilities, and protected intersections.
 - Athlone Avenue Integrated Renewal: will reconstruct sanitary/water infrastructure and redesign the road to 30 km/h local street standards with new sidewalks and traffic calming.
 - Richmond/Westboro CDP and Secondary Plan: sets out long-term improvements for streetscape, public realm, and active transportation along Scott and Richmond Road.
 - A number of adjacent site developments that are recently constructed, currently under construction, or proposed in the future, have been accounted for in the future background traffic growth of the study area. This includes Scott St projects at 2026, 2050, 2070, and 1950, as well as sites along Richmond Road.

- Study area intersections are projected to continue operating at LOS 'D' or better overall, with the Richmond/Churchill intersection operating near capacity during peak hours. No concerns are expected for site access operations with stop control for outbound traffic.
- Traffic volumes on Athlone Avenue remain below the City's 120 veh/h threshold for local roads, indicating limited neighbourhood traffic impact. On Tweedsmuir Ave, traffic volumes are projected to exceed the threshold by almost 30 veh/h during the peak hours. Based on the Synchro intersection operations analysis and the provision of traffic calming measures on Tweedsmuir Ave by the proposed development, no major concerns are anticipated.
- Screenline analysis using City of Ottawa TRANS model data indicates there is sufficient capacity in the external road network to accommodate the projected traffic volumes as v/c ratios do not exceed 1.0.
- Study area intersections and facilities, as well as the future transit services are expected to well accommodate the number of trips expected to be generated by the proposed development with minimal impacts.

Based on the foregoing findings, the proposed development can be supported by the surrounding road network and is recommended from a transportation perspective. Design details will be further discussed as part of future Site Plan Control application.

Appendix A:

TIA Screening Form and Site Plan



PROJECT INFORMATION			
Zoning By-law: 2008-250 Consolidation	TM [102] R4UB	SITE AREA: 1994 SCOTT ST.	2,107.4 m²
		SITE AREA: 324 TWEEDSMUIR AVE.	1,490.9 m²
		SITE AREA: 330 ATHLONE AVE.	1,650.3 m²
SITE AREA: TOTAL ALL PARCELS 0.77 ha		SITE AREA: 335 TWEEDSMUIR AVE.	2,485.1 m²
			26,749 ft²
ZONING	REQUIRED	PROVIDED	
BUILDING HEIGHT	6 STOREYS / 18.0m	40 STOREYS / 136.0m	
BUILDING 'A1'	15.0m	4 STOREYS / 15.0m	
BUILDING 'A2'	15.0m	29 STOREYS / 99.0m	
BUILDING 'B'	15.0m	29 STOREYS / 99.0m	
BUILDING 'C'	15.0m	29 STOREYS / 99.0m	
ALLOWABLE PROJECTION - AMENITY LEVEL	--	6.5m + 300.0m²	
DENSITY - MAXIMUM FLOOR SPACE INDEX	--	8.32	
DENSITY - UNITS PER HECTARE	--	1,566	
MINIMUM LOT AREA (CORNER AND INTERIOR LOTS)	1,150.0m² & 1,350.0m²		
HIGH-RISE BUILDING SETBACK - INTERIOR SIDE AND REAR YARD	10.0m		
TOTAL RESIDENTIAL UNIT COUNT	--	1,206	
PARKING - RESIDENTIAL (AFTER 12 UNITS PER BLDG.) - 0.5 PER UNIT	PARKING AREA "Y" 579		
PARKING - VISITOR ONLY (AFTER 12 UNITS PER BLDG.) - 0.1 PER UNIT	91		
PARKING - COMMERCIAL (VARIES WITH USE) - 1.0 TO 10.0 PER 100m² GFA	0		
PARKING - RESIDENTIAL (MAXIMUM NEAR RAPID TRANSIT STATIONS) 1.75 PER UNIT	2,111		
PARKING - COMMERCIAL (MAXIMUM NEAR RAPID TRANSIT STATIONS) 3.6 PER 100m² GFA	28		
BICYCLE PARKING - RESIDENTIAL - 0.5 PER UNIT	545		
BICYCLE PARKING - COMMERCIAL - 1 PER 250m² GFA	3		
aisle & DRIVEWAY MINIMUM / MAXIMUM WIDTH	6.0m		
AMENITY AREA - TOTAL PER UNIT - 6.0m²	7,236.0m²		
AMENITY AREA - 50% COMMUNAL PER UNIT - 3.0m²	3,618.0m²		
PARKLAND DEDICATION AREA - 10% RESIDENTIAL / 2% COMMERCIAL	773.4m²		

IT IS THE RESPONSIBILITY OF THE APPROPRIATE CONTRACTOR TO CHECK AND VERIFY ALL DIMENSIONS ON SITE AND TO REPORT ALL ERRORS AND/OR OMISSIONS TO THE ARCHITECT.

ALL CONTRACTORS MUST COMPLY WITH ALL PERTINENT CODES AND BY-LAWS.

THIS DRAWING MAY NOT BE USED FOR CONSTRUCTION UNTIL SIGNED BY THE ARCHITECT.

DO NOT SCALE DRAWINGS.

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NOTATION SYMBOLS:

INDICATES DRAWING NOTES, LISTED ON EACH SHEET.

INDICATES ASSEMBLY TYPE; REFER TO TYPICAL ASSEMBLIES SCHEDULE.

INDICATES WINDOW TYPE; REFER TO WINDOW ELEVATIONS AND DETAILS ON A500 SERIES.

INDICATES DOOR TYPE; REFER TO DOOR SCHEDULE AND DETAILS ON A500 SERIES.

DETAIL NUMBER

TITLE

DETAIL REFERENCE PAGE

DETAIL CROSS REFERENCE PAGE

BUILDING STATISTICS	
BUILDING 'A1' - 40 Storey's	
GROSS BUILDING AREA (CITY OF OTTAWA ZONING AREA)	27,315.5 m²
TOWER FOOTPRINT	294,022 ft²
UNIT COUNT	555
VEHICLE PARKING	294 + 22 316
BICYCLE PARKING	542 + 0 542
COMMERCIAL AREA	466.6 m²
BUILDING 'A2' - 4 Storey's	
GROSS BUILDING AREA (CITY OF OTTAWA ZONING AREA)	2,321.9 m²
TOWER FOOTPRINT	24,993 ft²
UNIT COUNT	43
VEHICLE PARKING	0 + 0 0
BICYCLE PARKING	65 + 0 65
COMMERCIAL AREA	0 m²
BUILDING 'B' - 29 Storey's	
TOTAL BUILDING AREA (CITY OF OTTAWA ZONING AREA)	15,852.2 m²
TOWER FOOTPRINT	170,632 ft²
UNIT COUNT	318
VEHICLE PARKING - RESIDENTIAL ONLY	144 + 0 144
BICYCLE PARKING	318 + 0 318
COMMERCIAL / AMENITY AREA	321.9 m²
BUILDING 'C' - 29 Storey's	
TOTAL AREA (CITY OF OTTAWA ZONING AREA)	18,881.6 m²
TOWER FOOTPRINT	203,240 ft²
UNIT COUNT	318
VEHICLE PARKING - RESIDENTIAL ONLY	152 + 0 152
BICYCLE PARKING	322 + 0 322
COMMERCIAL AREA	0 m²
BUILDING AREA (CITY OF OTTAWA ZONING AREA)	
BUILDING 'A'	27,315.5 m²
BUILDING 'A1'	2,261.1 m²
BUILDING 'B'	15,852.2 m²
BUILDING 'C'	18,881.6 m²
TOTAL AREA ABOVE GRADE	64,310.6 m²

CAR PARKING		AREA "X" on SCHEDULE 1A	
MINIMUM REQUIRED			
RESIDENCE (AFTER 12 UNITS)	- 0.5 PER DWELLING UNIT	579	
VISITOR (AFTER 12 UNITS)	- 0.1 PER DWELLING UNIT	91	
COMM. USE	- UNDER 200m² NON REQUIRED	0	
TOTAL		670	
MAXIMUM REQUIRED			
RESIDENCE	- 1.75 PER DWELLING UNIT	2,111	
COMM. USE	- 3.6 PER 100m² OF GFA - ESTIMATE	28	
TOTAL		2,139	
PROVIDED			
RESIDENCE	- 0.38 PER DWELLING UNIT	454	
VISITOR		91	
COMM. USE		45	
TOTAL		590	
LOCATION			
EXTERIOR			
UIG - P1 LEVEL		27	0
UIG - P2 LEVEL		53	0
UIG - P3 LEVEL		53	0
UIG - P4 LEVEL		53	0
UIG - P5 LEVEL		53	0
UIG - P6 LEVEL		55	0
TOTAL		294	0
BICYCLE PARKING			
REQUIRED			
RESIDENCE	- 0.5 PER UNIT (1,206 UNITS)	603	
COMMERCIAL	- 1 PER 250m² GFA (788.6m²)	3	
TOTAL		606	
PROVIDED			
RESIDENCE	- 1.04 PER UNIT	1,257	
COMMERCIAL		2	
TOTAL		1,259	
AMENITY SPACE			
AT GRADE EXTERIOR - COMMUNAL		600.0 sq. m.	
INTERIOR 1st fl. AMENITY - COMMUNAL		450.0 sq. m.	
EXTERIOR TERRACES - PRIVATE		500.0 sq. m.	
INTERIOR 5th fl. AMENITY - COMMUNAL		900.0 sq. m.	
EXTERIOR 5th fl. TERRACES - COMMUNAL		1,200.0 sq. m.	
EXTERIOR ROOF TOP - COMMUNAL		300.0 sq. m.	
INTERIOR ROOF TOP - COMMUNAL		600.0 sq. m.	
PRIVATE BALCONIES		4,000.0 sq. m.	
TOTAL		8,550.0 sq. m.	
TOTAL COMMUNAL		4,050.0 sq. m.	
REQUIRED - 6.0m² PER UNIT (1,206)		7,236.0 sq. m.	
REQUIRED COMMUNAL @ 50%		3,618.0 sq. m.	
LOT COVERAGE			
BUILDING FOOTPRINT - "A1"		1,159.4 m²	15.0%
BUILDING FOOTPRINT - "A2"		788.0 m²	9.9%
BUILDING FOOTPRINT - "B"		660.2 m²	8.5%
BUILDING FOOTPRINT - "C"		1,007.7 m²	13.0%
DRIVING SURFACE		63.3 m²	0.8%
LANDSCAPE SURFACE		3,294.7 m²	42.6%
PARKLAND DEDICATION		780.4 m²	10.0%
TOTAL		7,733.7 m²	100.00%
LAND BLOCK AREA			
BUILDING "A1"		2,107.4 m²	273%
BUILDING "A2"		1,490.9 m²	19.3%
BUILDING "B"		1,650.3 m²	21.3%
BUILDING "C"		1,704.7 m²	22.0%
PARKLAND DEDICATION		780.4 m²	10.0%
TOTAL		7,733.7 m²	100.00%

1 OVERALL SITE PLAN

SCALE = 1 : 250

0m 5 10 25

SCALE 1: 250

City of Ottawa 2017 TIA Guidelines

Date

2-Sep-25

TIA Screening Form

Project

1994 Scott Street TIA

Project Number

478956-01000

Results of Screening	Yes/No
Development Satisfies the Trip Generation Trigger	Yes
Development Satisfies the Location Trigger	No
Development Satisfies the Safety Trigger	Yes

Module 1.1 - Description of Proposed Development	
Municipal Address	1994 Scott St, Ottawa, ON K1Z 6T2, Canada
Description of location	Along Tweedsmuir Ave and Athlone Ave south of Scott St
Land Use	Four high-rise residential buildings and a park
Development Size	1,206 total apartment units, 8,488 sqft total commercial space
Number of Accesses and Locations	Two along Tweedsmuir Ave, one along Athlone Ave
Development Phasing	Three phases
Buildout Year	Assumed 2028 for Phase 1, 2031 for Phases 2 and 3
Sketch Plan / Site Plan	See attached

Module 1.2 - Trip Generation Trigger		
Land Use Type	Multi-High Rise Res (3+ Storeys)	
Development Size	1206	Units
Trip Generation Trigger Met?	Yes	

Module 1.3 - Location Triggers		
Does the development propose a new driveway to a boundary street that is designated as part of the City's Transit Priority Network, Rapid Transit network or Cross-Town Bikeways?	No	
Is the development in a Hub, a Protected Major Transit Station Area (PMTSA), or a Design Priority Area (DPA)?	No	
Location Trigger Met?	No	

Module 1.4 - Safety Triggers		
Posted Speed Limit on any boundary road	<80	km/h
Are there any horizontal/vertical curvatures on a boundary street limits sight lines at a proposed driveway?	No	
A proposed driveway is within the area of influence of an adjacent traffic signal or roundabout (i.e. within 300 m of intersection in rural conditions, or within 150 m of intersection in urban/ suburban conditions) or within auxiliary lanes of an intersection?	Yes	Signal at Tweedsmuir Ave intersections at Scott St
Does the proposed driveway make use of an existing median break that serves an existing site?	No	
Is there is a documented history of traffic operations or safety concerns on the boundary streets within 500 m of the development?	Yes	Richmond Rd and Scott St intersections may be congested
Does the development include a drive-thru facility?	No	
Safety Trigger Met?	Yes	

Appendix B:

Transit Route Maps



EAST
EST

○ Blair

○ Cyrville

○ St-Laurent

○ Tremblay

■ VIA

○ Hurdman  SOUTH
SUD → 

○ Lees

24 min. ○ uOttawa

○ Rideau

○ Parliament
Parlement

○ Lyon

○ Pimisi

○ Bayview 2

○ Tunney's Pasture



WEST
OUEST





Fréquent

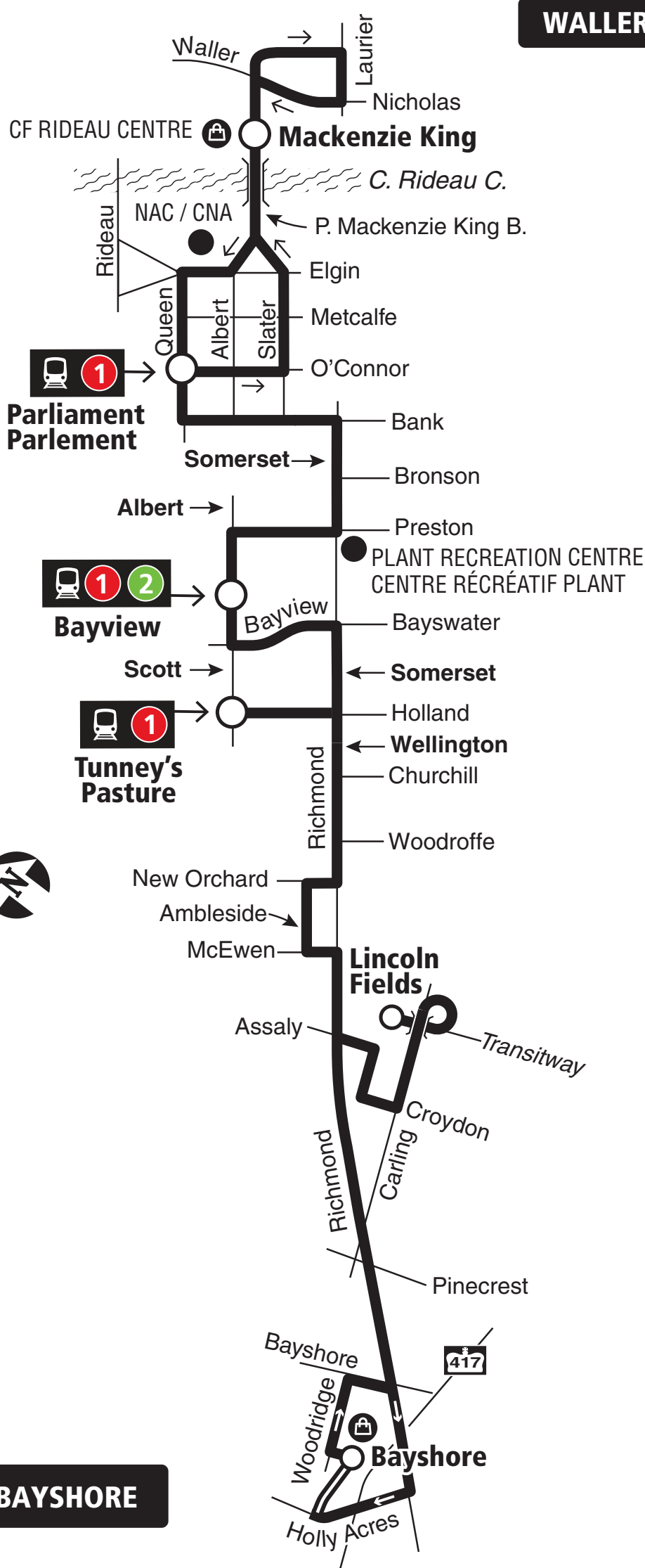
WALLER BAYSHORE

7 days a week / 7 jours par semaine

All day service

Service toute la journée

WALLER



BAYSHORE



Transitway & Station



Shopping Centre / Centre commercial

04.2025

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**



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Fréquent

**CARLING CAMPUS
COMPLEXE CARLING
BAYSHORE**

TUNNEY'S PASTURE

7 days a week / 7 jours par semaine

All day and limited overnight service

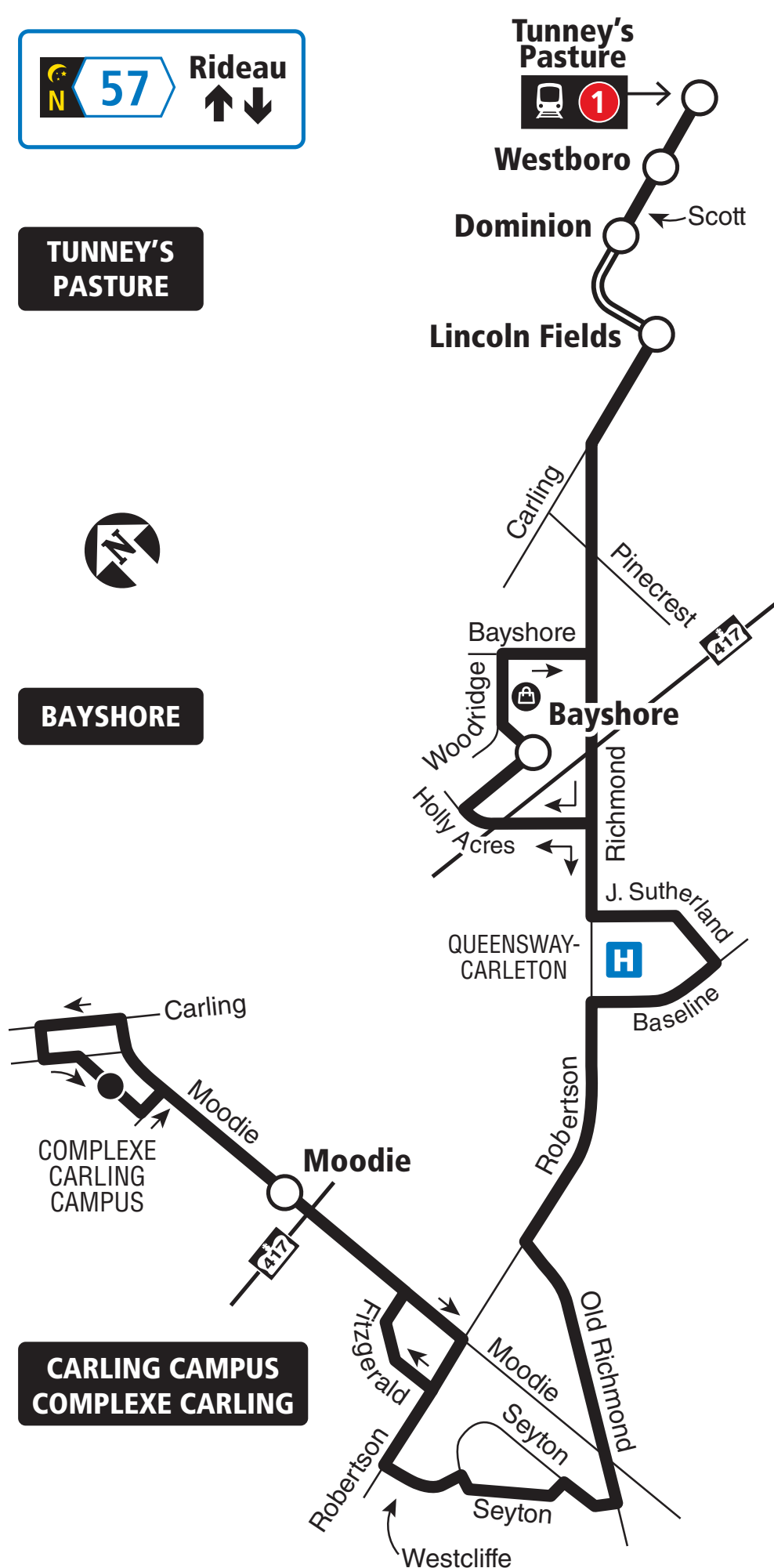
Service toute la journée et limité la nuit



**TUNNEY'S
PASTURE**



BAYSHORE



Transitway & Station



Shopping Centre / Centre commercial

04.2025



When O-Train Line 1 is not running overnight, Route 57 will be extended downtown to Rideau Station. / Lorsque la Ligne 1 de l'O-Train ne circule pas la nuit, le circuit 57 sera prolongée au centre-ville jusqu'à la station Rideau.

2025.04

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

Security / Sécurité **613-741-2478**



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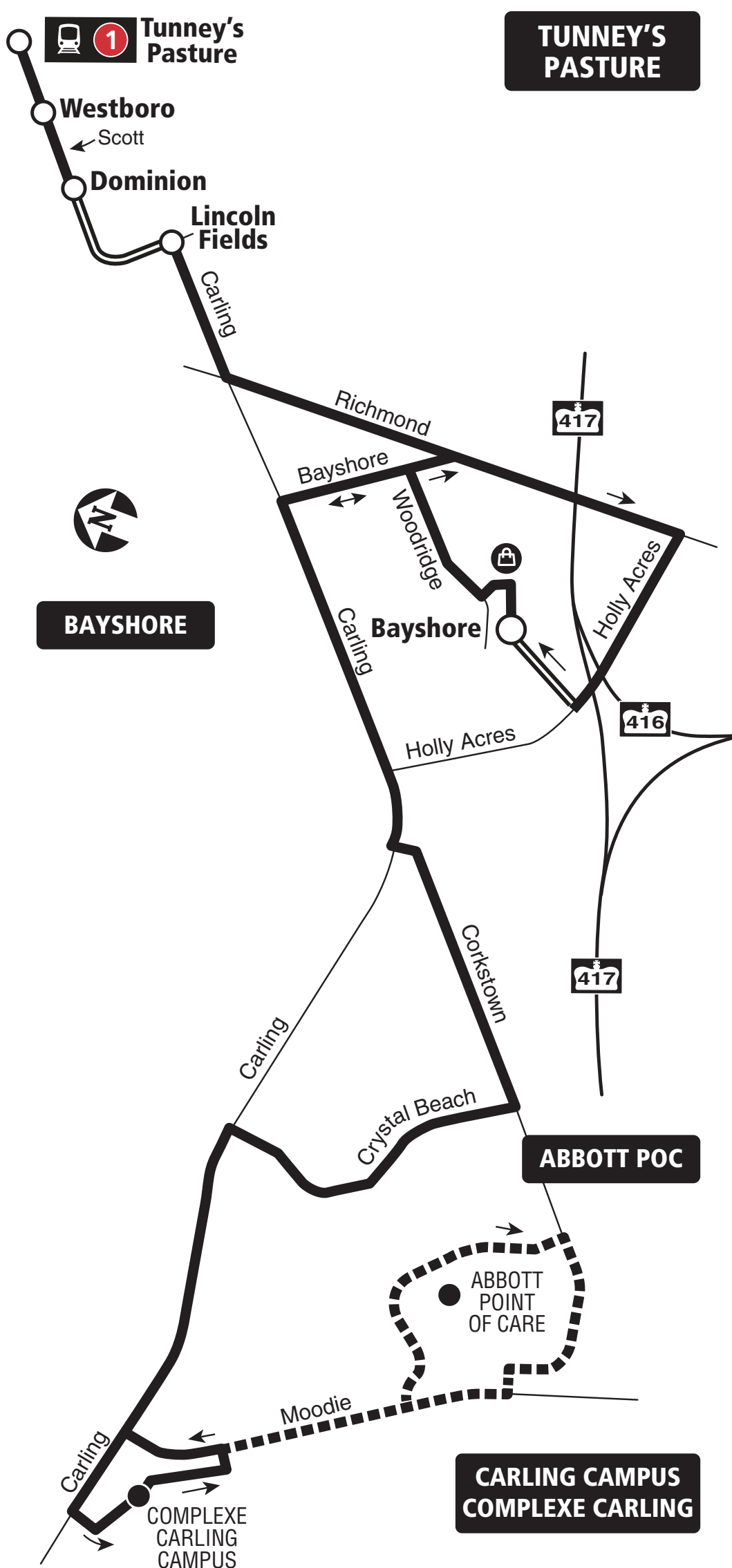


58

Local

TUNNEY'S PASTURE
BAYSHORE
CARLING CAMPUS
COMPLEXE CARLING
ABBOTT POC

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



Transitway & Station

08.2025



Limited weekday trips / Service limité en semaine



Shopping Centre / Centre commercial

2025.08



Schedule / Horaire613-560-1000
Text / Texto*560560

plus your four digit bus stop number / plus votre numéro d'arrêt à quatre chiffres

*Standard message rates may apply / Les tarifs réguliers de messagerie texte peuvent s'appliquer

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

Security / Sécurité.....**613-741-2478**

Lost & Found.....octranspo.com/lostandfound

Objets perdus.....octranspo.com/objetsperdus



octranspo.com

Effective August 24, 2025
En vigueur le 24 août 2025



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COPE

TERRY FOX TUNNEY'S PASTURE

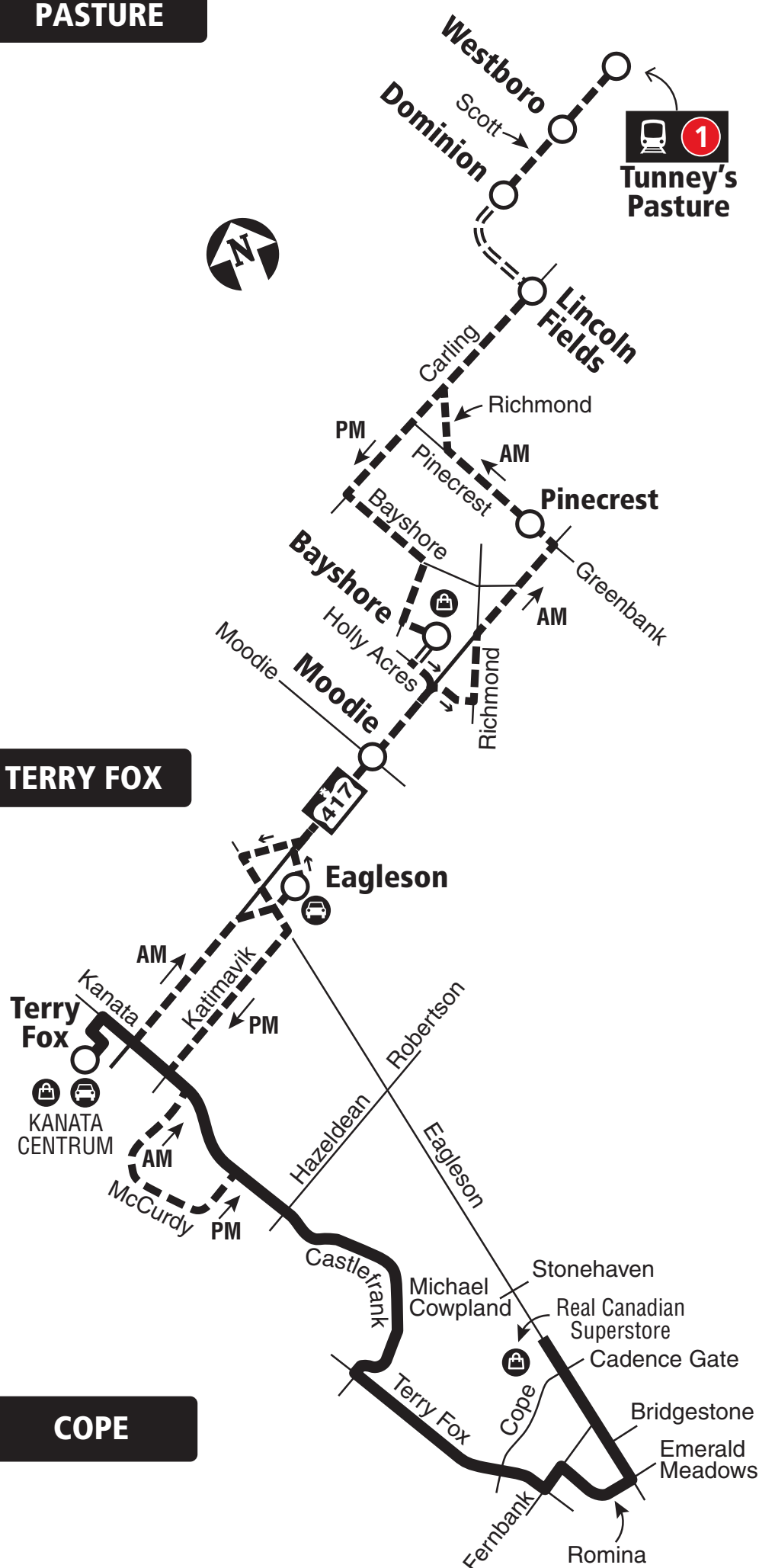
Local

Monday to Friday / Lundi au vendredi

All day service

Service toute la journée

**TUNNEY'S
PASTURE**



TERRY FOX

COPE



Station



Transitway



Peak Periods Only / Périodes de pointe seulement



Park & Ride / Parc relais



Shopping Centre / Centre commercial

04/2025

2025.04

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

Security / Sécurité **613-741-2478**

Transpo

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STITTSVILLE TERRY FOX

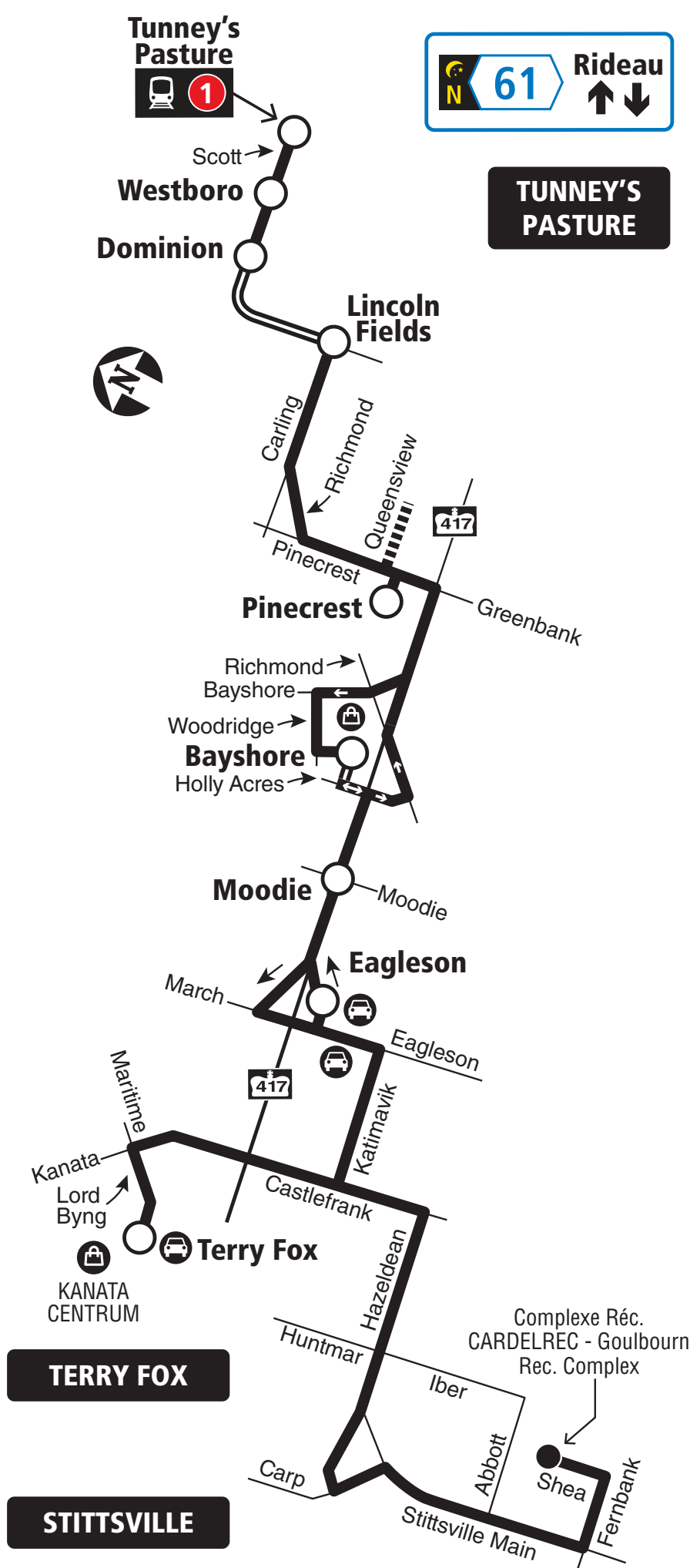
TUNNEY'S PASTURE

Fréquent

7 days a week / 7 jours par semaine

All day and limited overnight service

Service toute la journée et limité la nuit



Transitway & Station



Selected time periods / Périodes sélectionnées



Park & Ride / Parc relais



Shopping Centre / Centre commercial

05/2025



When O-Train Line 1 is not running overnight, Route 61 will be extended downtown to Rideau Station. / Lorsque la Ligne 1 de l'O-Train ne circule pas la nuit, le circuit 61 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**



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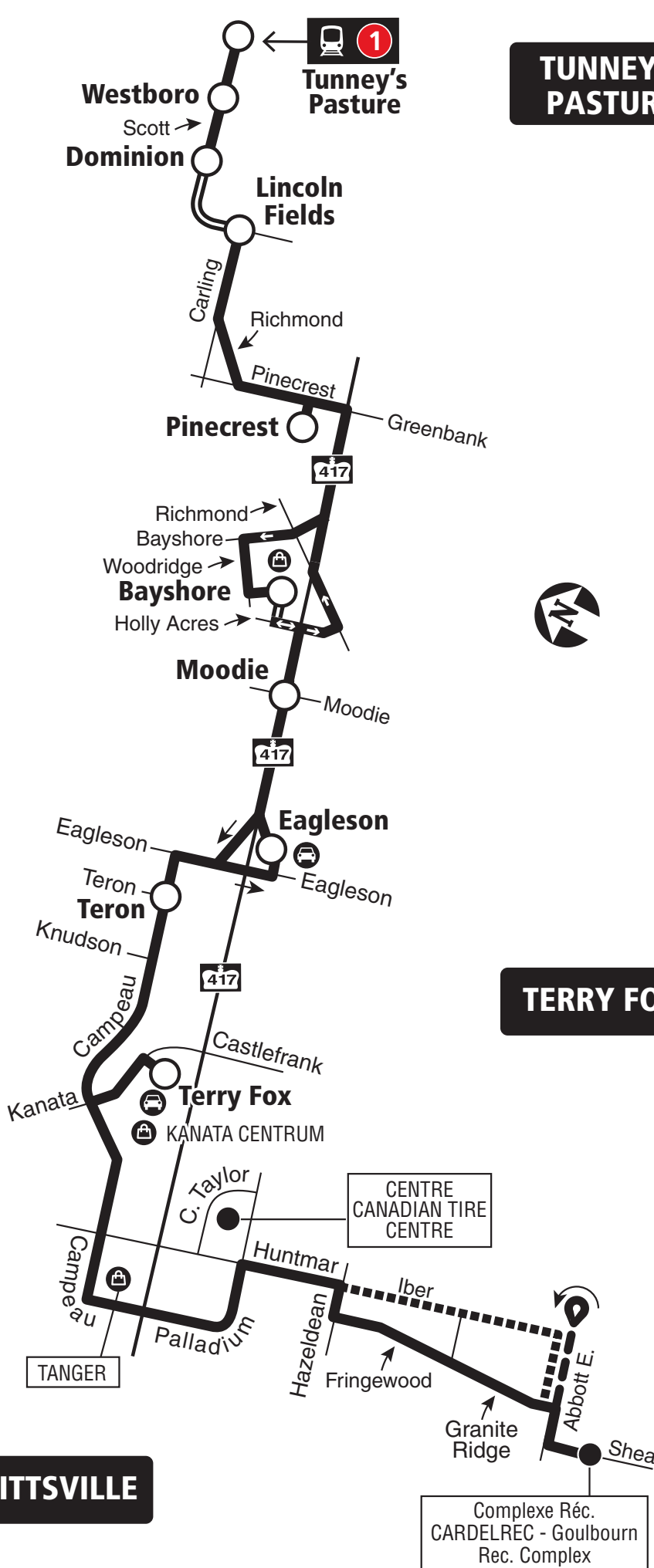
Fréquent

STITTSVILLE
TUNNEY'S PASTURE

7 days a week / 7 jours par semaine

All day service

Service toute la journée

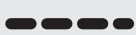


Transitway & Station



Weekday southbound trips before noon and weekday northbound trips between noon and 8 p.m. travel via Iber and Abbott E.

Trajets en semaine vers le sud en avant midi et trajets en semaine vers le nord entre midi et 20 h via Iber et Abbott E.



Saturday and Sunday / Samedi et dimanche



Shopping Centre / Centre commercial



Park & Ride / Parc relais

04/2025

2025.04

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

Security / Sécurité **613-741-2478**

**octranspo.com**



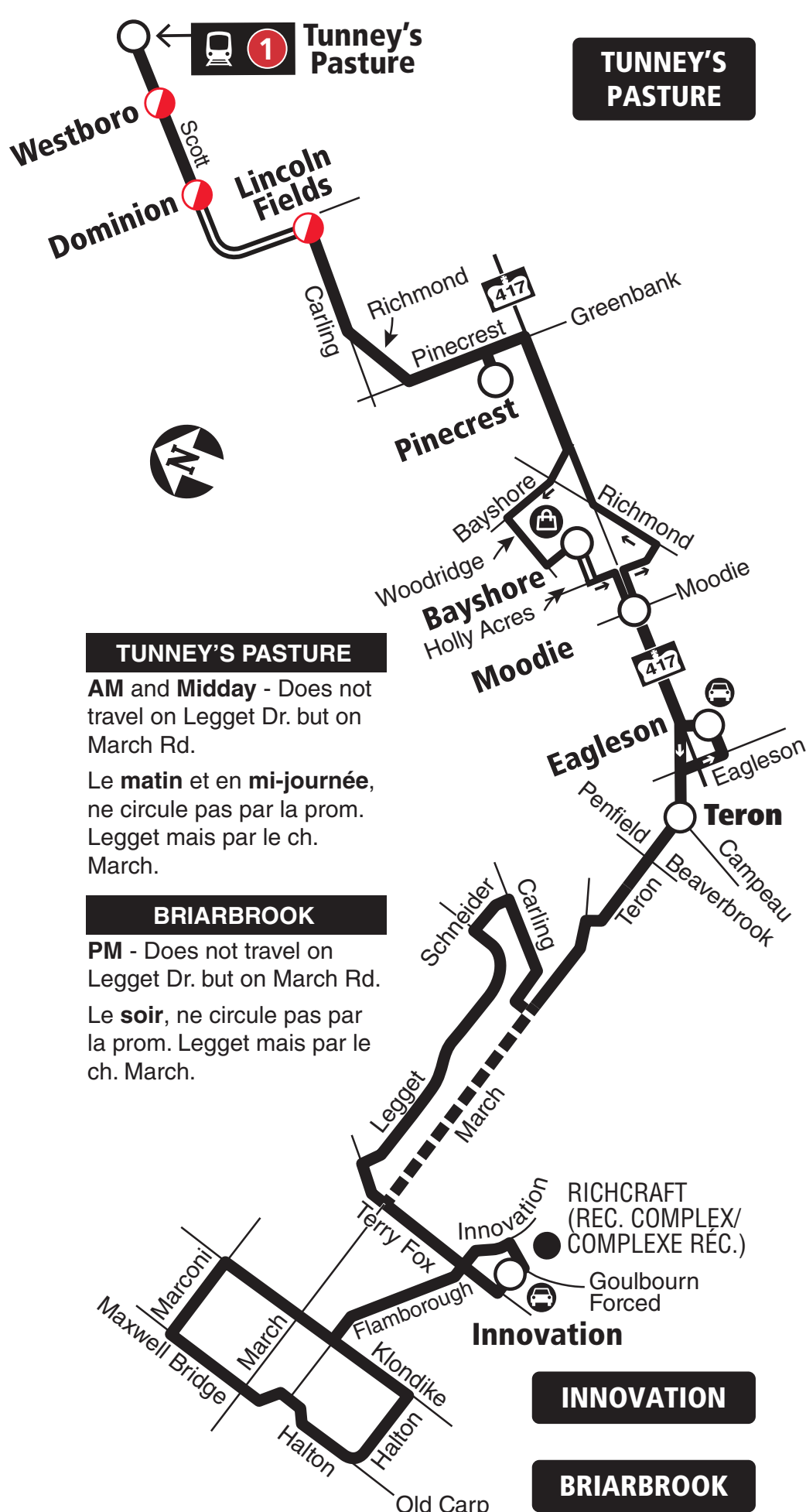
Fréquent

BRIARBROOK INNOVATION TUNNEY'S PASTURE

7 days a week / 7 jours par semaine

All day and limited overnight service

Service toute la journée et limité la nuit



2024

2025.04

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

Security / Sécurité **613-741-2478**

Transpo

octranspo.com



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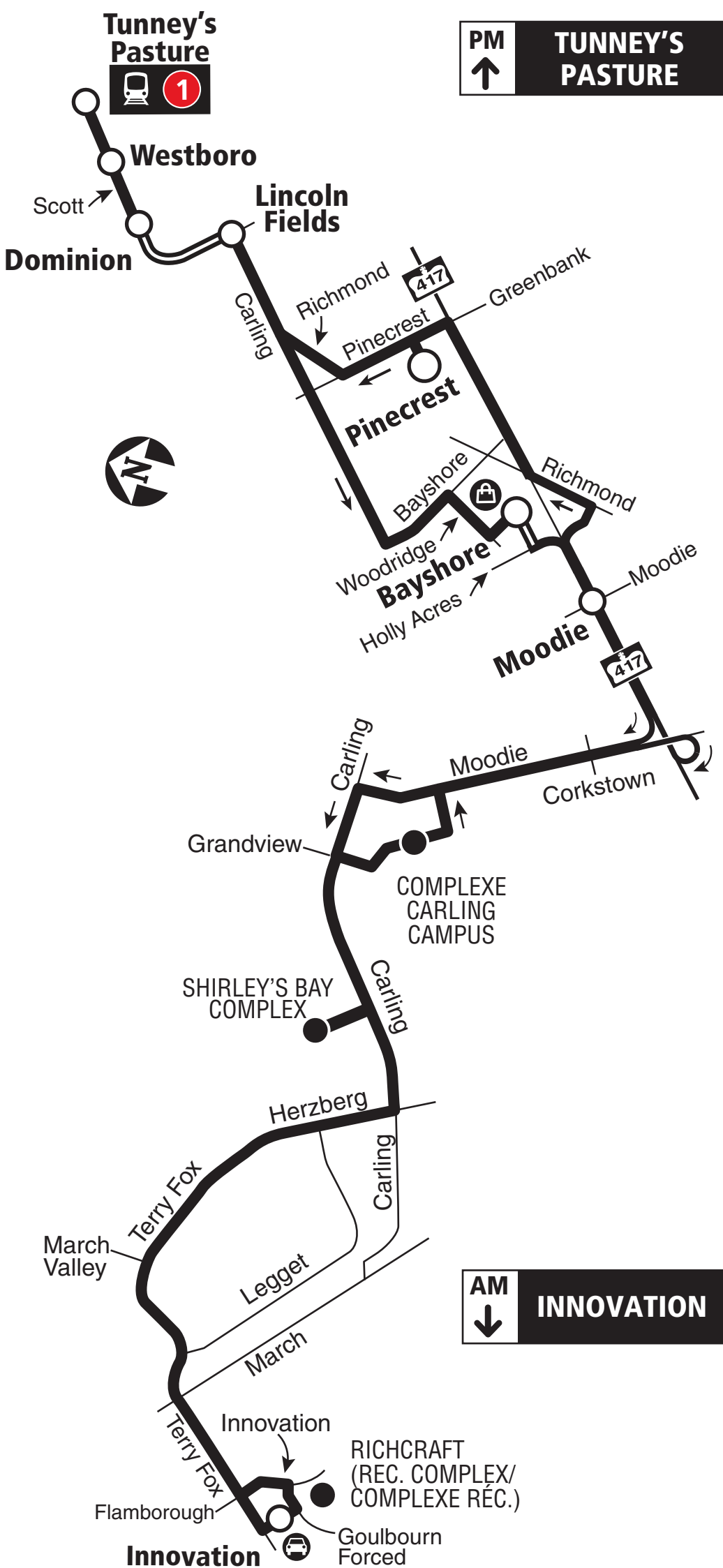
INNOVATION TUNNEY'S PASTURE

Local

Monday to Friday / Lundi au vendredi

Peak periods only

Périodes de pointe seulement



Transitway & Station

04/2025



Shopping Centre / Centre commercial



Park & Ride / Parc relais

2025.04

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

Security / Sécurité **613-741-2478**



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COPE

TERRY FOX TUNNEY'S PASTURE

Local

7 days a week / 7 jours par semaine

All day service

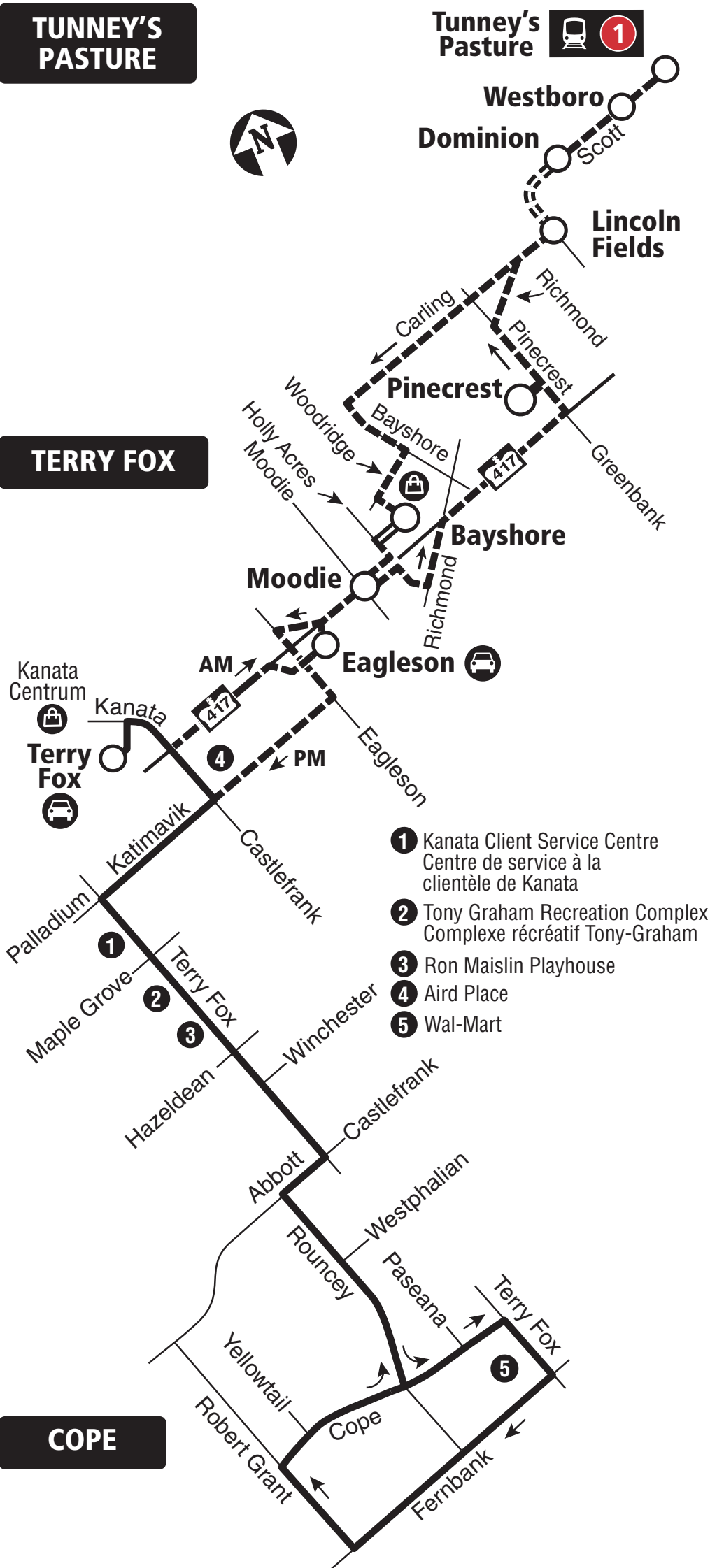
Service toute la journée

**TUNNEY'S
PASTURE**

**Tunney's
Pasture**



TERRY FOX



COPE



Transitway & Station



Peak Periods Only / Périodes de pointe seulement



Park & Ride / Parc relais

2025.04

2025.04

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

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

Security / Sécurité **613-741-2478**

Transpo

octranspo.com



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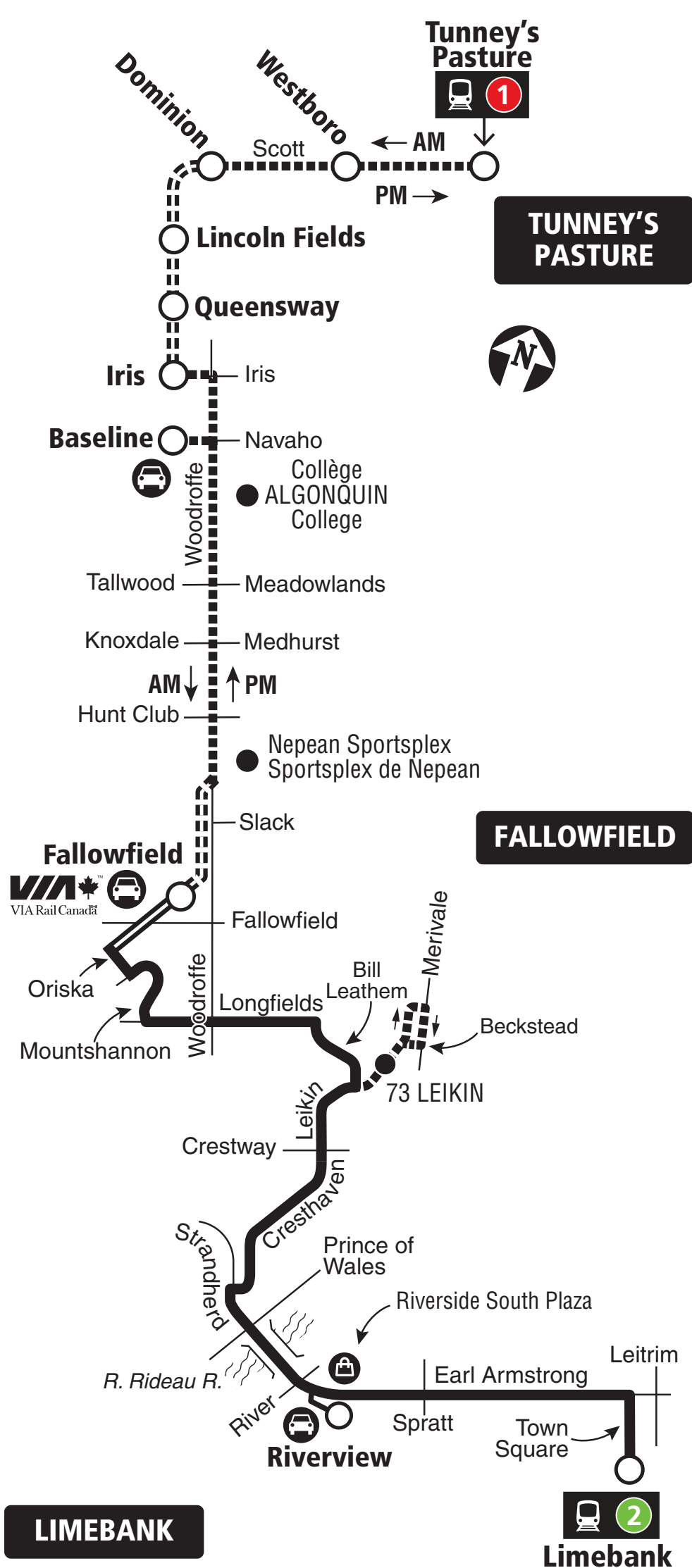
TUNNEY'S PASTURE FALLOWFIELD LIMEBANK

Local

Monday to Friday / Lundi au vendredi

All day service

Service toute la journée



Transitway & Station



Peak Periods / Périodes de pointe



Park & Ride / Parc relais



Shopping Centre / Centre commercial

05.2025

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**



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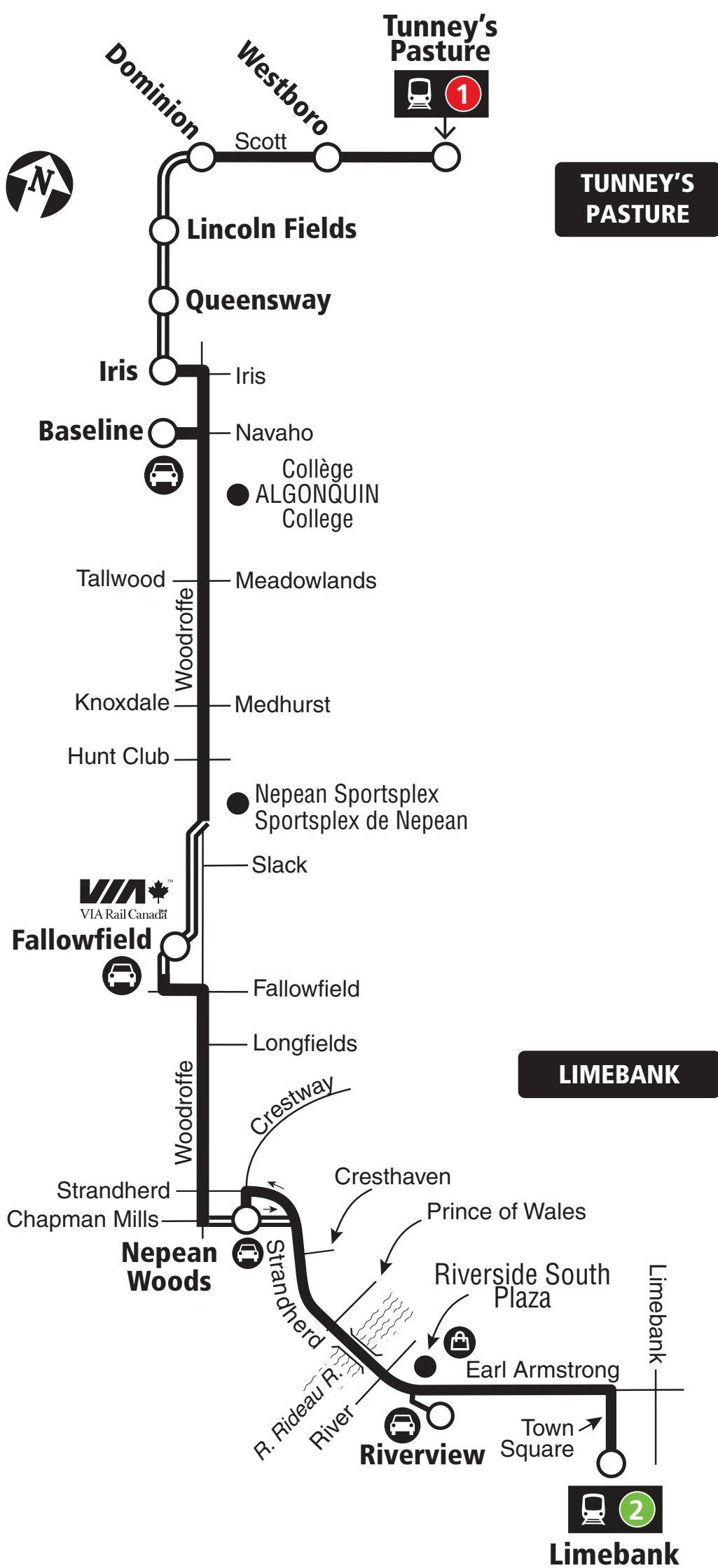
Fréquent

TUNNEY'S PASTURE LIMEBANK

7 days a week / 7 jours par semaine

All day service

Service toute la journée



Transitway & Station



Park & Ride / Parc relais



Shopping Centre / Centre commercial

05.2025

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**



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Fréquent

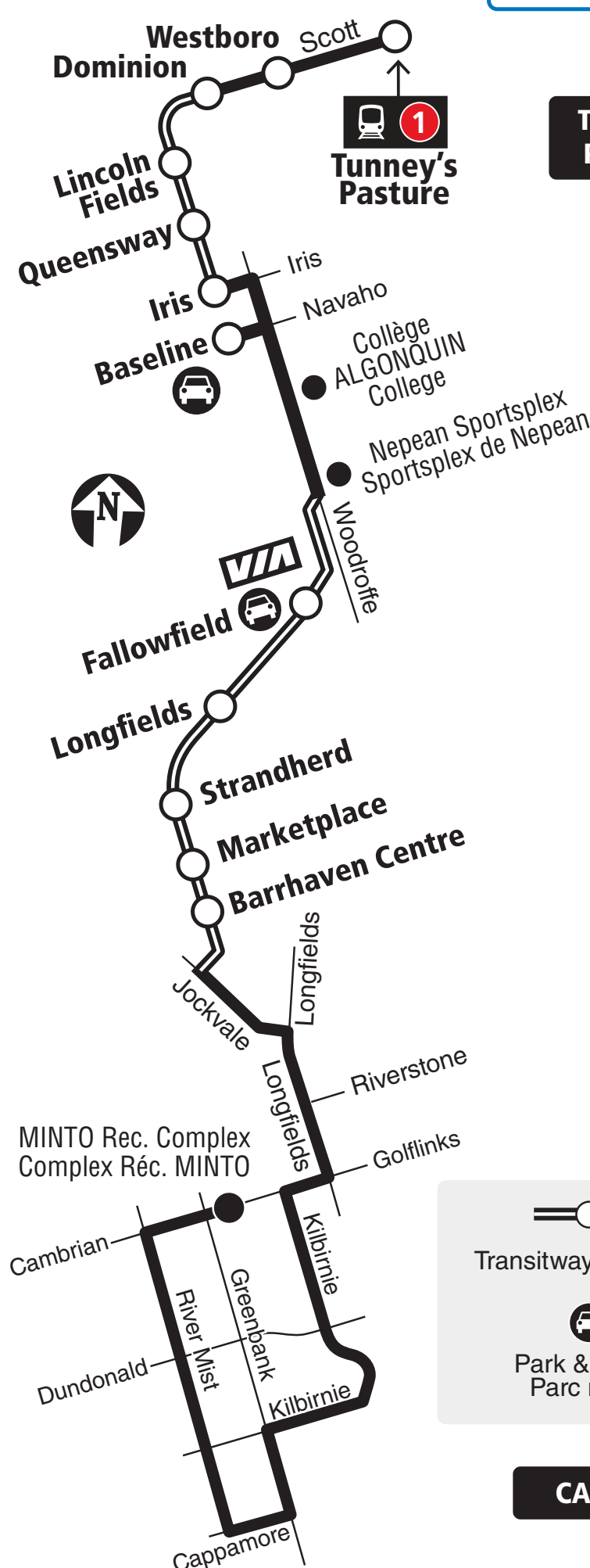
CAMBRIAN TUNNEY'S PASTURE

7 days a week / 7 jours par semaine

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



**TUNNEY'S
PASTURE**



CAMBRIAN

04.2025



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.

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

Security / Sécurité **613-741-2478**



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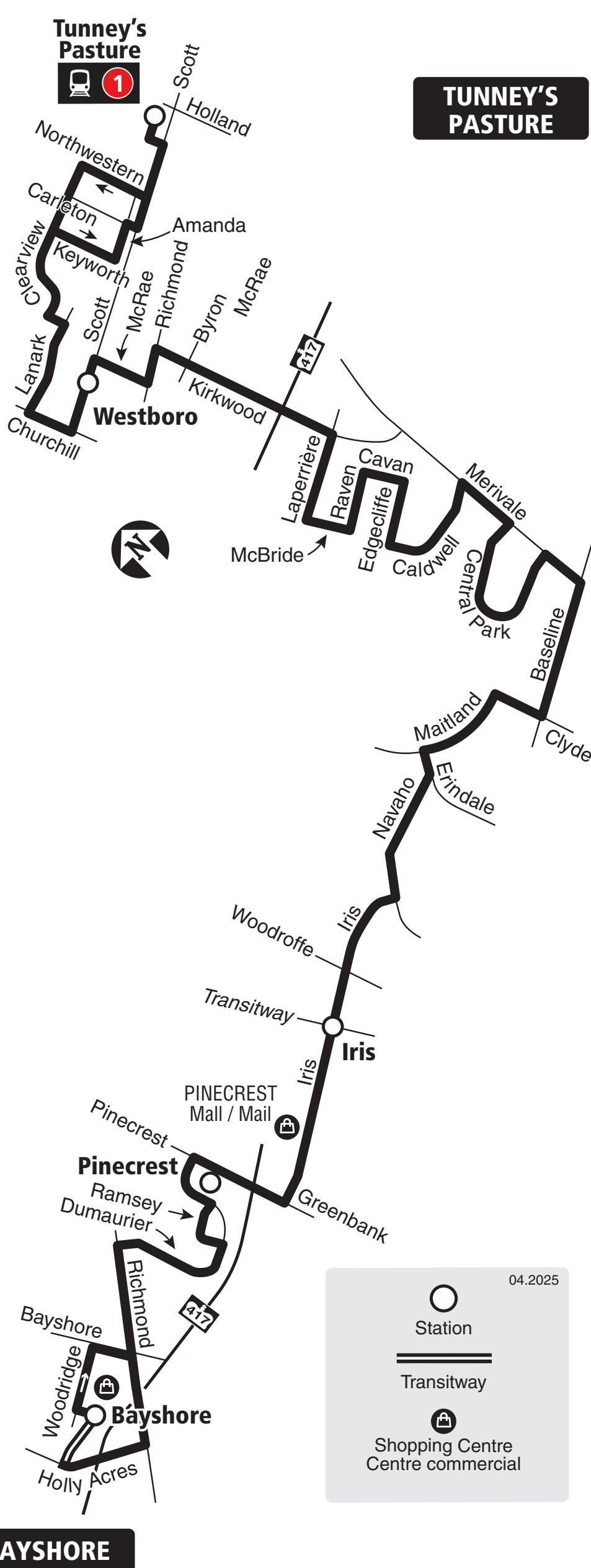


81

TUNNEY'S PASTURE BAYSHORE

Local

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.

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

Security / Sécurité **613-741-2478**



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TUNNEY'S PASTURE LINCOLN FIELDS

BASELINE

Local

7 days a week / 7 jours par semaine

All day service

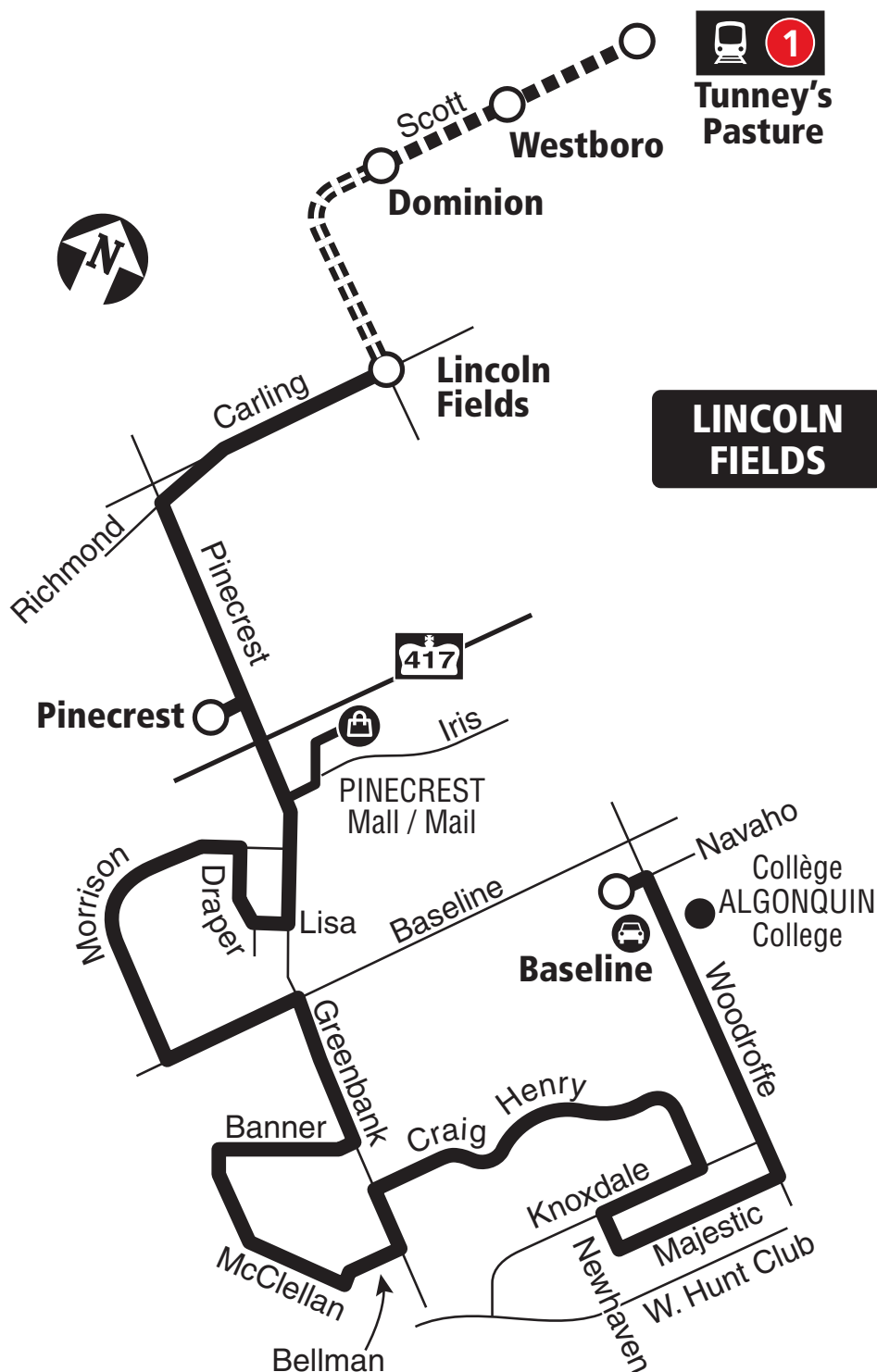
Service toute la journée

**TUNNEY'S
PASTURE**

 **1**
**Tunney's
Pasture**

**LINCOLN
FIELDS**

BASELINE



Transitway & Station
(Peak periods / périodes de pointe)



Peak periods / périodes de pointe



Park & Ride / Parc relais



Shopping Centre / Centre commercial

04/2025

2025.04

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

Security / Sécurité **613-741-2478**



octranspo.com



Fréquent

TUNNEY'S PASTURE BASELINE

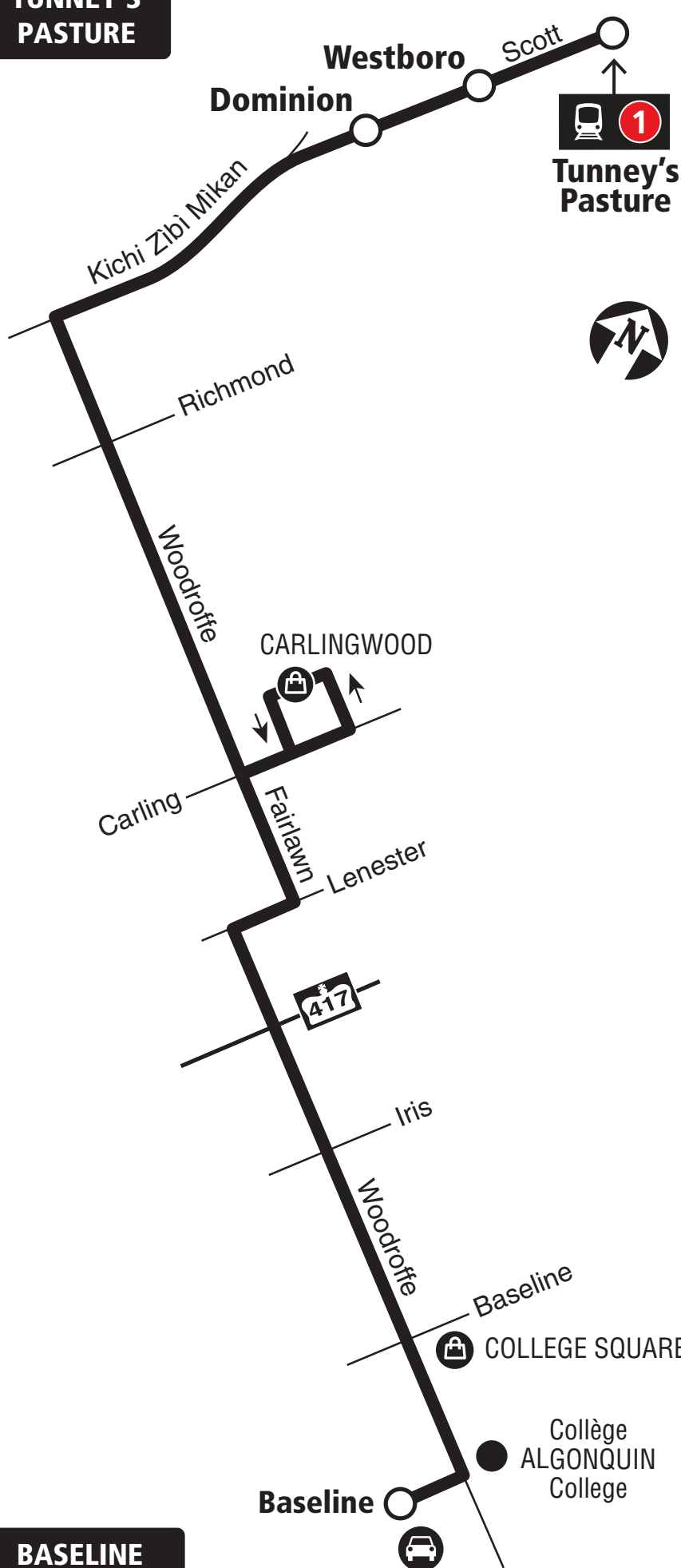
7 days a week / 7 jours par semaine

All day service

Service toute la journée



**TUNNEY'S
PASTURE**



BASELINE



Transitway & Station



Park & Ride / Parc relais



Shopping Centre / Centre commercial

04.2025

2025.04

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

Security / Sécurité **613-741-2478**



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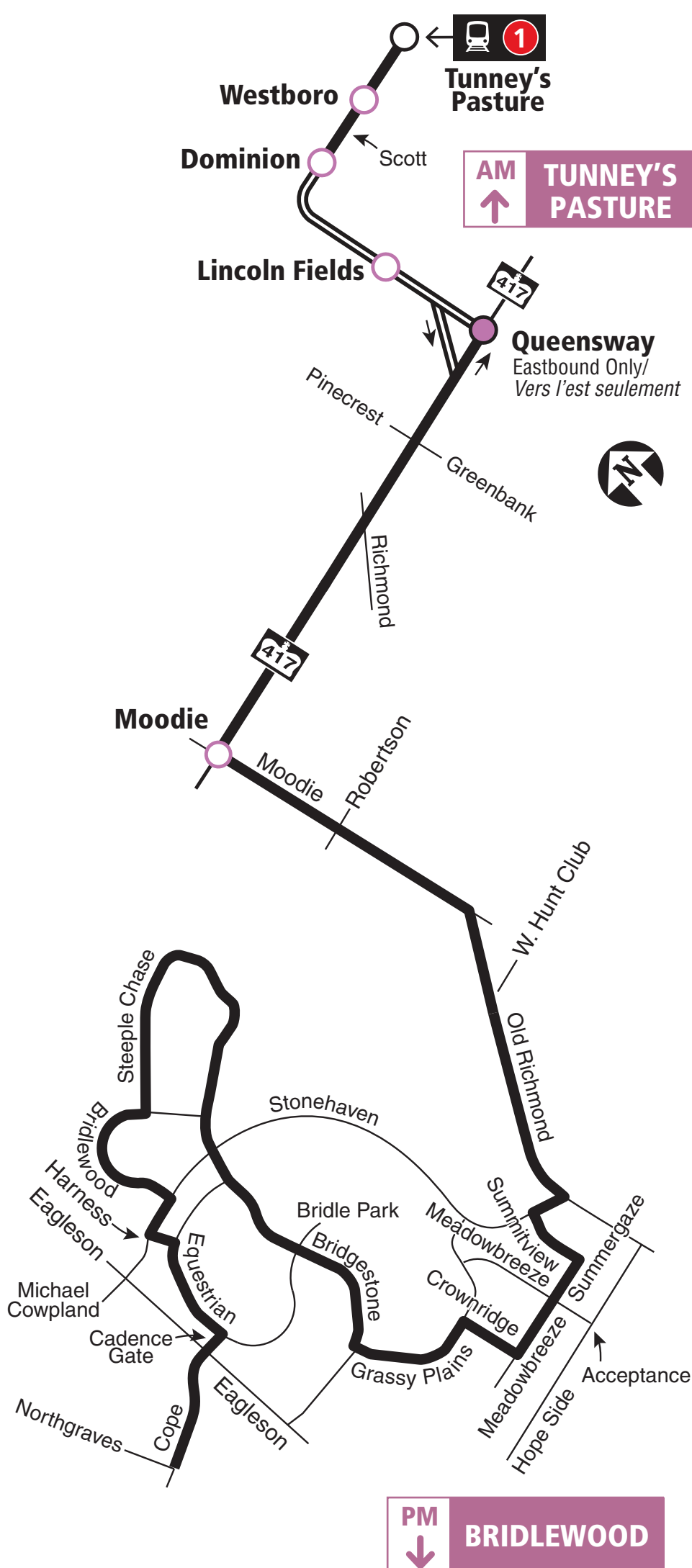
TUNNEY'S PASTURE BRIDLEWOOD

Connexion

Monday to Friday / Lundi au vendredi

Peak periods only

Périodes de pointe seulement



Transitway & Station



Limited stops: Full service in AM / No stop in PM
Arrêts limités : Service complet en AM / aucun arrêt en PM



AM: Off only - PM: Full Service
AM : débarquement seul. - PM : service complet

08.2025

2025.08



Schedule / Horaire613-560-1000

Text / Texto*560560

plus your four digit bus stop number / plus votre numéro d'arrêt à quatre chiffres

*Standard message rates may apply / Les tarifs réguliers de messagerie texte peuvent s'appliquer

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

Security / Sécurité.....**613-741-2478**

Lost & Found.....[octranspo.com/lostandfound](https://www.octranspo.com/lostandfound)

Objets perdus.....[octranspo.com/objetsperdus](https://www.octranspo.com/objetsperdus)



[octranspo.com](https://www.octranspo.com)

Effective August 24, 2025

En vigueur le 24 août 2025



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KIMPTON

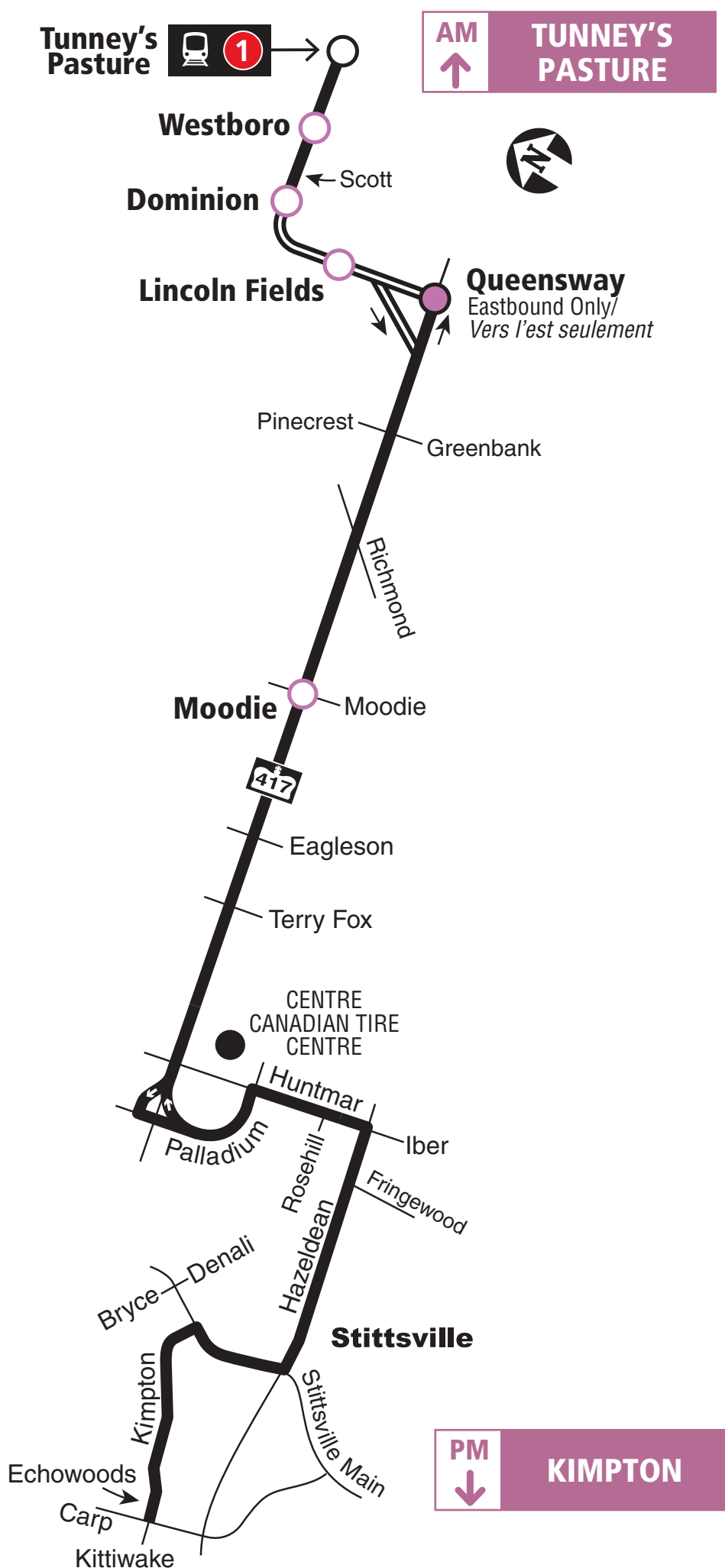
TUNNEY'S PASTURE

Connexion

Monday to Friday / Lundi au vendredi

Peak periods only

Périodes de pointe seulement



Transitway & Station

04.2025



AM Peak Only / Pointe seulement



Limited stops: Off only in AM / No stop in PM
Arrêts limités : débarquement en AM seul. / aucun arrêt en PM



AM: Off only - PM: Full Service
AM : débarquement seul. - PM : service complet

2025.04

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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**

Transpo

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FERNBANK

TUNNEY'S PASTURE

Connexion

Monday to Friday / Lundi au vendredi

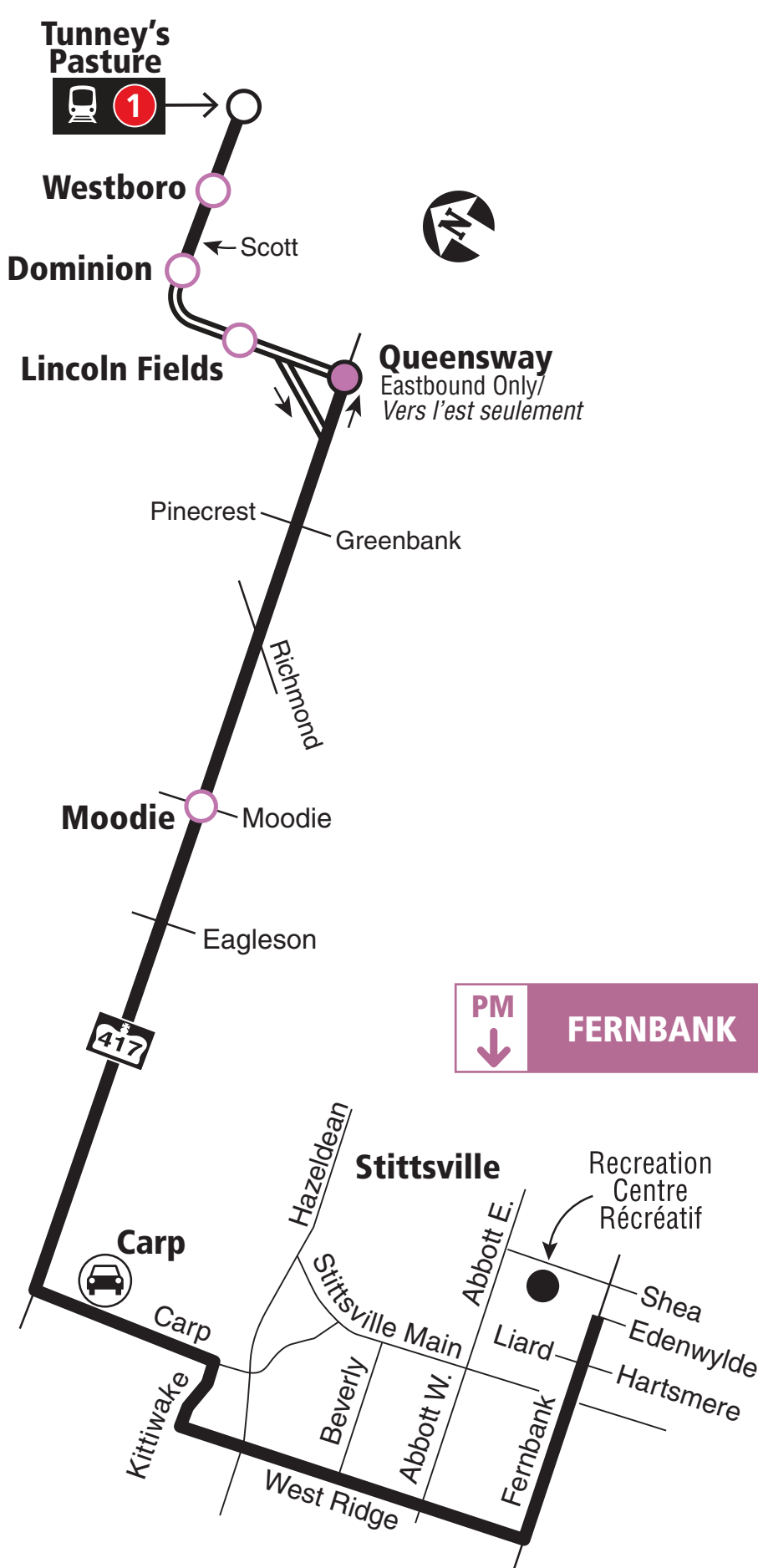
Peak periods only

Périodes de pointe seulement

AM



**TUNNEY'S
PASTURE**



PM



FERNBANK



Transitway & Station

04.2025



AM Peak Only / Pointe seulement



Limited stops: Off only in AM / No stop in PM
Arrêts limités : débarquement en AM seul. /
aucun arrêt en PM



AM: Off only - PM: Full Service
AM : débarquement seul. - PM : service complet



Park & Ride / Parc relais

2025.04

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

Security / Sécurité **613-741-2478**

Transpo

octranspo.com



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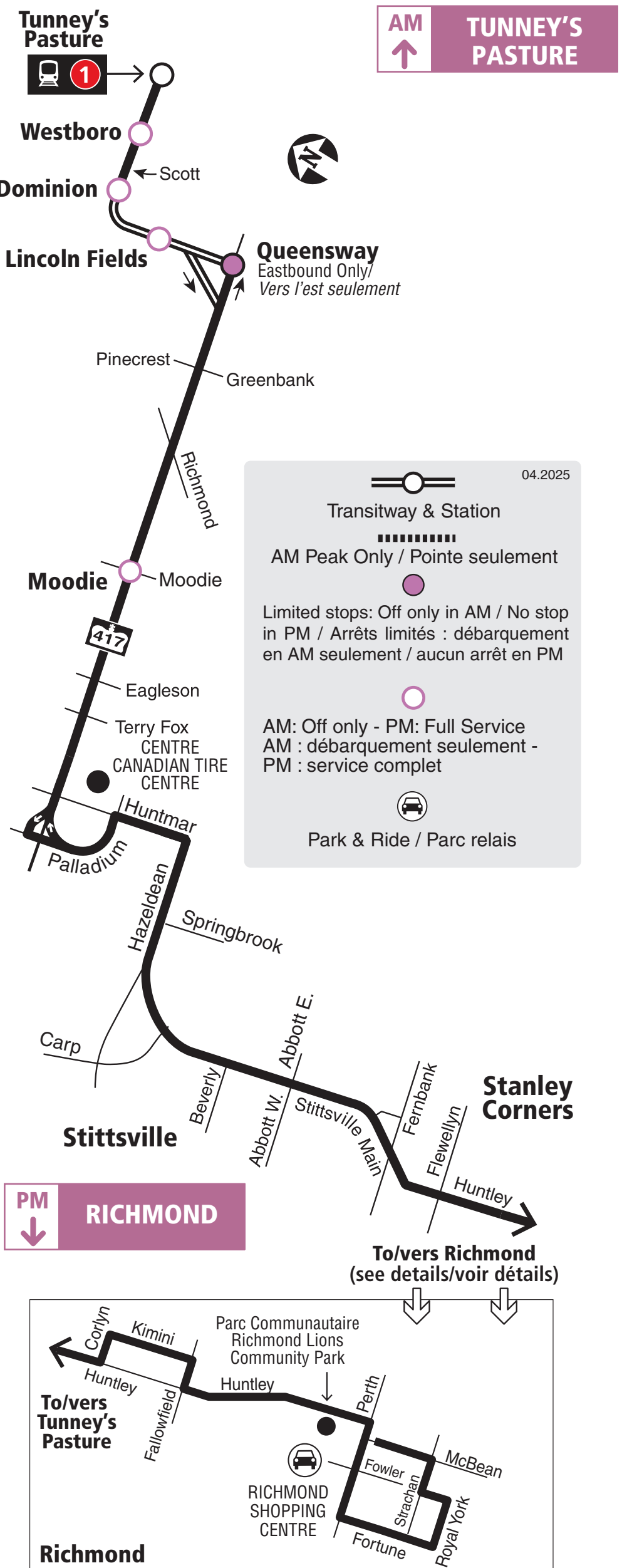
TUNNEY'S PASTURE RICHMOND

Connexion

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.

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

Security / Sécurité **613-741-2478**

Transpo

octranspo.com



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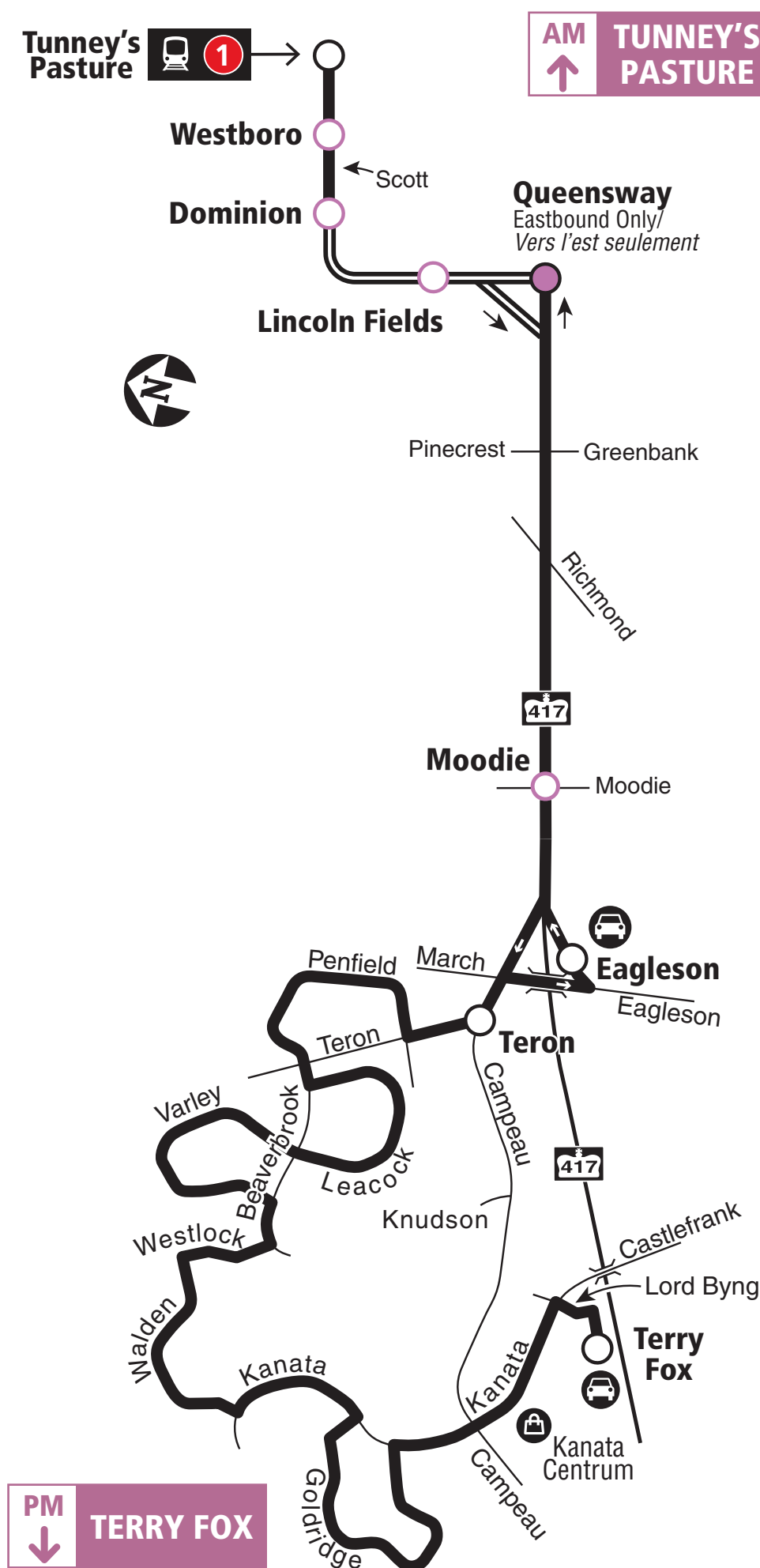
TUNNEY'S PASTURE TERRY FOX

Connexion

Monday to Friday / Lundi au vendredi

Peak periods only

Périodes de pointe seulement



04.2025

2025.04

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

Security / Sécurité **613-741-2478**

Transpo

octranspo.com





266

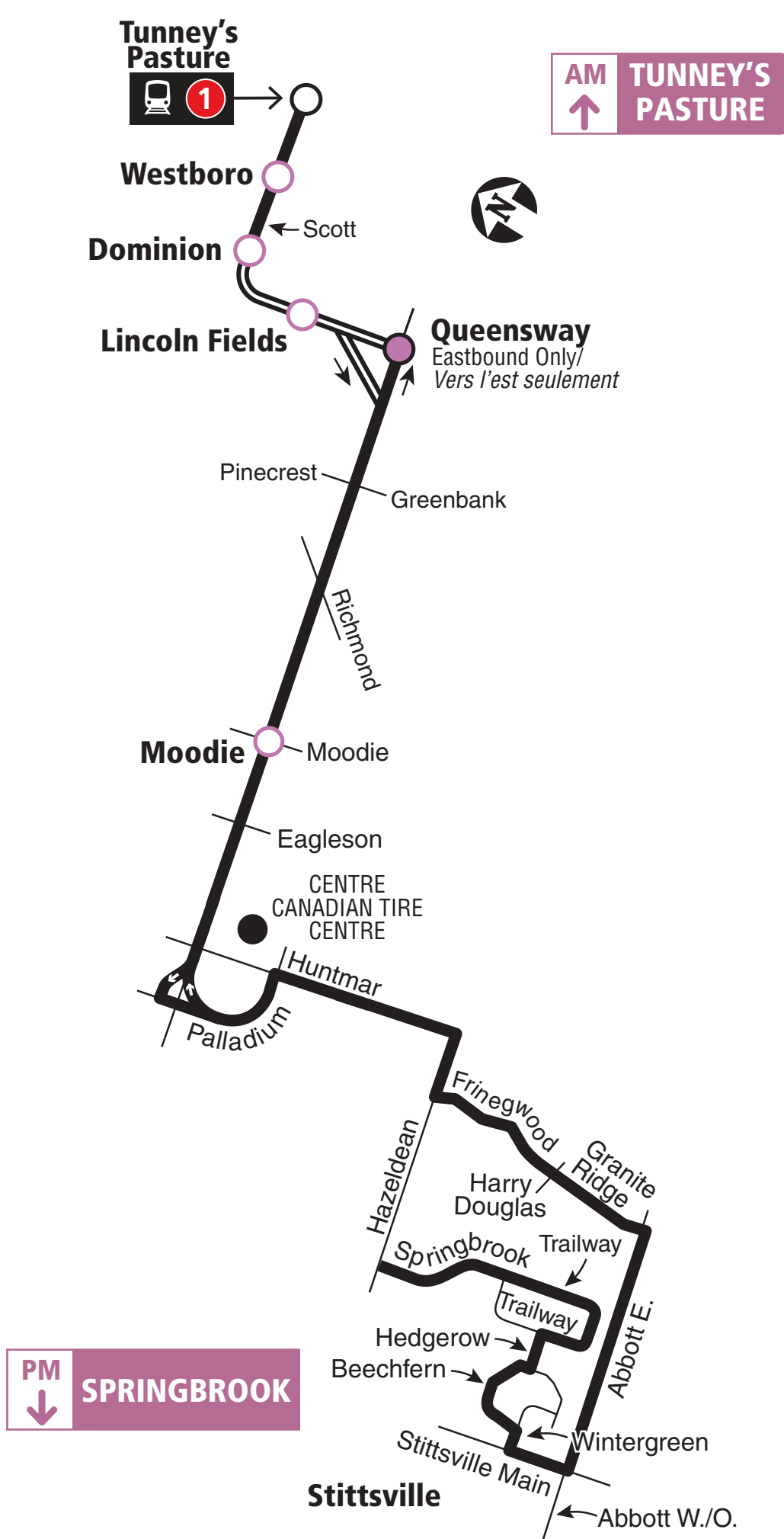
SPRINGBROOK TUNNEY'S PASTURE

Connexion

Monday to Friday / Lundi au vendredi

Peak periods only

Périodes de pointe seulement



Transitway & Station

04.2025



AM Peak Only / Pointe seulement



Limited stops: Off only in AM / No stop in PM
Arrêts limités : débarquement en AM seul. / aucun arrêt en PM



AM: Off only - PM: Full Service
AM : débarquement seul. - PM : service complet



Shopping Centre / Centre commercial

2024

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**

Transpo

octranspo.com



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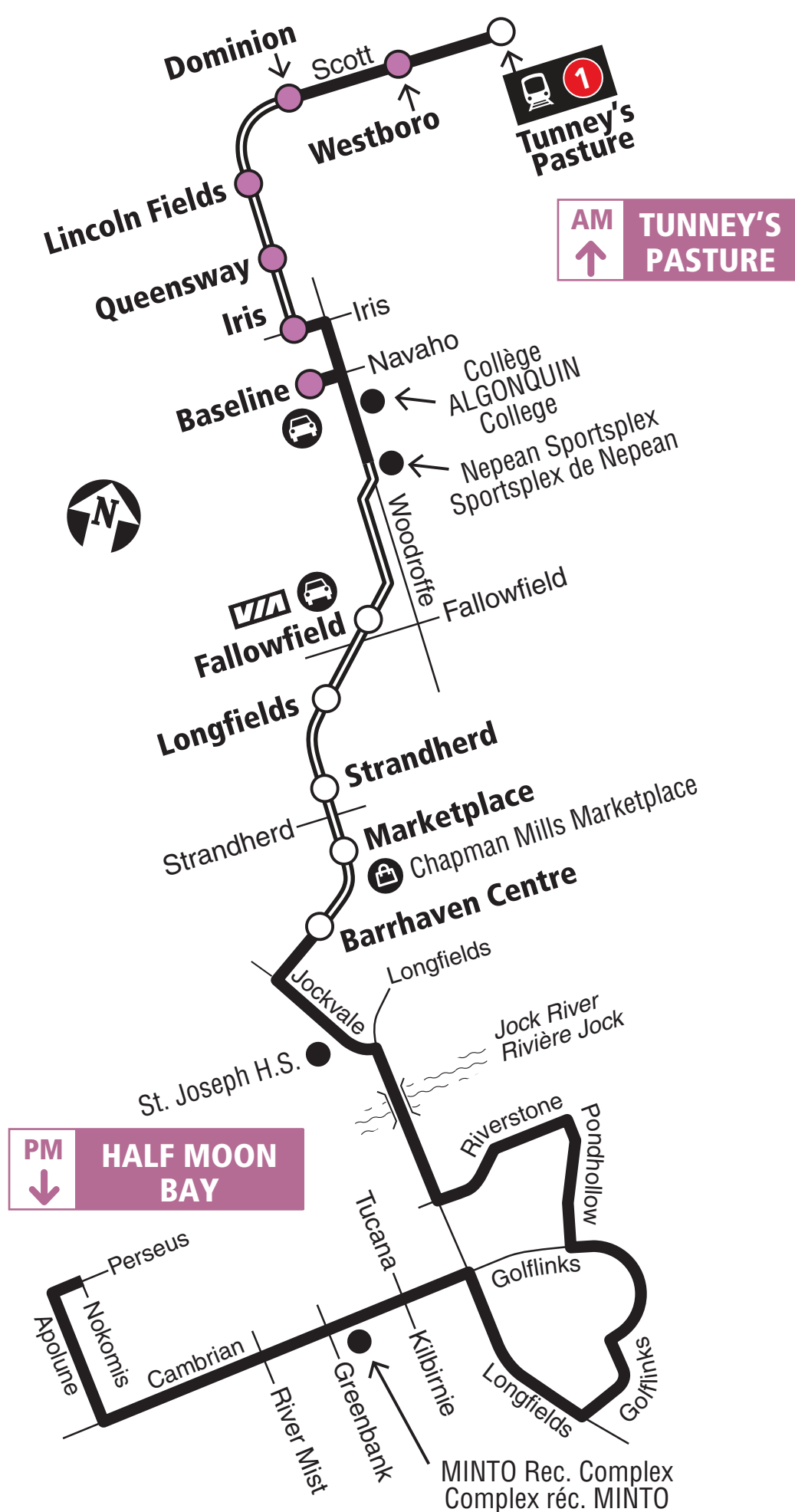
Connexion

HALF MOON BAY TUNNEY'S PASTURE

Monday to Friday / Lundi au vendredi

Peak periods only

Périodes de pointe seulement



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

04.2025

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**

Transpo

octranspo.com

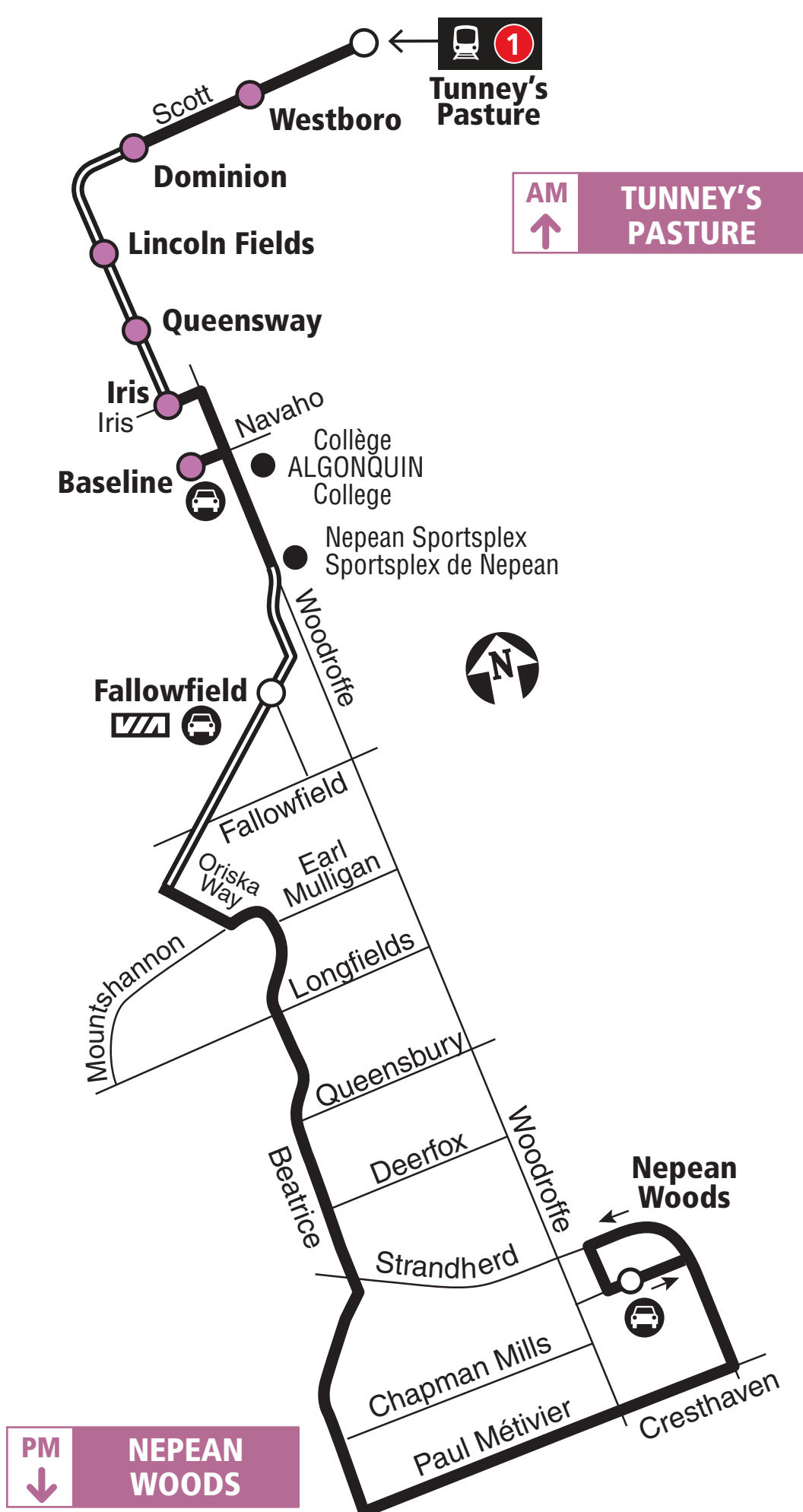


277

Connexion

NEPEAN WOODS TUNNEY'S PASTURE

Monday to Friday / Lundi au vendredi
Peak periods only
Périodes de pointe seulement



Transitway & Station



Limited stops: Off only in AM / No stop in PM
Arrêts limités: débarquement en AM seul. / aucun arrêt en PM



Park & Ride / Parc relais

04.2025

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**

Transpo

octranspo.com

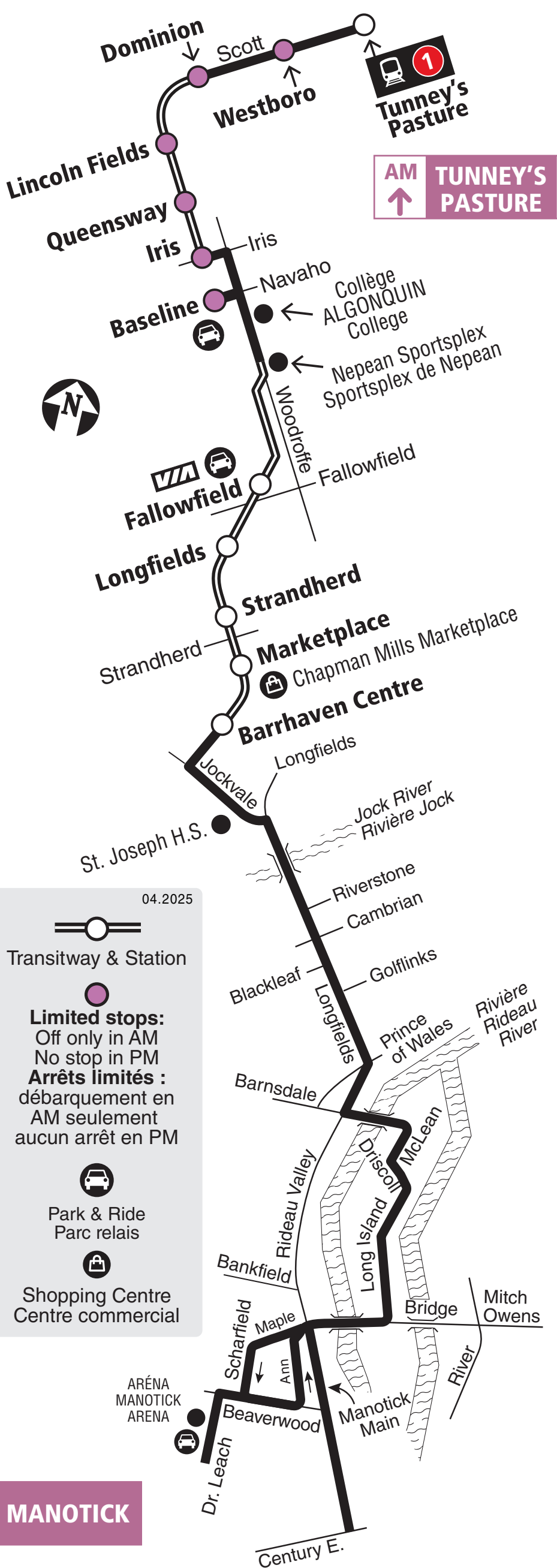


279

MANOTICK TUNNEY'S PASTURE

Connexion

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**

Transpo

octranspo.com

DRAFT

Appendix C:

Existing Peak Hour Volumes

Survey Date: Thursday, July 07, 2022

Start Time: 07:00

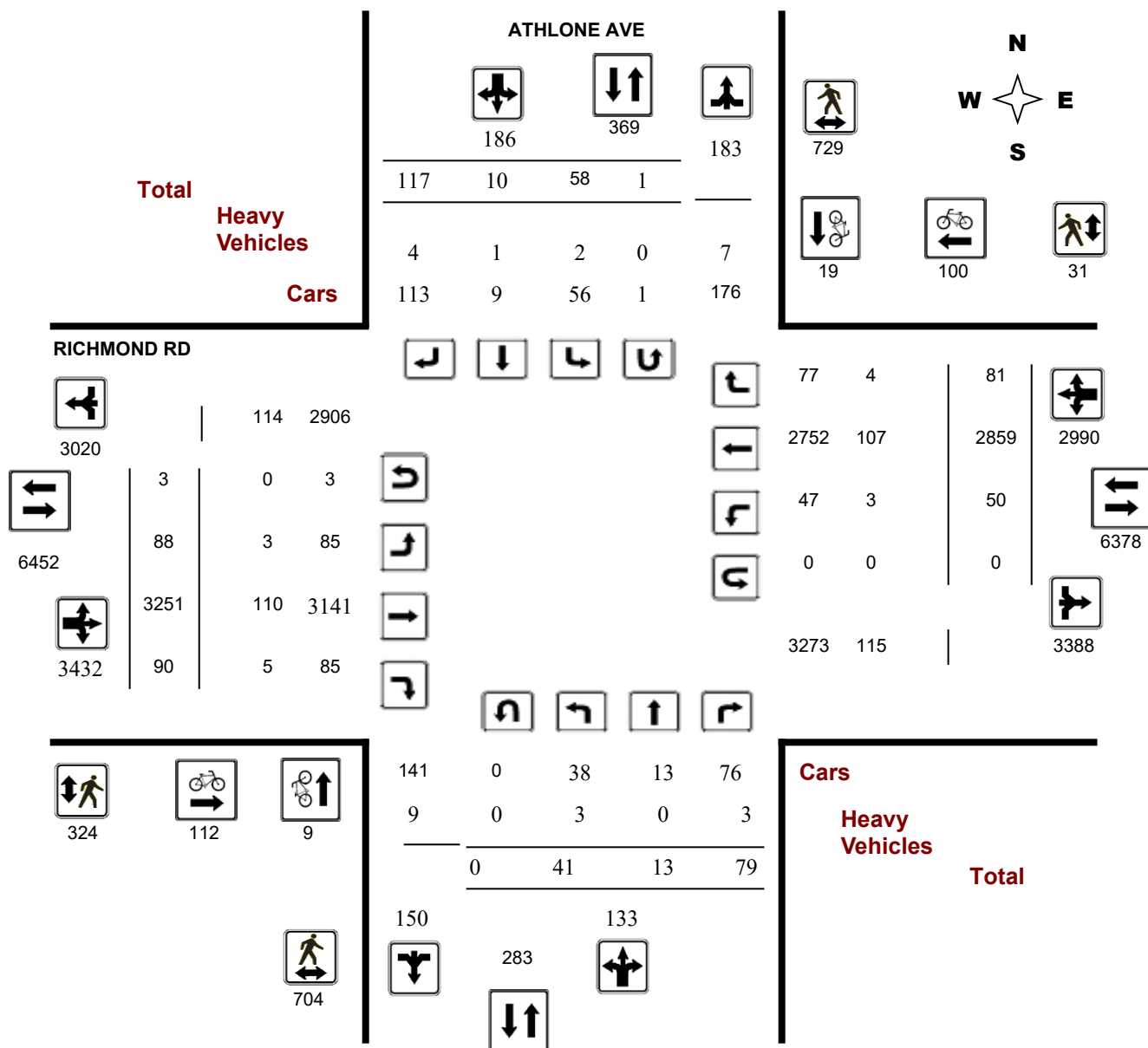
WO No:

40401

Device:

Miovision

Full Study Diagram



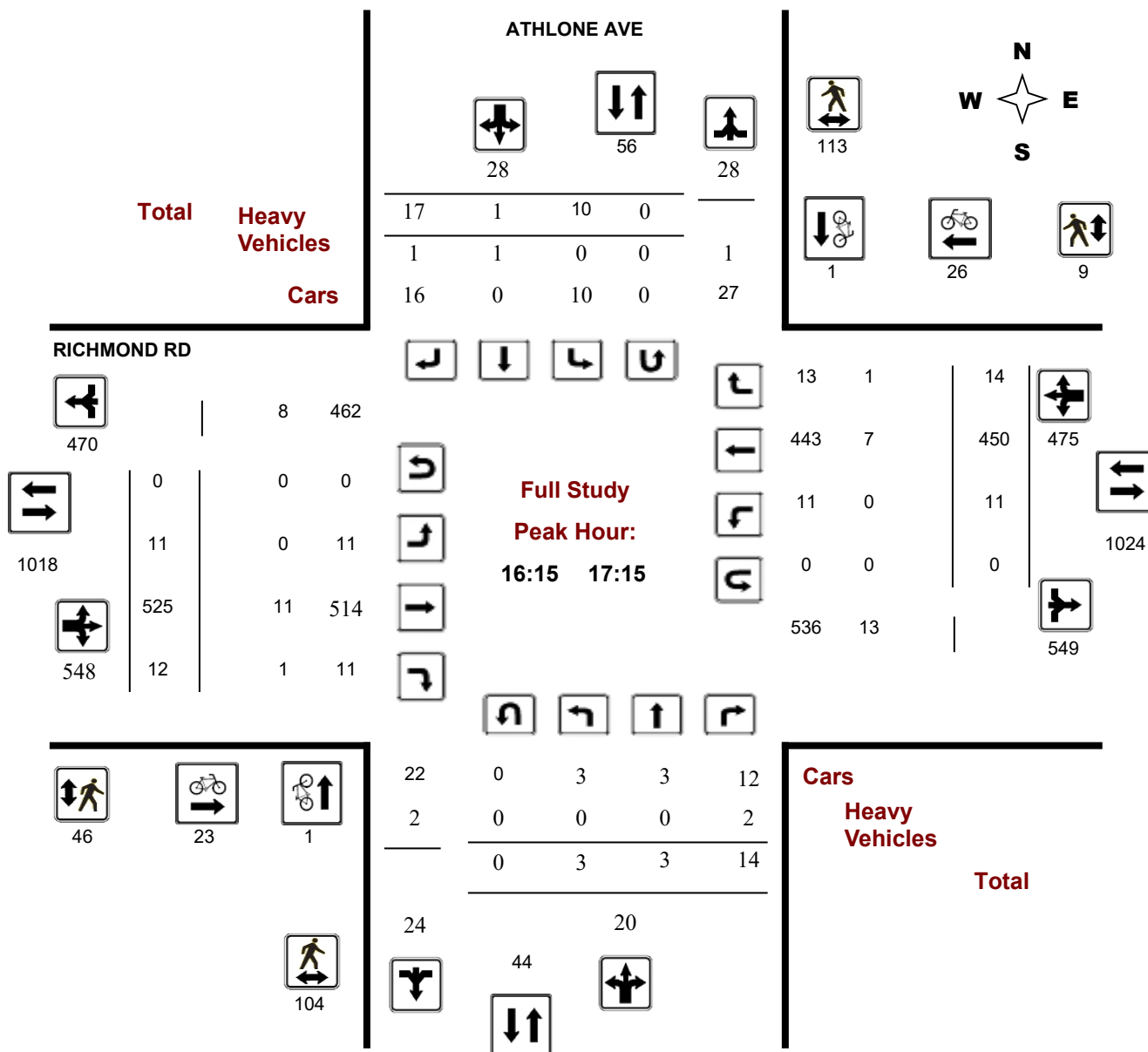
Survey Date: Thursday, July 07, 2022

WO No: 40401

Start Time: 07:00

Device: Miovision

Full Study Peak Hour Diagram



Turning Movement Count - Peak Hour Diagram

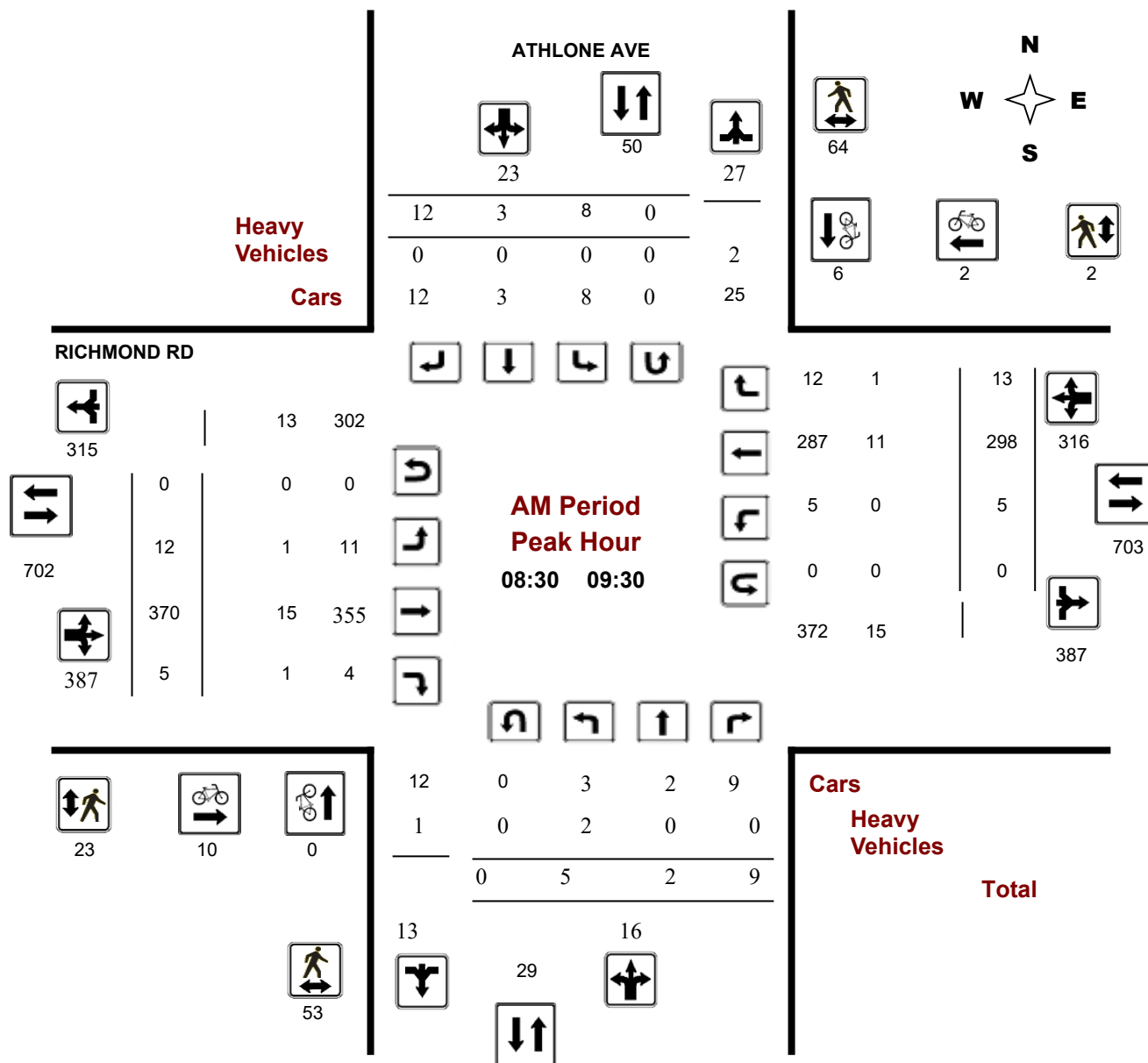
ATHLONE AVE @ RICHMOND RD

Survey Date: Thursday, July 07, 2022

Start Time: 07:00

WO No: 40401

Device: Miovision



Turning Movement Count - Peak Hour Diagram

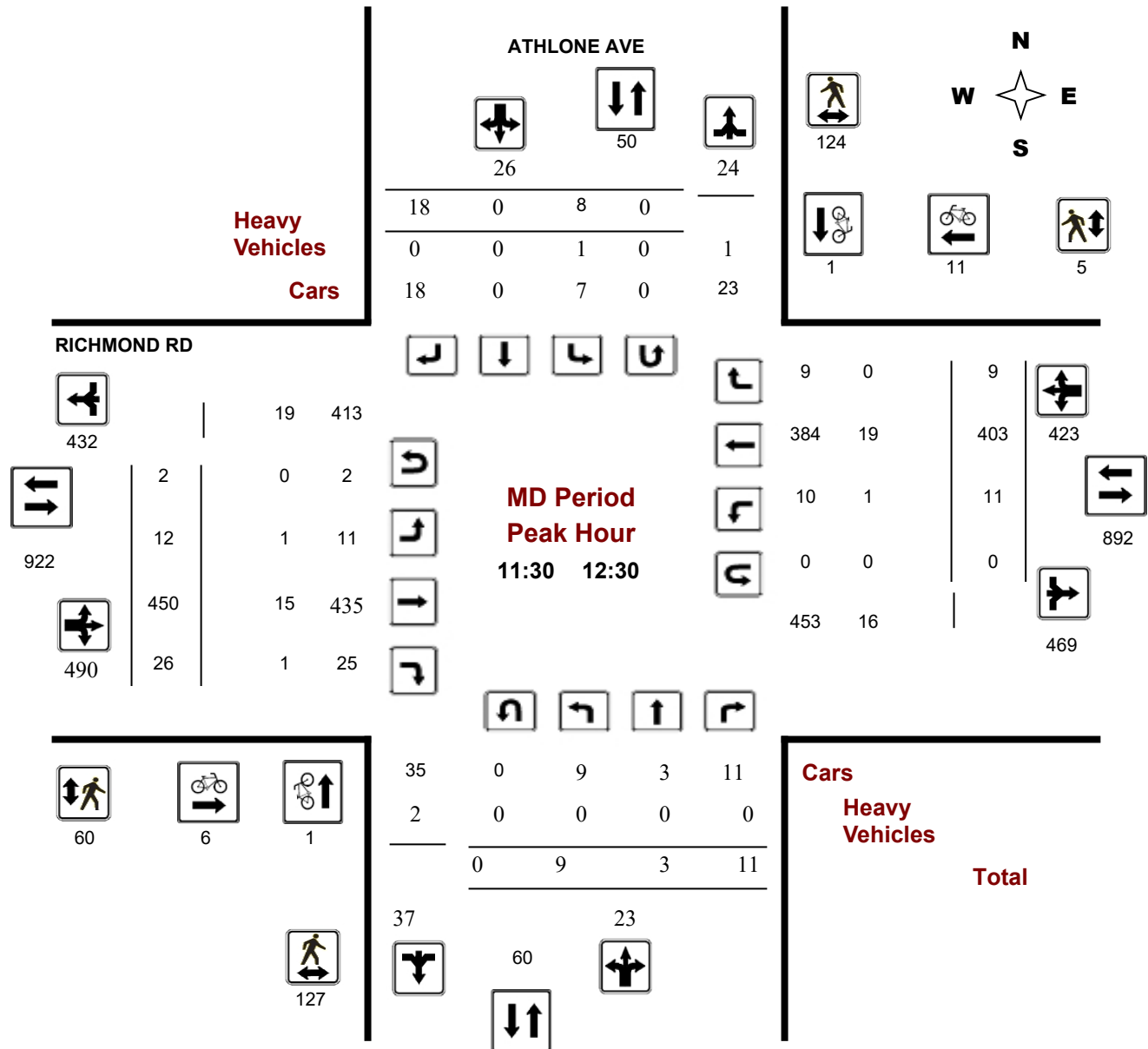
ATHLONE AVE @ RICHMOND RD

Survey Date: Thursday, July 07, 2022

Start Time: 07:00

WO No: 40401

Device: Miovision



Turning Movement Count - Peak Hour Diagram

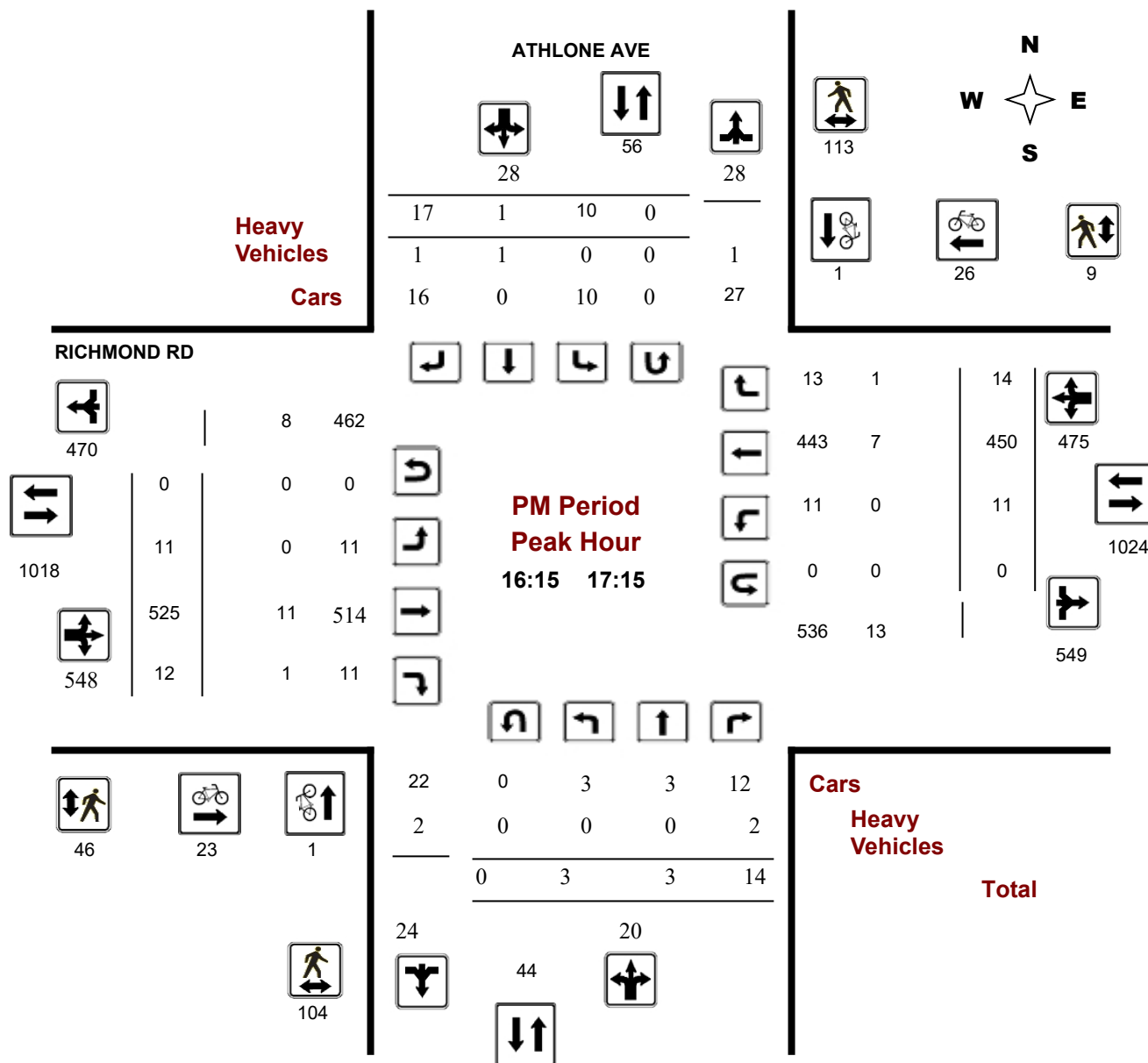
ATHLONE AVE @ RICHMOND RD

Survey Date: Thursday, July 07, 2022

Start Time: 07:00

WO No: 40401

Device: Miovision





Transportation Services - Traffic Services

Turning Movement Count - Study Results

ATHLONE AVE @ RICHMOND RD

Survey Date: Thursday, July 07, 2022

WO No: 40401

Start Time: 07:00

Device: Miovision

Full Study Summary (8 HR Standard)

Survey Date: Thursday, July 07, 2022

Total Observed U-Turns

Northbound: 0 Southbound: 1
Eastbound: 3 Westbound: 0

AADT Factor

.90

ATHLONE AVE

RICHMOND RD

Period	Northbound					Southbound					Eastbound					Westbound					Grand Total
	LT	ST	RT	NB TOT		LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT		LT	ST	RT	WB TOT	STR TOT	
07:00 08:00	3	1	2	6		4	1	6	11	17	4	225	2	231		6	173	6	185	416	433
08:00 09:00	6	2	7	15		11	2	10	23	38	8	365	7	380		5	283	10	298	678	716
09:00 10:00	4	0	7	11		6	2	10	18	29	10	317	1	328		4	278	13	295	623	652
11:30 12:30	9	3	11	23		8	0	18	26	49	12	450	26	488		11	403	9	423	911	960
12:30 13:30	5	3	12	20		7	0	25	32	52	13	417	17	447		4	393	10	407	854	906
15:00 16:00	5	1	13	19		6	2	17	25	44	14	453	9	476		3	439	9	451	927	971
16:00 17:00	2	3	13	18		8	1	11	20	38	12	536	8	556		11	436	15	462	1018	1056
17:00 18:00	7	0	14	21		8	2	20	30	51	15	488	20	523		6	454	9	469	992	1043
Sub Total	41	13	79	133		58	10	117	185	318	88	3251	90	3429		50	2859	81	2990	6419	6737
U Turns				0					1	1				3					0	3	4
Total	41	13	79	133		58	10	117	186	319	88	3251	90	3432		50	2859	81	2990	6422	6741
EQ 12Hr	57	18	110	185		81	14	163	259	443	122	4519	125	4770		70	3974	113	4156	8927	9370

Note: These values are calculated by multiplying the totals by the appropriate expansion factor.

1.39

AVG 12Hr	51	16	99	166		73	16	192	233	399	110	4067	112	4293		63	3577	102	3740	8034	8433
-----------------	----	----	----	-----	--	----	----	-----	-----	-----	-----	------	-----	------	--	----	------	-----	------	------	------

Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.

.90

AVG 24Hr	67	21	130	217		96	21	252	305	523	144	5328	147	5624		83	4686	134	4899	10525	11047
-----------------	----	----	-----	-----	--	----	----	-----	-----	-----	-----	------	-----	------	--	----	------	-----	------	-------	-------

Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.

1.31

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



Transportation Services - Traffic Services

Turning Movement Count - Study Results

ATHLONE AVE @ RICHMOND RD

Survey Date: Thursday, July 07, 2022

WO No: 40401

Start Time: 07:00

Device: Miovision

Full Study 15 Minute Increments

ATHLONE AVE

RICHMOND RD

Northbound

Southbound

Eastbound

Westbound

Time Period	LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00 07:15	0	0	1	1	0	0	2	2	3	2	48	1	51	0	41	0	41	92	95
07:15 07:30	0	0	0	0	0	1	2	3	3	1	56	1	58	1	33	2	36	94	97
07:30 07:45	1	1	0	2	2	0	0	2	4	0	58	0	58	3	41	2	46	104	108
07:45 08:00	2	0	1	3	2	0	2	4	7	1	63	0	64	2	58	2	62	126	133
08:00 08:15	1	0	1	2	3	0	2	5	7	1	79	1	81	0	50	1	51	132	139
08:15 08:30	1	0	0	1	4	0	1	5	6	2	72	1	75	1	68	2	71	146	152
08:30 08:45	3	1	1	5	4	0	2	6	11	1	99	4	104	1	84	2	87	191	202
08:45 09:00	1	1	5	7	0	2	5	7	14	4	115	1	120	3	81	5	89	209	223
09:00 09:15	0	0	3	3	3	0	4	7	10	4	74	0	78	0	63	2	65	143	153
09:15 09:30	1	0	0	1	1	1	1	3	4	3	82	0	85	1	70	4	75	160	164
09:30 09:45	2	0	2	4	2	0	2	4	8	1	79	1	81	1	68	1	70	151	159
09:45 10:00	1	0	2	3	0	1	3	4	7	2	82	0	84	2	77	6	85	169	176
11:30 11:45	2	0	4	6	2	0	4	6	12	4	109	5	118	4	94	0	98	216	228
11:45 12:00	4	2	3	9	3	0	3	6	15	2	109	10	121	5	101	2	108	229	244
12:00 12:15	3	0	2	5	0	0	5	5	10	3	126	8	137	0	108	2	110	247	257
12:15 12:30	0	1	2	3	3	0	6	9	12	3	106	3	114	2	100	5	107	221	233
12:30 12:45	1	0	3	4	2	0	6	8	12	2	101	3	107	1	94	3	98	205	217
12:45 13:00	1	1	2	4	3	0	4	7	11	5	93	3	101	2	102	3	107	208	219
13:00 13:15	2	1	5	8	0	0	8	8	16	5	106	6	117	1	106	1	108	225	241
13:15 13:30	1	1	2	4	2	0	7	9	13	1	117	5	123	0	91	3	94	217	230
15:00 15:15	0	0	4	4	1	0	5	6	10	2	109	4	115	2	110	2	114	229	239
15:15 15:30	1	0	2	3	1	0	6	7	10	7	119	0	126	0	115	3	118	244	254
15:30 15:45	1	0	1	2	1	2	3	6	8	3	96	2	101	0	104	2	106	207	215
15:45 16:00	3	1	6	10	3	0	3	6	16	2	129	3	134	1	110	2	113	247	263
16:00 16:15	0	0	2	2	1	0	2	4	6	3	137	1	141	2	103	2	107	248	254
16:15 16:30	1	2	3	6	1	0	1	2	8	2	130	3	135	2	115	7	124	259	267
16:30 16:45	0	0	7	7	2	1	4	7	14	4	147	1	152	5	114	1	120	272	286
16:45 17:00	1	1	1	3	4	0	4	8	11	3	122	3	128	2	104	5	111	239	250
17:00 17:15	1	0	3	4	3	0	8	11	15	2	126	5	133	2	117	1	120	253	268
17:15 17:30	2	0	4	6	0	1	4	5	11	1	115	7	123	1	126	1	128	251	262
17:30 17:45	0	0	4	4	2	0	4	6	10	4	121	3	128	3	110	3	116	244	254
17:45 18:00	4	0	3	7	3	1	4	8	15	8	126	5	139	0	101	4	105	244	259
Total:	41	13	79	133	58	10	117	186	319	88	3251	90	3432	50	2859	81	2990	6422	6,741

Note: U-Turns are included in Totals.



Transportation Services - Traffic Services

Turning Movement Count - Study Results

ATHLONE AVE @ RICHMOND RD

Survey Date: Thursday, July 07, 2022

WO No: 40401

Start Time: 07:00

Device: Miovision

Full Study Cyclist Volume

		ATHLONE AVE			RICHMOND RD			Grand Total
Time Period		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	
07:00	07:15	0	0	0	2	2	4	4
07:15	07:30	0	0	0	1	0	1	1
07:30	07:45	0	0	0	4	1	5	5
07:45	08:00	0	0	0	3	3	6	6
08:00	08:15	0	0	0	2	4	6	6
08:15	08:30	1	0	1	5	2	7	8
08:30	08:45	0	1	1	1	1	2	3
08:45	09:00	0	0	0	1	0	1	1
09:00	09:15	0	3	3	7	1	8	11
09:15	09:30	0	2	2	1	0	1	3
09:30	09:45	0	0	0	3	2	5	5
09:45	10:00	0	0	0	3	1	4	4
11:30	11:45	0	0	0	4	7	11	11
11:45	12:00	0	0	0	1	1	2	2
12:00	12:15	1	1	2	0	2	2	4
12:15	12:30	0	0	0	1	1	2	2
12:30	12:45	0	1	1	8	3	11	12
12:45	13:00	0	0	0	2	2	4	4
13:00	13:15	0	1	1	7	4	11	12
13:15	13:30	0	1	1	1	5	6	7
15:00	15:15	1	1	2	4	4	8	10
15:15	15:30	0	0	0	4	4	8	8
15:30	15:45	2	1	3	4	3	7	10
15:45	16:00	1	1	2	2	4	6	8
16:00	16:15	0	0	0	3	3	6	6
16:15	16:30	0	0	0	2	6	8	8
16:30	16:45	1	0	1	5	9	14	15
16:45	17:00	0	0	0	8	3	11	11
17:00	17:15	0	1	1	8	8	16	17
17:15	17:30	2	0	2	5	8	13	15
17:30	17:45	0	2	2	3	3	6	8
17:45	18:00	0	3	3	7	3	10	13
Total		9	19	28	112	100	212	240



Transportation Services - Traffic Services

Turning Movement Count - Study Results

ATHLONE AVE @ RICHMOND RD

Survey Date: Thursday, July 07, 2022

WO No: 40401

Start Time: 07:00

Device: Miovision

Full Study Pedestrian Volume

ATHLONE AVE

RICHMOND RD

Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00 07:15	14	6	20	1	1	2	22
07:15 07:30	5	8	13	4	1	5	18
07:30 07:45	10	7	17	2	1	3	20
07:45 08:00	6	9	15	4	0	4	19
08:00 08:15	9	8	17	5	0	5	22
08:15 08:30	5	20	25	2	0	2	27
08:30 08:45	7	22	29	5	1	6	35
08:45 09:00	15	21	36	9	1	10	46
09:00 09:15	18	12	30	4	0	4	34
09:15 09:30	13	9	22	5	0	5	27
09:30 09:45	14	21	35	6	0	6	41
09:45 10:00	13	21	34	5	1	6	40
11:30 11:45	26	27	53	5	2	7	60
11:45 12:00	24	38	62	18	1	19	81
12:00 12:15	41	23	64	23	2	25	89
12:15 12:30	36	36	72	14	0	14	86
12:30 12:45	40	27	67	11	0	11	78
12:45 13:00	47	39	86	17	1	18	104
13:00 13:15	26	29	55	9	0	9	64
13:15 13:30	26	30	56	14	1	15	71
15:00 15:15	21	23	44	16	1	17	61
15:15 15:30	33	20	53	9	3	12	65
15:30 15:45	18	25	43	14	0	14	57
15:45 16:00	46	27	73	32	2	34	107
16:00 16:15	22	27	49	9	2	11	60
16:15 16:30	21	36	57	12	3	15	72
16:30 16:45	20	27	47	6	1	7	54
16:45 17:00	24	24	48	8	1	9	57
17:00 17:15	39	26	65	20	4	24	89
17:15 17:30	18	32	50	6	0	6	56
17:30 17:45	21	25	46	12	0	12	58
17:45 18:00	26	24	50	17	1	18	68
Total	704	729	1433	324	31	355	1788



Transportation Services - Traffic Services

Turning Movement Count - Study Results

ATHLONE AVE @ RICHMOND RD

Survey Date: Thursday, July 07, 2022

WO No: 40401

Start Time: 07:00

Device: Miovision

Full Study Heavy Vehicles

ATHLONE AVE

RICHMOND RD

Northbound

Southbound

Eastbound

Westbound

Time Period	LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00 07:15	0	0	0	0	0	0	0	0	0	0	4	0	7	0	3	0	7	14	7
07:15 07:30	0	0	0	1	0	0	0	0	1	0	4	1	6	0	1	0	5	11	6
07:30 07:45	1	0	0	2	0	0	0	0	2	0	3	0	6	1	2	0	6	12	7
07:45 08:00	0	0	0	0	0	0	1	2	2	1	4	0	11	0	5	0	9	20	11
08:00 08:15	0	0	0	0	0	0	0	0	0	0	4	0	9	0	5	0	9	18	9
08:15 08:30	0	0	0	0	0	0	0	0	0	0	5	0	10	0	5	0	10	20	10
08:30 08:45	2	0	0	3	0	0	0	0	3	0	4	1	12	0	5	0	9	21	12
08:45 09:00	0	0	0	0	0	0	0	0	0	0	5	0	7	0	2	0	7	14	7
09:00 09:15	0	0	0	0	0	0	0	0	0	0	2	0	4	0	2	0	4	8	4
09:15 09:30	0	0	0	0	0	0	0	2	2	1	4	0	7	0	2	1	7	14	8
09:30 09:45	0	0	0	0	0	0	0	1	1	0	4	0	8	0	4	1	9	17	9
09:45 10:00	0	0	0	0	0	0	0	0	0	0	5	0	8	0	3	0	8	16	8
11:30 11:45	0	0	0	0	0	0	0	1	1	1	6	0	11	0	4	0	10	21	11
11:45 12:00	0	0	0	1	0	0	0	0	1	0	0	0	6	1	6	0	7	13	7
12:00 12:15	0	0	0	1	0	0	0	0	1	0	5	1	12	0	6	0	11	23	12
12:15 12:30	0	0	0	0	1	0	0	1	1	0	4	0	7	0	3	0	8	15	8
12:30 12:45	0	0	0	1	1	0	0	1	2	0	4	1	11	0	6	0	11	22	12
12:45 13:00	0	0	1	2	0	0	1	2	4	0	5	0	11	1	5	1	13	24	14
13:00 13:15	0	0	0	0	0	0	0	0	0	0	5	0	10	0	5	0	10	20	10
13:15 13:30	0	0	0	0	0	0	1	1	1	0	2	0	4	0	1	0	3	7	4
15:00 15:15	0	0	0	0	0	0	0	0	0	0	1	0	7	0	6	0	7	14	7
15:15 15:30	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0	3	6	3
15:30 15:45	0	0	0	0	0	0	0	0	0	0	4	0	8	0	4	0	8	16	8
15:45 16:00	0	0	0	0	0	0	0	0	0	0	5	0	7	0	2	0	7	14	7
16:00 16:15	0	0	0	0	0	0	0	0	0	0	5	0	8	0	3	0	8	16	8
16:15 16:30	0	0	0	0	0	0	0	0	0	0	3	0	5	0	2	0	5	10	5
16:30 16:45	0	0	2	3	0	1	1	2	5	0	3	0	6	0	2	0	7	13	9
16:45 17:00	0	0	0	0	0	0	0	1	1	0	2	0	5	0	3	1	6	11	6
17:00 17:15	0	0	0	1	0	0	0	0	1	0	3	1	4	0	0	0	3	7	4
17:15 17:30	0	0	0	0	0	0	0	0	0	0	1	0	3	0	2	0	3	6	3
17:30 17:45	0	0	0	0	0	0	0	0	0	0	3	0	5	0	2	0	5	10	5
17:45 18:00	0	0	0	0	0	0	0	0	0	0	1	0	4	0	3	0	4	8	4
Total: None	3	0	3	15	2	1	4	14	29	3	110	5	232	3	107	4	229	461	245



Transportation Services - Traffic Services

Turning Movement Count - Study Results

ATHLONE AVE @ RICHMOND RD

Survey Date: Thursday, July 07, 2022

WO No: 40401

Start Time: 07:00

Device: Miovision

Full Study 15 Minute U-Turn Total

ATHLONE AVE

RICHMOND RD

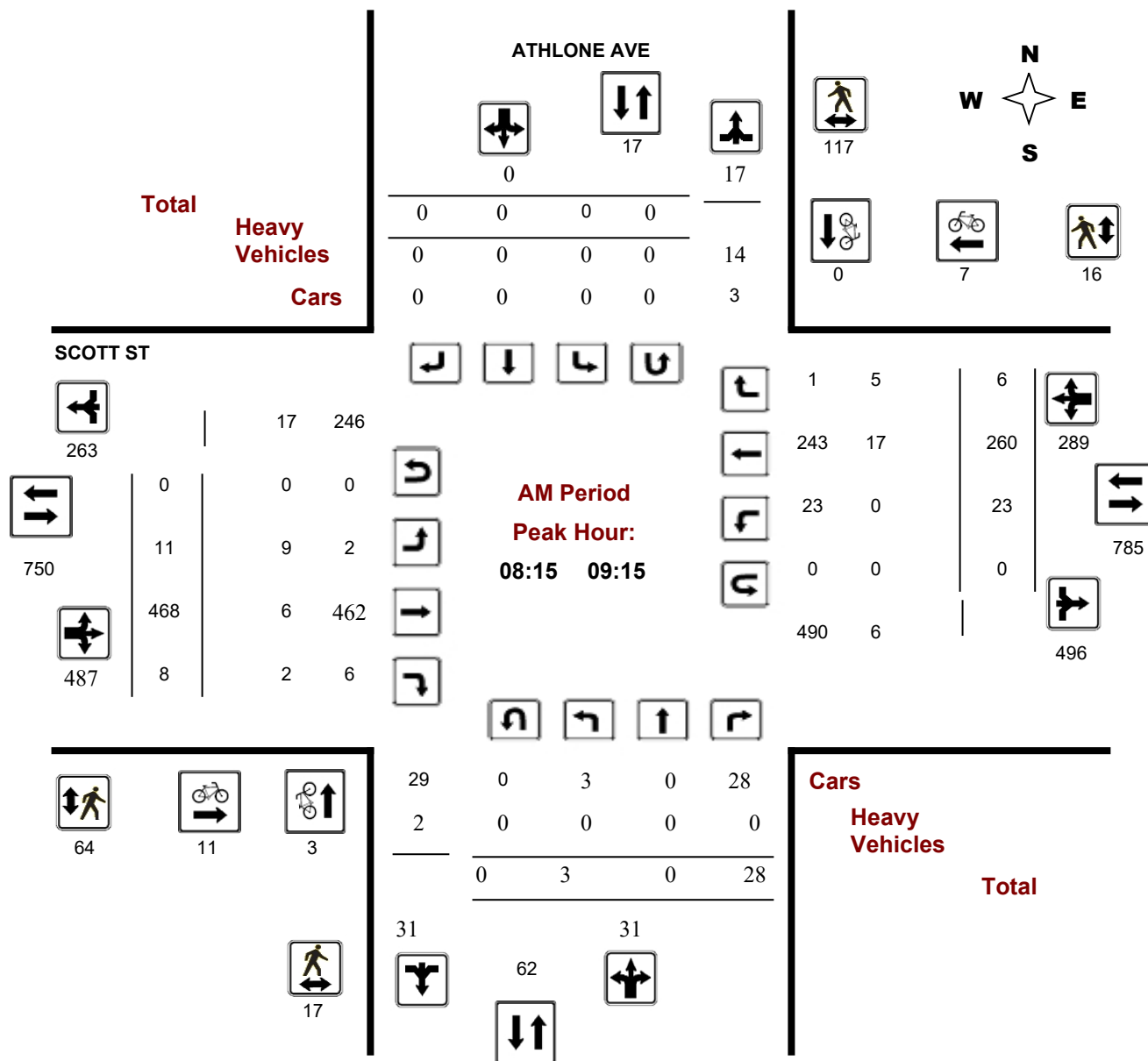
Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	0
07:15	07:30	0	0	0	0	0
07:30	07:45	0	0	0	0	0
07:45	08:00	0	0	0	0	0
08:00	08:15	0	0	0	0	0
08:15	08:30	0	0	0	0	0
08:30	08:45	0	0	0	0	0
08:45	09:00	0	0	0	0	0
09:00	09:15	0	0	0	0	0
09:15	09:30	0	0	0	0	0
09:30	09:45	0	0	0	0	0
09:45	10:00	0	0	0	0	0
11:30	11:45	0	0	0	0	0
11:45	12:00	0	0	0	0	0
12:00	12:15	0	0	0	0	0
12:15	12:30	0	0	2	0	2
12:30	12:45	0	0	1	0	1
12:45	13:00	0	0	0	0	0
13:00	13:15	0	0	0	0	0
13:15	13:30	0	0	0	0	0
15:00	15:15	0	0	0	0	0
15:15	15:30	0	0	0	0	0
15:30	15:45	0	0	0	0	0
15:45	16:00	0	0	0	0	0
16:00	16:15	0	1	0	0	1
16:15	16:30	0	0	0	0	0
16:30	16:45	0	0	0	0	0
16:45	17:00	0	0	0	0	0
17:00	17:15	0	0	0	0	0
17:15	17:30	0	0	0	0	0
17:30	17:45	0	0	0	0	0
17:45	18:00	0	0	0	0	0
Total		0	1	3	0	4

Survey Date: Wednesday, November 22, 2017

Start Time: 07:00

WO No: 37320

Device: Miovision



Turning Movement Count - Full Study Peak Hour Diagram

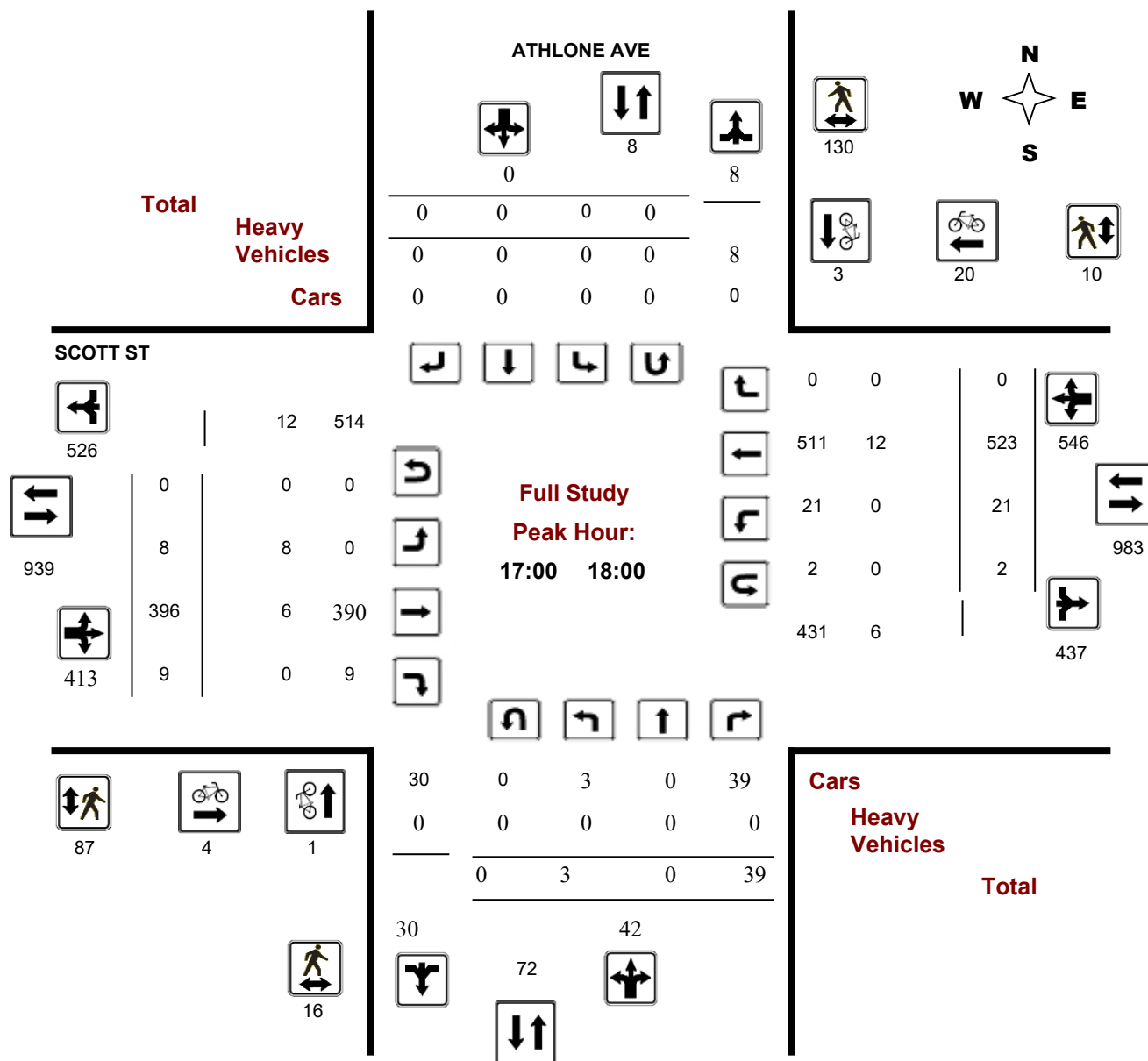
ATHLONE AVE @ SCOTT ST

Survey Date: Wednesday, November 22, 2017

Start Time: 07:00

WO No: 37320

Device: Miovision



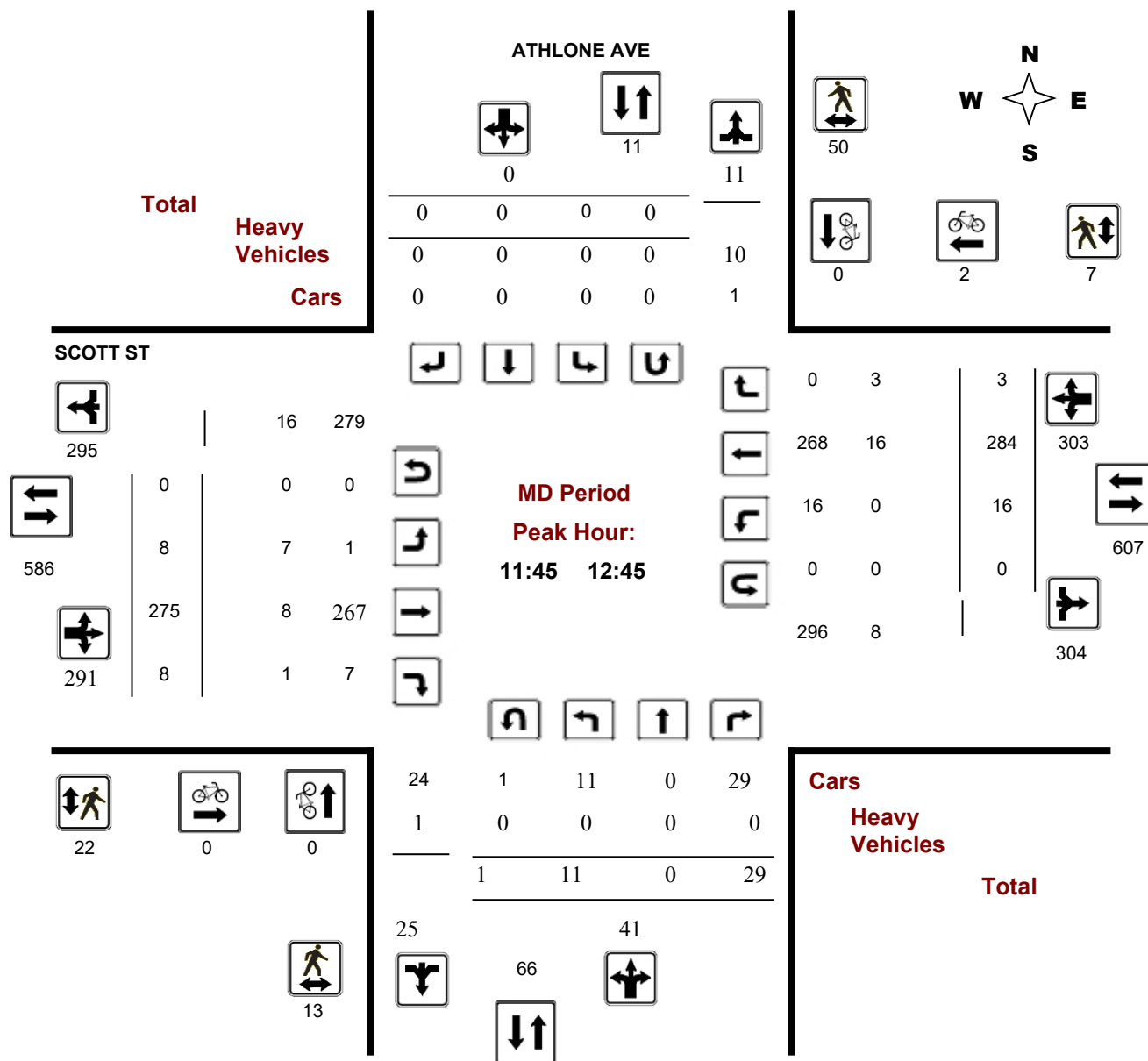
Comments

Survey Date: Wednesday, November 22, 2017

Start Time: 07:00

WO No: 37320

Device: Miovision

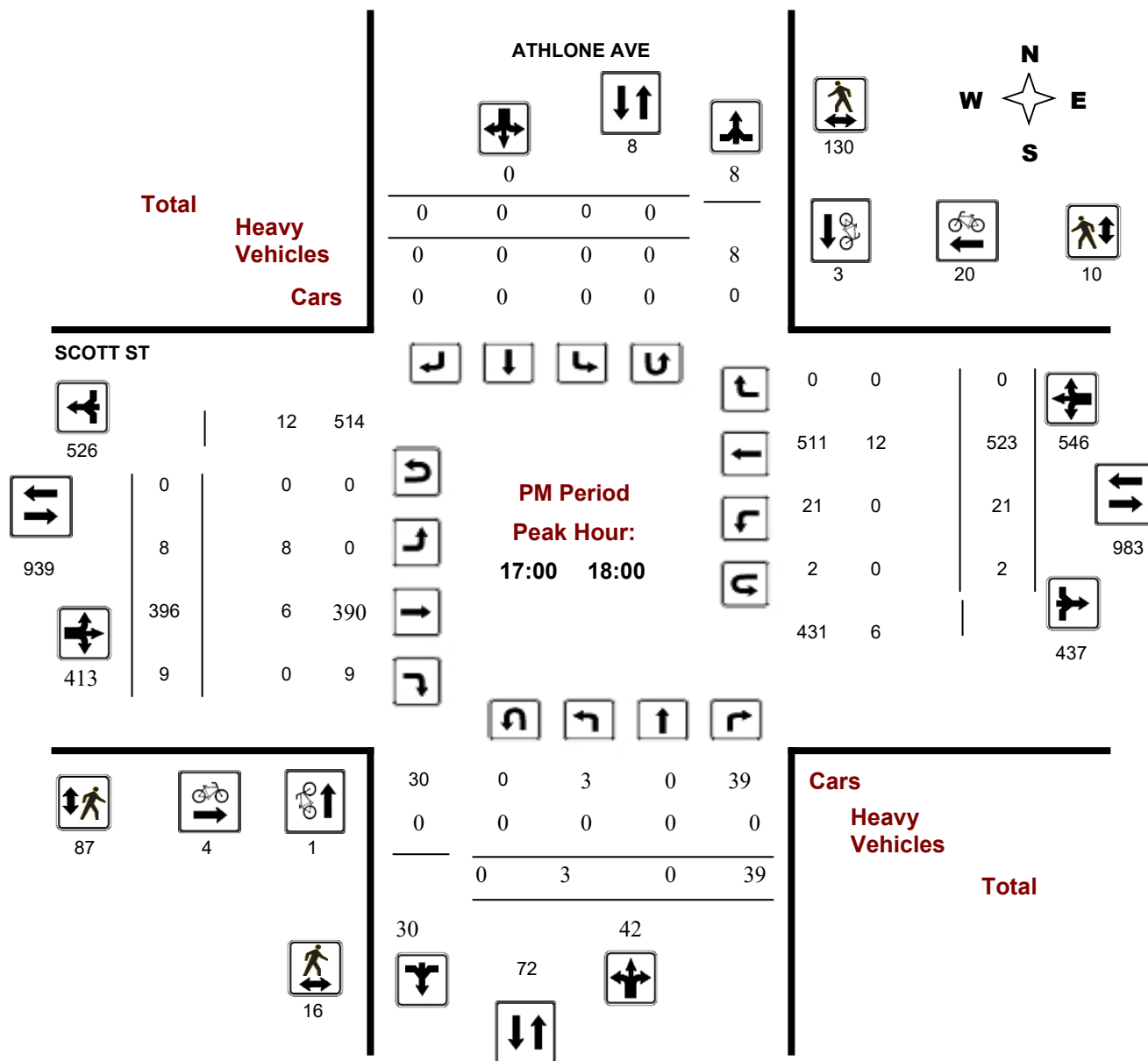


Survey Date: Wednesday, November 22, 2017

Start Time: 07:00

WO No: 37320

Device: Miovision



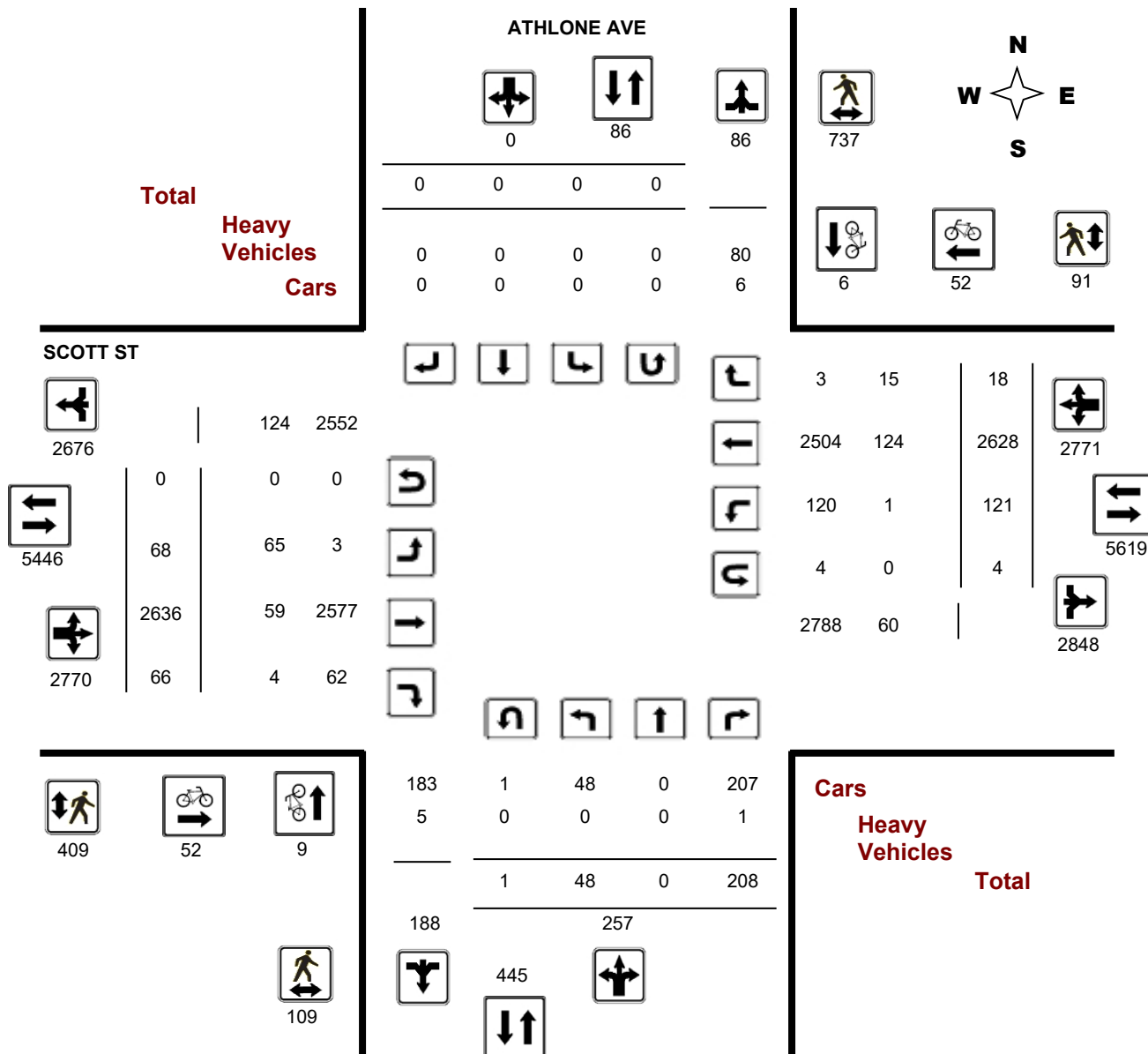
Transportation Services - Traffic Services Turning Movement Count - Full Study Diagram

ATHLONE AVE @ SCOTT ST

Survey Date: Wednesday, November 22, 2017

WO#: 37320

Device: Miovision



Turning Movement Count - Full Study Summary Report

ATHLONE AVE @ SCOTT ST

Survey Date: Wednesday, November 22, 2017

Total Observed U-Turns

AADT Factor

Northbound: 1 Southbound: 0
Eastbound: 0 Westbound: 4
.90

Full Study

ATHLONE AVE										SCOTT ST									
Period	Northbound				Southbound				STR TOT	Eastbound				Westbound				STR TOT	Grand Total
	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT		LT	ST	RT	EB TOT	LT	ST	RT	WB TOT		
07:00 08:00	5	0	24	29	0	0	0	0	29	9	326	4	339	5	210	5	220	559	588
08:00 09:00	7	0	28	35	0	0	0	0	35	9	461	9	479	22	249	6	277	756	791
09:00 10:00	2	0	22	24	0	0	0	0	24	9	312	4	325	15	248	1	264	589	613
11:30 12:30	9	0	22	31	0	0	0	0	31	6	269	15	290	20	281	3	304	594	625
12:30 13:30	9	0	30	39	0	0	0	0	39	10	252	7	269	8	244	0	252	521	560
15:00 16:00	3	0	19	22	0	0	0	0	22	7	301	6	314	11	409	2	422	736	758
16:00 17:00	10	0	24	34	0	0	0	0	34	10	319	12	341	19	464	1	484	825	859
17:00 18:00	3	0	39	42	0	0	0	0	42	8	396	9	413	21	523	0	544	957	999
Sub Total	48	0	208	256	0	0	0	0	256	68	2636	66	2770	121	2628	18	2767	5537	5793
U Turns				1				0	1				0				4	4	5
Total	48	0	208	257	0	0	0	0	257	68	2636	66	2770	121	2628	18	2771	5541	5798
EQ 12Hr	67	0	289	357	0	0	0	0	357	95	3664	92	3850	168	3653	25	3852	7702	8059
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.													1.39						
AVG 12Hr	60	0	260	322	0	0	0	0	322	85	3298	83	3465	151	3288	23	3467	6932	7254
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.													.90						
AVG 24Hr	79	0	341	421	0	0	0	0	421	111	4320	108	4540	198	4307	29	4541	9081	9502
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.													1.31						

Comments:

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

Turning Movement Count - 15 Minute Summary Report

ATHLONE AVE @ SCOTT ST

Survey Date: Wednesday, November 22, 2017

Total Observed U-Turns

Northbound: 1 Southbound: 0
Eastbound: 0 Westbound: 4

ATHLONE AVE										SCOTT ST										Grand Total
Northbound					Southbound					Eastbound					Westbound					
Time Period	LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT		
07:00 07:15	1	0	3	4	0	0	0	0	4	2	45	0	47	1	40	0	41	88	92	
07:15 07:30	1	0	2	3	0	0	0	0	3	3	80	1	84	1	45	1	47	131	134	
07:30 07:45	1	0	5	6	0	0	0	0	6	2	105	2	109	1	67	2	70	179	185	
07:45 08:00	2	0	14	16	0	0	0	0	16	2	96	1	99	2	58	2	62	161	177	
08:00 08:15	4	0	7	11	0	0	0	0	11	2	113	2	117	4	48	0	52	169	180	
08:15 08:30	1	0	6	7	0	0	0	0	7	3	119	5	127	6	59	0	65	192	199	
08:30 08:45	1	0	9	10	0	0	0	0	10	2	119	2	123	10	84	4	98	221	231	
08:45 09:00	1	0	6	7	0	0	0	0	7	2	110	0	112	2	58	2	62	174	181	
09:00 09:15	0	0	7	7	0	0	0	0	7	4	120	1	125	5	59	0	64	189	196	
09:15 09:30	1	0	3	4	0	0	0	0	4	2	74	1	77	4	70	0	74	151	155	
09:30 09:45	1	0	6	7	0	0	0	0	7	2	74	2	78	1	51	1	53	131	138	
09:45 10:00	0	0	6	6	0	0	0	0	6	1	44	0	45	5	68	0	73	118	124	
11:30 11:45	1	0	2	3	0	0	0	0	3	2	59	7	68	6	71	0	78	146	149	
11:45 12:00	5	0	8	14	0	0	0	0	14	1	79	4	84	4	68	0	72	156	170	
12:00 12:15	1	0	5	6	0	0	0	0	6	2	59	2	63	3	58	1	62	125	131	
12:15 12:30	2	0	7	9	0	0	0	0	9	1	72	2	75	7	84	2	93	168	177	
12:30 12:45	3	0	9	12	0	0	0	0	12	4	65	0	69	2	74	0	76	145	157	
12:45 13:00	3	0	4	7	0	0	0	0	7	2	69	3	74	3	69	0	72	146	153	
13:00 13:15	1	0	11	12	0	0	0	0	12	2	64	1	67	1	49	0	50	117	129	
13:15 13:30	2	0	6	8	0	0	0	0	8	2	54	3	59	2	52	0	54	113	121	
15:00 15:15	1	0	8	9	0	0	0	0	9	1	70	2	73	0	84	1	85	158	167	
15:15 15:30	0	0	3	3	0	0	0	0	3	2	66	0	68	3	110	0	113	181	184	
15:30 15:45	1	0	4	5	0	0	0	0	5	2	96	3	101	6	106	1	113	214	219	
15:45 16:00	1	0	4	5	0	0	0	0	5	2	69	1	72	2	109	0	111	183	188	
16:00 16:15	2	0	8	10	0	0	0	0	10	2	87	2	91	4	117	0	121	212	222	
16:15 16:30	1	0	3	4	0	0	0	0	4	3	84	3	90	4	110	0	115	205	209	
16:30 16:45	4	0	7	11	0	0	0	0	11	2	72	5	79	4	99	0	103	182	193	
16:45 17:00	3	0	6	9	0	0	0	0	9	3	76	2	81	7	138	1	146	227	236	
17:00 17:15	1	0	11	12	0	0	0	0	12	1	112	3	116	6	133	0	140	256	268	
17:15 17:30	1	0	8	9	0	0	0	0	9	3	95	1	99	9	124	0	133	232	241	
17:30 17:45	0	0	10	10	0	0	0	0	10	2	97	3	102	1	133	0	134	236	246	
17:45 18:00	1	0	10	11	0	0	0	0	11	2	92	2	96	5	133	0	139	235	246	
TOTAL:	48	0	208	257	0	0	0	0	257	68	2636	66	2770	121	2628	18	2771	5541	5798	

Note: U-Turns are included in Totals.

Comment:



Transportation Services - Traffic Services

Turning Movement Count - Cyclist Volume Report

Work Order
37320

ATHLONE AVE @ SCOTT ST

Count Date: Wednesday, November 22, 2017

Start Time: 07:00

Time Period	ATHLONE AVE			SCOTT ST			Grand Total
	Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	
07:00 08:00	1	0	1	15	3	18	19
08:00 09:00	4	0	4	17	5	22	26
09:00 10:00	2	1	3	7	4	11	14
11:30 12:30	0	0	0	1	2	3	3
12:30 13:30	1	0	1	2	1	3	4
15:00 16:00	0	2	2	1	3	4	6
16:00 17:00	0	0	0	5	14	19	19
17:00 18:00	1	3	4	4	20	24	28
Total	9	6	15	52	52	104	119

Comment:

Note: These volumes consists of bicycles only (no mopeds or motorcycles) and ARE NOT included in the Turning Movement Count Summary.



Transportation Services - Traffic Services

W.O.
37320

Turning Movement Count - Heavy Vehicle Report

ATHLONE AVE @ SCOTT ST

Survey Date: Wednesday, November 22, 2017

ATHLONE AVE										SCOTT ST											
Time Period	Northbound			Southbound			S TOT	STR TOT	Eastbound			Westbound			W TOT	STR TOT	Grand Total				
	LT	ST	RT	N TOT	LT	ST			RT	LT	ST	RT	E TOT	LT				ST	RT		
07:00	08:00	0	0	0	0	0	0	0	0	9	4	0	13	0	16	4	20	33	33		
08:00	09:00	0	0	0	0	0	0	0	0	9	8	2	19	0	11	5	16	35	35		
09:00	10:00	0	0	0	0	0	0	0	0	7	7	0	14	0	20	0	20	34	34		
11:30	12:30	0	0	0	0	0	0	0	0	6	12	2	20	0	16	3	19	39	39		
12:30	13:30	0	0	0	0	0	0	0	0	9	7	0	16	0	12	0	12	28	28		
15:00	16:00	0	0	1	1	0	0	0	1	7	12	0	19	1	19	2	22	41	42		
16:00	17:00	0	0	0	0	0	0	0	0	10	3	0	13	0	18	1	19	32	32		
17:00	18:00	0	0	0	0	0	0	0	0	8	6	0	14	0	12	0	12	26	26		
Sub Total		0	0	1	1	0	0	0	0	1	65	59	4	128	1	124	15	140	268	269	
U-Turns (Heavy Vehicles)					0				0	0				0				0	0	0	
Total		0	0	1	0	0	0	0	0	1	65	59	4	128	1	124	15	140	268	269	

Heavy Vehicles include Buses, Single-Unit Trucks and Articulated Trucks. Further, they ARE included in the Turning Movement Count Summary.



Transportation Services - Traffic Services

Work Order

37320

Turning Movement Count - Pedestrian Volume Report

ATHLONE AVE @ SCOTT ST

Count Date: Wednesday, November 22, 2017

Start Time: 07:00

Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00 07:15	0	12	12	9	3	12	24
07:15 07:30	1	16	17	8	4	12	29
07:30 07:45	0	36	36	21	0	21	57
07:45 08:00	4	33	37	15	7	22	59
07:00 08:00	5	97	102	53	14	67	169
08:00 08:15	4	42	46	27	5	32	78
08:15 08:30	6	38	44	23	4	27	71
08:30 08:45	1	33	34	17	3	20	54
08:45 09:00	5	25	30	10	7	17	47
08:00 09:00	16	138	154	77	19	96	250
09:00 09:15	5	21	26	14	2	16	42
09:15 09:30	2	15	17	11	0	11	28
09:30 09:45	3	8	11	2	3	5	16
09:45 10:00	2	14	16	7	2	9	25
09:00 10:00	12	58	70	34	7	41	111
11:30 11:45	1	10	11	1	1	2	13
11:45 12:00	4	10	14	3	1	4	18
12:00 12:15	5	13	18	7	1	8	26
12:15 12:30	2	16	18	8	2	10	28
11:30 12:30	12	49	61	19	5	24	85
12:30 12:45	2	11	13	4	3	7	20
12:45 13:00	3	15	18	5	1	6	24
13:00 13:15	0	10	10	6	0	6	16
13:15 13:30	2	15	17	6	1	7	24
12:30 13:30	7	51	58	21	5	26	84
15:00 15:15	7	14	21	11	0	11	32
15:15 15:30	2	13	15	2	0	2	17
15:30 15:45	6	31	37	12	9	21	58
15:45 16:00	5	20	25	11	4	15	40
15:00 16:00	20	78	98	36	13	49	147
16:00 16:15	3	33	36	19	4	23	59
16:15 16:30	7	34	41	20	4	24	65
16:30 16:45	5	34	39	23	4	27	66
16:45 17:00	6	35	41	20	6	26	67
16:00 17:00	21	136	157	82	18	100	257
17:00 17:15	4	38	42	24	0	24	66
17:15 17:30	4	37	41	26	4	30	71
17:30 17:45	5	34	39	18	0	18	57
17:45 18:00	3	21	24	19	6	25	49
17:00 18:00	16	130	146	87	10	97	243
Total	109	737	846	409	91	500	1346

Comment:

Turning Movement Count - 15 Min U-Turn Total Report

ATHLONE AVE @ SCOTT ST

Survey Date: Wednesday, November 22, 2017

Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	0
07:15	07:30	0	0	0	0	0
07:30	07:45	0	0	0	0	0
07:45	08:00	0	0	0	0	0
08:00	08:15	0	0	0	0	0
08:15	08:30	0	0	0	0	0
08:30	08:45	0	0	0	0	0
08:45	09:00	0	0	0	0	0
09:00	09:15	0	0	0	0	0
09:15	09:30	0	0	0	0	0
09:30	09:45	0	0	0	0	0
09:45	10:00	0	0	0	0	0
11:30	11:45	0	0	0	1	1
11:45	12:00	1	0	0	0	1
12:00	12:15	0	0	0	0	0
12:15	12:30	0	0	0	0	0
12:30	12:45	0	0	0	0	0
12:45	13:00	0	0	0	0	0
13:00	13:15	0	0	0	0	0
13:15	13:30	0	0	0	0	0
15:00	15:15	0	0	0	0	0
15:15	15:30	0	0	0	0	0
15:30	15:45	0	0	0	0	0
15:45	16:00	0	0	0	0	0
16:00	16:15	0	0	0	0	0
16:15	16:30	0	0	0	1	1
16:30	16:45	0	0	0	0	0
16:45	17:00	0	0	0	0	0
17:00	17:15	0	0	0	1	1
17:15	17:30	0	0	0	0	0
17:30	17:45	0	0	0	0	0
17:45	18:00	0	0	0	1	1
Total		1	0	0	4	5

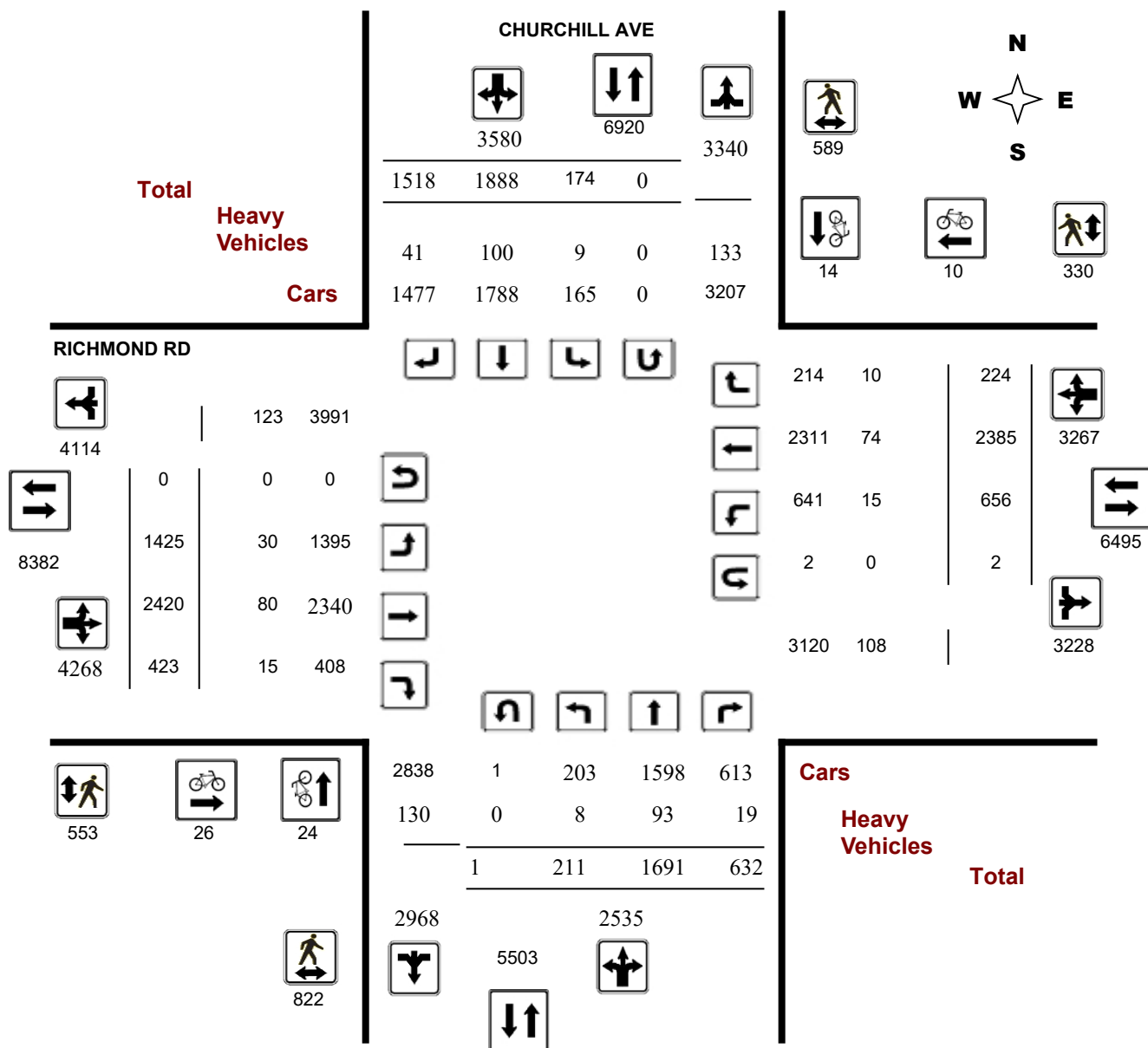
Survey Date: Thursday, January 23, 2020

Start Time: 07:00

WO No: 39644

Device: Miovision

Full Study Diagram



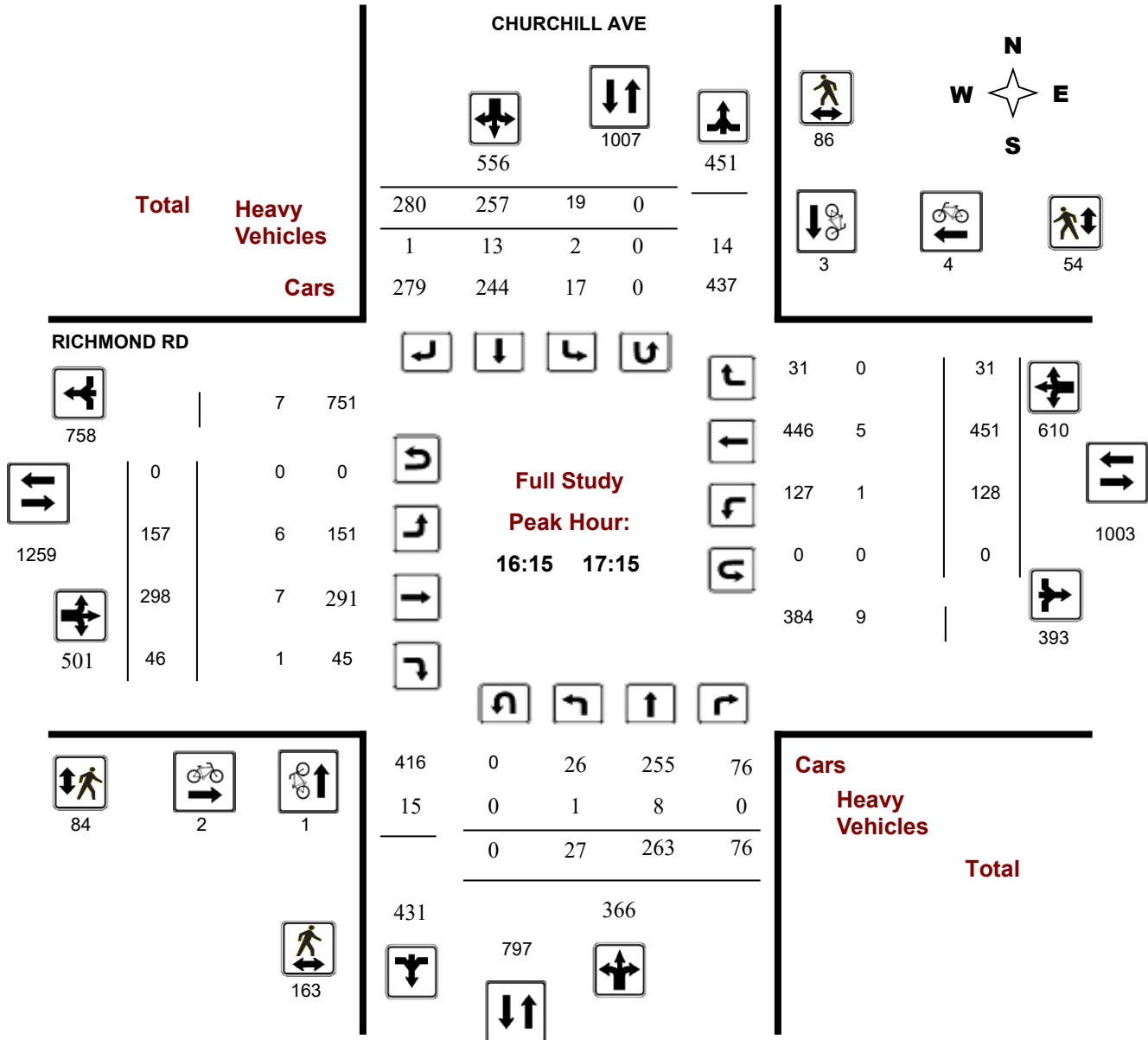
Survey Date: Thursday, January 23, 2020

WO No: 39644

Start Time: 07:00

Device: Miovision

Full Study Peak Hour Diagram



Turning Movement Count - Peak Hour Diagram

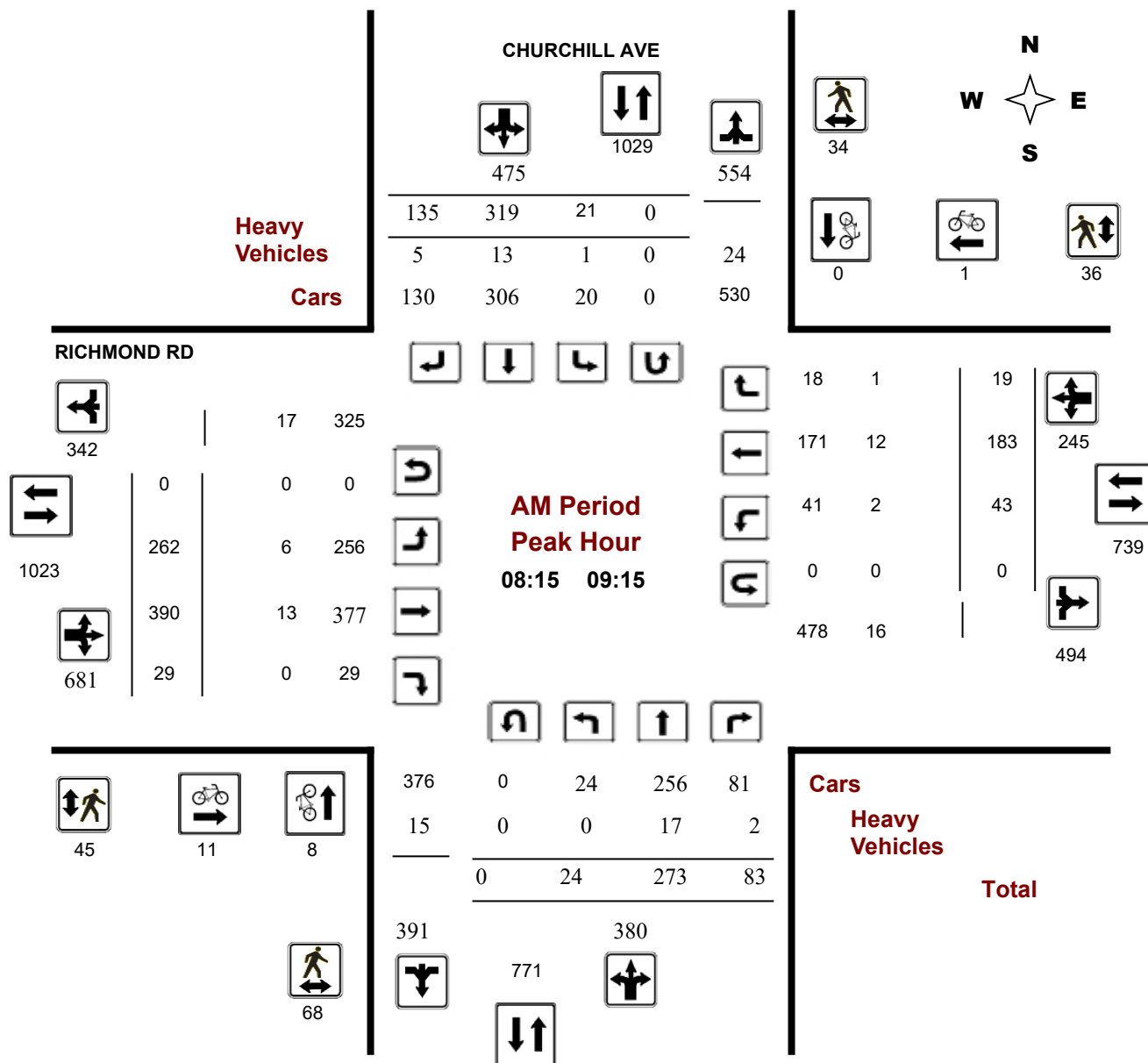
CHURCHILL AVE @ RICHMOND RD

Survey Date: Thursday, January 23, 2020

Start Time: 07:00

WO No: 39644

Device: Miovision



Turning Movement Count - Peak Hour Diagram

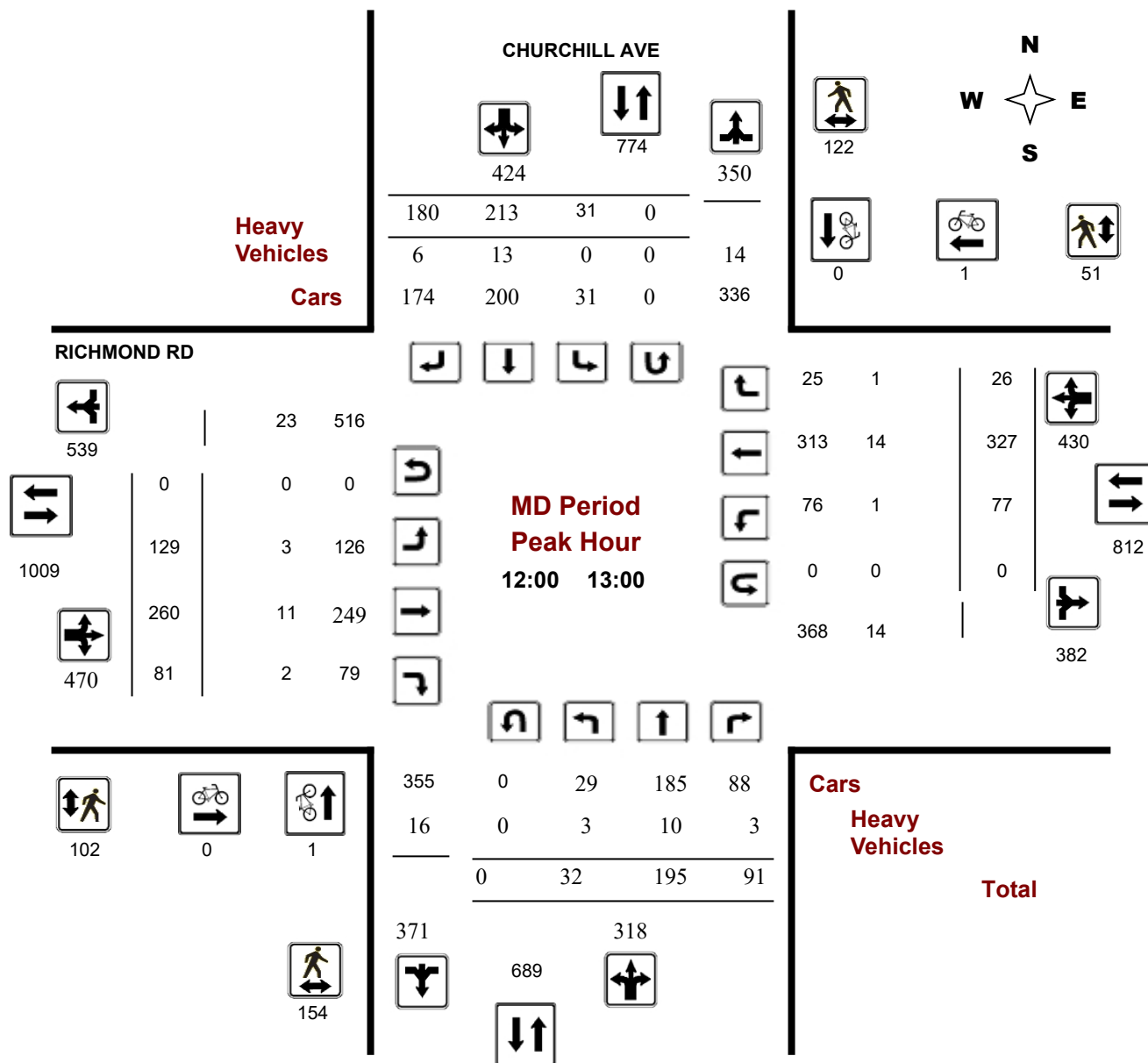
CHURCHILL AVE @ RICHMOND RD

Survey Date: Thursday, January 23, 2020

Start Time: 07:00

WO No: 39644

Device: Miovision



Turning Movement Count - Peak Hour Diagram

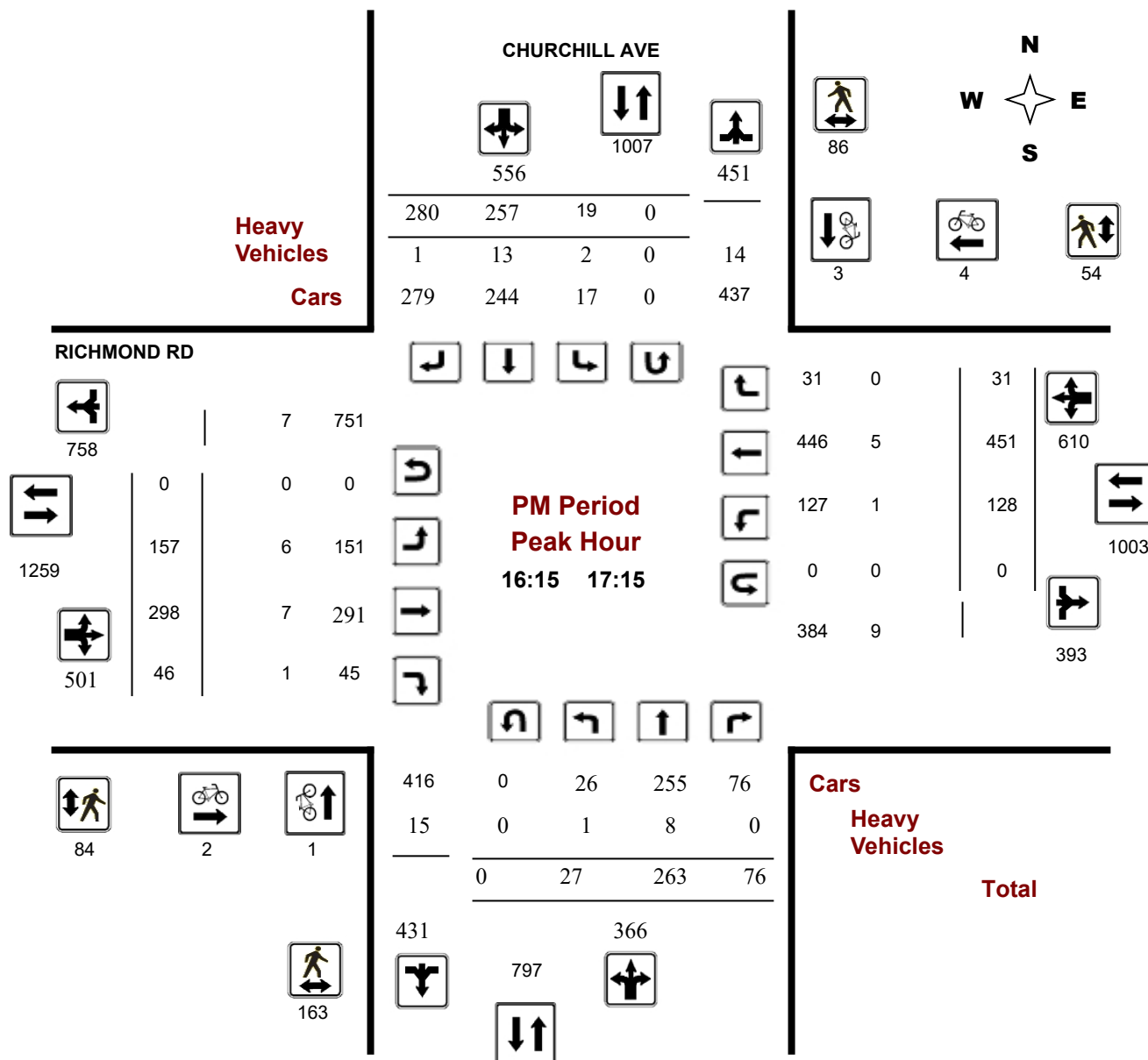
CHURCHILL AVE @ RICHMOND RD

Survey Date: Thursday, January 23, 2020

Start Time: 07:00

WO No: 39644

Device: Miovision



Comments



Transportation Services - Traffic Services

Turning Movement Count - Study Results

CHURCHILL AVE @ RICHMOND RD

Survey Date: Thursday, January 23, 2020

WO No: 39644

Start Time: 07:00

Device: Miovision

Full Study Summary (8 HR Standard)

Survey Date: Thursday, January 23, 2020

Total Observed U-Turns

AADT Factor

Northbound: 1 Southbound: 0
Eastbound: 0 Westbound: 2

1.00

CHURCHILL AVE

RICHMOND RD

		Northbound				Southbound				Eastbound				Westbound						Grand Total			
Period		LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT				
07:00	08:00	14	161	59	234	16	226	90	332	566	274	347	24	645	35	126	22	183	828	1394			
08:00	09:00	16	270	93	379	21	296	136	453	832	287	373	32	692	40	182	16	238	930	1762			
09:00	10:00	27	205	81	313	18	219	137	374	687	162	329	35	526	64	173	33	270	796	1483			
11:30	12:30	42	173	77	292	36	195	161	392	684	122	289	72	483	79	308	33	420	903	1587			
12:30	13:30	31	183	83	297	30	215	187	432	729	128	254	83	465	73	340	27	440	905	1634			
15:00	16:00	28	201	84	313	18	247	276	541	854	145	283	78	506	116	393	29	538	1044	1898			
16:00	17:00	28	260	71	359	16	256	270	542	901	145	279	57	481	132	453	25	610	1091	1992			
17:00	18:00	25	238	84	347	19	234	261	514	861	162	266	42	470	117	410	39	566	1036	1897			
Sub Total		211	1691	632	2534	174	1888	1518	3580	6114	1425	2420	423	4268	656	2385	224	3265	7533	13647			
U Turns		1				0				1				0				2				2	3
Total		211	1691	632	2535	174	1888	1518	3580	6115	1425	2420	423	4268	656	2385	224	3267	7535	13650			
EQ 12Hr		293	2350	878	3524	242	2624	2110	4976	8500	1981	3364	588	5933	912	3315	311	4541	10474	18974			
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														1.39									
AVG 12Hr		293	2350	878	3524	242	3438	2764	4976	8500	1981	3364	588	5933	912	3315	311	4541	10474	18974			
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														1.00									
AVG 24Hr		384	3078	1150	4616	317	4504	3621	6519	11135	2595	4407	770	7772	1195	4343	407	5949	13721	24856			
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.														1.31									
Note: U-Turns provided for approach totals. Refer to 'U-Turn' Report for specific breakdown.																							



Transportation Services - Traffic Services

Turning Movement Count - Study Results

CHURCHILL AVE @ RICHMOND RD

Survey Date: Thursday, January 23, 2020

WO No: 39644

Start Time: 07:00

Device: Miovision

Full Study 15 Minute Increments

CHURCHILL AVE

RICHMOND RD

Northbound

Southbound

Eastbound

Westbound

Time Period	LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00 07:15	4	25	10	39	3	46	20	69	108	56	75	5	136	7	27	6	40	176	284
07:15 07:30	4	28	8	40	2	50	19	71	111	63	91	5	159	5	35	2	42	201	312
07:30 07:45	2	37	18	57	9	59	24	92	149	80	85	10	175	11	26	4	41	216	365
07:45 08:00	4	71	23	98	2	71	27	100	198	75	96	4	175	12	38	10	60	235	433
08:00 08:15	1	69	22	93	6	60	32	98	191	72	83	11	166	11	39	3	53	219	410
08:15 08:30	6	60	30	96	7	83	29	119	215	77	95	7	179	9	43	7	59	238	453
08:30 08:45	4	66	20	90	3	74	36	113	203	76	83	8	167	8	53	4	65	232	435
08:45 09:00	5	75	21	101	5	79	39	123	224	62	112	6	180	12	47	2	61	241	465
09:00 09:15	9	72	12	93	6	83	31	120	213	47	100	8	155	14	40	6	60	215	428
09:15 09:30	4	48	27	79	5	55	39	99	178	46	79	12	137	14	37	6	58	195	373
09:30 09:45	6	46	19	71	4	43	34	81	152	38	74	8	120	19	56	10	85	205	357
09:45 10:00	8	39	23	70	3	38	33	74	144	31	76	7	114	17	40	11	68	182	326
11:30 11:45	9	32	16	57	12	46	29	87	144	28	75	13	116	22	78	11	111	227	371
11:45 12:00	15	52	19	86	8	43	39	90	176	31	73	22	126	19	63	12	94	220	396
12:00 12:15	10	48	22	80	7	59	44	110	190	31	82	20	133	17	90	6	113	246	436
12:15 12:30	8	41	20	69	9	47	49	105	174	32	59	17	108	21	77	4	102	210	384
12:30 12:45	5	46	25	76	9	51	41	101	177	31	52	27	110	16	77	6	99	209	386
12:45 13:00	9	60	24	93	6	56	46	108	201	35	67	17	119	23	83	10	116	235	436
13:00 13:15	11	42	13	66	6	50	56	112	178	30	70	24	124	17	83	4	104	228	406
13:15 13:30	6	35	21	62	9	58	44	111	173	32	65	15	112	17	97	7	121	233	406
15:00 15:15	10	48	16	74	5	61	62	128	202	32	77	34	143	28	98	11	137	280	482
15:15 15:30	10	53	24	87	6	66	71	143	230	46	74	18	138	32	84	7	123	261	491
15:30 15:45	4	49	15	68	6	57	61	124	192	35	68	9	112	30	110	8	148	260	452
15:45 16:00	4	51	29	84	1	63	82	146	230	32	64	17	113	26	101	3	131	244	474
16:00 16:15	4	53	15	72	4	57	62	123	195	28	60	18	106	36	114	5	155	261	456
16:15 16:30	8	70	12	90	4	60	68	132	222	37	76	12	125	29	113	7	149	274	496
16:30 16:45	6	64	23	93	4	71	67	142	235	43	72	13	128	35	114	7	156	284	519
16:45 17:00	10	73	21	104	4	68	73	145	249	37	71	14	122	32	112	6	150	272	521
17:00 17:15	3	56	20	79	7	58	72	137	216	40	79	7	126	32	112	11	155	281	497
17:15 17:30	10	62	16	88	5	61	68	134	222	44	52	16	112	28	116	8	152	264	486
17:30 17:45	8	59	22	89	3	68	66	137	226	40	72	5	117	28	89	7	124	241	467
17:45 18:00	4	61	26	91	4	47	55	106	197	38	63	14	115	29	93	13	135	250	447
Total:	211	1691	632	2535	174	1888	1518	3580	6115	1425	2420	423	4268	656	2385	224	3267	7535	13,650

Note: U-Turns are included in Totals.



Transportation Services - Traffic Services

Turning Movement Count - Study Results

CHURCHILL AVE @ RICHMOND RD

Survey Date: Thursday, January 23, 2020

WO No: 39644

Start Time: 07:00

Device: Miovision

Full Study Cyclist Volume

		CHURCHILL AVE			RICHMOND RD			Grand Total
Time Period		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	
07:00	07:15	0	0	0	1	0	1	1
07:15	07:30	2	0	2	0	0	0	2
07:30	07:45	1	0	1	0	0	0	1
07:45	08:00	3	0	3	4	0	4	7
08:00	08:15	4	1	5	0	1	1	6
08:15	08:30	5	0	5	4	0	4	9
08:30	08:45	2	0	2	2	1	3	5
08:45	09:00	0	0	0	2	0	2	2
09:00	09:15	1	0	1	3	0	3	4
09:15	09:30	2	1	3	0	1	1	4
09:30	09:45	0	1	1	1	1	2	3
09:45	10:00	1	0	1	0	0	0	1
11:30	11:45	0	0	0	0	0	0	0
11:45	12:00	0	0	0	0	0	0	0
12:00	12:15	0	0	0	0	0	0	0
12:15	12:30	0	0	0	0	1	1	1
12:30	12:45	0	0	0	0	0	0	0
12:45	13:00	1	0	1	0	0	0	1
13:00	13:15	0	0	0	0	0	0	0
13:15	13:30	0	0	0	0	0	0	0
15:00	15:15	0	0	0	1	0	1	1
15:15	15:30	0	0	0	1	0	1	1
15:30	15:45	0	0	0	2	0	2	2
15:45	16:00	0	1	1	1	0	1	2
16:00	16:15	0	2	2	0	1	1	3
16:15	16:30	0	0	0	0	1	1	1
16:30	16:45	0	1	1	0	0	0	1
16:45	17:00	0	0	0	1	0	1	1
17:00	17:15	1	2	3	1	3	4	7
17:15	17:30	0	2	2	0	0	0	2
17:30	17:45	0	1	1	2	0	2	3
17:45	18:00	1	2	3	0	0	0	3
Total		24	14	38	26	10	36	74



Transportation Services - Traffic Services

Turning Movement Count - Study Results

CHURCHILL AVE @ RICHMOND RD

Survey Date: Thursday, January 23, 2020

WO No: 39644

Start Time: 07:00

Device: Miovision

Full Study Pedestrian Volume

CHURCHILL AVE

RICHMOND RD

Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00 07:15	3	2	5	2	2	4	9
07:15 07:30	4	3	7	6	3	9	16
07:30 07:45	10	8	18	4	2	6	24
07:45 08:00	17	4	21	14	4	18	39
08:00 08:15	11	9	20	6	3	9	29
08:15 08:30	18	5	23	10	11	21	44
08:30 08:45	19	15	34	18	10	28	62
08:45 09:00	15	7	22	8	10	18	40
09:00 09:15	16	7	23	9	5	14	37
09:15 09:30	8	16	24	6	4	10	34
09:30 09:45	14	8	22	12	6	18	40
09:45 10:00	14	9	23	10	7	17	40
11:30 11:45	26	24	50	19	7	26	76
11:45 12:00	23	28	51	24	14	38	89
12:00 12:15	46	21	67	31	12	43	110
12:15 12:30	34	35	69	20	16	36	105
12:30 12:45	32	34	66	24	8	32	98
12:45 13:00	42	32	74	27	15	42	116
13:00 13:15	37	19	56	18	11	29	85
13:15 13:30	35	28	63	33	14	47	110
15:00 15:15	33	27	60	26	14	40	100
15:15 15:30	28	20	48	24	12	36	84
15:30 15:45	23	28	51	17	18	35	86
15:45 16:00	28	24	52	16	12	28	80
16:00 16:15	27	16	43	24	5	29	72
16:15 16:30	29	23	52	16	15	31	83
16:30 16:45	48	20	68	24	11	35	103
16:45 17:00	48	25	73	18	17	35	108
17:00 17:15	38	18	56	26	11	37	93
17:15 17:30	31	27	58	27	11	38	96
17:30 17:45	33	24	57	17	16	33	90
17:45 18:00	32	23	55	17	24	41	96
Total	822	589	1411	553	330	883	2294



Transportation Services - Traffic Services

Turning Movement Count - Study Results

CHURCHILL AVE @ RICHMOND RD

Survey Date: Thursday, January 23, 2020

WO No: 39644

Start Time: 07:00

Device: Miovision

Full Study Heavy Vehicles

CHURCHILL AVE

RICHMOND RD

Northbound

Southbound

Eastbound

Westbound

Time Period	LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00 07:15	0	1	1	3	0	1	1	6	9	3	2	0	7	0	1	0	4	11	10
07:15 07:30	0	1	2	5	0	2	1	5	10	1	4	0	8	0	2	0	8	16	13
07:30 07:45	0	5	1	11	1	2	4	13	24	1	1	2	9	1	1	0	5	14	19
07:45 08:00	1	2	1	8	1	3	0	8	16	1	2	0	8	1	4	1	10	18	17
08:00 08:15	0	8	0	9	1	1	0	13	22	2	4	0	11	0	5	1	11	22	22
08:15 08:30	0	2	0	6	1	4	0	9	15	1	4	0	8	0	3	1	9	17	16
08:30 08:45	0	5	2	8	0	1	3	12	20	3	3	0	11	0	2	0	7	18	19
08:45 09:00	0	7	0	9	0	1	0	10	19	2	2	0	7	1	3	0	6	13	16
09:00 09:15	0	3	0	11	0	7	2	12	23	0	4	0	10	1	4	0	9	19	21
09:15 09:30	0	6	1	13	0	5	1	13	26	0	5	0	7	1	1	1	9	16	21
09:30 09:45	1	7	2	14	1	3	3	14	28	0	5	0	12	1	3	0	12	24	26
09:45 10:00	0	2	3	11	0	4	3	11	22	1	5	0	10	2	1	1	12	22	22
11:30 11:45	0	2	1	14	1	10	0	15	29	0	1	1	6	0	4	2	9	15	22
11:45 12:00	1	7	2	12	0	2	2	12	24	0	3	0	8	0	2	1	8	16	20
12:00 12:15	0	4	2	14	0	6	2	13	27	0	4	2	12	0	4	1	11	23	25
12:15 12:30	1	0	0	5	0	4	0	6	11	2	2	0	8	0	3	0	5	13	12
12:30 12:45	1	4	0	8	0	3	2	10	18	1	2	0	12	0	6	0	8	20	19
12:45 13:00	1	2	1	5	0	0	2	4	9	0	3	0	7	1	1	0	6	13	11
13:00 13:15	0	4	0	8	1	3	1	10	18	1	2	1	6	0	1	0	4	10	14
13:15 13:30	0	2	0	13	0	8	2	15	28	3	1	1	11	2	4	0	7	18	23
15:00 15:15	1	1	0	11	0	3	2	7	18	1	5	4	17	2	4	0	11	28	23
15:15 15:30	0	3	0	8	0	4	1	8	16	0	1	1	5	0	2	0	3	8	12
15:30 15:45	0	0	0	3	0	2	2	4	7	0	2	1	5	0	0	0	2	7	7
15:45 16:00	0	1	0	2	0	1	1	4	6	1	2	0	6	0	2	0	4	10	8
16:00 16:15	0	2	0	4	0	1	4	8	12	0	2	0	9	1	3	1	7	16	14
16:15 16:30	0	2	0	7	0	4	0	7	14	1	1	1	5	0	2	0	3	8	11
16:30 16:45	1	2	0	7	1	4	0	10	17	3	1	0	5	0	0	0	2	7	12
16:45 17:00	0	2	0	8	0	5	0	8	16	1	3	0	4	1	0	0	4	8	12
17:00 17:15	0	2	0	2	1	0	1	5	7	1	2	0	7	0	3	0	6	13	10
17:15 17:30	0	2	0	4	0	1	1	4	8	0	1	1	4	0	1	0	2	6	7
17:30 17:45	0	2	0	6	0	4	0	6	12	0	0	0	1	0	1	0	1	2	7
17:45 18:00	0	0	0	1	0	1	0	1	2	0	1	0	2	0	1	0	2	4	3
Total: None	8	93	19	250	9	100	41	283	533	30	80	15	248	15	74	10	207	455	494



Transportation Services - Traffic Services

Turning Movement Count - Study Results

CHURCHILL AVE @ RICHMOND RD

Survey Date: Thursday, January 23, 2020

WO No: 39644

Start Time: 07:00

Device: Miovision

Full Study 15 Minute U-Turn Total

CHURCHILL AVE

RICHMOND RD

Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	0
07:15	07:30	0	0	0	0	0
07:30	07:45	0	0	0	0	0
07:45	08:00	0	0	0	0	0
08:00	08:15	1	0	0	0	1
08:15	08:30	0	0	0	0	0
08:30	08:45	0	0	0	0	0
08:45	09:00	0	0	0	0	0
09:00	09:15	0	0	0	0	0
09:15	09:30	0	0	0	1	1
09:30	09:45	0	0	0	0	0
09:45	10:00	0	0	0	0	0
11:30	11:45	0	0	0	0	0
11:45	12:00	0	0	0	0	0
12:00	12:15	0	0	0	0	0
12:15	12:30	0	0	0	0	0
12:30	12:45	0	0	0	0	0
12:45	13:00	0	0	0	0	0
13:00	13:15	0	0	0	0	0
13:15	13:30	0	0	0	0	0
15:00	15:15	0	0	0	0	0
15:15	15:30	0	0	0	0	0
15:30	15:45	0	0	0	0	0
15:45	16:00	0	0	0	1	1
16:00	16:15	0	0	0	0	0
16:15	16:30	0	0	0	0	0
16:30	16:45	0	0	0	0	0
16:45	17:00	0	0	0	0	0
17:00	17:15	0	0	0	0	0
17:15	17:30	0	0	0	0	0
17:30	17:45	0	0	0	0	0
17:45	18:00	0	0	0	0	0
Total		1	0	0	2	3

Survey Date: Thursday, November 30, 2023

Start Time: 07:00

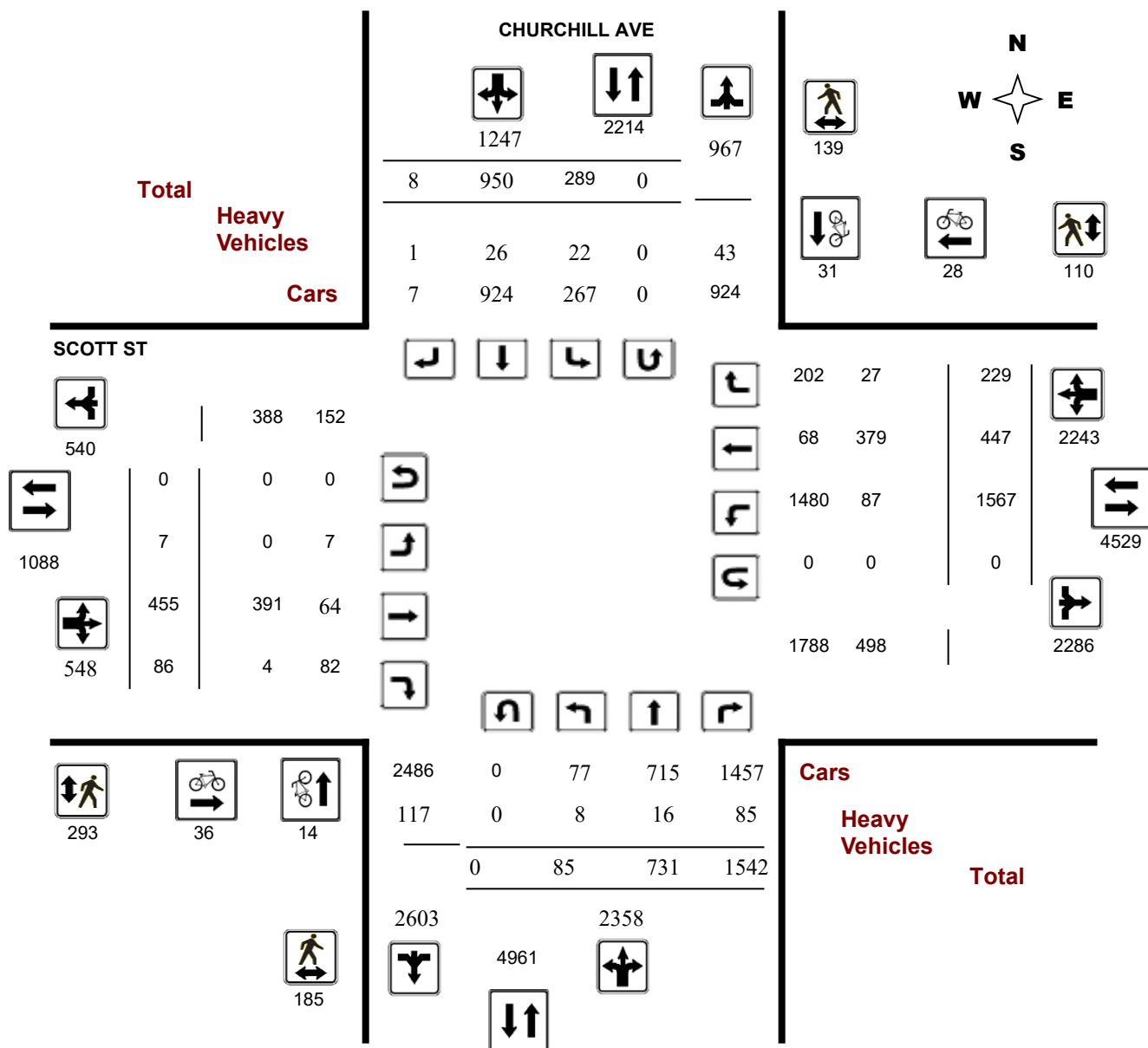
WO No:

41269

Device:

Miovision

Full Study Diagram



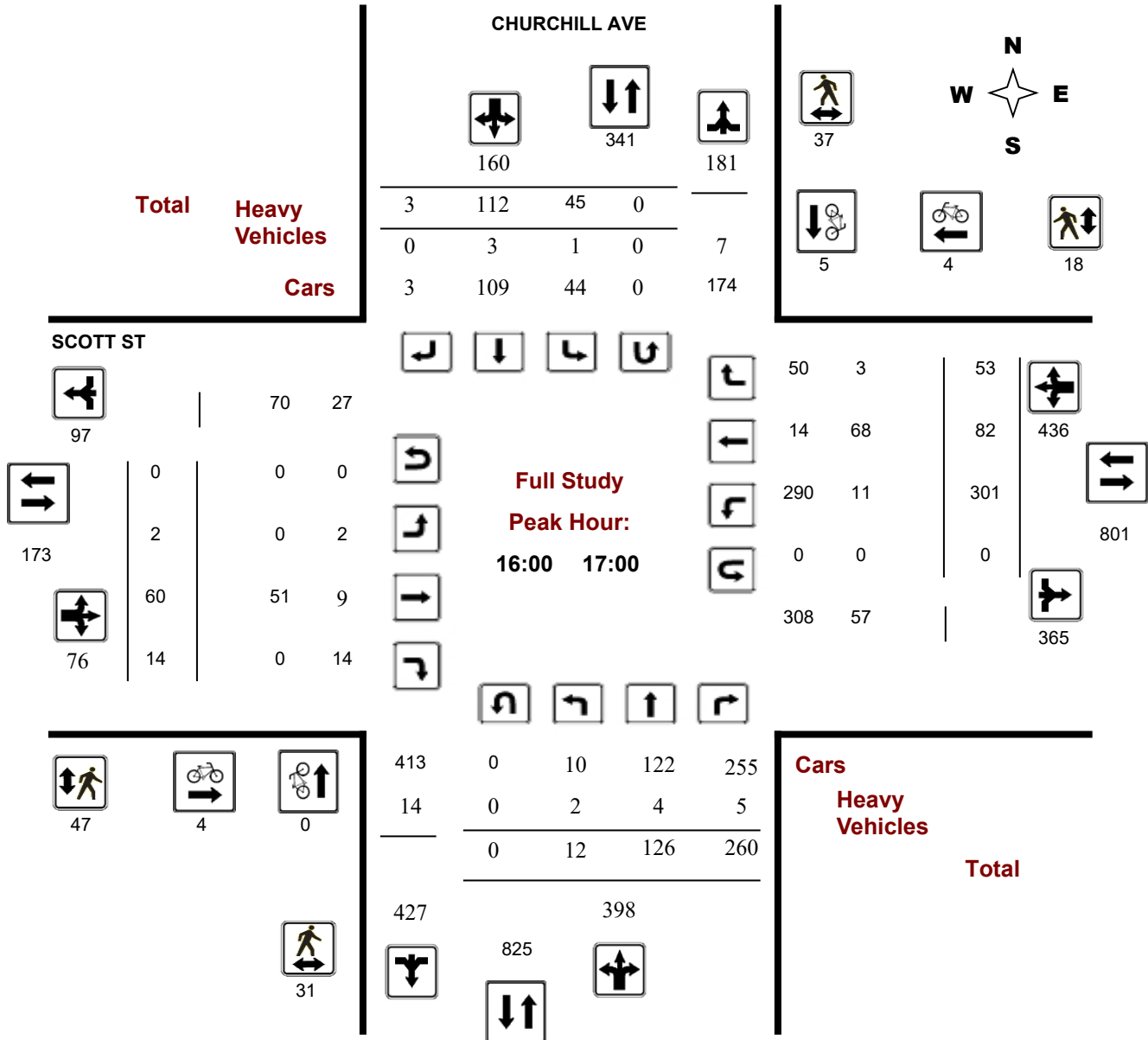
Survey Date: Thursday, November 30, 2023

WO No: 41269

Start Time: 07:00

Device: Miovision

Full Study Peak Hour Diagram



Turning Movement Count - Peak Hour Diagram

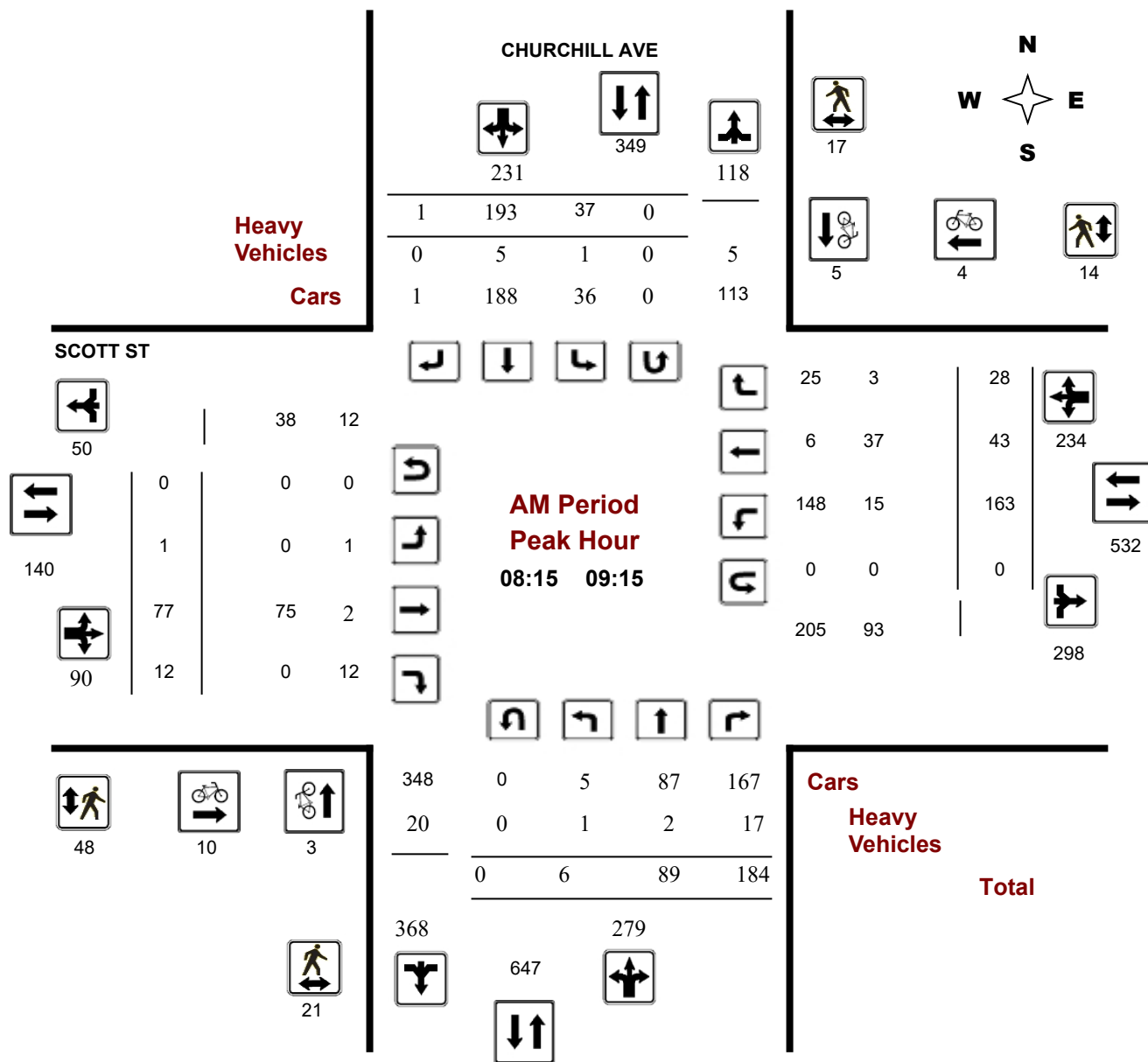
CHURCHILL AVE @ SCOTT ST

Survey Date: Thursday, November 30, 2023

Start Time: 07:00

WO No: 41269

Device: Miovision



Turning Movement Count - Peak Hour Diagram

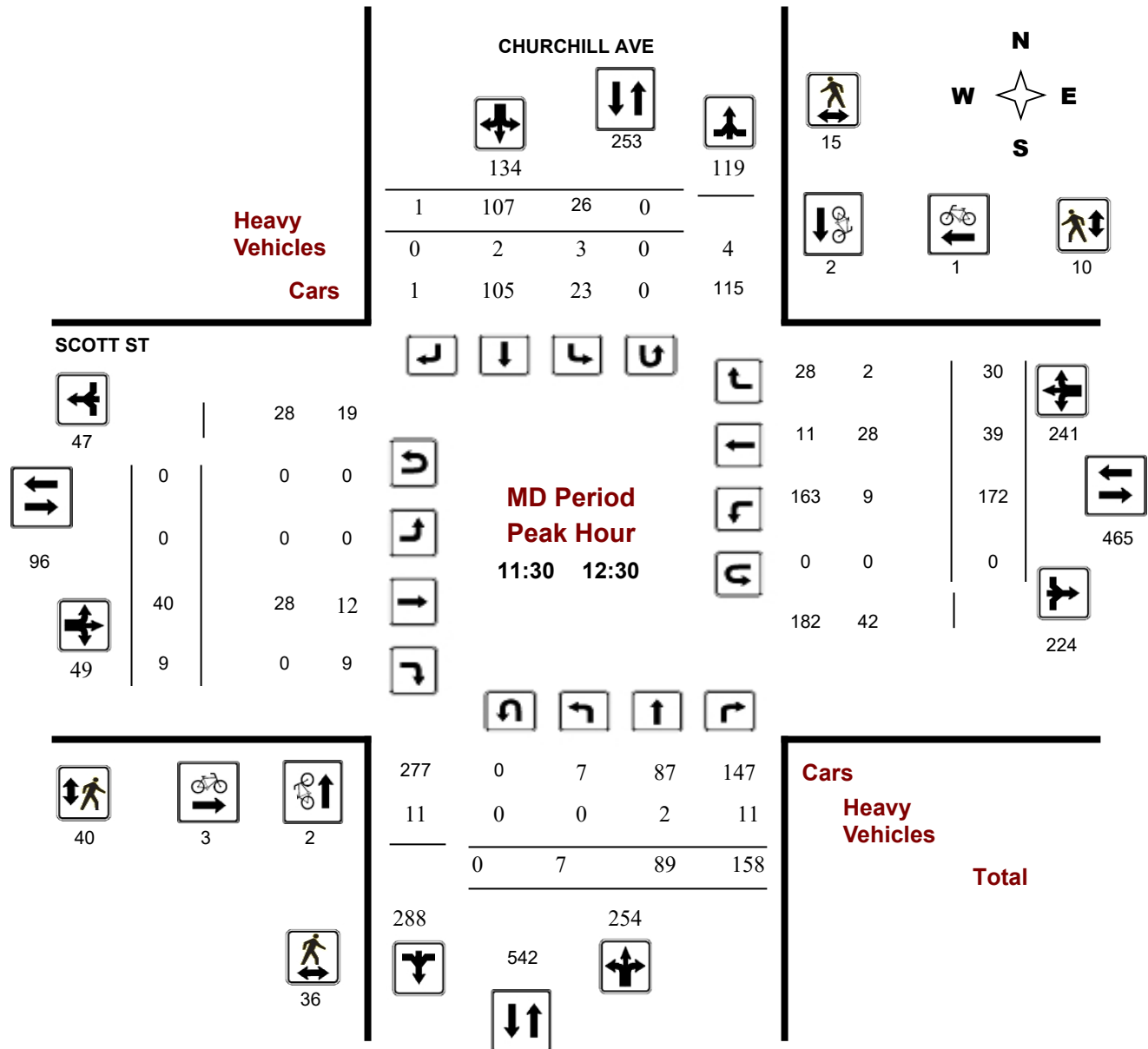
CHURCHILL AVE @ SCOTT ST

Survey Date: Thursday, November 30, 2023

Start Time: 07:00

WO No: 41269

Device: Miovision



Turning Movement Count - Peak Hour Diagram

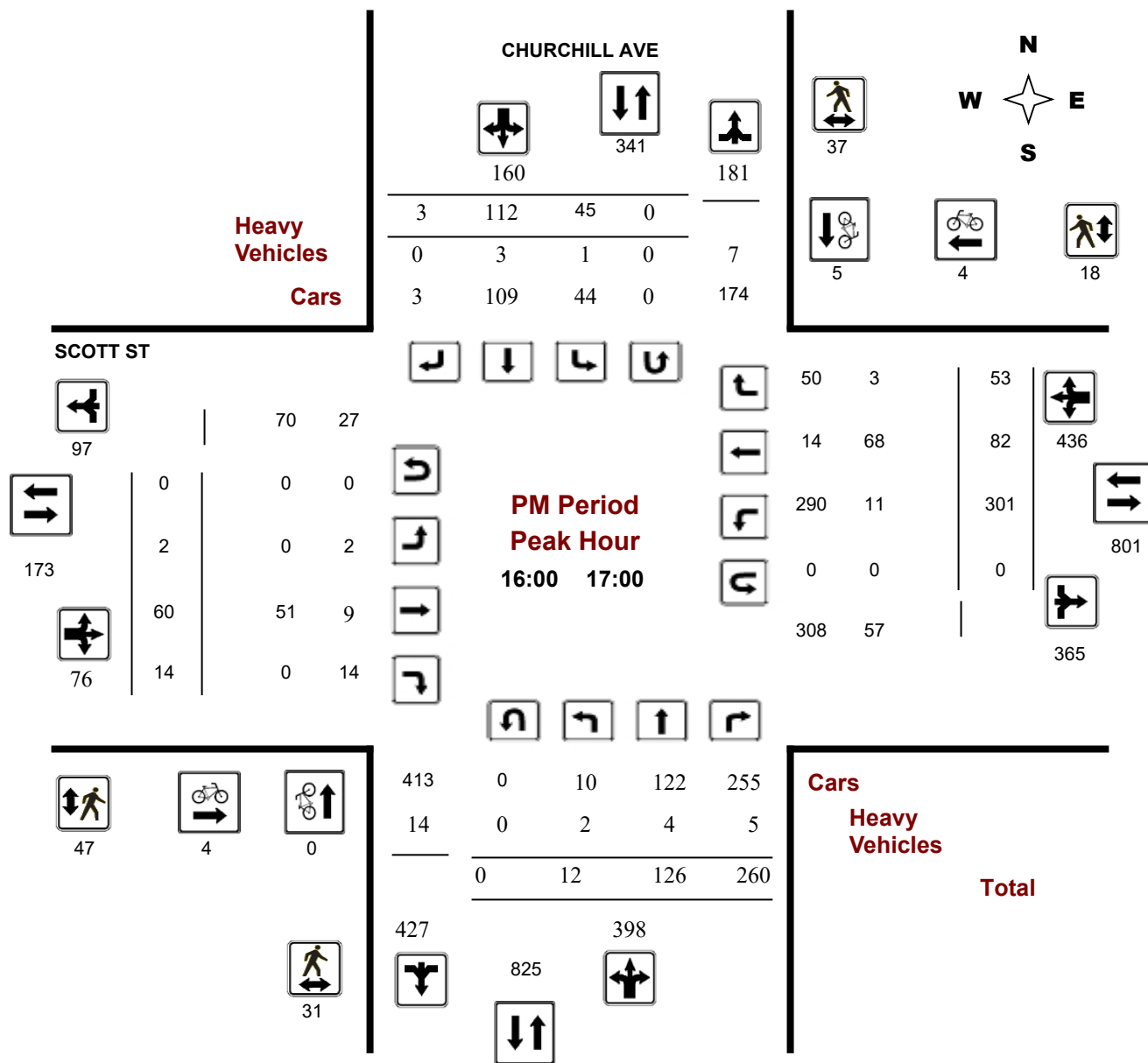
CHURCHILL AVE @ SCOTT ST

Survey Date: Thursday, November 30, 2023

Start Time: 07:00

WO No: 41269

Device: Miovision





Transportation Services - Traffic Services

Turning Movement Count - Study Results

CHURCHILL AVE @ SCOTT ST

Survey Date: Thursday, November 30, 2023

WO No: 41269

Start Time: 07:00

Device: Miovision

Full Study Summary (8 HR Standard)

Survey Date: Thursday, November 30, 2023

Total Observed U-Turns

AADT Factor

Northbound: 0 Southbound: 0

.90

Eastbound: 0 Westbound: 0

CHURCHILL AVE

SCOTT ST

		Northbound				Southbound				Eastbound				Westbound						Grand Total		
Period		LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT			
07:00	08:00	6	46	119	171	33	129	1	163	334	0	72	6	78	137	50	11	198	276	610		
08:00	09:00	5	76	196	277	39	193	1	233	510	1	77	10	88	159	43	28	230	318	828		
09:00	10:00	9	86	130	225	28	104	0	132	357	0	54	11	65	179	39	14	232	297	654		
11:30	12:30	7	89	158	254	26	107	1	134	388	0	40	9	49	172	39	30	241	290	678		
12:30	13:30	13	91	155	259	29	98	0	127	386	1	38	11	50	140	42	29	211	261	647		
15:00	16:00	14	114	272	400	48	115	1	164	564	3	55	10	68	228	67	36	331	399	963		
16:00	17:00	12	126	260	398	45	112	3	160	558	2	60	14	76	301	82	53	436	512	1070		
17:00	18:00	19	103	252	374	41	92	1	134	508	0	59	15	74	251	85	28	364	438	946		
Sub Total		85	731	1542	2358	289	950	8	1247	3605	7	455	86	548	1567	447	229	2243	2791	6396		
U Turns		0				0				0	0				0				0	0	0	
Total		85	731	1542	2358	289	950	8	1247	3605	7	455	86	548	1567	447	229	2243	2791	6396		
EQ 12Hr		118	1016	2143	3278	402	1320	11	1733	5011	10	632	120	762	2178	621	318	3118	3879	8890		
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														1.39								
AVG 12Hr		106	914	1929	2950	362	1557	13	1560	4510	9	569	108	686	1960	559	286	2806	3491	8001		
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														.90								
AVG 24Hr		139	1197	2527	3864	474	2040	17	2044	5908	12	745	141	899	2568	732	375	3676	4573	10481		
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.														1.31								
Note: U-Turns provided for approach totals. Refer to 'U-Turn' Report for specific breakdown.																						



Transportation Services - Traffic Services

Turning Movement Count - Study Results

CHURCHILL AVE @ SCOTT ST

Survey Date: Thursday, November 30, 2023

WO No: 41269

Start Time: 07:00

Device: Miovision

Full Study 15 Minute Increments

CHURCHILL AVE

SCOTT ST

Northbound

Southbound

Eastbound

Westbound

Time Period	LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total	
07:00	07:15	1	14	20	35	8	24	1	33	68	0	21	0	21	20	10	5	35	56	124
07:15	07:30	0	6	22	28	9	25	0	34	62	0	18	1	19	29	10	2	41	60	122
07:30	07:45	0	16	23	39	7	38	0	45	84	0	18	1	19	43	13	0	56	75	159
07:45	08:00	5	10	54	69	9	42	0	51	120	0	15	4	19	45	17	4	66	85	205
08:00	08:15	0	17	61	78	10	36	0	46	124	0	19	0	19	34	9	8	51	70	194
08:15	08:30	1	15	50	66	16	46	0	62	128	0	23	6	29	38	11	5	54	83	211
08:30	08:45	1	21	49	71	7	54	0	61	132	1	14	3	18	40	11	7	58	76	208
08:45	09:00	3	23	36	62	6	57	1	64	126	0	21	1	22	47	12	8	67	89	215
09:00	09:15	1	30	49	80	8	36	0	44	124	0	19	2	21	38	9	8	55	76	200
09:15	09:30	3	16	36	55	4	30	0	34	89	0	12	4	16	52	12	2	66	82	171
09:30	09:45	3	22	20	45	9	18	0	27	72	0	12	2	14	43	10	3	56	70	142
09:45	10:00	2	18	25	45	7	20	0	27	72	0	11	3	14	46	8	1	55	69	141
11:30	11:45	0	19	45	64	5	29	0	34	98	0	11	1	12	42	9	8	59	71	169
11:45	12:00	3	17	41	61	10	21	1	32	93	0	13	4	17	51	15	7	73	90	183
12:00	12:15	2	25	34	61	4	28	0	32	93	0	5	3	8	45	9	5	59	67	160
12:15	12:30	2	28	38	68	7	29	0	36	104	0	11	1	12	34	6	10	50	62	166
12:30	12:45	1	25	32	58	6	30	0	36	94	1	6	4	11	41	9	11	61	72	166
12:45	13:00	4	18	41	63	7	24	0	31	94	0	12	3	15	38	10	5	53	68	162
13:00	13:15	3	28	45	76	7	19	0	26	102	0	10	4	14	29	12	7	48	62	164
13:15	13:30	5	20	37	62	9	25	0	34	96	0	10	0	10	32	11	6	49	59	155
15:00	15:15	4	19	52	75	9	27	1	37	112	1	17	4	22	58	11	8	77	99	211
15:15	15:30	4	35	84	123	15	41	0	56	179	1	11	3	15	54	18	8	80	95	274
15:30	15:45	3	32	79	114	14	32	0	46	160	0	11	2	13	59	17	10	86	99	259
15:45	16:00	3	28	57	88	10	15	0	25	113	1	16	1	18	57	21	10	88	106	219
16:00	16:15	3	37	64	104	14	26	1	41	145	1	16	2	19	76	22	8	106	125	270
16:15	16:30	2	30	64	96	8	29	0	37	133	1	12	4	17	78	17	13	108	125	258
16:30	16:45	3	23	67	93	13	21	1	35	128	0	11	4	15	67	25	14	106	121	249
16:45	17:00	4	36	65	105	10	36	1	47	152	0	21	4	25	80	18	18	116	141	293
17:00	17:15	6	21	78	105	16	16	1	33	138	0	13	9	22	71	24	6	101	123	261
17:15	17:30	3	33	68	104	12	30	0	42	146	0	11	4	15	63	27	11	101	116	262
17:30	17:45	6	31	53	90	8	23	0	31	121	0	17	1	18	52	15	5	72	90	211
17:45	18:00	4	18	53	75	5	23	0	28	103	0	18	1	19	65	19	6	90	109	212
Total:		85	731	1542	2358	289	950	8	1247	3605	7	455	86	548	1567	447	229	2243	2791	6,396

Note: U-Turns are included in Totals.



Transportation Services - Traffic Services

Turning Movement Count - Study Results

CHURCHILL AVE @ SCOTT ST

Survey Date: Thursday, November 30, 2023

WO No: 41269

Start Time: 07:00

Device: Miovision

Full Study Cyclist Volume

		CHURCHILL AVE			SCOTT ST			Grand Total
Time Period		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	
07:00	07:15	0	1	1	0	0	0	1
07:15	07:30	1	0	1	0	0	0	1
07:30	07:45	0	1	1	0	1	1	2
07:45	08:00	0	0	0	3	0	3	3
08:00	08:15	0	2	2	4	1	5	7
08:15	08:30	1	3	4	4	3	7	11
08:30	08:45	1	1	2	3	0	3	5
08:45	09:00	1	1	2	3	1	4	6
09:00	09:15	0	0	0	0	0	0	0
09:15	09:30	1	0	1	1	0	1	2
09:30	09:45	0	0	0	0	0	0	0
09:45	10:00	0	1	1	2	1	3	4
11:30	11:45	1	0	1	0	1	1	2
11:45	12:00	1	0	1	1	0	1	2
12:00	12:15	0	1	1	0	0	0	1
12:15	12:30	0	1	1	2	0	2	3
12:30	12:45	1	1	2	0	2	2	4
12:45	13:00	0	0	0	2	0	2	2
13:00	13:15	0	1	1	0	1	1	2
13:15	13:30	0	2	2	2	0	2	4
15:00	15:15	0	1	1	0	2	2	3
15:15	15:30	1	0	1	2	0	2	3
15:30	15:45	4	0	4	2	0	2	6
15:45	16:00	1	2	3	1	0	1	4
16:00	16:15	0	1	1	0	0	0	1
16:15	16:30	0	3	3	1	3	4	7
16:30	16:45	0	0	0	1	1	2	2
16:45	17:00	0	1	1	2	0	2	3
17:00	17:15	0	4	4	0	4	4	8
17:15	17:30	0	0	0	0	2	2	2
17:30	17:45	0	2	2	0	3	3	5
17:45	18:00	0	1	1	0	2	2	3
Total		14	31	45	36	28	64	109



Transportation Services - Traffic Services

Turning Movement Count - Study Results

CHURCHILL AVE @ SCOTT ST

Survey Date: Thursday, November 30, 2023

WO No: 41269

Start Time: 07:00

Device: Miovision

Full Study Pedestrian Volume

CHURCHILL AVE

SCOTT ST

Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00 07:15	4	1	5	2	6	8	13
07:15 07:30	2	3	5	5	0	5	10
07:30 07:45	6	3	9	18	6	24	33
07:45 08:00	5	0	5	2	0	2	7
08:00 08:15	6	3	9	3	3	6	15
08:15 08:30	2	4	6	11	5	16	22
08:30 08:45	7	4	11	14	4	18	29
08:45 09:00	7	5	12	14	3	17	29
09:00 09:15	5	4	9	9	2	11	20
09:15 09:30	4	1	5	5	1	6	11
09:30 09:45	3	8	11	5	1	6	17
09:45 10:00	5	3	8	6	4	10	18
11:30 11:45	7	1	8	9	4	13	21
11:45 12:00	3	2	5	7	0	7	12
12:00 12:15	12	3	15	12	1	13	28
12:15 12:30	14	9	23	12	5	17	40
12:30 12:45	4	6	10	6	4	10	20
12:45 13:00	5	6	11	15	3	18	29
13:00 13:15	5	4	9	10	4	14	23
13:15 13:30	5	0	5	7	4	11	16
15:00 15:15	3	1	4	9	4	13	17
15:15 15:30	0	8	8	7	1	8	16
15:30 15:45	15	8	23	22	6	28	51
15:45 16:00	2	2	4	6	4	10	14
16:00 16:15	9	11	20	14	7	21	41
16:15 16:30	11	5	16	11	6	17	33
16:30 16:45	8	14	22	12	5	17	39
16:45 17:00	3	7	10	10	0	10	20
17:00 17:15	3	4	7	9	6	15	22
17:15 17:30	6	6	12	5	4	9	21
17:30 17:45	7	1	8	4	5	9	17
17:45 18:00	7	2	9	12	2	14	23
Total	185	139	324	293	110	403	727



Transportation Services - Traffic Services

Turning Movement Count - Study Results

CHURCHILL AVE @ SCOTT ST

Survey Date: Thursday, November 30, 2023

WO No: 41269

Start Time: 07:00

Device: Miovision

Full Study Heavy Vehicles

CHURCHILL AVE

SCOTT ST

Northbound

Southbound

Eastbound

Westbound

Time Period	LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00 07:15	0	2	6	11	0	0	1	4	15	0	19	0	30	3	10	1	39	69	42
07:15 07:30	0	0	4	11	1	6	0	8	19	0	18	0	28	1	10	1	35	63	41
07:30 07:45	0	1	1	7	1	1	0	3	10	0	18	0	31	4	13	0	37	68	39
07:45 08:00	0	1	6	8	1	1	0	5	13	0	14	0	30	0	16	2	39	69	41
08:00 08:15	0	1	6	12	0	2	0	6	18	0	17	0	26	3	9	3	38	64	41
08:15 08:30	0	0	5	10	1	1	0	3	13	0	23	0	34	4	11	1	45	79	46
08:30 08:45	1	0	5	10	0	1	0	1	11	0	13	0	24	3	10	0	31	55	33
08:45 09:00	0	1	0	7	0	2	0	4	11	0	21	0	30	4	9	1	35	65	38
09:00 09:15	0	1	7	13	0	1	0	3	16	0	18	0	25	4	7	1	37	62	39
09:15 09:30	1	0	2	8	1	0	0	2	10	0	11	1	23	4	10	1	29	52	31
09:30 09:45	0	0	0	3	1	0	0	3	6	0	10	0	19	3	9	2	25	44	25
09:45 10:00	1	0	5	10	0	0	0	0	10	0	10	1	19	3	7	0	25	44	27
11:30 11:45	0	0	3	4	1	0	0	1	5	0	8	0	15	1	7	0	20	35	20
11:45 12:00	0	1	2	10	1	1	0	4	14	0	7	0	17	6	10	1	27	44	29
12:00 12:15	0	1	3	7	0	1	0	2	9	0	5	0	11	2	6	0	16	27	18
12:15 12:30	0	0	3	3	1	0	0	2	5	0	8	0	13	0	5	1	18	31	18
12:30 12:45	0	1	0	3	1	0	0	3	6	0	5	0	12	2	7	1	16	28	17
12:45 13:00	0	0	2	6	1	0	0	2	8	0	7	1	16	3	8	1	22	38	23
13:00 13:15	2	0	0	11	1	2	0	5	16	0	7	1	16	6	6	2	22	38	27
13:15 13:30	1	0	4	7	1	0	0	1	8	0	8	0	17	2	8	0	23	40	24
15:00 15:15	0	0	2	9	2	2	0	5	14	0	14	0	23	5	9	1	33	56	35
15:15 15:30	0	0	4	6	0	0	0	0	6	0	9	0	24	2	15	0	30	54	30
15:30 15:45	0	2	1	11	0	1	0	4	15	0	8	0	24	7	16	1	33	57	36
15:45 16:00	0	0	1	2	3	0	0	4	6	0	14	0	35	1	21	1	41	76	41
16:00 16:15	1	2	2	12	0	1	0	3	15	0	14	0	32	6	17	0	39	71	43
16:15 16:30	0	1	1	5	1	1	0	4	9	0	11	0	23	2	12	1	28	51	30
16:30 16:45	0	1	0	3	0	1	0	3	6	0	8	0	31	1	23	1	33	64	35
16:45 17:00	1	0	2	5	0	0	0	1	6	0	18	0	35	2	16	1	39	74	40
17:00 17:15	0	0	4	5	1	0	0	1	6	0	9	0	25	1	16	0	31	56	31
17:15 17:30	0	0	1	2	2	0	0	3	5	0	10	0	34	1	24	1	39	73	39
17:30 17:45	0	0	2	3	0	0	0	0	3	0	12	0	26	1	14	0	29	55	29
17:45 18:00	0	0	1	2	0	1	0	2	4	0	17	0	35	0	18	1	37	72	38
Total: None	8	16	85	226	22	26	1	92	318	0	391	4	783	87	379	27	991	1774	1,046



Transportation Services - Traffic Services

Turning Movement Count - Study Results

CHURCHILL AVE @ SCOTT ST

Survey Date: Thursday, November 30, 2023

WO No: 41269

Start Time: 07:00

Device: Miovision

Full Study 15 Minute U-Turn Total

CHURCHILL AVE

SCOTT ST

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

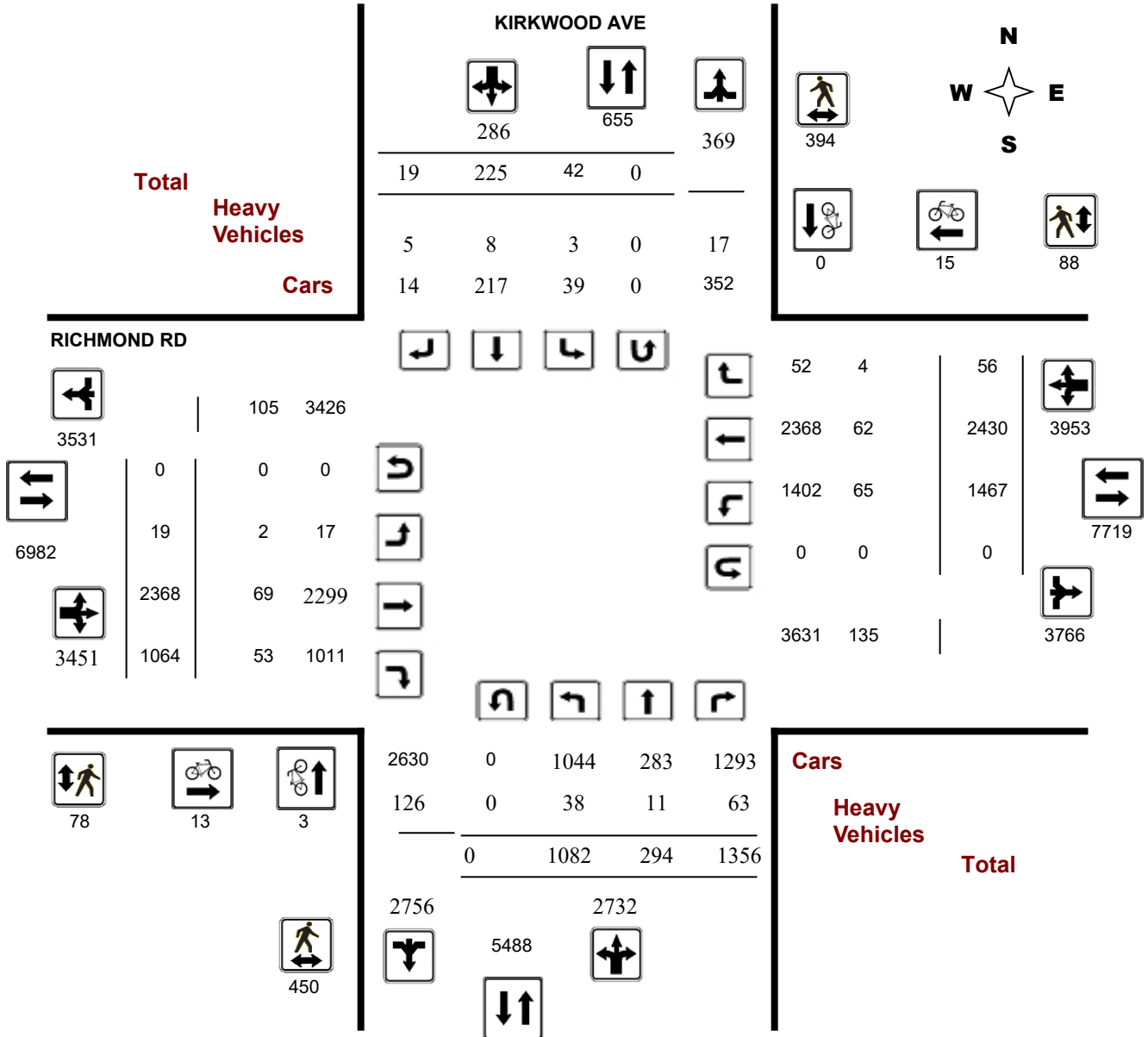
Survey Date: Wednesday, December 20, 2023

Start Time: 07:00

WO No: 41423

Device: Miovision

Full Study Diagram



Turning Movement Count - Study Results

KIRKWOOD AVE @ RICHMOND RD

Survey Date: Wednesday, December 20, 2023

Start Time: 07:00

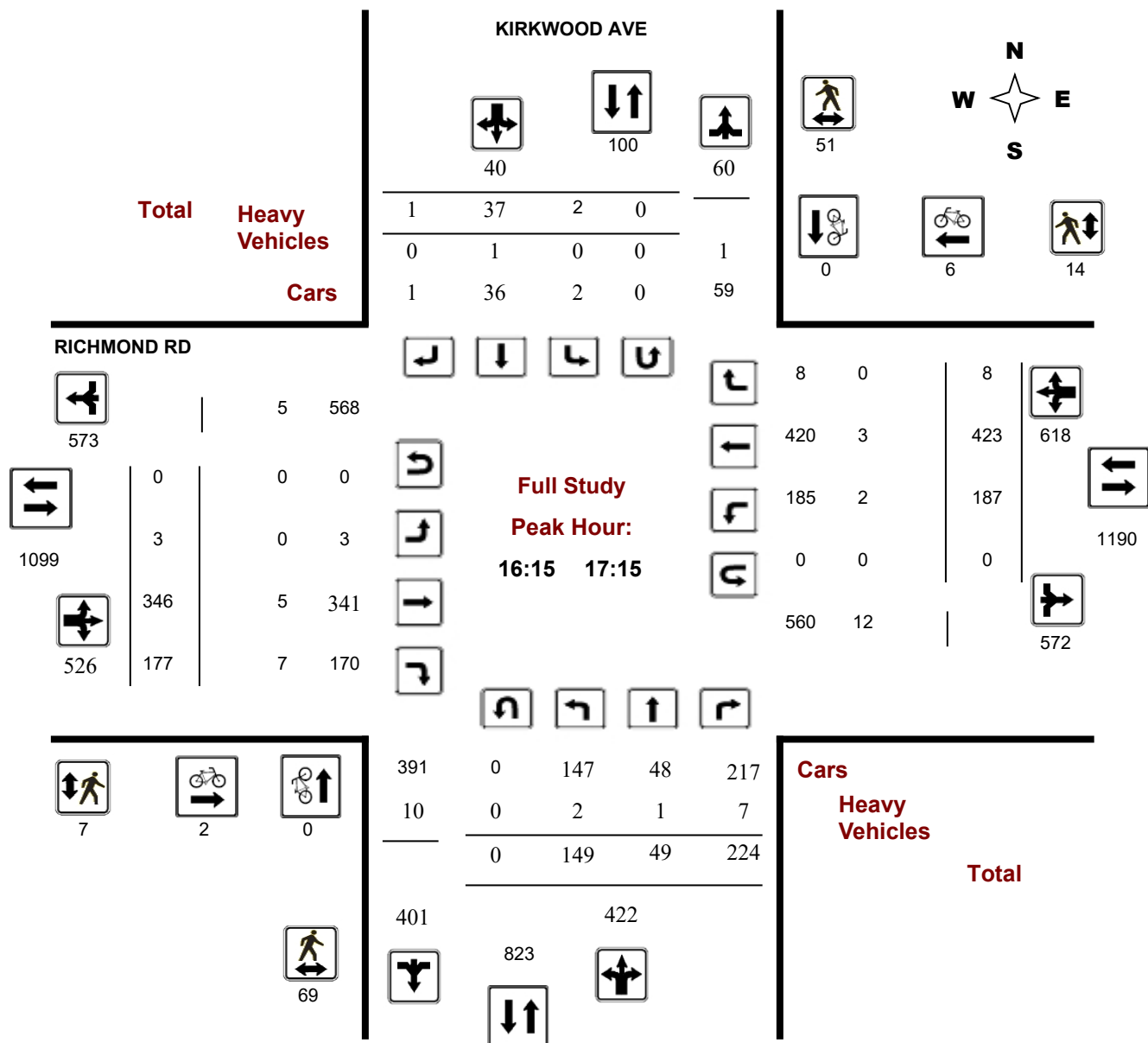
WO No:

41423

Device:

Miovision

Full Study Peak Hour Diagram





Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

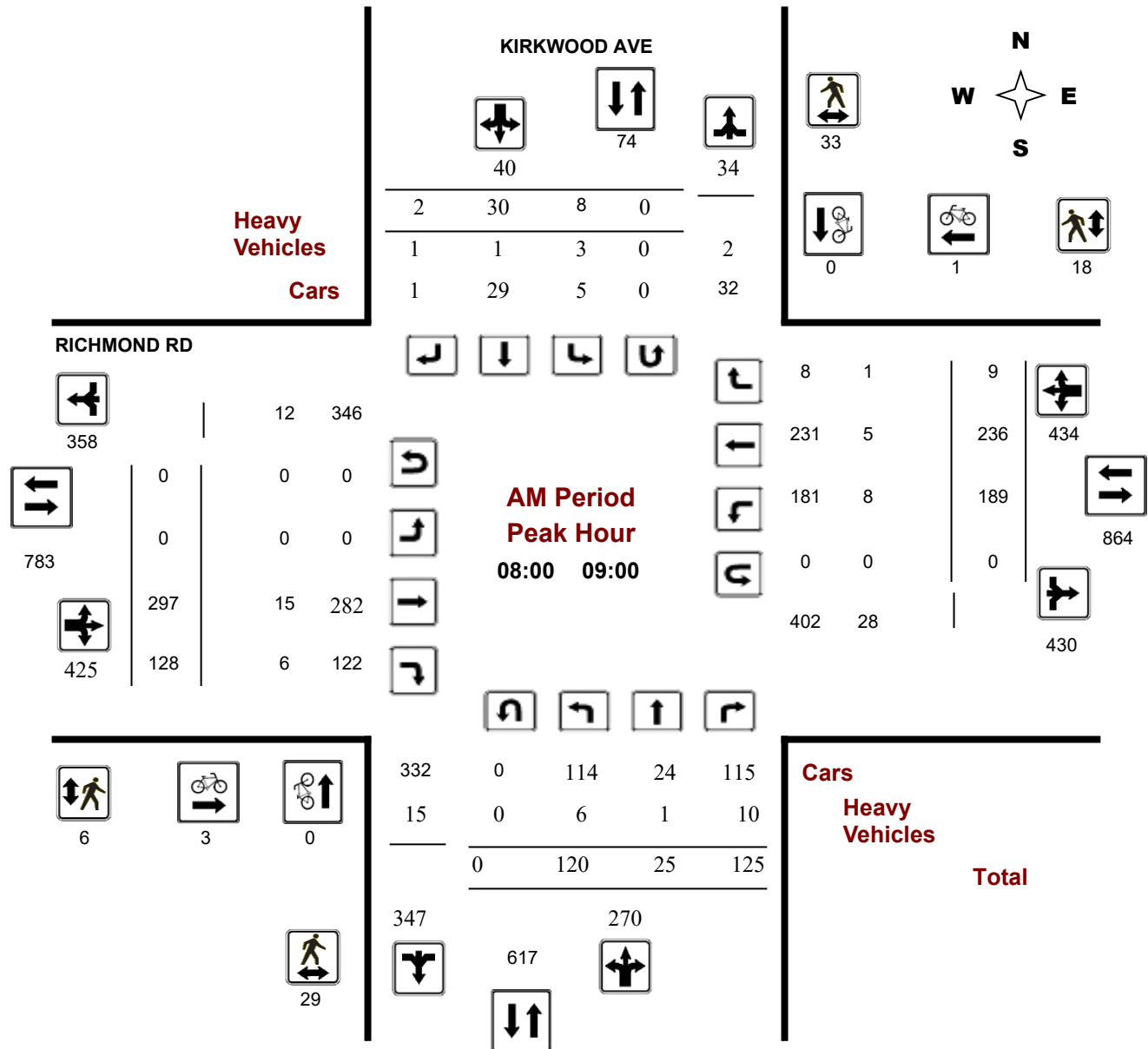
KIRKWOOD AVE @ RICHMOND RD

Survey Date: Wednesday, December 20, 2023

Start Time: 07:00

WO No: 41423

Device: Miovision





Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

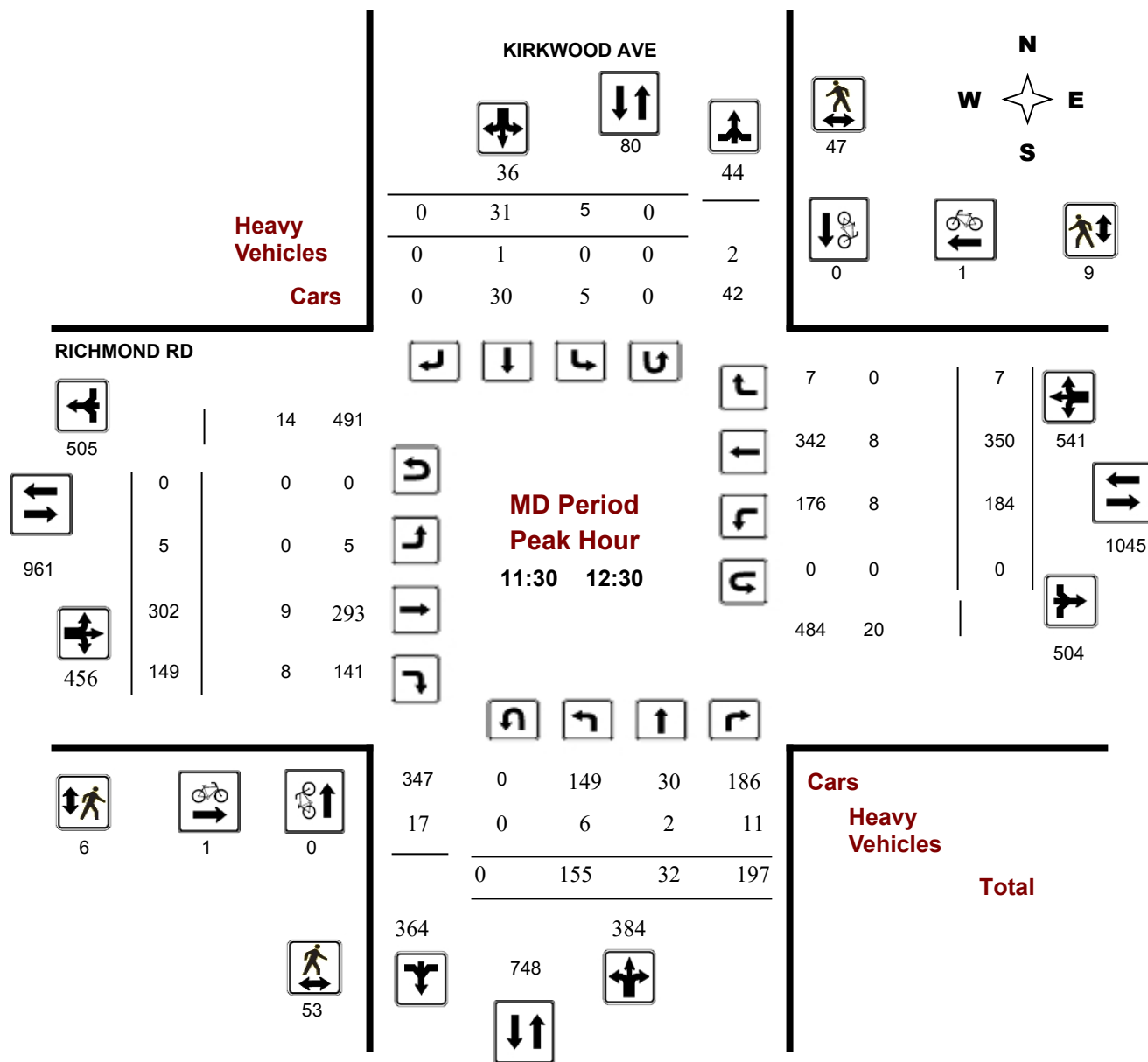
KIRKWOOD AVE @ RICHMOND RD

Survey Date: Wednesday, December 20, 2023

Start Time: 07:00

WO No: 41423

Device: Miovision





Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

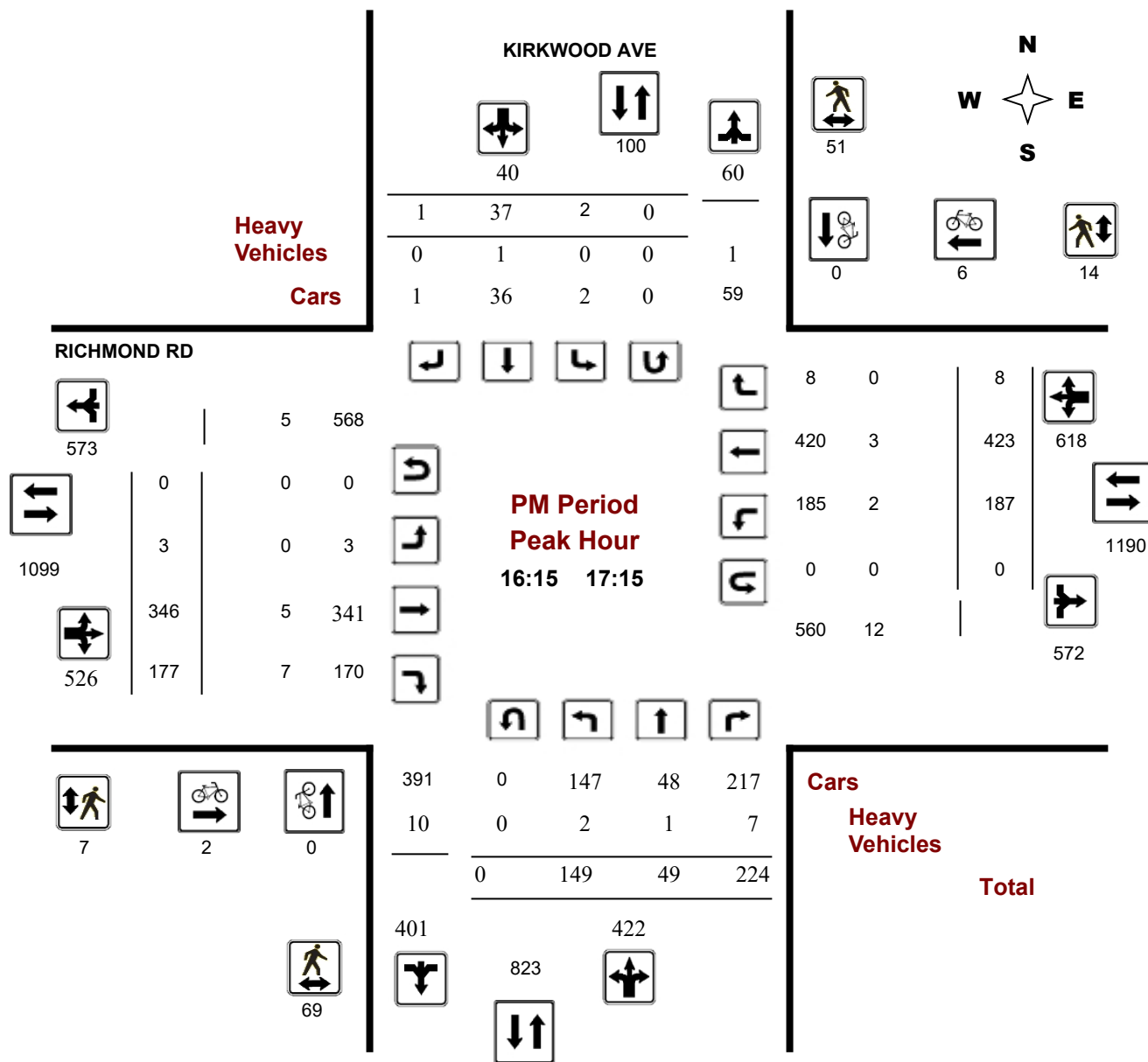
KIRKWOOD AVE @ RICHMOND RD

Survey Date: Wednesday, December 20, 2023

Start Time: 07:00

WO No: 41423

Device: Miovision





Transportation Services - Traffic Services

Turning Movement Count - Study Results

KIRKWOOD AVE @ RICHMOND RD

Survey Date: Wednesday, December 20, 2023

WO No: 41423

Start Time: 07:00

Device: Miovision

Full Study Summary (8 HR Standard)

Survey Date: Wednesday, December 20, 2023

Total Observed U-Turns

Northbound: 0 Southbound: 0
Eastbound: 0 Westbound: 0

AADT Factor

1.00

KIRKWOOD AVE

RICHMOND RD

Period	Northbound					Southbound					Eastbound					Westbound					Grand Total
	LT	ST	RT	NB TOT		LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT		LT	ST	RT	WB TOT	STR TOT	
07:00 08:00	90	20	109	219		4	11	2	17	236	3	170	105	278		173	141	2	316	594	830
08:00 09:00	120	25	125	270		8	30	2	40	310	0	297	128	425		189	236	9	434	859	1169
09:00 10:00	151	21	144	316		3	30	4	37	353	2	240	108	350		173	241	1	415	765	1118
11:30 12:30	155	32	197	384		5	31	0	36	420	5	302	149	456		184	350	7	541	997	1417
12:30 13:30	135	35	153	323		5	24	3	32	355	3	315	122	440		179	323	9	511	951	1306
15:00 16:00	151	54	168	373		7	36	4	47	420	1	357	138	496		192	351	11	554	1050	1470
16:00 17:00	147	47	232	426		4	39	3	46	472	1	346	164	511		190	423	8	621	1132	1604
17:00 18:00	133	60	228	421		6	24	1	31	452	4	341	150	495		187	365	9	561	1056	1508
Sub Total	1082	294	1356	2732		42	225	19	286	3018	19	2368	1064	3451		1467	2430	56	3953	7404	10422
U Turns				0					0	0				0					0	0	0
Total	1082	294	1356	2732		42	225	19	286	3018	19	2368	1064	3451		1467	2430	56	3953	7404	10422
EQ 12Hr	1504	409	1885	3797		58	313	26	398	4195	26	3292	1479	4797		2039	3378	78	5495	10292	14487

Note: These values are calculated by multiplying the totals by the appropriate expansion factor.

1.39

AVG 12Hr 1504 409 1885 3797 58 410 35 398 4195 26 3292 1479 4797 2039 3378 78 5495 10292 14487

Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.

1.00

AVG 24Hr 1970 536 2469 4974 76 537 46 521 5495 34 4313 1937 6284 2671 4425 102 7198 13483 18978

Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.

1.31

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



Transportation Services - Traffic Services

Turning Movement Count - Study Results

KIRKWOOD AVE @ RICHMOND RD

Survey Date: Wednesday, December 20, 2023

WO No: 41423

Start Time: 07:00

Device: Miovision

Full Study 15 Minute Increments

KIRKWOOD AVE

RICHMOND RD

Northbound

Southbound

Eastbound

Westbound

Time Period	LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total	
07:00	07:15	24	6	33	63	0	2	0	2	65	0	24	28	52	44	22	0	66	118	183
07:15	07:30	22	6	23	51	0	3	0	3	54	0	42	20	62	34	31	1	66	128	182
07:30	07:45	13	1	21	35	0	3	0	3	38	1	46	34	81	46	37	0	83	164	202
07:45	08:00	31	7	32	70	4	3	2	9	79	2	58	23	83	49	51	1	101	184	263
08:00	08:15	26	3	30	59	3	7	1	11	70	0	70	41	111	70	46	3	119	230	300
08:15	08:30	30	9	24	63	0	5	0	5	68	0	89	31	120	45	62	1	108	228	296
08:30	08:45	39	8	34	81	1	6	1	8	89	0	69	33	102	38	55	4	97	199	288
08:45	09:00	25	5	37	67	4	12	0	16	83	0	69	23	92	36	73	1	110	202	285
09:00	09:15	45	5	35	85	1	11	0	12	97	0	70	25	95	43	55	0	98	193	290
09:15	09:30	37	3	36	76	0	10	0	10	86	1	61	29	91	49	58	0	107	198	284
09:30	09:45	26	9	38	73	0	2	3	5	78	1	52	31	84	32	65	1	98	182	260
09:45	10:00	43	4	35	82	2	7	1	10	92	0	57	23	80	49	63	0	112	192	284
11:30	11:45	31	12	50	93	0	3	0	3	96	1	65	39	105	40	104	1	145	250	346
11:45	12:00	36	8	38	82	2	7	0	9	91	2	77	37	116	48	82	0	130	246	337
12:00	12:15	48	6	59	113	3	13	0	16	129	2	75	39	116	42	81	5	128	244	373
12:15	12:30	40	6	50	96	0	8	0	8	104	0	85	34	119	54	83	1	138	257	361
12:30	12:45	29	10	37	76	1	9	2	12	88	0	91	28	119	45	76	1	122	241	329
12:45	13:00	26	5	47	78	2	2	0	4	82	0	69	29	98	36	82	4	122	220	302
13:00	13:15	44	13	36	93	2	8	1	11	104	3	60	34	97	42	79	3	124	221	325
13:15	13:30	36	7	33	76	0	5	0	5	81	0	95	31	126	56	86	1	143	269	350
15:00	15:15	26	9	43	78	2	6	2	10	88	0	87	43	130	58	82	1	141	271	359
15:15	15:30	31	17	38	86	1	21	1	23	109	0	93	33	126	53	94	6	153	279	388
15:30	15:45	41	12	44	97	0	3	1	4	101	1	99	28	128	38	91	2	131	259	360
15:45	16:00	53	16	43	112	4	6	0	10	122	0	78	34	112	43	84	2	129	241	363
16:00	16:15	37	15	61	113	2	11	2	15	128	0	81	32	113	49	113	1	163	276	404
16:15	16:30	39	7	66	112	0	7	1	8	120	0	92	40	132	44	105	2	151	283	403
16:30	16:45	33	19	50	102	0	12	0	12	114	1	99	46	146	49	117	3	169	315	429
16:45	17:00	38	6	55	99	2	9	0	11	110	0	74	46	120	48	88	2	138	258	368
17:00	17:15	39	17	53	109	0	9	0	9	118	2	81	45	128	46	113	1	160	288	406
17:15	17:30	35	17	49	101	3	2	0	5	106	1	100	41	142	50	85	2	137	279	385
17:30	17:45	31	16	53	100	0	7	0	7	107	0	85	33	118	43	78	4	125	243	350
17:45	18:00	28	10	73	111	3	6	1	10	121	1	75	31	107	48	89	2	139	246	367
Total:		1082	294	1356	2732	42	225	19	286	3018	19	2368	1064	3451	1467	2430	56	3953	7404	10,422

Note: U-Turns are included in Totals.



Transportation Services - Traffic Services

Turning Movement Count - Study Results

KIRKWOOD AVE @ RICHMOND RD

Survey Date: Wednesday, December 20, 2023

WO No: 41423

Start Time: 07:00

Device: Miovision

Full Study Cyclist Volume

		KIRKWOOD AVE			RICHMOND RD			Grand Total
Time Period		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	
07:00	07:15	0	0	0	0	0	0	0
07:15	07:30	0	0	0	2	0	2	2
07:30	07:45	0	0	0	1	0	1	1
07:45	08:00	0	0	0	2	1	3	3
08:00	08:15	0	0	0	1	0	1	1
08:15	08:30	0	0	0	0	0	0	0
08:30	08:45	0	0	0	0	0	0	0
08:45	09:00	0	0	0	2	1	3	3
09:00	09:15	0	0	0	0	0	0	0
09:15	09:30	0	0	0	1	0	1	1
09:30	09:45	0	0	0	0	0	0	0
09:45	10:00	0	0	0	0	1	1	1
11:30	11:45	0	0	0	1	0	1	1
11:45	12:00	0	0	0	0	1	1	1
12:00	12:15	0	0	0	0	0	0	0
12:15	12:30	0	0	0	0	0	0	0
12:30	12:45	0	0	0	0	0	0	0
12:45	13:00	0	0	0	0	0	0	0
13:00	13:15	0	0	0	1	1	2	2
13:15	13:30	0	0	0	0	0	0	0
15:00	15:15	0	0	0	0	0	0	0
15:15	15:30	0	0	0	0	0	0	0
15:30	15:45	0	0	0	0	1	1	1
15:45	16:00	1	0	1	0	1	1	2
16:00	16:15	1	0	1	0	1	1	2
16:15	16:30	0	0	0	2	1	3	3
16:30	16:45	0	0	0	0	1	1	1
16:45	17:00	0	0	0	0	2	2	2
17:00	17:15	0	0	0	0	2	2	2
17:15	17:30	0	0	0	0	1	1	1
17:30	17:45	0	0	0	0	0	0	0
17:45	18:00	1	0	1	0	0	0	1
Total		3	0	3	13	15	28	31



Transportation Services - Traffic Services

Turning Movement Count - Study Results

KIRKWOOD AVE @ RICHMOND RD

Survey Date: Wednesday, December 20, 2023

WO No: 41423

Start Time: 07:00

Device: Miovision

Full Study Pedestrian Volume

KIRKWOOD AVE

RICHMOND RD

Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00 07:15	6	7	13	0	1	1	14
07:15 07:30	5	3	8	0	0	0	8
07:30 07:45	6	12	18	3	0	3	21
07:45 08:00	14	8	22	3	8	11	33
08:00 08:15	6	10	16	1	7	8	24
08:15 08:30	6	10	16	2	8	10	26
08:30 08:45	8	8	16	1	2	3	19
08:45 09:00	9	5	14	2	1	3	17
09:00 09:15	3	6	9	0	0	0	9
09:15 09:30	10	11	21	0	1	1	22
09:30 09:45	12	10	22	0	1	1	23
09:45 10:00	8	11	19	5	2	7	26
11:30 11:45	10	9	19	1	1	2	21
11:45 12:00	15	17	32	4	4	8	40
12:00 12:15	12	6	18	0	1	1	19
12:15 12:30	16	15	31	1	3	4	35
12:30 12:45	16	24	40	6	3	9	49
12:45 13:00	14	12	26	0	2	2	28
13:00 13:15	18	21	39	3	2	5	44
13:15 13:30	13	18	31	7	2	9	40
15:00 15:15	25	21	46	4	5	9	55
15:15 15:30	20	20	40	2	3	5	45
15:30 15:45	22	15	37	3	2	5	42
15:45 16:00	19	16	35	7	2	9	44
16:00 16:15	17	12	29	3	3	6	35
16:15 16:30	17	13	30	3	5	8	38
16:30 16:45	20	10	30	4	4	8	38
16:45 17:00	17	11	28	0	1	1	29
17:00 17:15	15	17	32	0	4	4	36
17:15 17:30	26	11	37	6	5	11	48
17:30 17:45	22	12	34	4	1	5	39
17:45 18:00	23	13	36	3	4	7	43
Total	450	394	844	78	88	166	1010



Transportation Services - Traffic Services

Turning Movement Count - Study Results

KIRKWOOD AVE @ RICHMOND RD

Survey Date: Wednesday, December 20, 2023

WO No: 41423

Start Time: 07:00

Device: Miovision

Full Study Heavy Vehicles

KIRKWOOD AVE

RICHMOND RD

Northbound

Southbound

Eastbound

Westbound

Time Period	LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00 07:15	2	0	0	5	0	0	0	0	5	0	2	2	6	1	0	0	3	9	7
07:15 07:30	1	1	1	7	0	0	0	1	8	0	3	1	8	3	3	0	10	18	13
07:30 07:45	0	1	3	7	0	1	0	2	9	0	1	1	4	1	2	0	7	11	10
07:45 08:00	1	2	1	9	0	0	2	5	14	1	1	2	10	3	3	0	8	18	16
08:00 08:15	1	0	3	10	1	0	1	2	12	0	5	2	10	4	1	0	14	24	18
08:15 08:30	2	1	2	6	0	0	0	1	7	0	4	1	7	0	0	0	6	13	10
08:30 08:45	3	0	4	12	1	1	0	2	14	0	5	2	13	2	3	0	15	28	21
08:45 09:00	0	0	1	4	1	0	0	2	6	0	1	1	3	2	1	1	7	10	8
09:00 09:15	1	0	3	8	0	0	0	0	8	0	8	1	12	3	2	0	16	28	18
09:15 09:30	3	0	5	10	0	0	0	0	10	0	1	1	9	1	4	0	11	20	15
09:30 09:45	2	1	3	16	0	0	1	4	20	1	2	4	12	6	2	1	14	26	23
09:45 10:00	3	0	1	8	0	0	1	1	9	0	2	1	10	3	3	0	9	19	14
11:30 11:45	1	1	2	6	0	0	0	1	7	0	4	1	7	1	1	0	8	15	11
11:45 12:00	0	0	2	9	0	1	0	1	10	0	1	4	10	2	5	0	10	20	15
12:00 12:15	4	0	3	11	0	0	0	0	11	0	3	1	9	3	1	0	10	19	15
12:15 12:30	1	1	4	10	0	0	0	1	11	0	1	2	5	2	1	0	8	13	12
12:30 12:45	1	1	1	9	0	1	0	2	11	0	5	3	13	2	4	0	12	25	18
12:45 13:00	0	0	4	6	0	0	0	1	7	0	2	1	5	1	2	1	10	15	11
13:00 13:15	4	0	1	11	0	1	0	1	12	0	0	0	8	5	4	0	10	18	15
13:15 13:30	0	1	3	11	0	2	0	4	15	0	3	3	8	2	2	1	11	19	17
15:00 15:15	1	0	2	8	0	0	0	0	8	0	2	4	10	1	3	0	8	18	13
15:15 15:30	0	0	2	8	0	0	0	0	8	0	2	2	5	4	1	0	9	14	11
15:30 15:45	0	0	1	4	0	0	0	0	4	0	1	1	4	2	2	0	6	10	7
15:45 16:00	2	0	0	6	0	0	0	0	6	0	1	2	7	2	2	0	5	12	9
16:00 16:15	1	0	1	6	0	0	0	0	6	0	1	2	7	2	3	0	7	14	10
16:15 16:30	0	0	2	7	0	0	0	0	7	0	0	3	3	2	0	0	4	7	7
16:30 16:45	2	1	1	5	0	0	0	1	6	0	3	1	7	0	1	0	5	12	9
16:45 17:00	0	0	1	2	0	1	0	1	3	0	1	0	1	0	0	0	2	3	3
17:00 17:15	0	0	3	6	0	0	0	0	6	0	1	3	6	0	2	0	6	12	9
17:15 17:30	1	0	1	4	0	0	0	0	4	0	2	0	4	2	1	0	6	10	7
17:30 17:45	1	0	0	3	0	0	0	0	3	0	1	1	6	1	3	0	5	11	7
17:45 18:00	0	0	2	4	0	0	0	0	4	0	0	0	0	2	0	0	4	4	4
Total: None	38	11	63	238	3	8	5	33	271	2	69	53	229	65	62	4	266	495	383



Transportation Services - Traffic Services

Turning Movement Count - Study Results

KIRKWOOD AVE @ RICHMOND RD

Survey Date: Wednesday, December 20, 2023

WO No: 41423

Start Time: 07:00

Device: Miovision

Full Study 15 Minute U-Turn Total

KIRKWOOD AVE

RICHMOND RD

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

Survey Date: Thursday, November 30, 2023

Start Time: 07:00

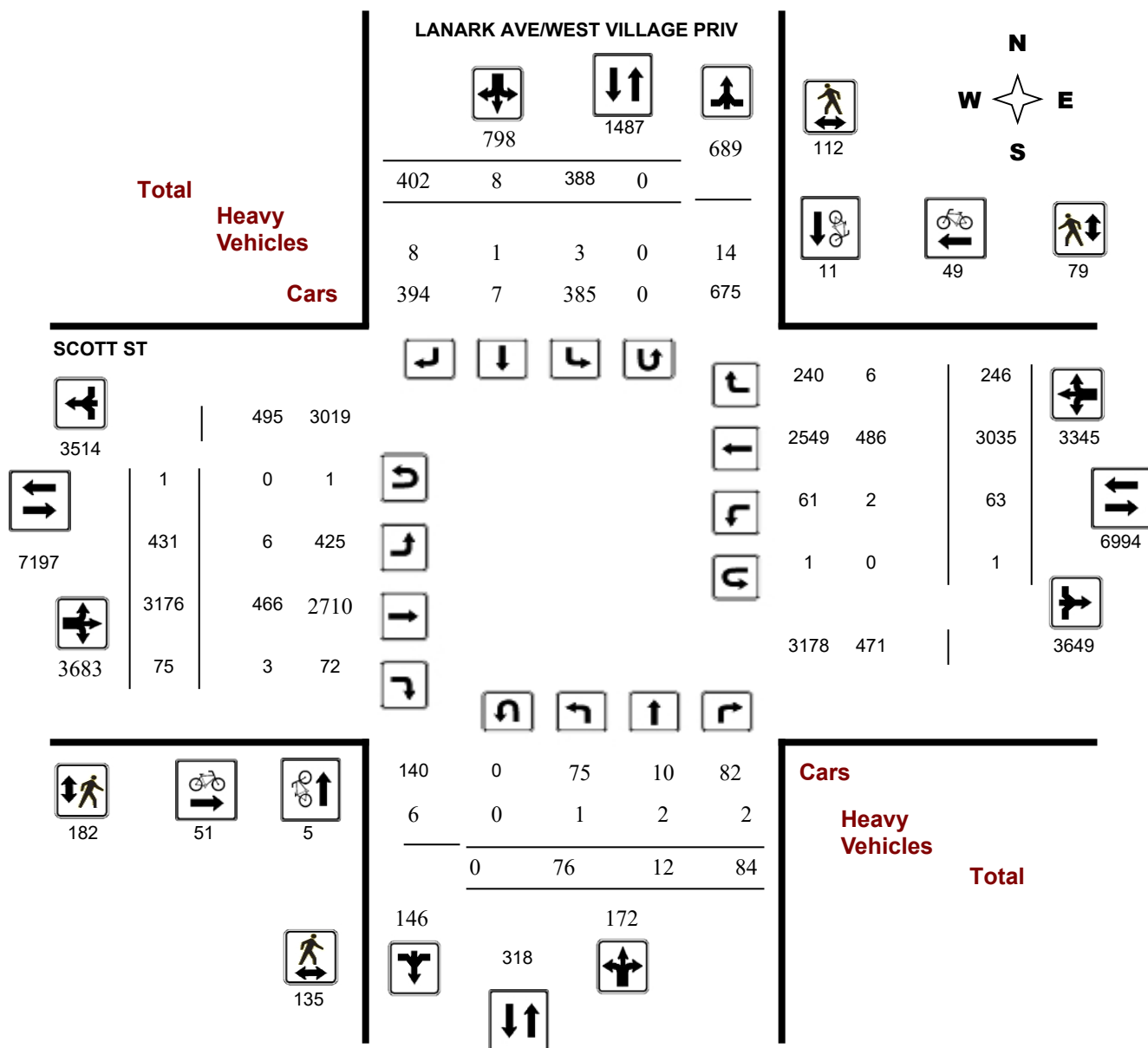
WO No:

41268

Device:

Miovision

Full Study Diagram



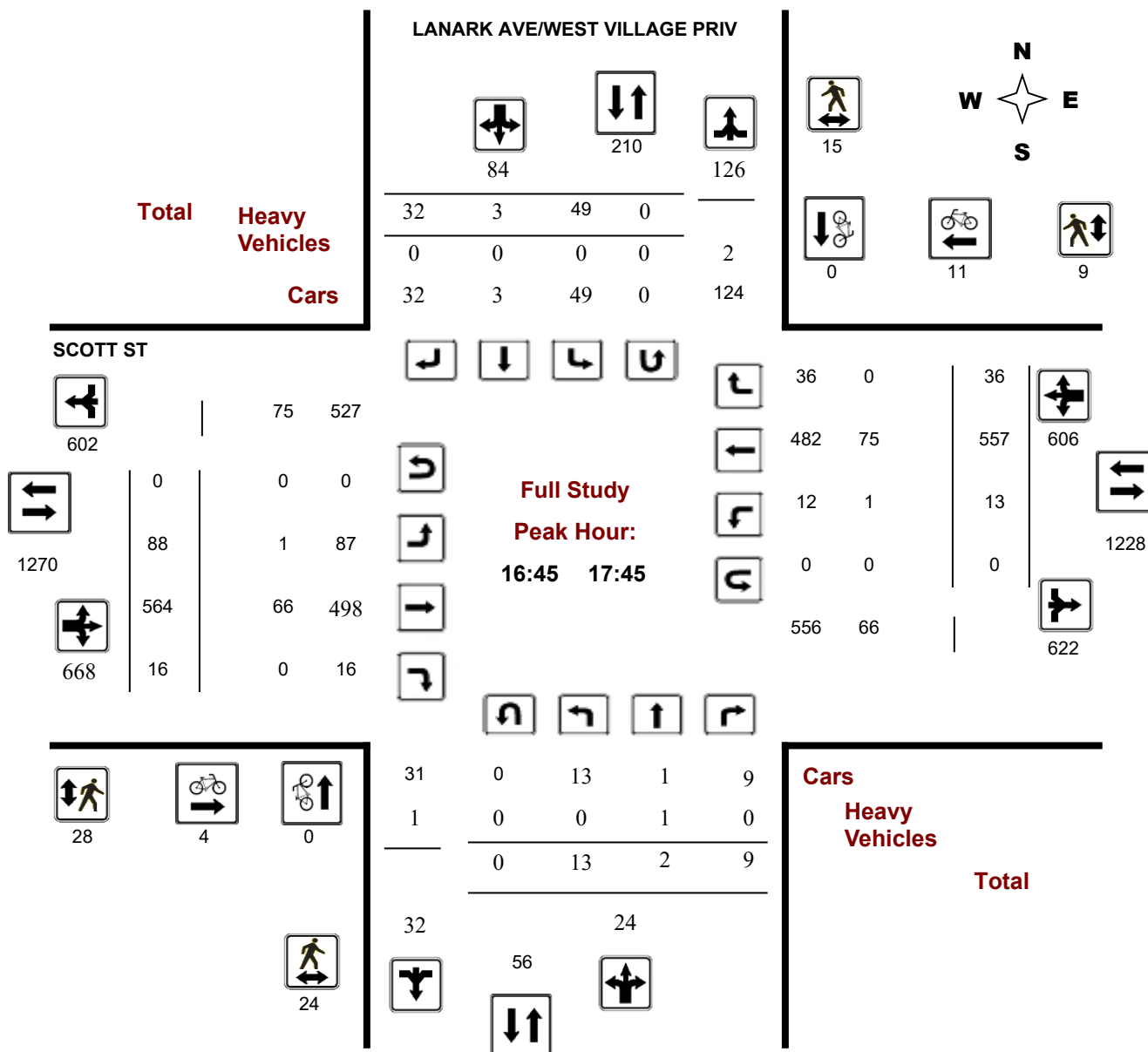
Survey Date: Thursday, November 30, 2023

WO No: 41268

Start Time: 07:00

Device: Miovision

Full Study Peak Hour Diagram



Turning Movement Count - Peak Hour Diagram

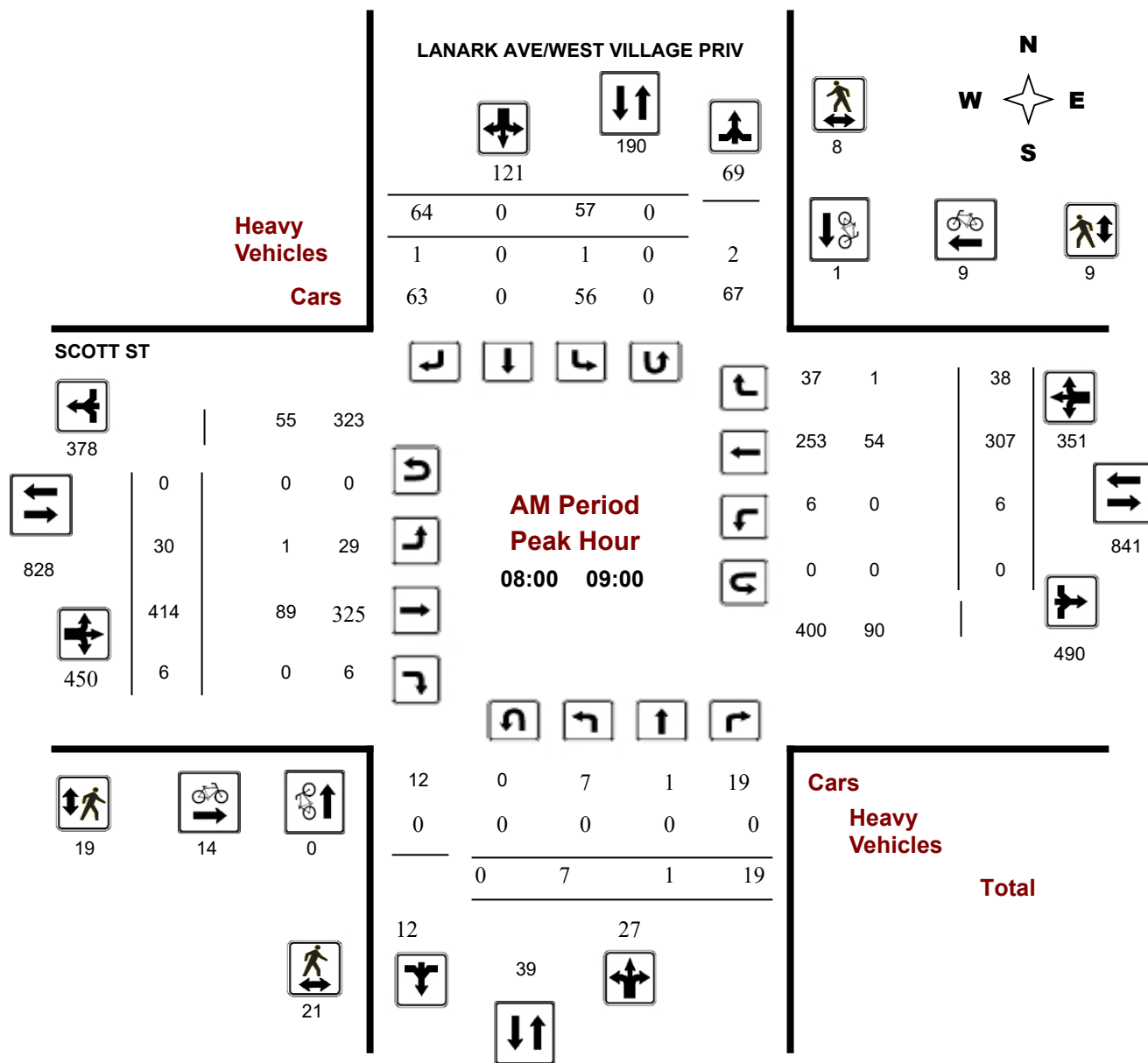
LANARK AVE/WEST VILLAGE PRIV @ SCOTT ST

Survey Date: Thursday, November 30, 2023

Start Time: 07:00

WO No: 41268

Device: Miovision



Comments

Turning Movement Count - Peak Hour Diagram

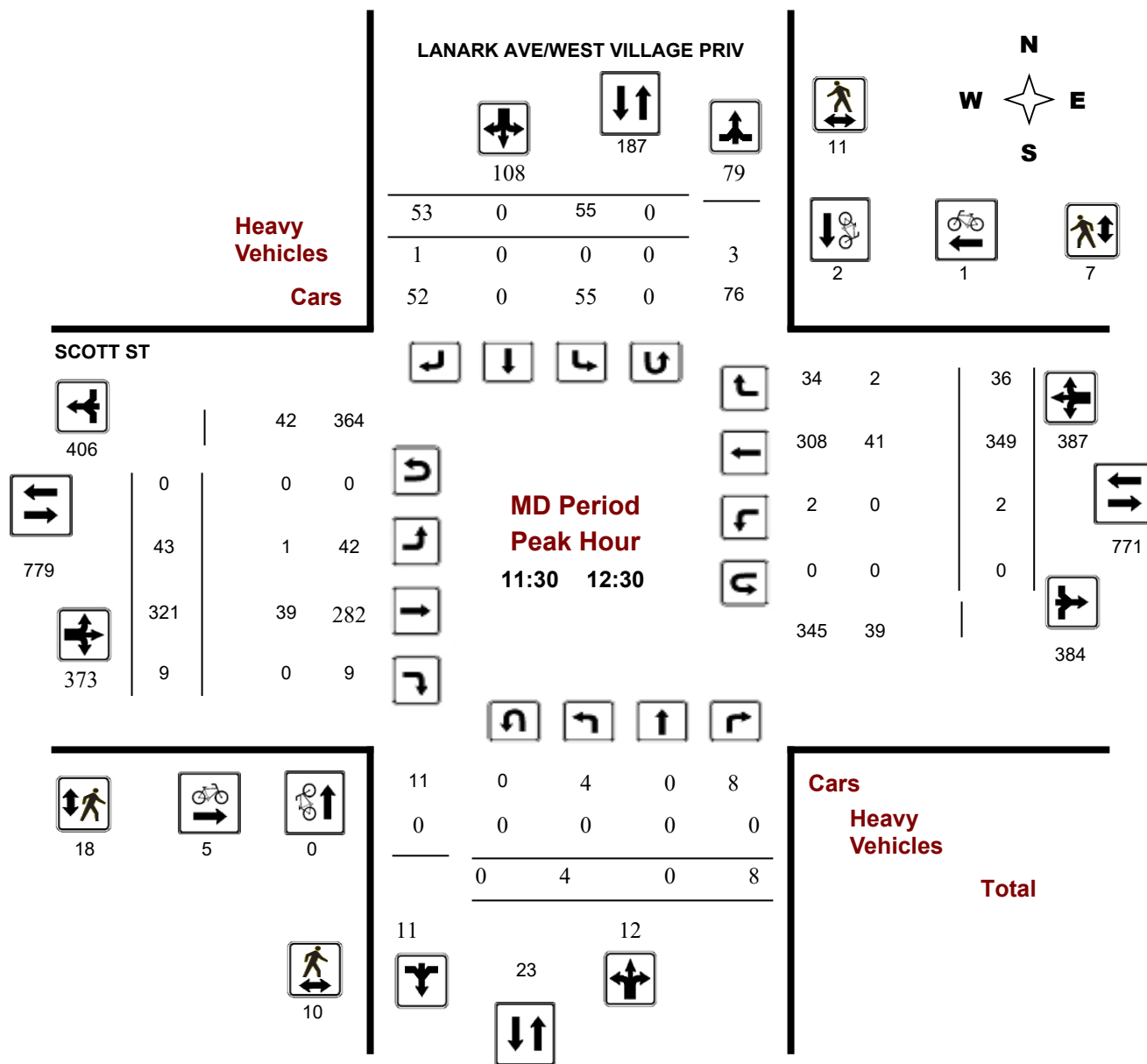
LANARK AVE/WEST VILLAGE PRIV @ SCOTT ST

Survey Date: Thursday, November 30, 2023

Start Time: 07:00

WO No: 41268

Device: Miovision



Turning Movement Count - Peak Hour Diagram

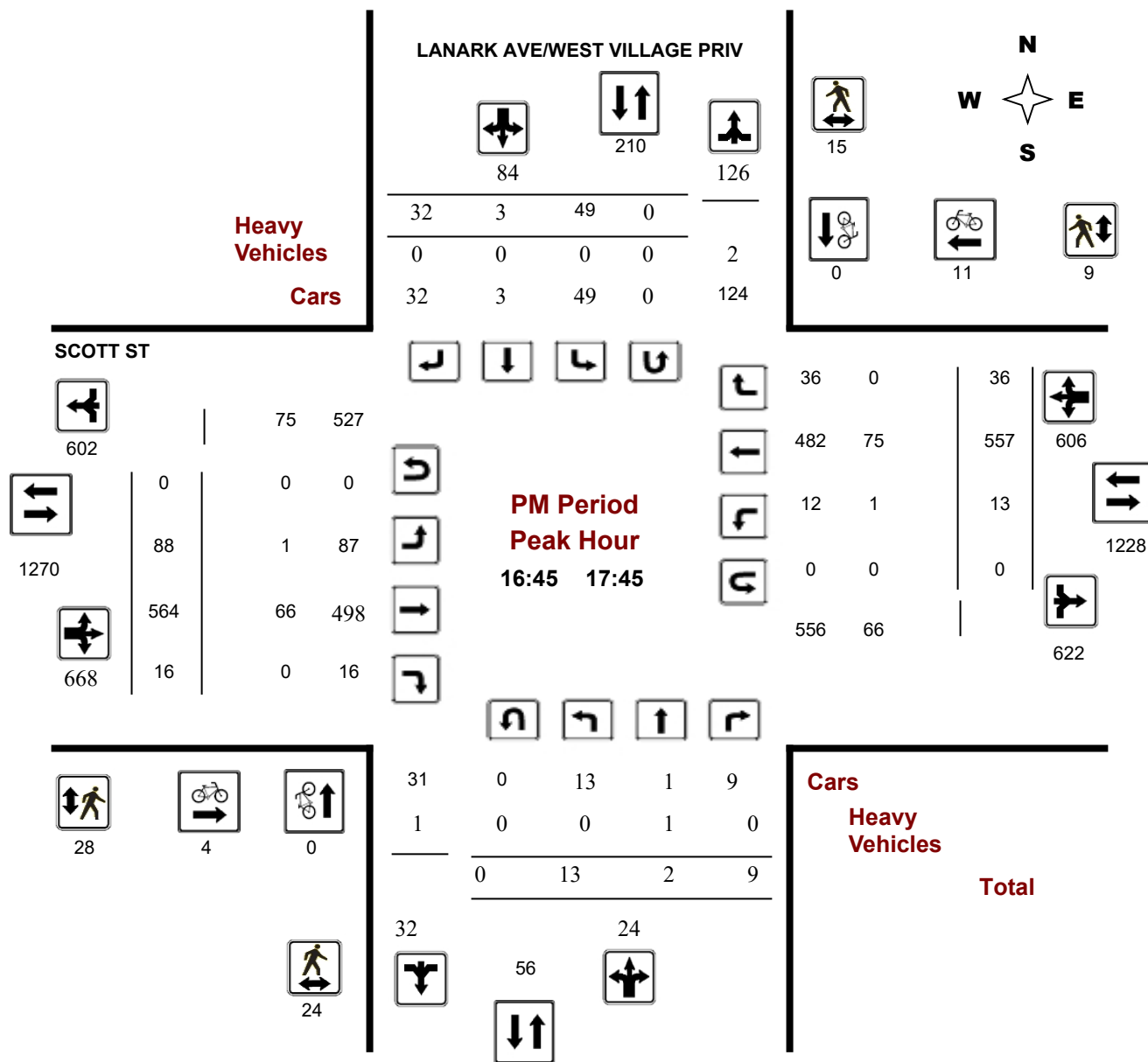
LANARK AVE/WEST VILLAGE PRIV @ SCOTT ST

Survey Date: Thursday, November 30, 2023

Start Time: 07:00

WO No: 41268

Device: Miovision





Transportation Services - Traffic Services

Turning Movement Count - Study Results

LANARK AVE/WEST VILLAGE PRIV @ SCOTT ST

Survey Date: Thursday, November 30, 2023

WO No: 41268

Start Time: 07:00

Device: Miovision

Full Study Summary (8 HR Standard)

Survey Date: Thursday, November 30, 2023

Total Observed U-Turns

AADT Factor

Northbound: 0 Southbound: 0
Eastbound: 1 Westbound: 1
.90

LANARK AVE/WEST VILLAGE PRIV

SCOTT ST

		Northbound				Southbound				Eastbound				Westbound										
Period		LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total				
07:00	08:00	11	0	10	21	50	0	71	121	142	17	283	1	301	5	249	12	266	567	709				
08:00	09:00	7	1	19	27	57	0	64	121	148	30	414	6	450	6	307	38	351	801	949				
09:00	10:00	12	0	8	20	40	0	46	86	106	27	296	5	328	9	297	19	325	653	759				
11:30	12:30	4	0	8	12	55	0	53	108	120	43	321	9	373	2	349	36	387	760	880				
12:30	13:30	4	1	4	9	36	1	47	84	93	56	329	9	394	6	292	37	335	729	822				
15:00	16:00	9	7	18	34	62	2	46	110	144	82	517	11	610	12	476	36	524	1134	1278				
16:00	17:00	11	2	11	24	49	3	35	87	111	90	478	13	581	13	540	30	583	1164	1275				
17:00	18:00	18	1	6	25	39	2	40	81	106	86	538	21	645	10	525	38	573	1218	1324				
Sub Total		76	12	84	172	388	8	402	798	970	431	3176	75	3682	63	3035	246	3344	7026	7996				
U Turns		0				0				0				1				1				2	2	
Total		76	12	84	172	388	8	402	798	970	431	3176	75	3683	63	3035	246	3345	7028	7998				
EQ 12Hr		106	17	117	239	539	11	559	1109	1348	599	4415	104	5119	88	4219	342	4650	9769	11117				
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.															1.39									
AVG 12Hr		95	15	105	215	485	13	659	998	1213	539	3974	94	4607	79	3797	308	4185	8792	10005				
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.															.90									
AVG 24Hr		124	20	138	282	635	17	863	1307	1589	706	5206	123	6035	103	4974	403	5482	11518	13107				
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.															1.31									
Note: U-Turns provided for approach totals. Refer to 'U-Turn' Report for specific breakdown.																								



Transportation Services - Traffic Services

Turning Movement Count - Study Results

LANARK AVE/WEST VILLAGE PRIV @ SCOTT ST

Survey Date: Thursday, November 30, 2023

WO No: 41268

Start Time: 07:00

Device: Miovision

Full Study 15 Minute Increments

LANARK AVE/WEST VILLAGE PRIV

SCOTT ST

Northbound

Southbound

Eastbound

Westbound

Time Period	LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00 07:15	2	0	0	2	9	0	8	17	19	4	66	0	70	0	50	1	51	121	140
07:15 07:30	1	0	3	4	11	0	20	31	35	4	64	1	69	1	49	2	52	121	156
07:30 07:45	5	0	4	9	16	0	16	32	41	5	70	0	75	1	69	7	77	152	193
07:45 08:00	3	0	3	6	14	0	27	41	47	4	83	0	87	3	81	2	86	173	220
08:00 08:15	3	0	5	8	10	0	14	24	32	7	111	1	119	0	68	12	80	199	231
08:15 08:30	0	1	4	5	16	0	17	33	38	9	117	3	129	4	68	8	80	209	247
08:30 08:45	1	0	4	5	9	0	10	19	24	7	102	2	111	0	80	12	92	203	227
08:45 09:00	3	0	6	9	22	0	23	45	54	7	84	0	91	2	91	6	99	190	244
09:00 09:15	1	0	1	2	14	0	12	26	28	12	104	2	118	5	72	7	84	202	230
09:15 09:30	3	0	3	6	9	0	12	21	27	10	74	2	86	2	85	7	94	180	207
09:30 09:45	5	0	0	5	6	0	14	20	25	4	63	1	68	0	72	2	74	142	167
09:45 10:00	3	0	4	7	11	0	8	19	26	1	55	0	56	2	68	3	73	129	155
11:30 11:45	2	0	2	4	14	0	11	25	29	9	85	4	98	0	90	10	100	198	227
11:45 12:00	1	0	3	4	13	0	12	25	29	10	80	1	91	0	105	8	113	204	233
12:00 12:15	0	0	2	2	16	0	14	30	32	11	70	2	83	2	76	8	86	169	201
12:15 12:30	1	0	1	2	12	0	16	28	30	13	86	2	101	0	78	10	88	189	219
12:30 12:45	1	1	1	3	9	1	12	22	25	15	82	2	99	3	82	7	92	191	216
12:45 13:00	1	0	0	1	13	0	10	23	24	21	84	1	106	0	75	15	90	196	220
13:00 13:15	1	0	2	3	10	0	12	22	25	11	83	2	96	2	75	9	86	182	207
13:15 13:30	1	0	1	2	4	0	13	17	19	9	80	4	93	1	60	6	67	160	179
15:00 15:15	3	2	3	8	12	1	8	21	29	19	118	1	138	4	104	9	117	255	284
15:15 15:30	1	3	5	9	19	1	17	37	46	24	121	3	148	3	123	14	141	289	335
15:30 15:45	4	2	5	11	17	0	11	28	39	17	145	3	165	2	115	5	122	287	326
15:45 16:00	1	0	5	6	14	0	10	24	30	22	133	4	159	3	134	8	145	304	334
16:00 16:15	2	0	0	2	10	0	15	25	27	19	113	4	136	3	133	8	144	280	307
16:15 16:30	4	0	3	7	12	0	7	19	26	22	125	4	152	1	128	9	138	290	316
16:30 16:45	4	0	3	7	12	2	9	23	30	29	103	2	134	4	131	5	140	274	304
16:45 17:00	1	2	5	8	15	1	4	20	28	20	137	3	160	5	148	8	161	321	349
17:00 17:15	3	0	2	5	9	0	11	20	25	20	148	1	169	3	153	4	160	329	354
17:15 17:30	6	0	2	8	12	2	10	24	32	26	148	6	180	2	136	16	154	334	366
17:30 17:45	3	0	0	3	13	0	7	20	23	22	131	6	159	3	120	8	131	290	313
17:45 18:00	6	1	2	9	5	0	12	17	26	18	111	8	137	2	116	10	128	265	291
Total:	76	12	84	172	388	8	402	798	970	431	3176	75	3683	63	3035	246	3345	7028	7,998

Note: U-Turns are included in Totals.



Transportation Services - Traffic Services

Turning Movement Count - Study Results

LANARK AVE/WEST VILLAGE PRIV @ SCOTT ST

Survey Date: Thursday, November 30, 2023

WO No: 41268

Start Time: 07:00

Device: Miovision

Full Study Cyclist Volume

LANARK AVE/WEST VILLAGE PRIV

SCOTT ST

Time Period	Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00 07:15	0	0	0	1	0	1	1
07:15 07:30	0	0	0	2	0	2	2
07:30 07:45	0	0	0	1	2	3	3
07:45 08:00	0	2	2	3	0	3	5
08:00 08:15	0	0	0	1	1	2	2
08:15 08:30	0	0	0	4	3	7	7
08:30 08:45	0	0	0	7	4	11	11
08:45 09:00	0	1	1	2	1	3	4
09:00 09:15	0	0	0	1	0	1	1
09:15 09:30	0	0	0	0	1	1	1
09:30 09:45	0	0	0	0	0	0	0
09:45 10:00	0	0	0	2	1	3	3
11:30 11:45	0	1	1	2	0	2	3
11:45 12:00	0	1	1	3	0	3	4
12:00 12:15	0	0	0	0	0	0	0
12:15 12:30	0	0	0	0	1	1	1
12:30 12:45	0	1	1	1	2	3	4
12:45 13:00	0	0	0	0	0	0	0
13:00 13:15	1	0	1	1	2	3	4
13:15 13:30	0	0	0	2	0	2	2
15:00 15:15	0	1	1	4	2	6	7
15:15 15:30	3	0	3	1	1	2	5
15:30 15:45	0	1	1	2	2	4	5
15:45 16:00	0	0	0	2	1	3	3
16:00 16:15	0	0	0	0	3	3	3
16:15 16:30	1	2	3	2	4	6	9
16:30 16:45	0	0	0	2	3	5	5
16:45 17:00	0	0	0	3	1	4	4
17:00 17:15	0	0	0	1	4	5	5
17:15 17:30	0	0	0	0	2	2	2
17:30 17:45	0	0	0	0	4	4	4
17:45 18:00	0	1	1	1	4	5	6
Total	5	11	16	51	49	100	116



Transportation Services - Traffic Services

Turning Movement Count - Study Results

LANARK AVE/WEST VILLAGE PRIV @ SCOTT ST

Survey Date: Thursday, November 30, 2023

WO No: 41268

Start Time: 07:00

Device: Miovision

Full Study Pedestrian Volume

LANARK AVE/WEST VILLAGE PRIV

SCOTT ST

Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00 07:15	1	1	2	0	0	0	2
07:15 07:30	2	4	6	2	1	3	9
07:30 07:45	4	6	10	5	0	5	15
07:45 08:00	6	4	10	7	6	13	23
08:00 08:15	6	2	8	1	6	7	15
08:15 08:30	4	3	7	9	2	11	18
08:30 08:45	4	3	7	2	1	3	10
08:45 09:00	7	0	7	7	0	7	14
09:00 09:15	2	2	4	1	1	2	6
09:15 09:30	5	0	5	3	3	6	11
09:30 09:45	4	1	5	4	2	6	11
09:45 10:00	2	1	3	5	0	5	8
11:30 11:45	1	3	4	4	3	7	11
11:45 12:00	0	3	3	6	0	6	9
12:00 12:15	4	4	8	3	1	4	12
12:15 12:30	5	1	6	5	3	8	14
12:30 12:45	2	4	6	6	3	9	15
12:45 13:00	4	5	9	9	3	12	21
13:00 13:15	3	5	8	7	0	7	15
13:15 13:30	5	5	10	13	1	14	24
15:00 15:15	5	2	7	5	7	12	19
15:15 15:30	3	3	6	5	0	5	11
15:30 15:45	6	4	10	10	8	18	28
15:45 16:00	5	4	9	7	6	13	22
16:00 16:15	3	8	11	5	6	11	22
16:15 16:30	10	3	13	8	3	11	24
16:30 16:45	3	10	13	11	3	14	27
16:45 17:00	6	4	10	14	1	15	25
17:00 17:15	3	3	6	2	2	4	10
17:15 17:30	11	5	16	7	4	11	27
17:30 17:45	4	3	7	5	2	7	14
17:45 18:00	5	6	11	4	1	5	16
Total	135	112	247	182	79	261	508



Transportation Services - Traffic Services

Turning Movement Count - Study Results

LANARK AVE/WEST VILLAGE PRIV @ SCOTT ST

Survey Date: Thursday, November 30, 2023

WO No: 41268

Start Time: 07:00

Device: Miovision

Full Study Heavy Vehicles

LANARK AVE/WEST VILLAGE PRIV

SCOTT ST

		Northbound			N TOT	Southbound			S TOT	STR TOT	Eastbound			E TOT	Westbound			W TOT	STR TOT	Grand Total
Time Period		LT	ST	RT		LT	ST	RT			LT	ST	RT		LT	ST	RT			
07:00	07:15	0	0	0	0	0	0	0	1	1	1	26	0	44	0	17	0	43	87	44
07:15	07:30	0	0	0	0	0	0	0	0	0	0	22	0	34	0	12	0	34	68	34
07:30	07:45	0	0	0	0	0	0	0	0	0	0	20	0	38	0	18	0	38	76	38
07:45	08:00	0	0	0	0	0	0	0	0	0	0	17	0	37	0	20	0	37	74	37
08:00	08:15	0	0	0	0	0	0	0	1	1	0	19	0	32	0	13	1	33	65	33
08:15	08:30	0	0	0	0	1	0	1	2	2	0	28	0	46	0	17	0	46	92	47
08:30	08:45	0	0	0	0	0	0	0	1	1	1	19	0	30	0	10	0	29	59	30
08:45	09:00	0	0	0	0	0	0	0	0	0	0	23	0	37	0	14	0	37	74	37
09:00	09:15	0	0	0	0	0	0	1	1	1	0	23	0	34	0	10	0	33	67	34
09:15	09:30	0	0	0	0	0	0	0	0	0	0	13	0	28	0	15	0	28	56	28
09:30	09:45	0	0	0	0	0	0	0	0	0	0	11	0	26	0	15	0	26	52	26
09:45	10:00	0	0	0	0	0	0	0	0	0	0	10	0	22	0	12	0	22	44	22
11:30	11:45	0	0	0	0	0	0	0	1	1	0	11	0	21	0	10	1	22	43	22
11:45	12:00	0	0	0	0	0	0	0	0	0	0	9	0	25	0	16	0	25	50	25
12:00	12:15	0	0	0	0	0	0	0	1	1	1	9	0	18	0	8	0	17	35	18
12:15	12:30	0	0	0	0	0	0	1	2	2	0	10	0	18	0	7	1	18	36	19
12:30	12:45	0	0	1	2	0	1	1	2	4	0	7	0	17	0	9	0	17	34	19
12:45	13:00	0	0	0	0	0	0	1	1	1	0	11	0	22	0	10	0	21	43	22
13:00	13:15	0	0	0	0	0	0	1	3	3	1	8	0	22	0	12	1	21	43	23
13:15	13:30	0	0	0	0	0	0	0	0	0	0	14	0	19	0	5	0	19	38	19
15:00	15:15	0	0	0	2	1	0	0	2	4	1	4	1	23	1	17	0	23	46	25
15:15	15:30	0	1	0	1	1	0	0	2	3	0	2	0	17	0	15	0	18	35	19
15:30	15:45	0	0	0	0	0	0	0	0	0	0	13	0	39	0	26	0	39	78	39
15:45	16:00	0	0	0	0	0	0	0	0	0	0	17	0	39	0	22	0	39	78	39
16:00	16:15	0	0	0	0	0	0	1	2	2	0	17	0	40	0	22	1	40	80	41
16:15	16:30	1	0	0	2	0	0	0	0	2	0	14	1	31	0	15	0	29	60	31
16:30	16:45	0	0	0	0	0	0	1	1	1	0	10	0	37	0	26	0	36	73	37
16:45	17:00	0	1	0	1	0	0	0	1	2	0	17	0	33	0	16	0	33	66	34
17:00	17:15	0	0	0	0	0	0	0	0	0	0	18	0	39	0	21	0	39	78	39
17:15	17:30	0	0	0	0	0	0	0	1	1	1	15	0	38	0	22	0	37	75	38
17:30	17:45	0	0	0	1	0	0	0	0	1	0	16	0	32	1	16	0	33	65	33
17:45	18:00	0	0	1	2	0	0	0	1	3	0	13	1	32	0	18	1	33	65	34
Total:	None	1	2	2	11	3	1	8	26	37	6	466	3	970	2	486	6	965	1935	986



Transportation Services - Traffic Services

Turning Movement Count - Study Results

LANARK AVE/WEST VILLAGE PRIV @ SCOTT ST

Survey Date: Thursday, November 30, 2023

WO No: 41268

Start Time: 07:00

Device: Miovision

Full Study 15 Minute U-Turn Total

LANARK AVE/WEST VILLAGE PRIV

SCOTT ST

Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	0	0	0
07:15	07:30	0	0	0	0	0
07:30	07:45	0	0	0	0	0
07:45	08:00	0	0	0	0	0
08:00	08:15	0	0	0	0	0
08:15	08:30	0	0	0	0	0
08:30	08:45	0	0	0	0	0
08:45	09:00	0	0	0	0	0
09:00	09:15	0	0	0	0	0
09:15	09:30	0	0	0	0	0
09:30	09:45	0	0	0	0	0
09:45	10:00	0	0	0	0	0
11:30	11:45	0	0	0	0	0
11:45	12:00	0	0	0	0	0
12:00	12:15	0	0	0	0	0
12:15	12:30	0	0	0	0	0
12:30	12:45	0	0	0	0	0
12:45	13:00	0	0	0	0	0
13:00	13:15	0	0	0	0	0
13:15	13:30	0	0	0	0	0
15:00	15:15	0	0	0	0	0
15:15	15:30	0	0	0	1	1
15:30	15:45	0	0	0	0	0
15:45	16:00	0	0	0	0	0
16:00	16:15	0	0	0	0	0
16:15	16:30	0	0	1	0	1
16:30	16:45	0	0	0	0	0
16:45	17:00	0	0	0	0	0
17:00	17:15	0	0	0	0	0
17:15	17:30	0	0	0	0	0
17:30	17:45	0	0	0	0	0
17:45	18:00	0	0	0	0	0
Total		0	0	1	1	2

Survey Date: Thursday, January 23, 2020

Start Time: 07:00

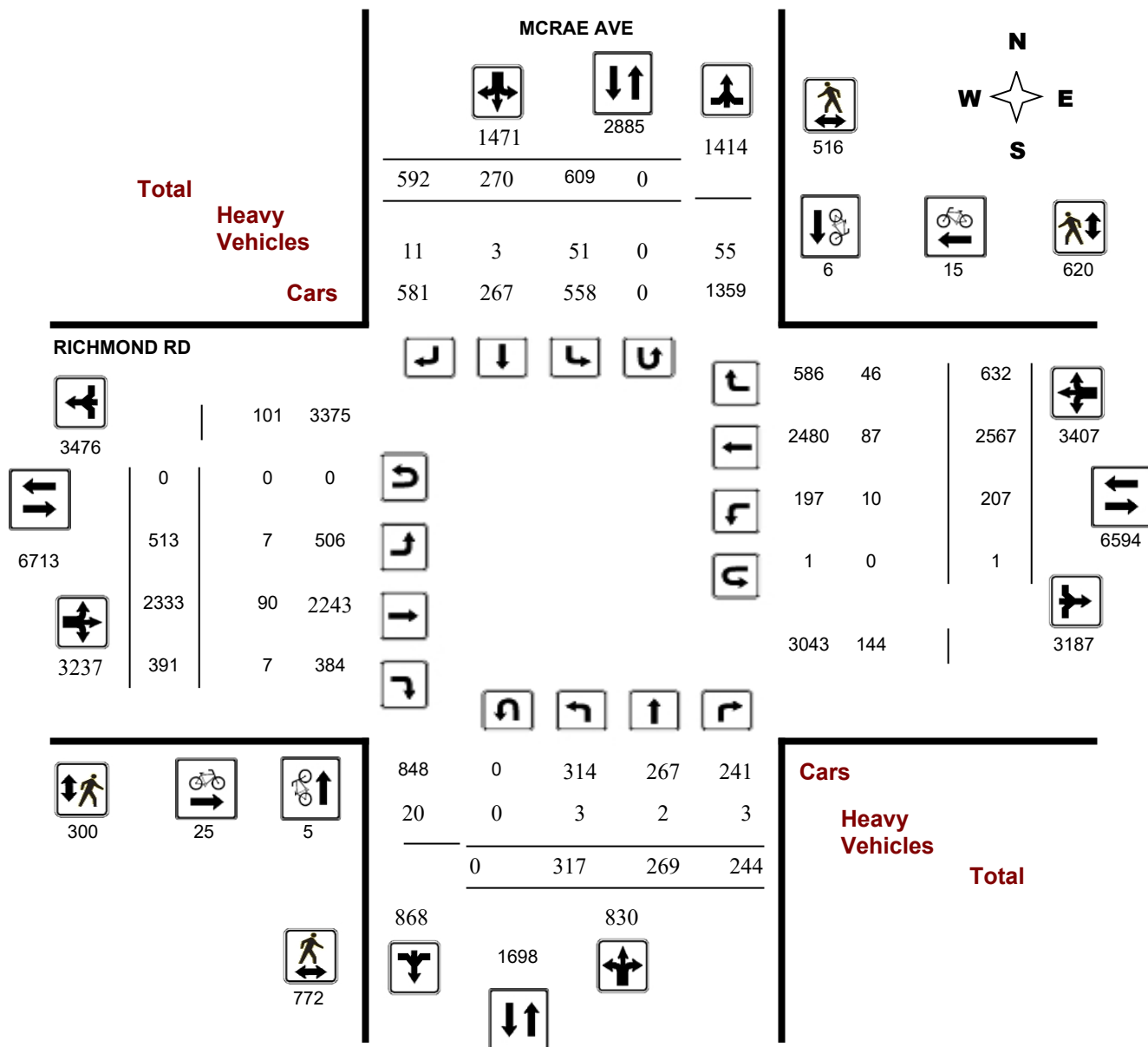
WO No:

39388

Device:

Miovision

Full Study Diagram



5472206 - THU JAN 23, 2020 - 8HRS - LORETTA

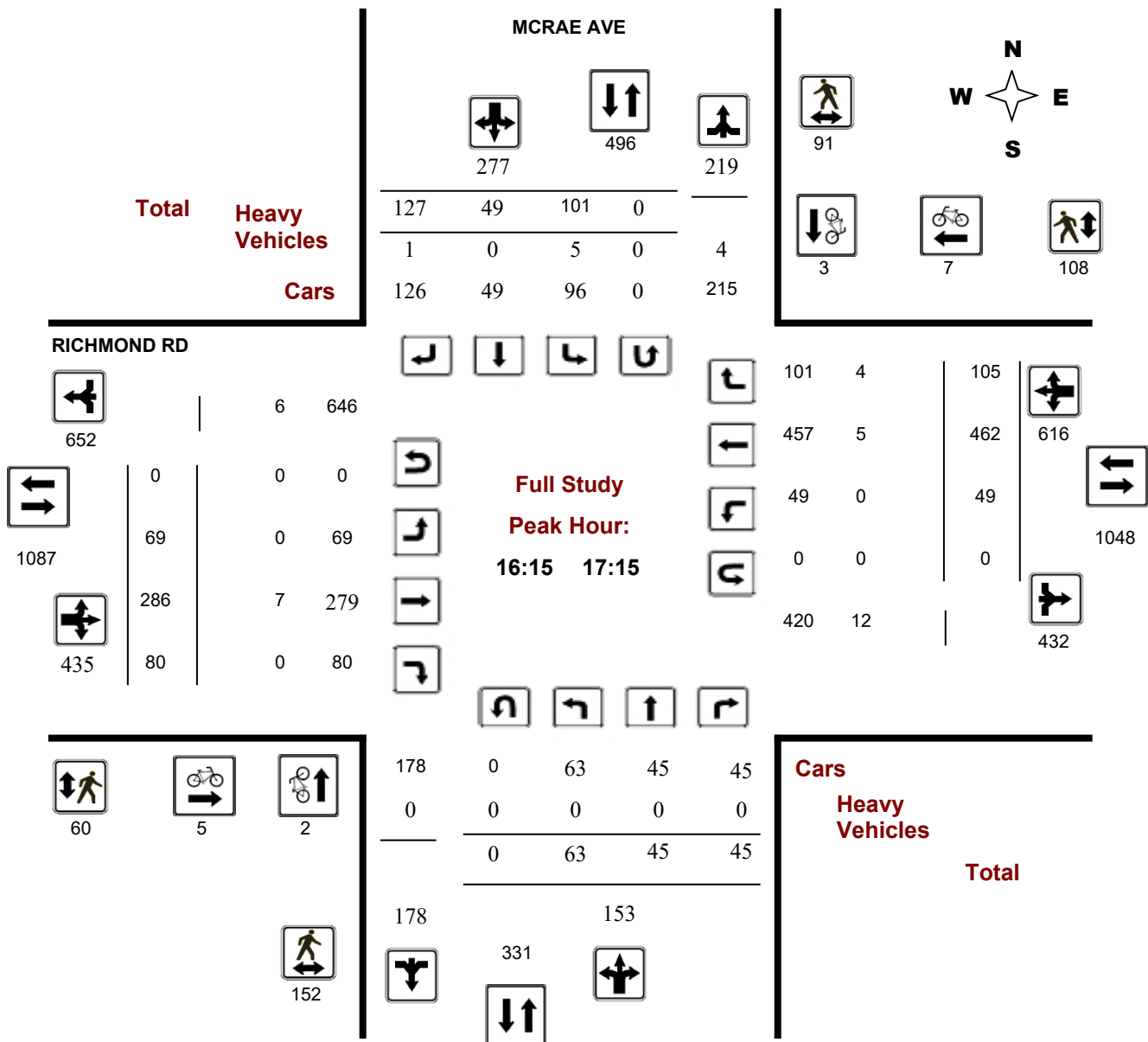
Survey Date: Thursday, January 23, 2020

WO No: 39388

Start Time: 07:00

Device: Miovision

Full Study Peak Hour Diagram



5472206 - THU JAN 23, 2020 - 8HRS - LORETTA



Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

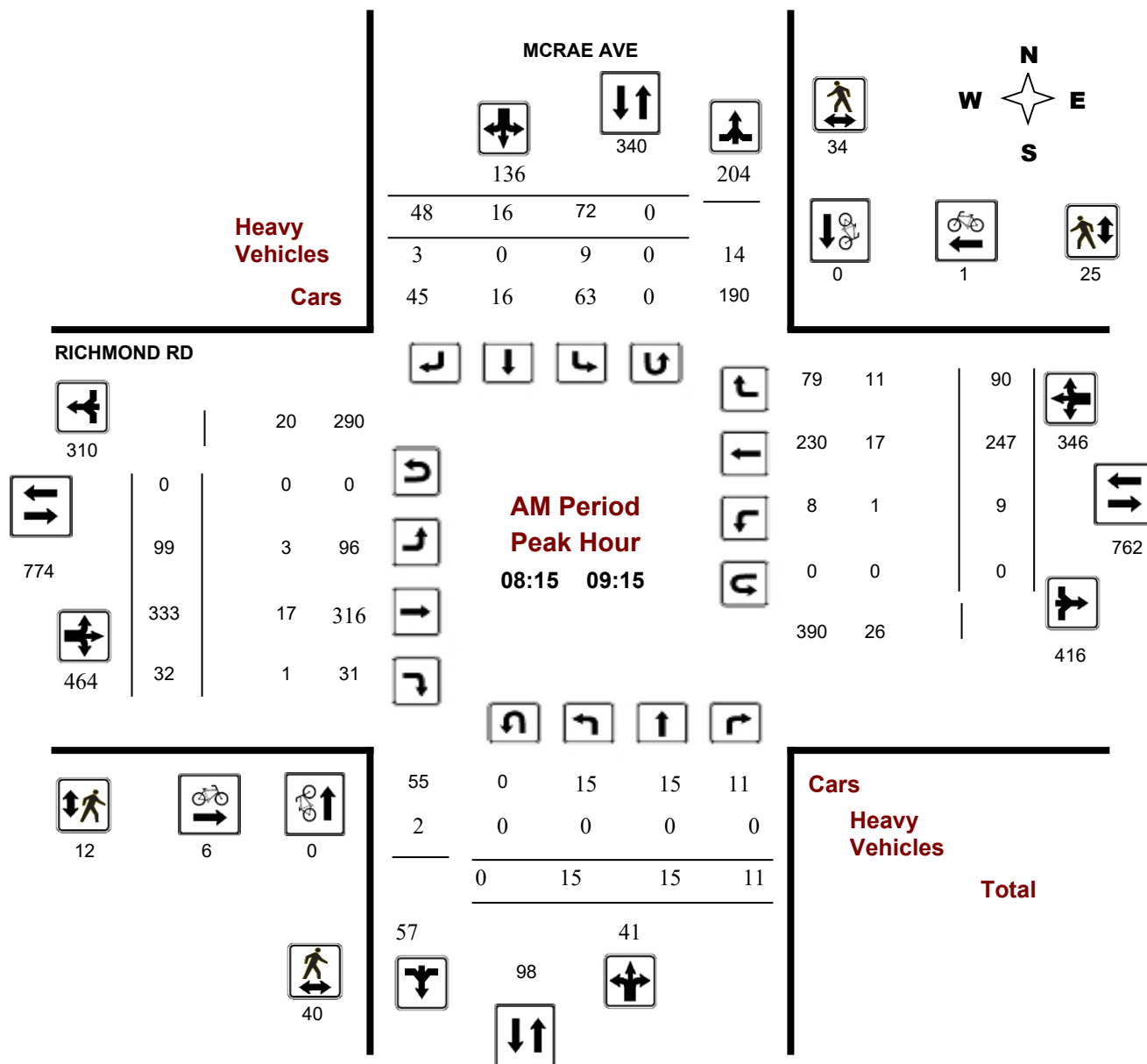
MCRAE AVE @ RICHMOND RD

Survey Date: Thursday, January 23, 2020

Start Time: 07:00

WO No: 39388

Device: Miovision



Turning Movement Count - Peak Hour Diagram

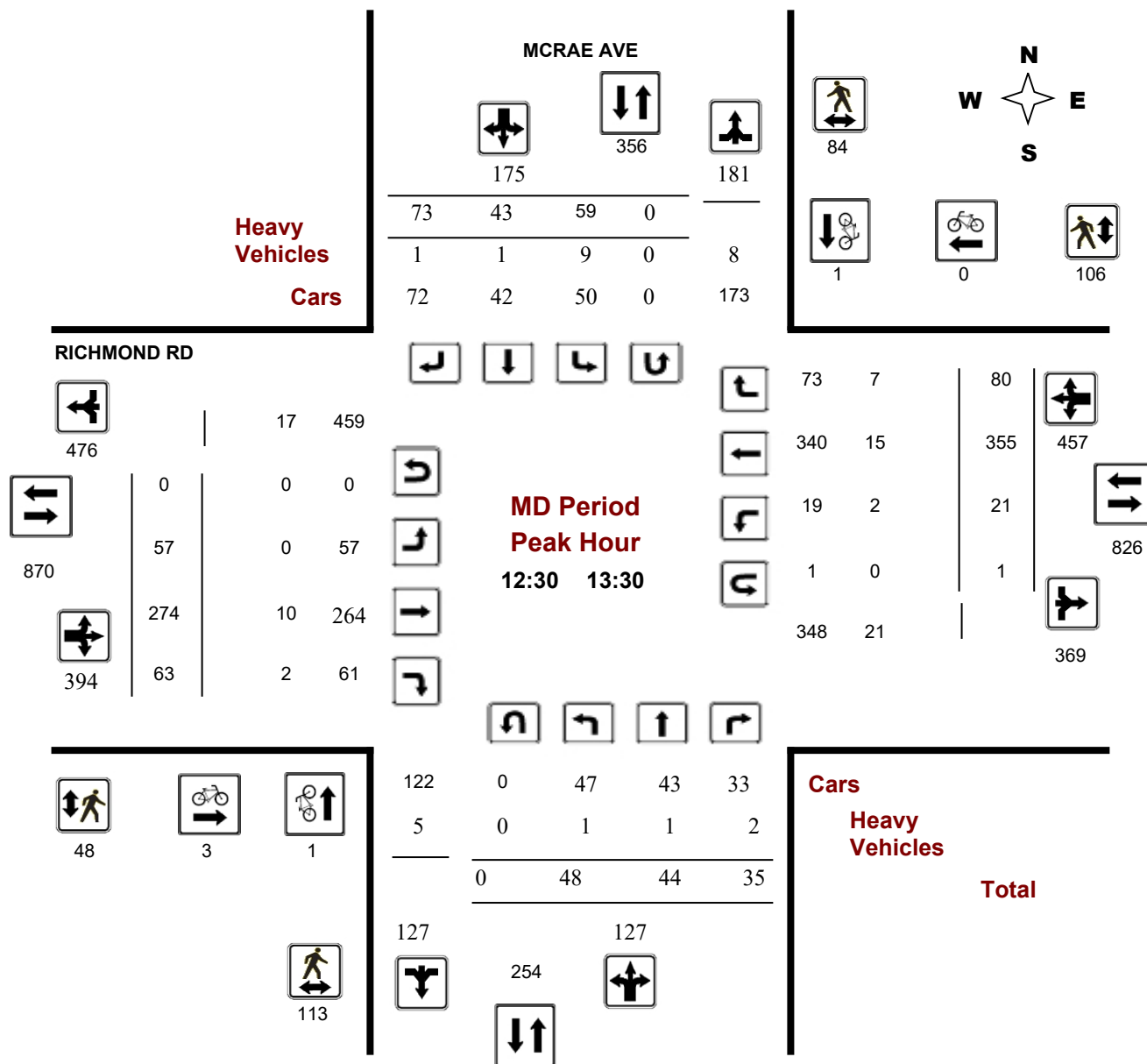
MCRAE AVE @ RICHMOND RD

Survey Date: Thursday, January 23, 2020

Start Time: 07:00

WO No: 39388

Device: Miovision



Turning Movement Count - Peak Hour Diagram

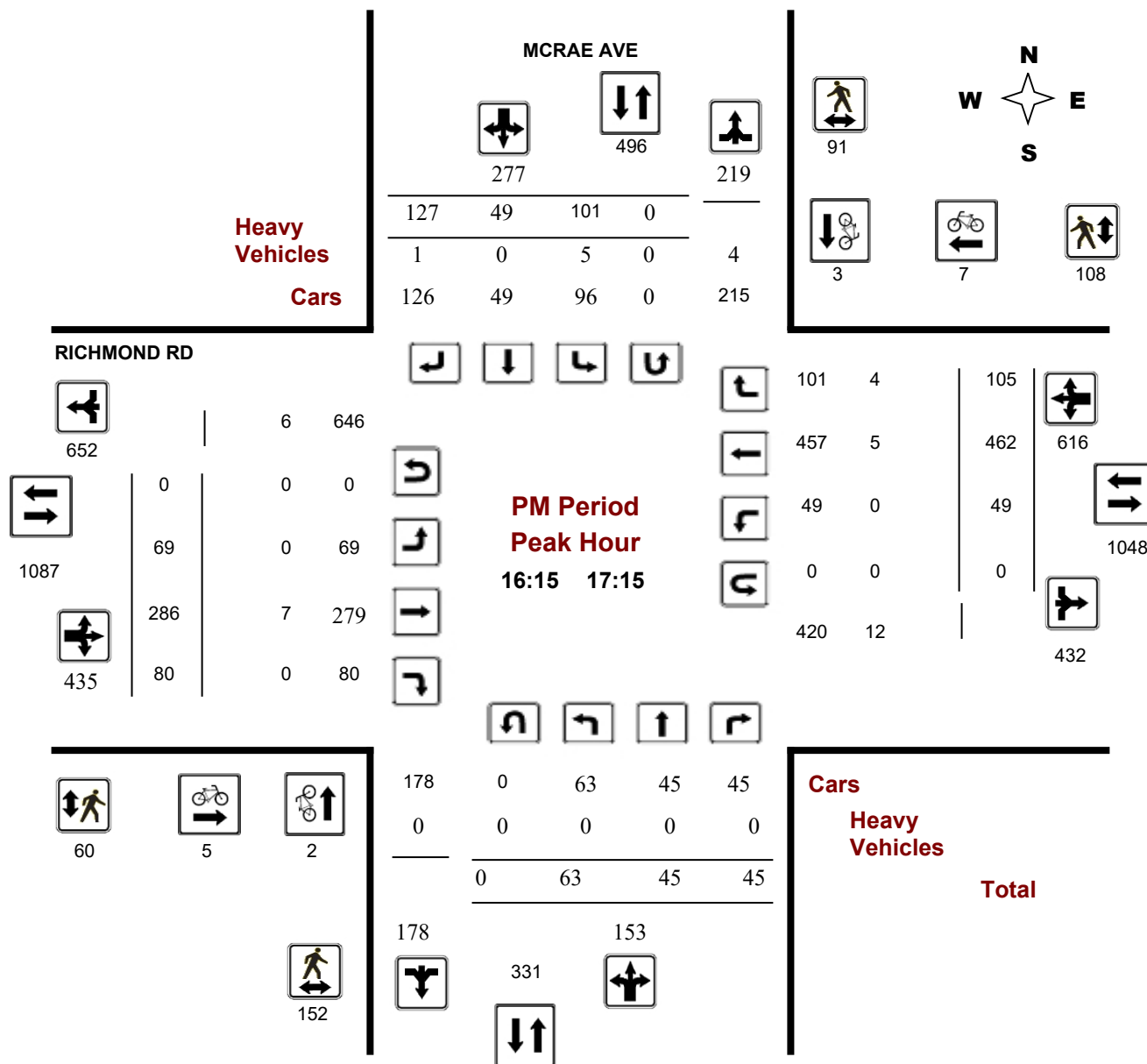
MCRAE AVE @ RICHMOND RD

Survey Date: Thursday, January 23, 2020

Start Time: 07:00

WO No: 39388

Device: Miovision



Comments 5472206 - THU JAN 23, 2020 - 8HRS - LORETTA



Transportation Services - Traffic Services

Turning Movement Count - Study Results

MCRAE AVE @ RICHMOND RD

Survey Date: Thursday, January 23, 2020

WO No: 39388

Start Time: 07:00

Device: Miovision

Full Study Summary (8 HR Standard)

Survey Date: Thursday, January 23, 2020

Total Observed U-Turns

AADT Factor

Northbound: 0 Southbound: 0

1.00

Eastbound: 0 Westbound: 1

MCRAE AVE

RICHMOND RD

		Northbound				Southbound				Eastbound				Westbound							
Period		LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT	Grand Total	
07:00	08:00	4	4	11	19	63	8	29	100	119	74	293	14	381	7	169	60	236	617	736	
08:00	09:00	13	11	13	37	76	11	40	127	164	98	333	28	459	9	249	93	351	810	974	
09:00	10:00	31	21	12	64	50	25	56	131	195	59	291	39	389	14	216	72	302	691	886	
11:30	12:30	47	47	36	130	62	34	77	173	303	46	298	61	405	27	328	59	414	819	1122	
12:30	13:30	48	44	35	127	59	43	73	175	302	57	274	63	394	21	355	80	456	850	1152	
15:00	16:00	59	45	36	140	98	45	84	227	367	49	300	49	398	32	383	68	483	881	1248	
16:00	17:00	53	48	45	146	95	40	123	258	404	62	267	64	393	39	452	114	605	998	1402	
17:00	18:00	62	49	56	167	106	64	110	280	447	68	277	73	418	58	415	86	559	977	1424	
Sub Total		317	269	244	830	609	270	592	1471	2301	513	2333	391	3237	207	2567	632	3406	6643	8944	
U Turns		0			0	0			0	0	0			0	1			1	1	1	
Total		317	269	244	830	609	270	592	1471	2301	513	2333	391	3237	208	2567	632	3407	6644	8945	
EQ 12Hr		441	374	339	1154	847	375	823	2045	3199	713	3243	543	4499	289	3568	878	4735	9234	12433	
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.															1.39						
AVG 12Hr		441	374	339	1154	847	375	823	2045	3199	713	3243	543	4499	289	3568	878	4735	9234	12433	
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.															1.00						
AVG 24Hr		578	490	444	1512	1110	491	1078	2679	4191	934	4248	711	5893	379	4674	1150	6203	12096	16287	

Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor. **1.31**

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



Transportation Services - Traffic Services

Turning Movement Count - Study Results

MCRAE AVE @ RICHMOND RD

Survey Date: Thursday, January 23, 2020

WO No: 39388

Start Time: 07:00

Device: Miovision

Full Study 15 Minute Increments

MCRAE AVE

RICHMOND RD

Northbound

Southbound

Eastbound

Westbound

Time Period	LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total	
07:00	07:15	0	2	4	6	16	1	4	21	27	13	61	0	74	2	41	7	50	124	151
07:15	07:30	1	1	2	4	14	2	3	19	23	19	71	5	95	2	42	18	62	157	180
07:30	07:45	1	1	0	2	15	2	11	28	30	19	77	2	98	2	31	12	45	143	173
07:45	08:00	2	0	5	7	18	3	11	32	39	23	84	7	114	1	55	23	79	193	232
08:00	08:15	3	2	3	8	21	1	10	32	40	17	88	3	108	4	56	25	85	193	233
08:15	08:30	2	3	5	10	14	1	8	23	33	22	87	11	120	1	65	24	90	210	243
08:30	08:45	4	2	2	8	29	2	11	42	50	22	82	4	108	2	62	24	88	196	246
08:45	09:00	4	4	3	11	12	7	11	30	41	37	76	10	123	2	66	20	88	211	252
09:00	09:15	5	6	1	12	17	6	18	41	53	18	88	7	113	4	54	22	80	193	246
09:15	09:30	7	4	1	12	11	5	7	23	35	19	69	12	100	1	53	13	67	167	202
09:30	09:45	9	6	5	20	12	6	19	37	57	7	66	10	83	6	60	19	85	168	225
09:45	10:00	10	5	5	20	10	8	12	30	50	15	68	10	93	3	49	18	70	163	213
11:30	11:45	14	8	10	32	14	14	19	47	79	12	72	20	104	3	79	18	100	204	283
11:45	12:00	8	9	10	27	11	6	19	36	63	8	92	11	111	2	90	13	105	216	279
12:00	12:15	12	15	7	34	19	5	15	39	73	12	70	14	96	12	85	17	114	210	283
12:15	12:30	13	15	9	37	18	9	24	51	88	14	64	16	94	10	74	11	95	189	277
12:30	12:45	8	10	7	25	11	11	24	46	71	19	53	19	91	5	84	24	113	204	275
12:45	13:00	15	14	7	36	12	13	13	38	74	15	71	13	99	9	92	14	115	214	288
13:00	13:15	10	12	11	33	18	7	14	39	72	8	74	19	101	5	87	24	116	217	289
13:15	13:30	15	8	10	33	18	12	22	52	85	15	76	12	103	3	92	18	113	216	301
15:00	15:15	14	6	8	28	27	12	16	55	83	14	82	12	108	8	95	13	116	224	307
15:15	15:30	22	11	10	43	20	15	18	53	96	9	82	13	104	7	81	12	100	204	300
15:30	15:45	13	17	11	41	21	7	29	57	98	12	65	7	84	5	102	14	121	205	303
15:45	16:00	10	11	7	28	30	11	21	62	90	14	71	17	102	12	105	29	146	248	338
16:00	16:15	7	12	13	32	30	9	25	64	96	18	56	8	82	12	99	32	143	225	321
16:15	16:30	12	11	12	35	20	13	30	63	98	15	74	20	109	11	131	30	172	281	379
16:30	16:45	19	13	11	43	23	9	35	67	110	16	76	16	108	9	113	29	151	259	369
16:45	17:00	15	12	9	36	22	9	33	64	100	13	61	20	94	7	109	23	139	233	333
17:00	17:15	17	9	13	39	36	18	29	83	122	25	75	24	124	22	109	23	154	278	400
17:15	17:30	14	11	14	39	28	20	28	76	115	7	52	17	76	8	110	20	138	214	329
17:30	17:45	9	14	17	40	20	13	19	52	92	15	68	13	96	18	105	23	146	242	334
17:45	18:00	22	15	12	49	22	13	34	69	118	21	82	19	122	10	91	20	121	243	361
Total:		317	269	244	830	609	270	592	1471	2301	513	2333	391	3237	208	2567	632	3407	2301	8,945

Note: U-Turns are included in Totals.



Transportation Services - Traffic Services

Turning Movement Count - Study Results

MCRAE AVE @ RICHMOND RD

Survey Date: Thursday, January 23, 2020

WO No: 39388

Start Time: 07:00

Device: Miovision

Full Study Cyclist Volume

		MCRAE AVE			RICHMOND RD			Grand Total
Time Period		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	
07:00	07:15	0	0	0	0	0	0	0
07:15	07:30	0	0	0	2	0	2	2
07:30	07:45	0	0	0	0	0	0	0
07:45	08:00	0	0	0	2	0	2	2
08:00	08:15	0	0	0	1	2	3	3
08:15	08:30	0	0	0	0	0	0	0
08:30	08:45	0	0	0	3	1	4	4
08:45	09:00	0	0	0	1	0	1	1
09:00	09:15	0	0	0	2	0	2	2
09:15	09:30	0	0	0	0	1	1	1
09:30	09:45	0	0	0	1	1	2	2
09:45	10:00	0	0	0	0	1	1	1
11:30	11:45	0	0	0	0	0	0	0
11:45	12:00	0	0	0	0	0	0	0
12:00	12:15	0	0	0	0	0	0	0
12:15	12:30	0	0	0	1	0	1	1
12:30	12:45	1	0	1	0	0	0	1
12:45	13:00	0	0	0	2	0	2	2
13:00	13:15	0	1	1	1	0	1	2
13:15	13:30	0	0	0	0	0	0	0
15:00	15:15	0	0	0	1	0	1	1
15:15	15:30	0	0	0	1	0	1	1
15:30	15:45	0	0	0	1	2	3	3
15:45	16:00	0	0	0	1	0	1	1
16:00	16:15	2	0	2	0	0	0	2
16:15	16:30	0	0	0	0	2	2	2
16:30	16:45	0	2	2	1	1	2	4
16:45	17:00	2	1	3	4	1	5	8
17:00	17:15	0	0	0	0	3	3	3
17:15	17:30	0	0	0	0	0	0	0
17:30	17:45	0	2	2	0	0	0	2
17:45	18:00	0	0	0	0	0	0	0
Total		5	6	11	25	15	40	51



Transportation Services - Traffic Services

Turning Movement Count - Study Results

MCRAE AVE @ RICHMOND RD

Survey Date: Thursday, January 23, 2020

WO No: 39388

Start Time: 07:00

Device: Miovision

Full Study Pedestrian Volume

MCRAE AVE

RICHMOND RD

Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00 07:15	7	3	10	2	0	2	12
07:15 07:30	6	5	11	1	4	5	16
07:30 07:45	7	8	15	2	5	7	22
07:45 08:00	29	11	40	5	11	16	56
08:00 08:15	9	1	10	4	8	12	22
08:15 08:30	12	7	19	4	5	9	28
08:30 08:45	18	14	32	6	11	17	49
08:45 09:00	5	4	9	2	3	5	14
09:00 09:15	5	9	14	0	6	6	20
09:15 09:30	13	11	24	6	11	17	41
09:30 09:45	14	6	20	4	14	18	38
09:45 10:00	12	7	19	4	9	13	32
11:30 11:45	25	10	35	3	29	32	67
11:45 12:00	12	18	30	4	19	23	53
12:00 12:15	35	20	55	11	35	46	101
12:15 12:30	30	21	51	5	23	28	79
12:30 12:45	36	22	58	23	24	47	105
12:45 13:00	24	28	52	13	27	40	92
13:00 13:15	21	17	38	6	22	28	66
13:15 13:30	32	17	49	6	33	39	88
15:00 15:15	28	17	45	12	20	32	77
15:15 15:30	22	13	35	8	21	29	64
15:30 15:45	42	26	68	12	26	38	106
15:45 16:00	37	27	64	11	27	38	102
16:00 16:15	41	20	61	26	27	53	114
16:15 16:30	39	16	55	12	23	35	90
16:30 16:45	46	20	66	23	19	42	108
16:45 17:00	35	29	64	10	31	41	105
17:00 17:15	32	26	58	15	35	50	108
17:15 17:30	25	19	44	13	32	45	89
17:30 17:45	31	38	69	29	31	60	129
17:45 18:00	42	26	68	18	29	47	115
Total	772	516	1288	300	620	920	2208

5472206 - THU JAN 23, 2020 - 8HRS - LORETTA



Transportation Services - Traffic Services

Turning Movement Count - Study Results

MCRAE AVE @ RICHMOND RD

Survey Date: Thursday, January 23, 2020

WO No: 39388

Start Time: 07:00

Device: Miovision

Full Study Heavy Vehicles

MCRAE AVE

RICHMOND RD

Northbound

Southbound

Eastbound

Westbound

Time Period		Northbound			N TOT	Southbound			S TOT	STR TOT	Eastbound			E TOT	Westbound			W TOT	STR TOT	Grand Total
		LT	ST	RT		LT	ST	RT			LT	ST	RT		LT	ST	RT			
07:00	07:15	0	0	0	0	2	0	0	2	2	1	2	0	3	1	1	0	2	5	7
07:15	07:30	0	0	0	0	0	0	1	1	1	0	3	1	4	0	3	1	4	8	9
07:30	07:45	0	0	0	0	1	0	0	1	1	0	3	0	3	1	3	2	6	9	10
07:45	08:00	0	0	0	0	1	0	1	2	2	0	3	0	3	0	2	1	3	6	8
08:00	08:15	0	0	0	0	3	0	1	4	4	0	4	0	4	0	6	1	7	11	15
08:15	08:30	0	0	0	0	3	0	1	4	4	1	6	0	7	0	5	2	7	14	18
08:30	08:45	0	0	0	0	3	0	0	3	3	0	7	1	8	1	4	2	7	15	18
08:45	09:00	0	0	0	0	1	0	1	2	2	1	1	0	2	0	4	4	8	10	12
09:00	09:15	0	0	0	0	2	0	1	3	3	1	3	0	4	0	4	3	7	11	14
09:15	09:30	1	0	0	1	2	0	0	2	3	1	4	0	5	0	3	0	3	8	11
09:30	09:45	0	0	0	0	3	0	0	3	3	0	5	2	7	0	4	2	6	13	16
09:45	10:00	1	0	0	1	0	0	2	2	3	1	6	1	8	0	1	3	4	12	15
11:30	11:45	0	0	0	0	1	1	0	2	2	0	1	0	1	0	5	1	6	7	9
11:45	12:00	0	0	0	0	1	0	1	2	2	0	3	0	3	0	2	2	4	7	9
12:00	12:15	0	0	0	0	3	1	0	4	4	1	5	0	6	1	4	1	6	12	16
12:15	12:30	0	0	0	0	0	0	0	0	0	0	4	0	4	0	3	1	4	8	8
12:30	12:45	1	0	1	2	3	0	1	4	6	0	3	1	4	0	5	2	7	11	17
12:45	13:00	0	1	1	2	1	1	0	2	4	0	2	1	3	1	4	2	7	10	14
13:00	13:15	0	0	0	0	4	0	0	4	4	0	4	0	4	0	2	2	4	8	12
13:15	13:30	0	0	0	0	1	0	0	1	1	0	1	0	1	1	4	1	6	7	8
15:00	15:15	0	0	0	0	2	0	0	2	2	0	4	0	4	0	4	2	6	10	12
15:15	15:30	0	0	1	1	1	0	0	1	2	0	2	0	2	0	2	0	2	4	6
15:30	15:45	0	0	0	0	1	0	0	1	1	0	1	0	1	1	0	2	3	4	5
15:45	16:00	0	0	0	0	2	0	0	2	2	0	1	0	1	1	3	0	4	5	7
16:00	16:15	0	1	0	1	2	0	0	2	3	0	2	0	2	0	2	4	6	8	11
16:15	16:30	0	0	0	0	1	0	0	1	1	0	2	0	2	0	2	0	2	4	5
16:30	16:45	0	0	0	0	1	0	0	1	1	0	1	0	1	0	0	1	1	2	3
16:45	17:00	0	0	0	0	2	0	1	3	3	0	1	0	1	0	0	1	1	2	5
17:00	17:15	0	0	0	0	1	0	0	1	1	0	3	0	3	0	3	2	5	8	9
17:15	17:30	0	0	0	0	1	0	0	1	1	0	0	0	0	0	1	0	1	1	2
17:30	17:45	0	0	0	0	1	0	0	1	1	0	2	0	2	2	0	1	3	5	6
17:45	18:00	0	0	0	0	1	0	0	1	1	0	1	0	1	0	1	0	1	2	3
Total:	None	3	2	3	8	51	3	11	65	73	7	90	7	104	10	87	46	143	247	320



Transportation Services - Traffic Services

Turning Movement Count - Study Results

MCRAE AVE @ RICHMOND RD

Survey Date: Thursday, January 23, 2020

WO No: 39388

Start Time: 07:00

Device: Miovision

Full Study 15 Minute U-Turn Total

MCRAE AVE

RICHMOND RD

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

DIRECTIONAL TRAFFIC FLOW

Intersection: Richmond Rd at Tweedsmuir Ave

DATE: Day: 12 Month: December Year: 2023 Day of Week: Tuesday

Observer: Jordan Terada Weather: Overcast

Chkd by: _____ Date: _____

TIME PERIOD: From: 7:30am To: 9:30am

N



Pedestrians

76	1
Street Name: Richmond Rd	

3	16	1
28	15	15

Street Name: Tweedsmuir Ave

Bikes HV

Pass. Vehicles

71	700	16
5	21	1

Street Name: Tweedsmuir Ave

12	24	40
1	1	1

Pass. Vehicles

HV Bikes

12	2	30
498	3	27

Street Name: Richmond Rd	
Pedestrians	
21	4

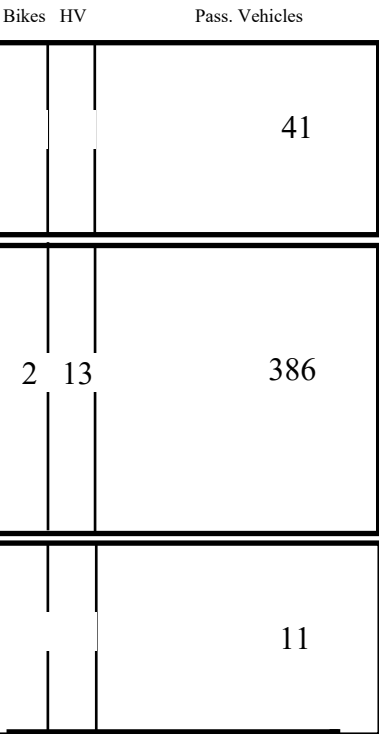
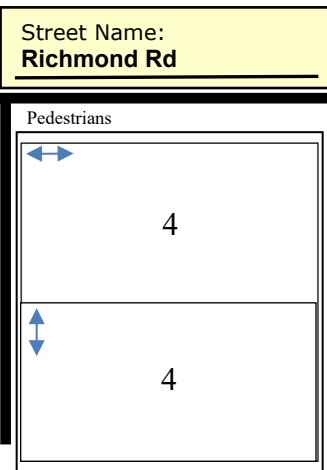
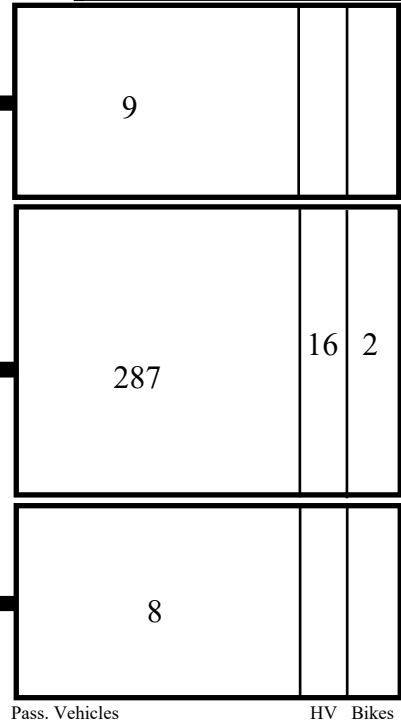
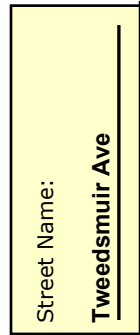
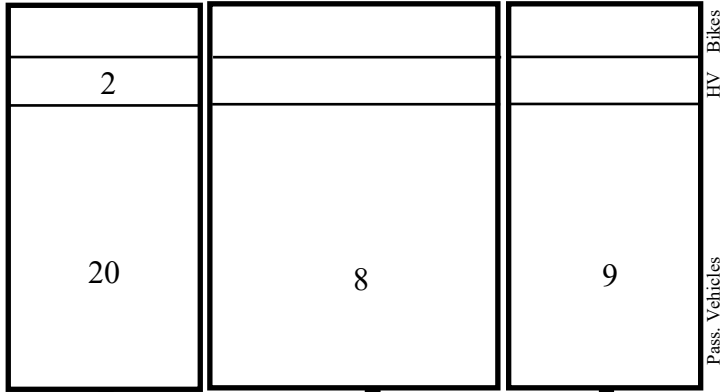
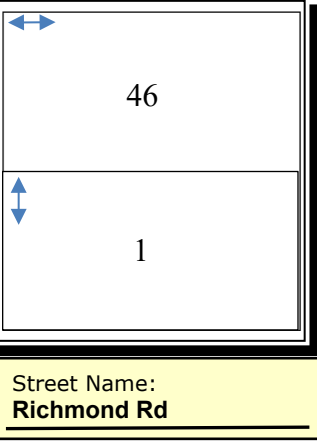
DIRECTIONAL TRAFFIC FLOW

TIME PERIOD: From: **8:15am** To: **9:15am (Peak Hour)**

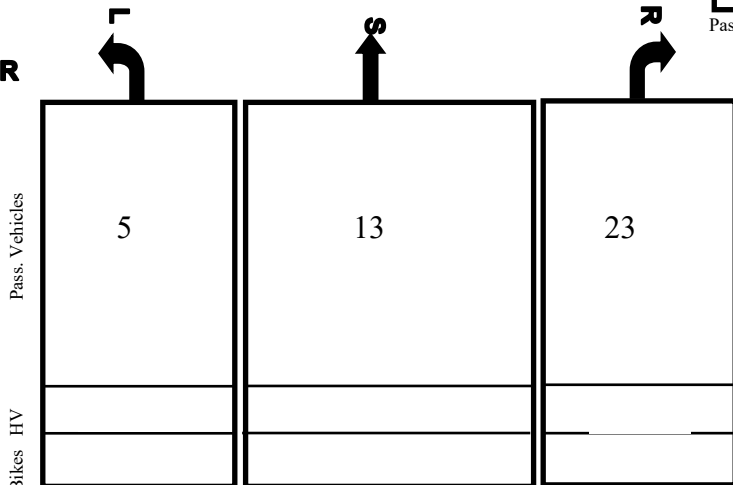
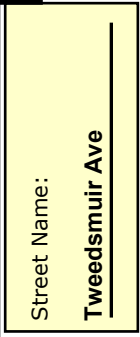
N



Pedestrians



PARSONS



DIRECTIONAL TRAFFIC FLOW

Intersection: Richmond Rd at Tweedsmuir Ave

DATE: Day: 12 Month: December Year: 2023 Day of Week: Tuesday

Observer: Jordan Terada Weather: Overcast/Rain

Chkd by: _____ Date: _____

TIME PERIOD: From: 4:00pm To: 6:00pm

N



Pedestrians

106	2
Street Name: Richmond Rd	

1	2 1	14
35	21	14

Street Name: Tweedsmuir Ave

Bikes HV

Pass. Vehicles

98	767	23
----	-----	----

23	15	75
1		

27	1	
970	10	4
78	2	

Pass. Vehicles

HV Bikes

Street Name: Richmond Rd	
Pedestrians	
51	1

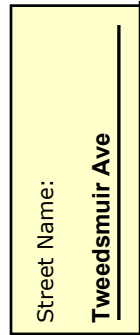
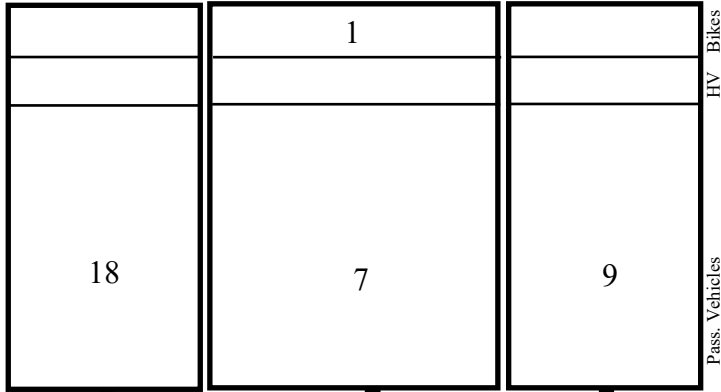
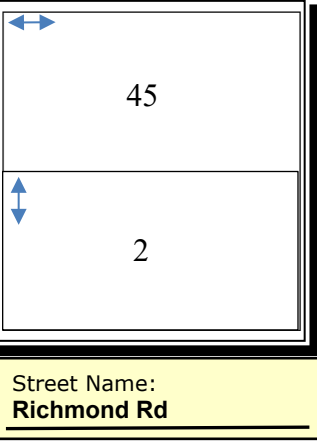
DIRECTIONAL TRAFFIC FLOW

TIME PERIOD: From: 4:45pm To: 5:45pm (Peak Hour)

N

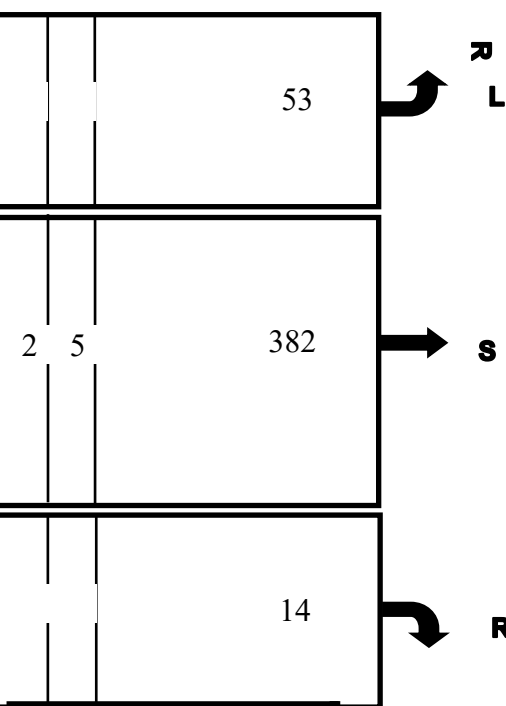


Pedestrians

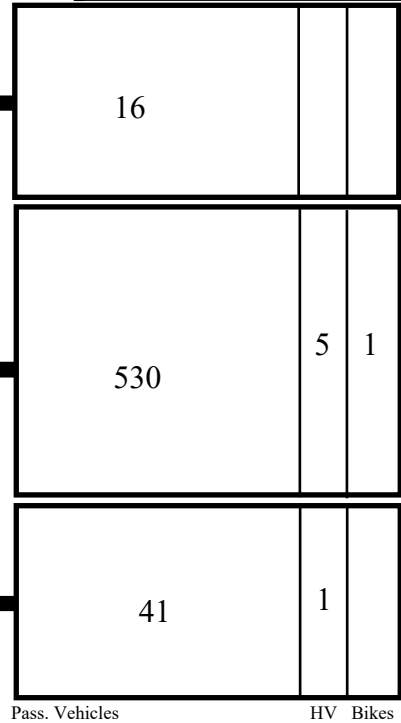


Bikes HV

Pass. Vehicles



R



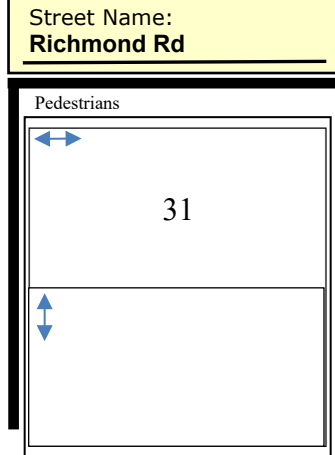
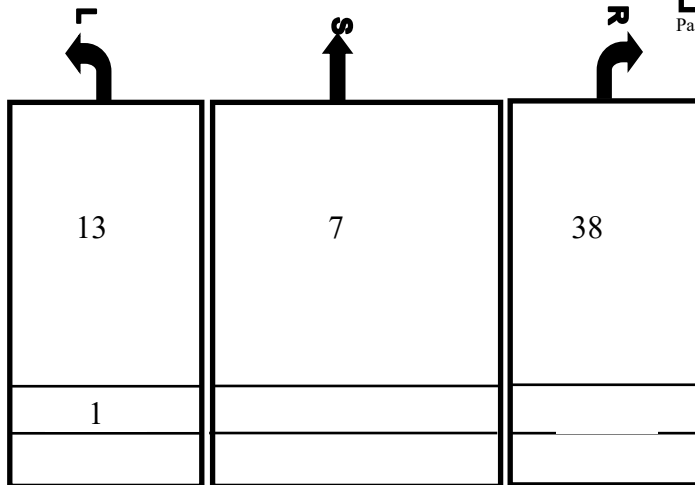
L

PARSONS



Pass. Vehicles

Bikes HV





Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

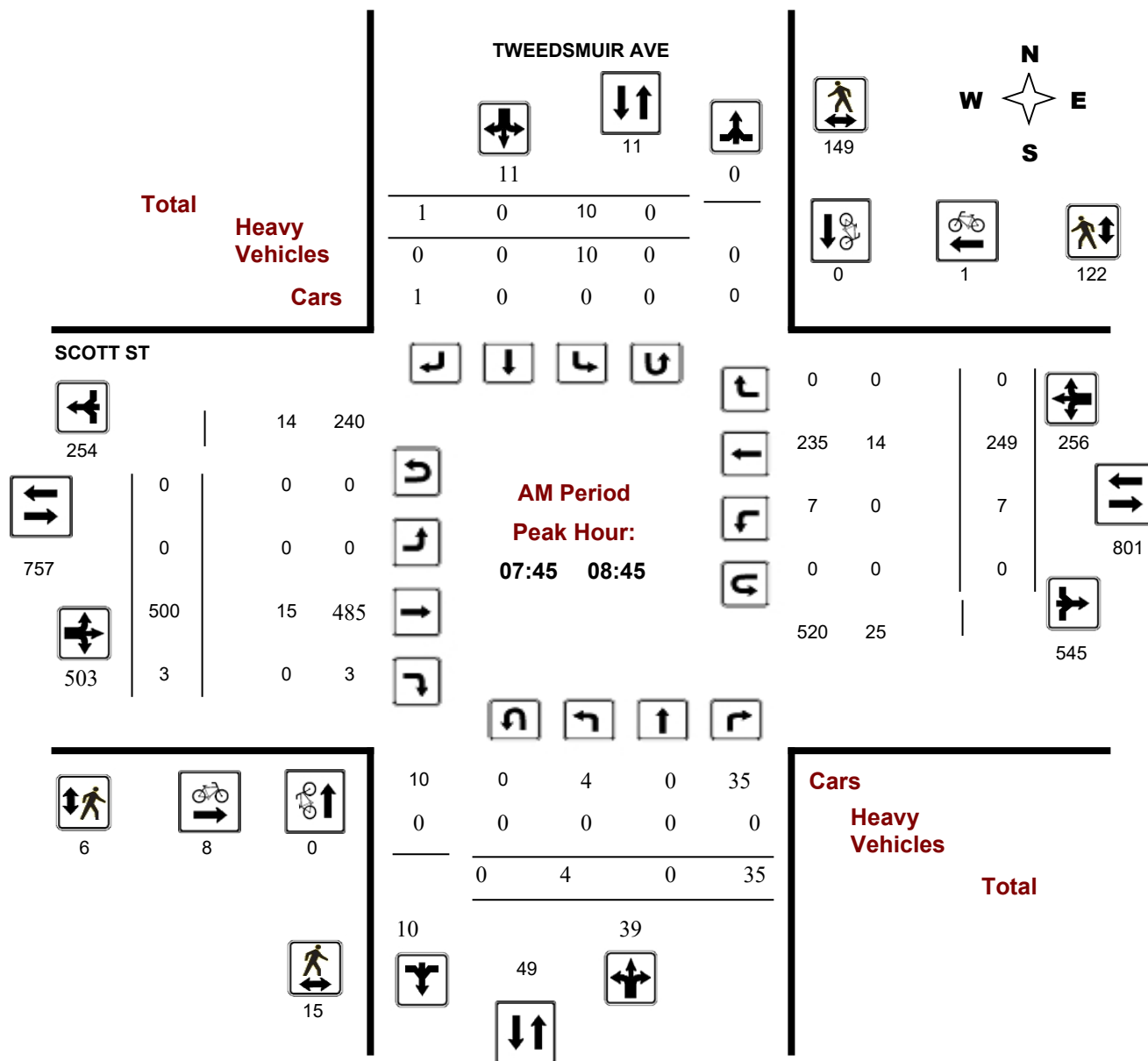
TWEEDSMUIR AVE @ SCOTT ST

Survey Date: Tuesday, March 28, 2017

Start Time: 07:00

WO No: 36806

Device: Miovision



Turning Movement Count - Full Study Peak Hour Diagram

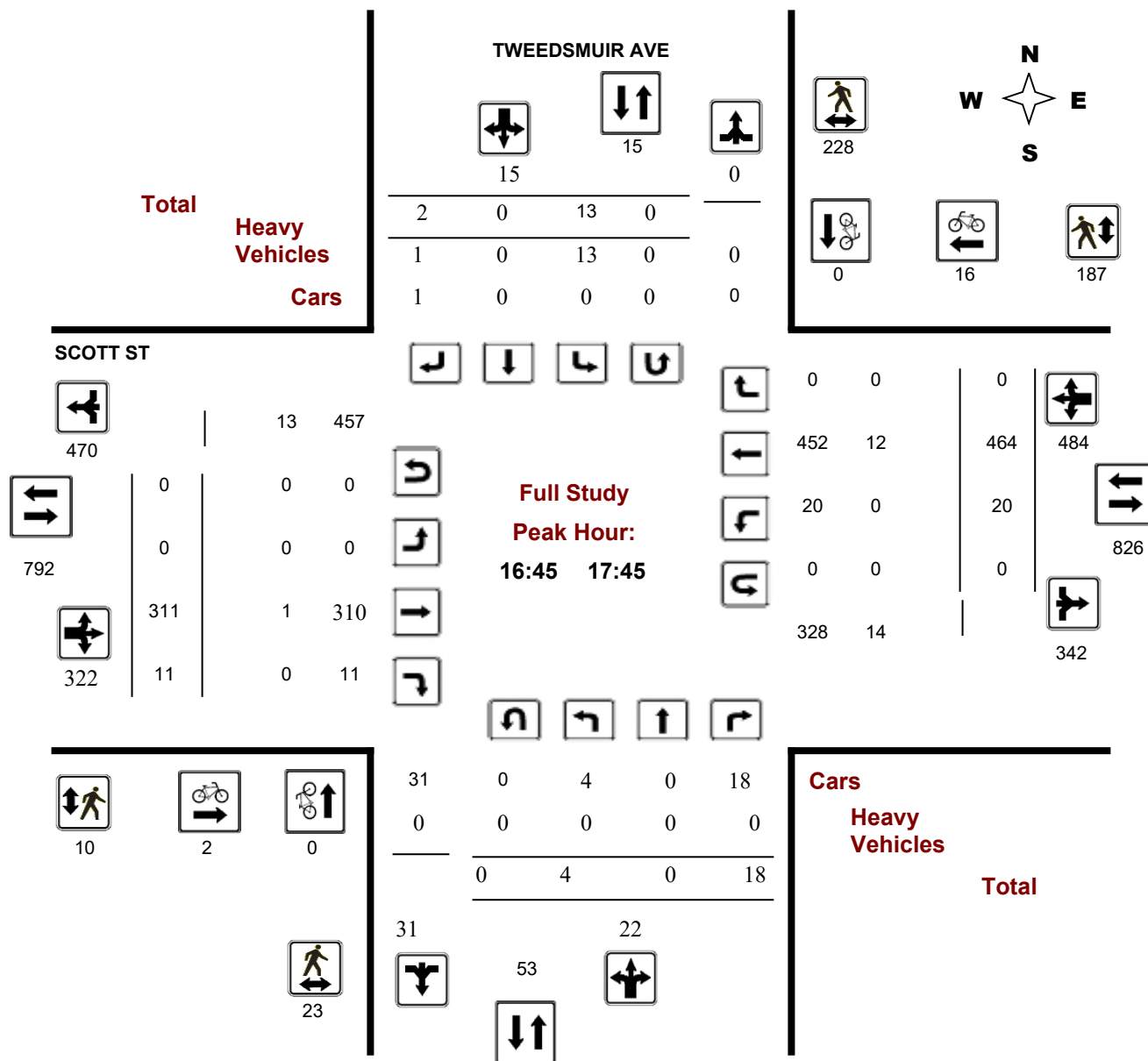
TWEEDSMUIR AVE @ SCOTT ST

Survey Date: Tuesday, March 28, 2017

Start Time: 07:00

WO No: 36806

Device: Miovision



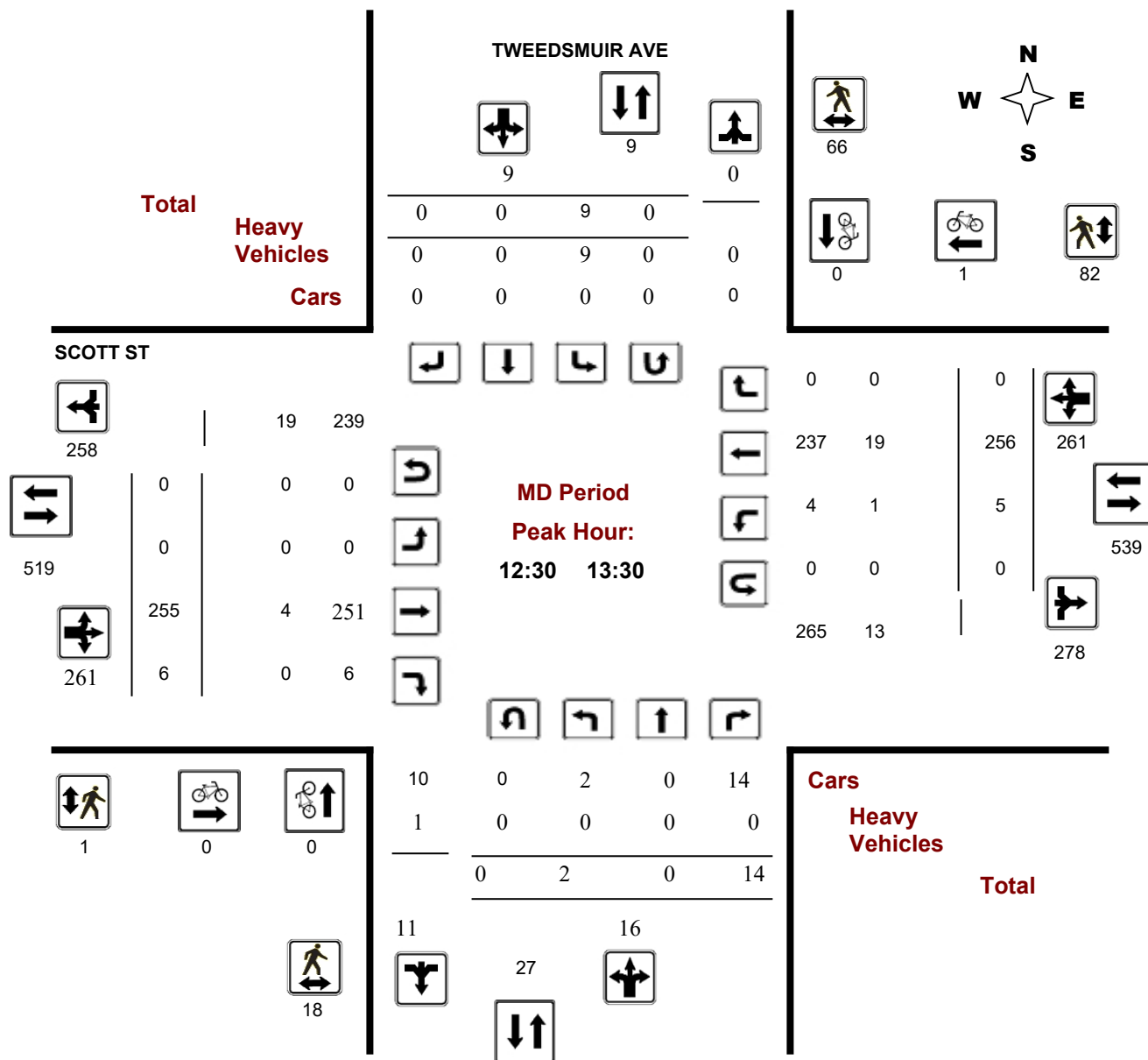
Comments

Survey Date: Tuesday, March 28, 2017

Start Time: 07:00

WO No: 36806

Device: Miovision



Turning Movement Count - Full Study Peak Hour Diagram

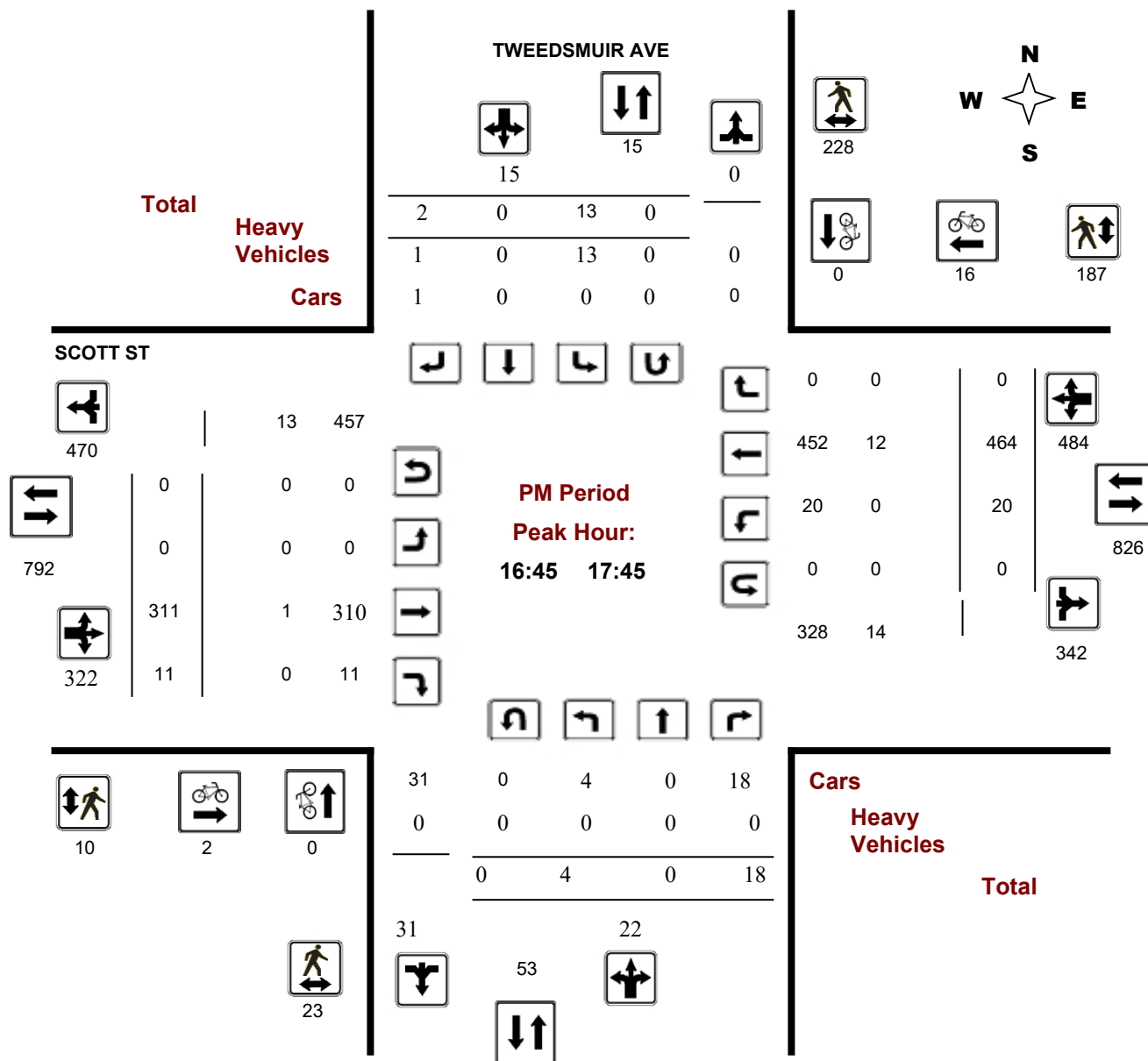
TWEEDSMUIR AVE @ SCOTT ST

Survey Date: Tuesday, March 28, 2017

Start Time: 07:00

WO No: 36806

Device: Miovision



Comments

Transportation Services - Traffic Services

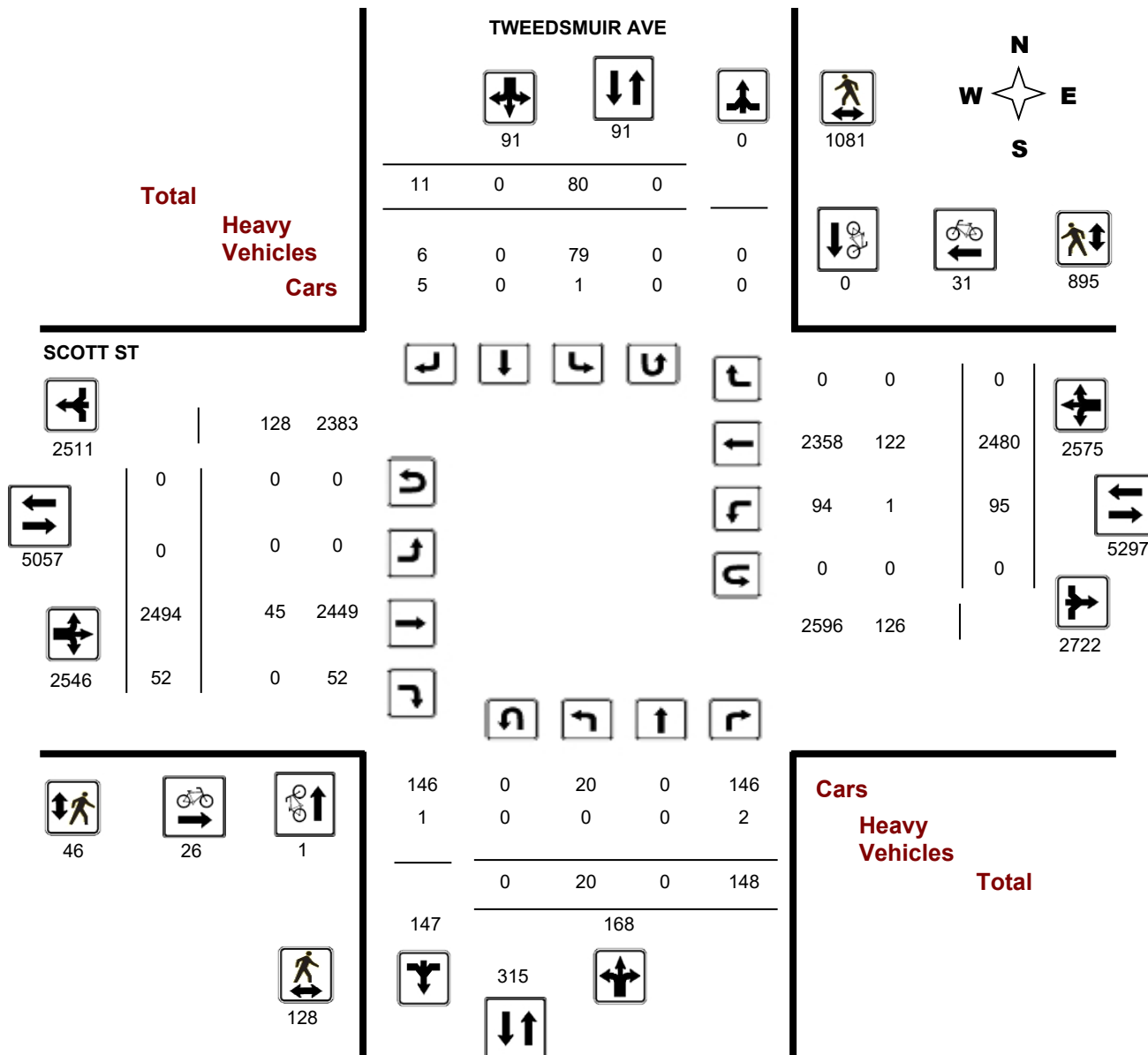
Turning Movement Count - Full Study Diagram

TWEEDSMUIR AVE @ SCOTT ST

Survey Date: Tuesday, March 28, 2017

WO#: 36806

Device: Miovision



Turning Movement Count - Full Study Summary Report

TWEEDSMUIR AVE @ SCOTT ST

Survey Date: Tuesday, March 28, 2017

Total Observed U-Turns

Northbound: 0 Southbound: 0
Eastbound: 0 Westbound: 0

AADT Factor

1.00

Full Study

TWEEDSMUIR AVE										SCOTT ST									
Period	Northbound				Southbound				STR TOT	Eastbound				Westbound				STR TOT	Grand Total
	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT		LT	ST	RT	EB TOT	LT	ST	RT	WB TOT		
07:00 08:00	1	0	22	23	10	0	1	11	34	0	367	6	373	8	203	0	211	584	618
08:00 09:00	4	0	33	37	11	0	1	12	49	0	471	2	473	6	251	0	257	730	779
09:00 10:00	1	0	13	14	8	0	2	10	24	0	283	4	287	10	235	0	245	532	556
11:30 12:30	2	0	14	16	8	0	2	10	26	0	215	8	223	11	258	0	269	492	518
12:30 13:30	2	0	14	16	9	0	0	9	25	0	255	6	261	5	256	0	261	522	547
15:00 16:00	2	0	19	21	10	0	3	13	34	0	296	7	303	18	410	0	428	731	765
16:00 17:00	4	0	18	22	10	0	0	10	32	0	303	11	314	19	426	0	445	759	791
17:00 18:00	4	0	15	19	14	0	2	16	35	0	304	8	312	18	441	0	459	771	806
Sub Total	20	0	148	168	80	0	11	91	259	0	2494	52	2546	95	2480	0	2575	5121	5380
U Turns				0				0	0				0				0	0	0
Total	20	0	148	168	80	0	11	91	259	0	2494	52	2546	95	2480	0	2575	5121	5380
EQ 12Hr	28	0	206	234	111	0	15	126	360	0	3467	72	3539	132	3447	0	3579	7118	7478
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														1.39					
AVG 12Hr	28	0	206	234	111	0	15	126	360	0	3467	72	3539	132	3447	0	3579	7118	7478
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														1.00					
AVG 24Hr	36	0	269	306	146	0	20	166	472	0	4541	95	4636	173	4516	0	4689	9325	9797
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.														1.31					

Comments:

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



Turning Movement Count - 15 Minute Summary Report

TWEEDSMUIR AVE @ SCOTT ST

Survey Date: Tuesday, March 28, 2017

Total Observed U-Turns

Northbound: 0 Southbound: 0
Eastbound: 0 Westbound: 0

TWEEDSMUIR AVE										SCOTT ST										Grand Total
Northbound					Southbound					Eastbound					Westbound					
Time Period	LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT		
07:00 07:15	0	0	5	5	2	0	1	3	8	0	56	1	57	1	35	0	36	93	101	
07:15 07:30	0	0	5	5	4	0	0	4	9	0	68	2	70	2	50	0	52	122	131	
07:30 07:45	1	0	6	7	2	0	0	2	9	0	109	2	111	1	56	0	57	168	177	
07:45 08:00	0	0	6	6	2	0	0	2	8	0	134	1	135	4	62	0	66	201	209	
08:00 08:15	0	0	8	8	2	0	1	3	11	0	114	1	115	2	50	0	52	167	178	
08:15 08:30	2	0	12	14	3	0	0	3	17	0	130	0	130	1	61	0	62	192	209	
08:30 08:45	2	0	9	11	3	0	0	3	14	0	122	1	123	0	76	0	76	199	213	
08:45 09:00	0	0	4	4	3	0	0	3	7	0	105	0	105	3	64	0	67	172	179	
09:00 09:15	0	0	4	4	3	0	0	3	7	0	94	2	96	2	64	0	66	162	169	
09:15 09:30	1	0	3	4	2	0	1	3	7	0	75	1	76	5	53	0	58	134	141	
09:30 09:45	0	0	4	4	1	0	1	2	6	0	60	1	61	3	61	0	64	125	131	
09:45 10:00	0	0	2	2	2	0	0	2	4	0	54	0	54	0	57	0	57	111	115	
11:30 11:45	1	0	3	4	1	0	0	1	5	0	55	4	59	3	69	0	72	131	136	
11:45 12:00	0	0	4	4	3	0	0	3	7	0	53	2	55	5	70	0	75	130	137	
12:00 12:15	1	0	4	5	3	0	1	4	9	0	51	1	52	2	57	0	59	111	120	
12:15 12:30	0	0	3	3	1	0	1	2	5	0	56	1	57	1	62	0	63	120	125	
12:30 12:45	1	0	5	6	2	0	0	2	8	0	71	2	73	1	66	0	67	140	148	
12:45 13:00	0	0	1	1	3	0	0	3	4	0	57	0	57	1	70	0	71	128	132	
13:00 13:15	1	0	1	2	2	0	0	2	4	0	60	2	62	1	66	0	67	129	133	
13:15 13:30	0	0	7	7	2	0	0	2	9	0	67	2	69	2	54	0	56	125	134	
15:00 15:15	0	0	3	3	1	0	0	1	4	0	70	1	71	2	104	0	106	177	181	
15:15 15:30	0	0	5	5	4	0	1	5	10	0	70	3	73	1	87	0	88	161	171	
15:30 15:45	0	0	5	5	2	0	1	3	8	0	79	2	81	6	103	0	109	190	198	
15:45 16:00	2	0	6	8	3	0	1	4	12	0	77	1	78	9	116	0	125	203	215	
16:00 16:15	1	0	4	5	1	0	0	1	6	0	83	3	86	8	127	0	135	221	227	
16:15 16:30	1	0	6	7	4	0	0	4	11	0	78	1	79	3	92	0	95	174	185	
16:30 16:45	1	0	3	4	1	0	0	1	5	0	60	2	62	4	109	0	113	175	180	
16:45 17:00	1	0	5	6	4	0	0	4	10	0	82	5	87	4	98	0	102	189	199	
17:00 17:15	0	0	5	5	4	0	1	5	10	0	70	1	71	6	136	0	142	213	223	
17:15 17:30	2	0	4	6	3	0	0	3	9	0	83	4	87	4	119	0	123	210	219	
17:30 17:45	1	0	4	5	2	0	1	3	8	0	76	1	77	6	111	0	117	194	202	
17:45 18:00	1	0	2	3	5	0	0	5	8	0	75	2	77	2	75	0	77	154	162	
TOTAL:	20	0	148	168	80	0	11	91	259	0	2494	52	2546	95	2480	0	2575	5121	5380	

Note: U-Turns are included in Totals.

Comment:



Transportation Services - Traffic Services

Turning Movement Count - Cyclist Volume Report

Work Order
36806

TWEEDSMUIR AVE @ SCOTT ST

Count Date: Tuesday, March 28, 2017

Start Time: 07:00

Time Period	TWEEDSMUIR AVE			SCOTT ST			Grand Total
	Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	
07:00 08:00	1	0	1	11	1	12	13
08:00 09:00	0	0	0	6	2	8	8
09:00 10:00	0	0	0	0	1	1	1
11:30 12:30	0	0	0	2	1	3	3
12:30 13:30	0	0	0	0	1	1	1
15:00 16:00	0	0	0	2	4	6	6
16:00 17:00	0	0	0	4	8	12	12
17:00 18:00	0	0	0	1	13	14	14
Total	1	0	1	26	31	57	58

Comment:

Note: These volumes consists of bicycles only (no mopeds or motorcycles) and ARE NOT included in the Turning Movement Count Summary.



Transportation Services - Traffic Services

W.O.
36806

Turning Movement Count - Heavy Vehicle Report

TWEEDSMUIR AVE @ SCOTT ST

Survey Date: Tuesday, March 28, 2017

TWEEDSMUIR AVE										SCOTT ST												
Time Period		Northbound			Southbound			S TOT			Eastbound			Westbound			W TOT			STR TOT		Grand Total
		LT	ST	RT	N TOT	LT	ST				RT	LT	ST	RT	E TOT	LT						
07:00	08:00	0	0	1	1	10	0	0	10	11	0	8	0	8	0	16	0	16	24	35		
08:00	09:00	0	0	0	0	11	0	0	11	11	0	12	0	12	0	11	0	11	23	34		
09:00	10:00	0	0	1	1	8	0	1	9	10	0	7	0	7	0	20	0	20	27	37		
11:30	12:30	0	0	0	0	7	0	1	8	8	0	7	0	7	0	13	0	13	20	28		
12:30	13:30	0	0	0	0	9	0	0	9	9	0	4	0	4	1	19	0	20	24	33		
15:00	16:00	0	0	0	0	10	0	3	13	13	0	5	0	5	0	20	0	20	25	38		
16:00	17:00	0	0	0	0	10	0	0	10	10	0	2	0	2	0	12	0	12	14	24		
17:00	18:00	0	0	0	0	14	0	1	15	15	0	0	0	0	0	11	0	11	11	26		
Sub Total		0	0	2	2	79	0	6	85	87	0	45	0	45	1	122	0	123	168	255		
U-Turns (Heavy Vehicles)					0				0	0				0				0	0	0		
Total		0	0	2	0	79	0	6	85	87	0	45	0	45	1	122	0	123	168	255		

Heavy Vehicles include Buses, Single-Unit Trucks and Articulated Trucks. Further, they ARE included in the Turning Movement Count Summary.



Transportation Services - Traffic Services

Work Order

36806

Turning Movement Count - Pedestrian Volume Report

TWEEDSMUIR AVE @ SCOTT ST

Count Date: Tuesday, March 28, 2017

Start Time: 07:00

Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00 07:15	0	30	30	2	17	19	49
07:15 07:30	1	38	39	0	23	23	62
07:30 07:45	9	52	61	1	41	42	103
07:45 08:00	10	39	49	2	33	35	84
07:00 08:00	20	159	179	5	114	119	298
08:00 08:15	2	35	37	1	24	25	62
08:15 08:30	0	44	44	1	38	39	83
08:30 08:45	3	31	34	2	27	29	63
08:45 09:00	0	40	40	1	29	30	70
08:00 09:00	5	150	155	5	118	123	278
09:00 09:15	1	25	26	3	18	21	47
09:15 09:30	2	13	15	1	9	10	25
09:30 09:45	0	15	15	1	15	16	31
09:45 10:00	0	8	8	1	3	4	12
09:00 10:00	3	61	64	6	45	51	115
11:30 11:45	1	18	19	0	14	14	33
11:45 12:00	6	14	20	0	7	7	27
12:00 12:15	9	18	27	4	16	20	47
12:15 12:30	7	27	34	3	29	32	66
11:30 12:30	23	77	100	7	66	73	173
12:30 12:45	2	22	24	0	29	29	53
12:45 13:00	7	20	27	1	25	26	53
13:00 13:15	5	16	21	0	17	17	38
13:15 13:30	4	8	12	0	11	11	23
12:30 13:30	18	66	84	1	82	83	167
15:00 15:15	2	31	33	1	20	21	54
15:15 15:30	1	27	28	2	18	20	48
15:30 15:45	7	25	32	1	22	23	55
15:45 16:00	5	40	45	1	40	41	86
15:00 16:00	15	123	138	5	100	105	243
16:00 16:15	2	55	57	0	44	44	101
16:15 16:30	6	39	45	1	33	34	79
16:30 16:45	10	58	68	2	53	55	123
16:45 17:00	4	67	71	4	50	54	125
16:00 17:00	22	219	241	7	180	187	428
17:00 17:15	8	58	66	3	56	59	125
17:15 17:30	5	62	67	1	47	48	115
17:30 17:45	6	41	47	2	34	36	83
17:45 18:00	3	65	68	4	53	57	125
17:00 18:00	22	226	248	10	190	200	448
Total	128	1081	1209	46	895	941	2150

Comment:

Turning Movement Count - 15 Min U-Turn Total Report

TWEEDSMUIR AVE @ SCOTT ST

Survey Date: Tuesday, March 28, 2017

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

Appendix D:

Historic Collision Data

Total Area

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	SMV other	SMV unattended vehicle	Other	Total
P.D. only	3	1	3	6	0	1	11	0	25
Non-fatal injury	0	1	0	4	0	5	0	0	10
Non-reportable	0	0	0	0	0	0	0	0	0
Total	3	2	3	10	0	6	11	0	35
	#4 or 9%	#6 or 6%	#4 or 9%	#2 or 29%	#7 or 0%	#3 or 17%	#1 or 31%	#7 or 0%	

71%
29%
0%
100%

ATHLONE AVE/RICHMOND RD

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2017-2021	6	n/a	1825	n/a

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	SMV other	SMV unattended vehicle	Other	Total
P.D. only	1	0	1	2	0	0	1	0	5
Non-fatal injury	0	0	0	1	0	0	0	0	1
Non-reportable	0	0	0	0	0	0	0	0	0
Total	1	0	1	3	0	0	1	0	6
	17%	0%	17%	50%	0%	0%	17%	0%	

83%
17%
0%
100%

RICHMOND RD/TWEEDSMUIR AVE

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2017-2021	4	n/a	1825	n/a

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	SMV other	SMV unattended vehicle	Other	Total
P.D. only	1	0	0	2	0	0	0	0	3
Non-fatal injury	0	0	0	1	0	0	0	0	1
Non-reportable	0	0	0	0	0	0	0	0	0
Total	1	0	0	3	0	0	0	0	4
	25%	0%	0%	75%	0%	0%	0%	0%	

75%
25%
0%
100%

RICHMOND RD, ATHLONE AVE to TWEEDSMUIR AVE

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2017-2021	3	n/a	1825	n/a

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	SMV other	SMV unattended vehicle	Other	Total
P.D. only	0	0	0	1	0	1	0	0	2
Non-fatal injury	0	0	0	1	0	0	0	0	1
Non-reportable	0	0	0	0	0	0	0	0	0
Total	0	0	0	2	0	1	0	0	3
	0%	0%	0%	67%	0%	33%	0%	0%	

67%
33%
0%
100%

ATHLONE AVE/SCOTT ST

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2017-2021	2	n/a	1825	n/a

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	SMV other	SMV unattended vehicle	Other	Total
P.D. only	1	0	0	0	0	0	0	0	1
Non-fatal injury	0	0	0	0	0	1	0	0	1
Non-reportable	0	0	0	0	0	0	0	0	0
Total	1	0	0	0	0	1	0	0	2
	50%	0%	0%	0%	0%	50%	0%	0%	

50%
50%
0%
100%

CHURCHILL AVE/SCOTT ST

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2017-2021	4	n/a	1825	n/a

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	SMV other	SMV unattended vehicle	Other	Total
P.D. only	0	0	1	0	0	0	1	0	2
Non-fatal injury	0	0	0	0	0	2	0	0	2
Non-reportable	0	0	0	0	0	0	0	0	0
Total	0	0	1	0	0	2	1	0	4
	0%	0%	25%	0%	0%	50%	25%	0%	

50%
50%
0%
100%

LANARK AVE/WEST VILLAGE PRIV/SCOTT ST

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2017-2021	2	n/a	1825	n/a

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	SMV other	SMV unattended vehicle	Other	Total	
P.D. only	0	0	0	0	0	0	0	0	0	0%
Non-fatal injury	0	1	0	1	0	0	0	0	2	100%
Non-reportable	0	0	0	0	0	0	0	0	0	0%
Total	0	1	0	1	0	0	0	0	2	100%
	0%	50%	0%	50%	0%	0%	0%	0%		

SCOTT ST, CLIFTON RD to LANARK AVE

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2017-2021	1	n/a	1825	n/a

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	SMV other	SMV unattended vehicle	Other	Total	
P.D. only	0	1	0	0	0	0	0	0	1	100%
Non-fatal injury	0	0	0	0	0	0	0	0	0	0%
Non-reportable	0	0	0	0	0	0	0	0	0	0%
Total	0	1	0	0	0	0	0	0	1	100%
	0%	100%	0%	0%	0%	0%	0%	0%		

SCOTT ST, TRANSITWAY to MCRAE AVE

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2017-2021	2	n/a	1825	n/a

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	SMV other	SMV unattended vehicle	Other	Total	
P.D. only	0	0	0	0	0	0	1	0	1	50%
Non-fatal injury	0	0	0	0	0	1	0	0	1	50%
Non-reportable	0	0	0	0	0	0	0	0	0	0%
Total	0	0	0	0	0	1	1	0	2	100%
	0%	0%	0%	0%	0%	50%	50%	0%		

SCOTT ST, WINONA AVE to TRANSITWAY/ATHLONE AVE

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2017-2021	1	n/a	1825	n/a

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	SMV other	SMV unattended vehicle	Other	Total	
P.D. only	0	0	1	0	0	0	0	0	1	100%
Non-fatal injury	0	0	0	0	0	0	0	0	0	0%
Non-reportable	0	0	0	0	0	0	0	0	0	0%
Total	0	0	1	0	0	0	0	0	1	100%
	0%	0%	100%	0%	0%	0%	0%	0%		

ATHLONE AVE, SCOTT ST to RICHMOND RD

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2017-2021	6	n/a	1825	n/a

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	SMV other	SMV unattended vehicle	Other	Total	
P.D. only	0	0	0	0	0	0	5	0	5	83%
Non-fatal injury	0	0	0	0	0	1	0	0	1	17%
Non-reportable	0	0	0	0	0	0	0	0	0	0%
Total	0	0	0	0	0	1	5	0	6	100%
	0%	0%	0%	0%	0%	17%	83%	0%		

TWEEDSMUIR AVE, TRANSITWAY to RICHMOND RD

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2017-2021	4	n/a	1825	n/a

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	SMV other	SMV unattended vehicle	Other	Total	
P.D. only	0	0	0	1	0	0	3	0	4	100%
Non-fatal injury	0	0	0	0	0	0	0	0	0	0%
Non-reportable	0	0	0	0	0	0	0	0	0	0%
Total	0	0	0	1	0	0	3	0	4	100%
	0%	0%	0%	25%	0%	0%	75%	0%		

Appendix E:

Adjacent Developments' Site-Generated Volumes

2026 Scott Street TIA Report (April 2024) Excerpt

Figure 10: Net Site-Generated Traffic Volumes (2026)

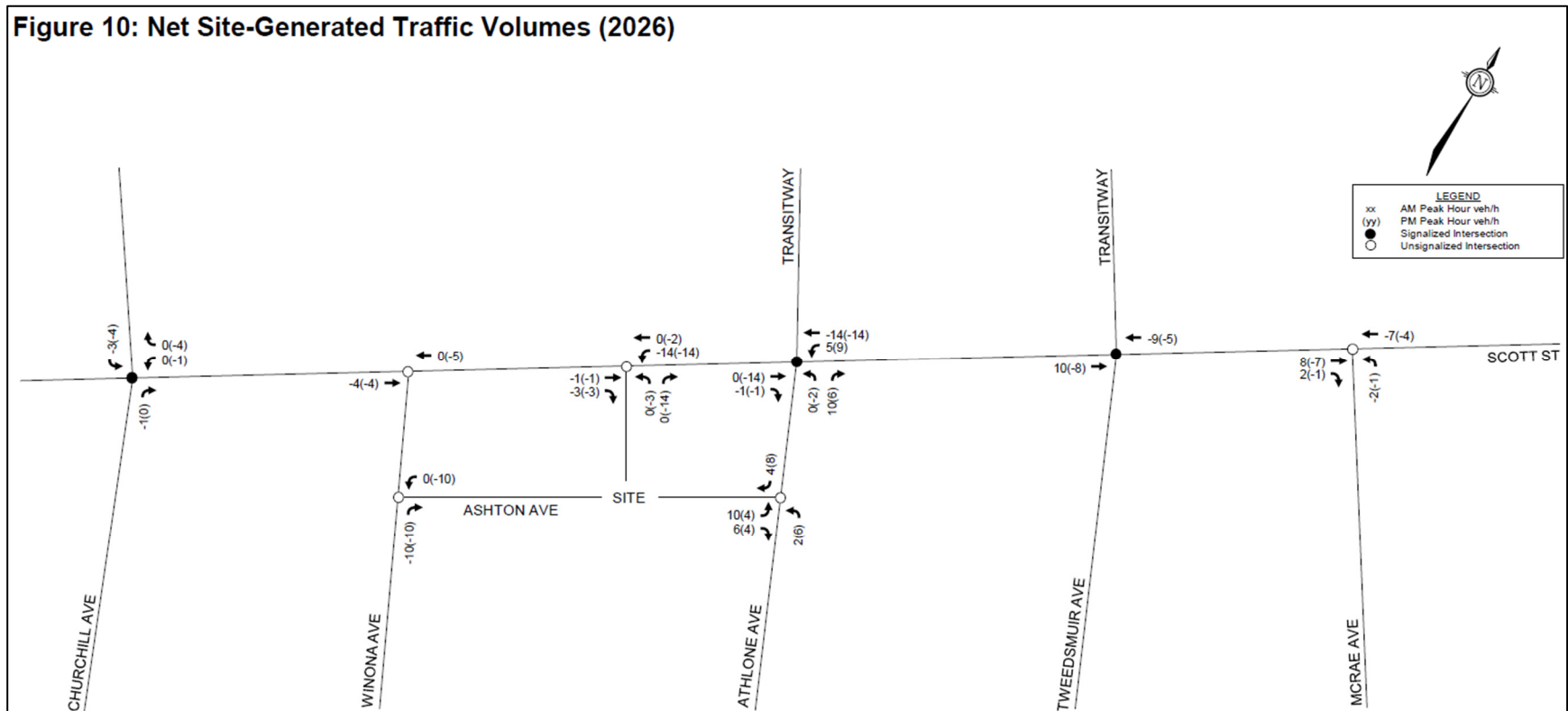
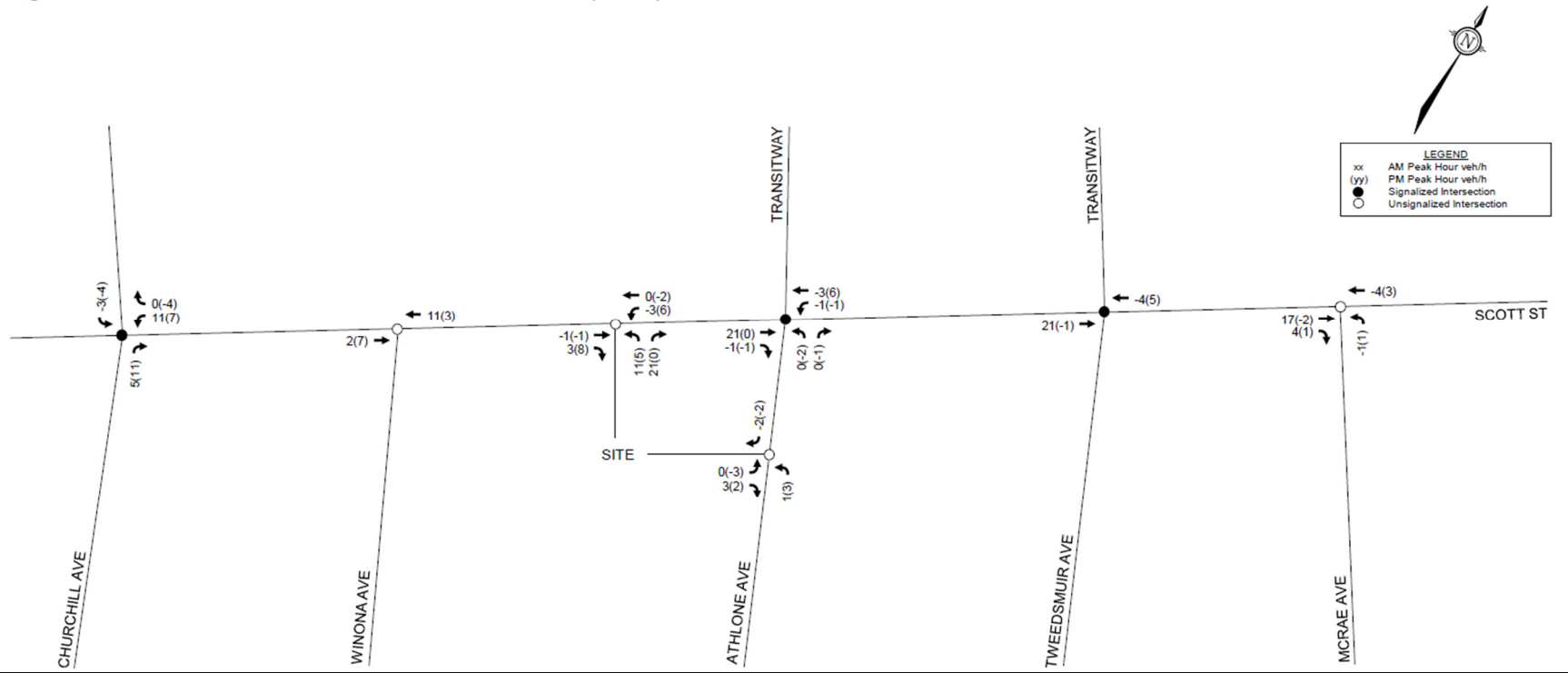
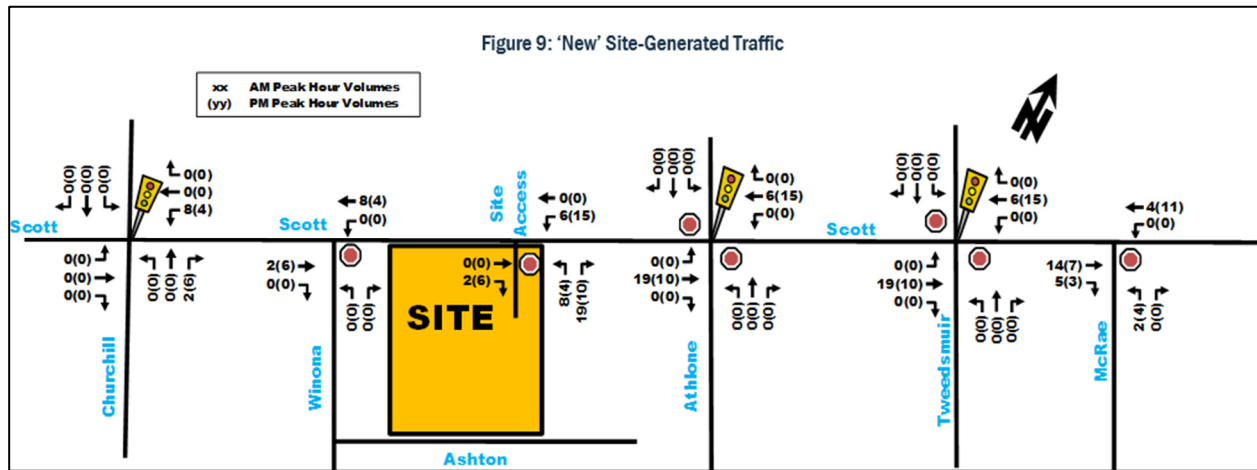


Figure 11: Net Site-Generated Traffic Volumes (2031)

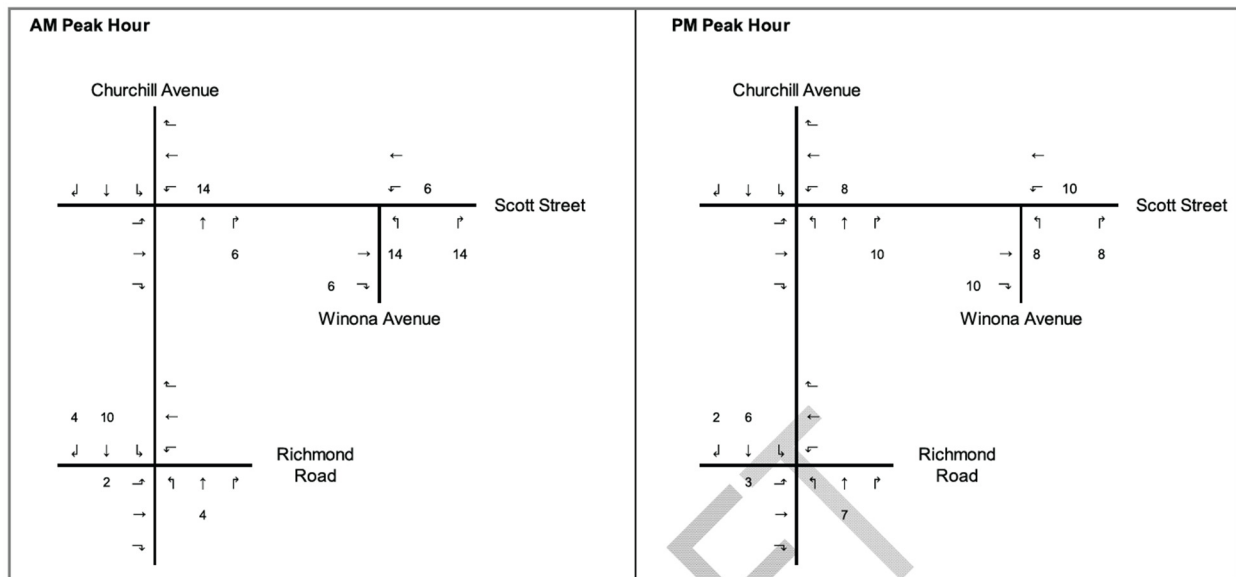


2050 Scott Street TIA Report (Feb 2021) Excerpt

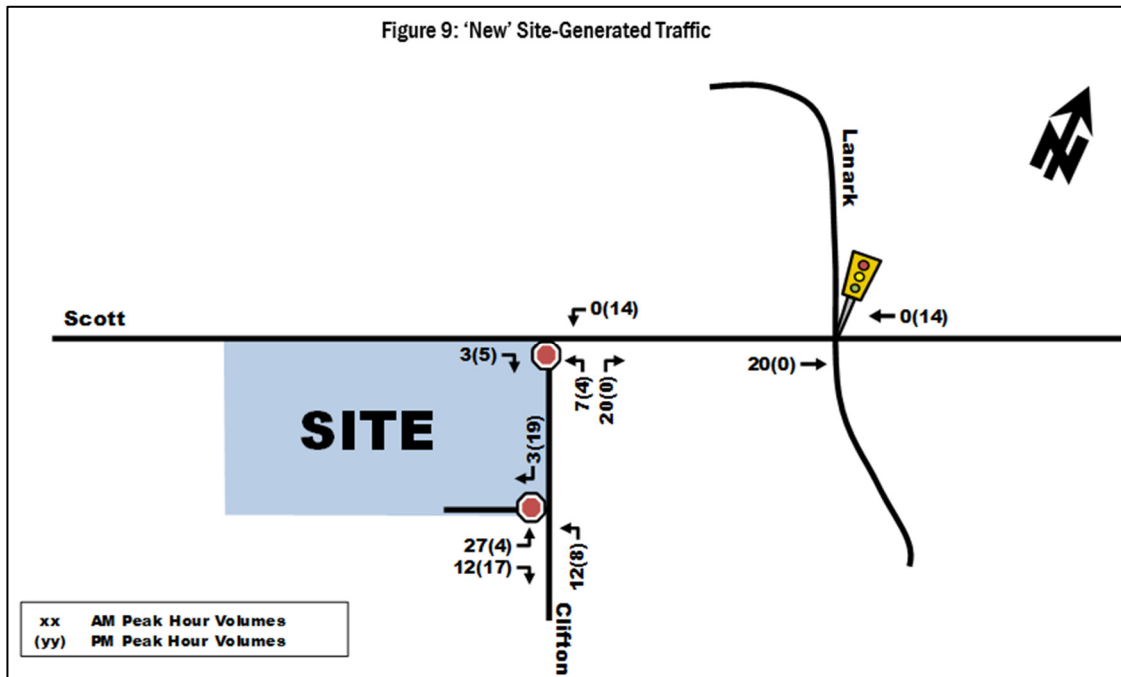


2070 Scott Street TIA Report (Nov 2019) Excerpt

Figure 12 - Site Trips



1950 Scott Street TIA Report (April 2019) Excerpt



249-255 Richmond Road & 372 Tweedsmuir Avenue TIA Report (July 2025) Excerpt

Net Trip Generation

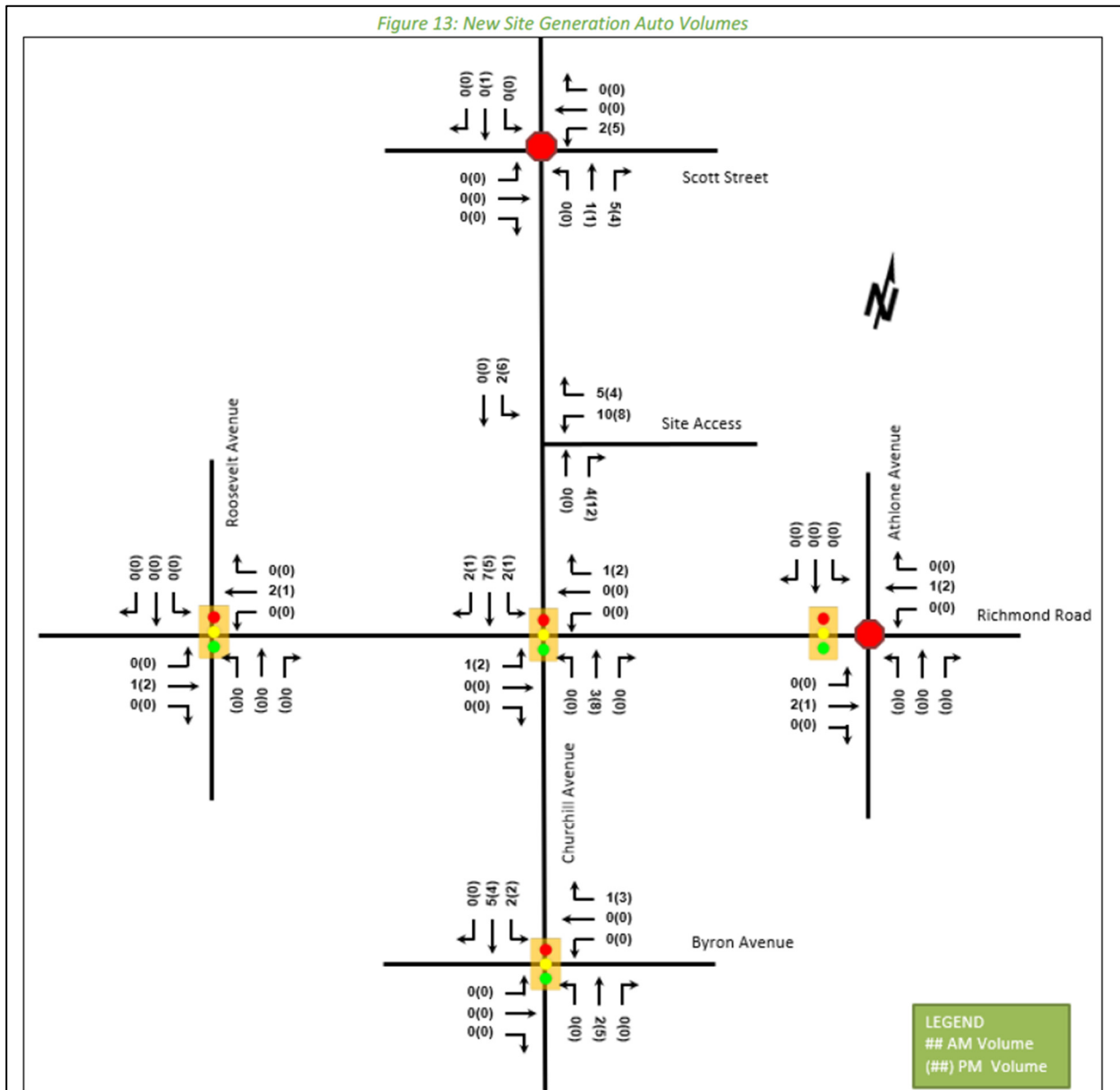
A full breakdown of the net person trips generated by modal share is shown in Table 12.

Table 12: Net Person Trip Generation

Travel Mode	AM Peak Hour			PM Peak Hour		
	In	Out	Total	In	Out	Total
<i>Existing Development</i>						
Auto Driver	3	2	5	17	15	32
Auto Passenger	1	0	1	5	4	9
Transit	0	0	0	2	3	5
Cyclist	0	0	0	2	2	4
Pedestrian	1	1	2	16	11	27
Total	5	3	8	42	35	77
<i>Proposed Development</i>						
Auto Driver	11	14	25	18	14	32
Auto Passenger	2	4	6	6	4	10
Transit	8	16	24	14	11	25
Cyclist	2	3	5	2	1	3
Pedestrian	11	15	26	16	11	27
Total	34	52	86	56	41	97
<i>Net Trips</i>						
Auto Driver	8	12	20	1	-1	0
Auto Passenger	1	4	5	1	0	1
Transit	8	16	24	12	8	20
Cyclist	2	3	5	0	-1	-1
Pedestrian	10	14	24	0	0	0
Total	29	49	78	14	6	20

319-327 Richmond Road TIA Report (Dec 2020) Excerpt

Figure 13: New Site Generation Auto Volumes



Appendix F:

TDM Checklists

TDM-Supportive Development Design and Infrastructure Checklist: *Residential Developments (multi-family or condominium)*

Legend	
REQUIRED	The Official Plan or Zoning By-law provides related guidance that must be followed
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

TDM-supportive design & infrastructure measures: <i>Residential developments</i>		Check if completed & add descriptions, explanations or plan/drawing references
1. WALKING & CYCLING: ROUTES		
1.1 Building location & access points		
BASIC	1.1.1 Locate building close to the street, and do not locate parking areas between the street and building entrances	☒
BASIC	1.1.2 Locate building entrances in order to minimize walking distances to sidewalks and transit stops/stations	☒
BASIC	1.1.3 Locate building doors and windows to ensure visibility of pedestrians from the building, for their security and comfort	☒
1.2 Facilities for walking & cycling		
REQUIRED	1.2.1 Provide convenient, direct access to stations or major stops along rapid transit routes within 600 metres; minimize walking distances from buildings to rapid transit; provide pedestrian-friendly, weather-protected (where possible) environment between rapid transit accesses and building entrances; ensure quality linkages from sidewalks through building entrances to integrated stops/stations (<i>see Official Plan policy 4.3.3</i>)	☒
REQUIRED	1.2.2 Provide safe, direct and attractive pedestrian access from public sidewalks to building entrances through such measures as: reducing distances between public sidewalks and major building entrances; providing walkways from public streets to major building entrances; within a site, providing walkways along the front of adjoining buildings, between adjacent buildings, and connecting areas where people may congregate, such as courtyards and transit stops; and providing weather protection through canopies, colonnades, and other design elements wherever possible (<i>see Official Plan policy 4.3.12</i>)	☒

TDM-supportive design & infrastructure measures: <i>Residential developments</i>		Check if completed & add descriptions, explanations or plan/drawing references
REQUIRED	1.2.3 Provide sidewalks of smooth, well-drained walking surfaces of contrasting materials or treatments to differentiate pedestrian areas from vehicle areas, and provide marked pedestrian crosswalks at intersection sidewalks (<i>see Official Plan policy 4.3.10</i>)	☒
REQUIRED	1.2.4 Make sidewalks and open space areas easily accessible through features such as gradual grade transition, depressed curbs at street corners and convenient access to extra-wide parking spaces and ramps (<i>see Official Plan policy 4.3.10</i>)	☒
REQUIRED	1.2.5 Include adequately spaced inter-block/street cycling and pedestrian connections to facilitate travel by active transportation. Provide links to the existing or planned network of public sidewalks, multi-use pathways and on-road cycle routes. Where public sidewalks and multi-use pathways intersect with roads, consider providing traffic control devices to give priority to cyclists and pedestrians (<i>see Official Plan policy 4.3.11</i>)	☒
BASIC	1.2.6 Provide safe, direct and attractive walking routes from building entrances to nearby transit stops	☒
BASIC	1.2.7 Ensure that walking routes to transit stops are secure, visible, lighted, shaded and wind-protected wherever possible	☒
BASIC	1.2.8 Design roads used for access or circulation by cyclists using a target operating speed of no more than 30 km/h, or provide a separated cycling facility	☐
1.3 Amenities for walking & cycling		
BASIC	1.3.1 Provide lighting, landscaping and benches along walking and cycling routes between building entrances and streets, sidewalks and trails	☒
BASIC	1.3.2 Provide wayfinding signage for site access (where required, e.g. when multiple buildings or entrances exist) and egress (where warranted, such as when directions to reach transit stops/stations, trails or other common destinations are not obvious)	☐

TDM-supportive design & infrastructure measures: <i>Residential developments</i>		Check if completed & add descriptions, explanations or plan/drawing references
2. WALKING & CYCLING: END-OF-TRIP FACILITIES		
2.1 Bicycle parking		
REQUIRED	2.1.1 Provide bicycle parking in highly visible and lighted areas, sheltered from the weather wherever possible (see <i>Official Plan policy 4.3.6</i>)	☒
REQUIRED	2.1.2 Provide the number of bicycle parking spaces specified for various land uses in different parts of Ottawa; provide convenient access to main entrances or well-used areas (see <i>Zoning By-law Section 111</i>)	☒
REQUIRED	2.1.3 Ensure that bicycle parking spaces and access aisles meet minimum dimensions; that no more than 50% of spaces are vertical spaces; and that parking racks are securely anchored (see <i>Zoning By-law Section 111</i>)	☒
BASIC	2.1.4 Provide bicycle parking spaces equivalent to the expected number of resident-owned bicycles, plus the expected peak number of visitor cyclists	☐
2.2 Secure bicycle parking		
REQUIRED	2.2.1 Where more than 50 bicycle parking spaces are provided for a single residential building, locate at least 25% of spaces within a building/structure, a secure area (e.g. supervised parking lot or enclosure) or bicycle lockers (see <i>Zoning By-law Section 111</i>)	☒
BETTER	2.2.2 Provide secure bicycle parking spaces equivalent to at least the number of units at condominiums or multi-family residential developments	☐
2.3 Bicycle repair station		
BETTER	2.3.1 Provide a permanent bike repair station, with commonly used tools and an air pump, adjacent to the main bicycle parking area (or secure bicycle parking area, if provided)	☐
3. TRANSIT		
3.1 Customer amenities		
BASIC	3.1.1 Provide shelters, lighting and benches at any on-site transit stops	☐
BASIC	3.1.2 Where the site abuts an off-site transit stop and insufficient space exists for a transit shelter in the public right-of-way, protect land for a shelter and/or install a shelter	☐
BETTER	3.1.3 Provide a secure and comfortable interior waiting area by integrating any on-site transit stops into the building	☐

TDM-supportive design & infrastructure measures: <i>Residential developments</i>		Check if completed & add descriptions, explanations or plan/drawing references
4. RIDESHARING		
4.1 Pick-up & drop-off facilities		
BASIC	4.1.1 Provide a designated area for carpool drivers (plus taxis and ride-hailing services) to drop off or pick up passengers without using fire lanes or other no-stopping zones	☒
5. CARSHARING & BIKESHARING		
5.1 Carshare parking spaces		
BETTER	5.1.1 Provide up to three carshare parking spaces in an R3, R4 or R5 Zone for specified residential uses (<i>see Zoning By-law Section 94</i>)	☐
5.2 Bikeshare station location		
BETTER	5.2.1 Provide a designated bikeshare station area near a major building entrance, preferably lighted and sheltered with a direct walkway connection	☐
6. PARKING		
6.1 Number of parking spaces		
REQUIRED	6.1.1 Do not provide more parking than permitted by zoning, nor less than required by zoning, unless a variance is being applied for	☒
BASIC	6.1.2 Provide parking for long-term and short-term users that is consistent with mode share targets, considering the potential for visitors to use off-site public parking	☐
BASIC	6.1.3 Where a site features more than one use, provide shared parking and reduce the cumulative number of parking spaces accordingly (<i>see Zoning By-law Section 104</i>)	☐
BETTER	6.1.4 Reduce the minimum number of parking spaces required by zoning by one space for each 13 square metres of gross floor area provided as shower rooms, change rooms, locker rooms and other facilities for cyclists in conjunction with bicycle parking (<i>see Zoning By-law Section 111</i>)	☐
6.2 Separate long-term & short-term parking areas		
BETTER	6.2.1 Provide separate areas for short-term and long-term parking (using signage or physical barriers) to permit access controls and simplify enforcement (i.e. to discourage residents from parking in visitor spaces, and vice versa)	☐

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: <i>Residential developments</i>		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 (<i>multi-family, condominium</i>)	☒
2.2 Bicycle skills training		
BETTER	2.2.1 Offer on-site cycling courses for residents, or subsidize off-site courses	☐

TDM measures: <i>Residential developments</i>		Check if proposed & add descriptions
3. TRANSIT		
3.1 Transit information		
BASIC	3.1.1 Display relevant transit schedules and route maps at entrances (<i>multi-family, condominium</i>)	☒
BETTER	3.1.2 Provide real-time arrival information display at entrances (<i>multi-family, condominium</i>)	☐
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 (<i>subdivision</i>)	☐
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 (<i>multi-family</i>)	☐
BETTER	4.1.2 Provide residents with bikeshare memberships, either free or subsidized (<i>multi-family</i>)	☐
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 (<i>condominium</i>)	☐
BASIC ★	5.1.2 Unbundle parking cost from monthly rent (<i>multi-family</i>)	☒

TDM measures: <i>Residential developments</i>		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 G:

TRANS Model

TRANS Regional Model

Version 2.15 - Assigned June 16, 2020

AM Peak Hour Total Traffic Volume

Westboro Area

2011 Model - Basecase

N/A

User Initials: MANS

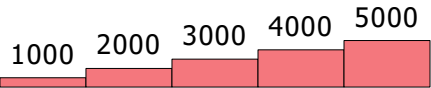
Plot Prepared: December 14, 2023

EMME Scenario: 21713

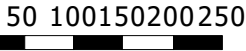


Legend

AM Peak Hour Total Traffic Volume



Distance (m)



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 2.15 - Assigned June 16, 2020

AM Peak Hour Total Traffic Volume

Westboro Area

2031 Model - Basecase

N/A

User Initials: MANS

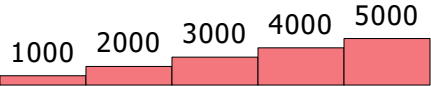
Plot Prepared: December 14, 2023

EMME Scenario: 21717

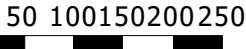


Legend

AM Peak Hour Total Traffic Volume



Distance (m)



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.

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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 H:

Synchro Analysis Reports

Existing Conditions

Lanes, Volumes, Timings
1: Churchill Avenue & Transitway/Scott Street

Existing AM
09/16/2025



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	1	77	163	43	6	89	184	37	193
Future Volume (vph)	1	77	163	43	6	89	184	37	193
Lane Group Flow (vph)	0	100	181	79	0	106	204	0	256
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Over	Perm	NA
Protected Phases		4	3	8		2	3		6
Permitted Phases	4		8		2			6	
Detector Phase	4	4	3	8	2	2	3	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	25.4	25.4	11.8	25.4	27.4	27.4	11.8	27.4	27.4
Total Split (s)	26.0	26.0	41.0	67.0	28.0	28.0	41.0	28.0	28.0
Total Split (%)	27.4%	27.4%	43.2%	70.5%	29.5%	29.5%	43.2%	29.5%	29.5%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.3	3.3	3.0	3.3	3.3
All-Red Time (s)	4.4	4.4	3.8	4.4	3.1	3.1	3.8	3.1	3.1
Lost Time Adjust (s)		0.0	0.0	0.0		0.0	0.0		0.0
Total Lost Time (s)		7.4	6.8	7.4		6.4	6.8		6.4
Lead/Lag	Lag	Lag	Lead				Lead		
Lead-Lag Optimize?	Yes	Yes	Yes				Yes		
Recall Mode	Max	Max	Min	Max	None	None	Min	None	None
Act Effct Green (s)		34.3	60.3	59.7		18.2	18.6		18.2
Actuated g/C Ratio		0.37	0.66	0.65		0.20	0.20		0.20
v/c Ratio		0.28	0.23	0.11		0.31	0.71		0.80
Control Delay		24.9	7.5	5.0		33.6	47.4		53.4
Queue Delay		0.0	0.0	0.0		0.0	0.0		0.0
Total Delay		24.9	7.5	5.0		33.6	47.4		53.4
LOS		C	A	A		C	D		D
Approach Delay		24.9		6.7		42.7			53.4
Approach LOS		C		A		D			D
Queue Length 50th (m)		11.6	11.6	3.0		16.1	34.4		43.3
Queue Length 95th (m)		28.3	21.2	8.5		30.2	53.1		#71.3
Internal Link Dist (m)		133.0		226.0		312.2			409.2
Turn Bay Length (m)			70.0						
Base Capacity (vph)		363	877	703		404	529		383
Starvation Cap Reductn		0	0	0		0	0		0
Spillback Cap Reductn		0	0	0		0	0		0
Storage Cap Reductn		0	0	0		0	0		0
Reduced v/c Ratio		0.28	0.21	0.11		0.26	0.39		0.67

Intersection Summary

Cycle Length: 95

Actuated Cycle Length: 91.7

Natural Cycle: 70

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 33.6

Intersection LOS: C

Intersection Capacity Utilization 62.2%

ICU Level of Service B

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: Churchill Avenue & Transitway/Scott Street



Lanes, Volumes, Timings
4: West Village Private/Lanark Avenue & Scott Street

Existing AM
09/16/2025

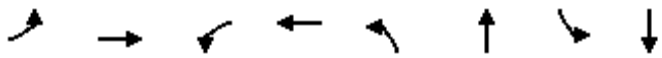
								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	30	414	6	307	7	1	57	0
Future Volume (vph)	30	414	6	307	7	1	57	0
Lane Group Flow (vph)	33	467	7	383	8	22	63	71
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	21.6	21.6	21.6	21.6	28.2	28.2	28.2	28.2
Total Split (s)	66.0	66.0	66.0	66.0	29.0	29.0	29.0	29.0
Total Split (%)	69.5%	69.5%	69.5%	69.5%	30.5%	30.5%	30.5%	30.5%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.3	3.3	3.3	3.3	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.2	6.2	6.2	6.2
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	39.4	39.4	39.4	39.4	42.8	42.8	42.8	42.8
Actuated g/C Ratio	0.41	0.41	0.41	0.41	0.45	0.45	0.45	0.45
v/c Ratio	0.11	0.75	0.03	0.60	0.01	0.03	0.11	0.08
Control Delay	14.2	30.2	12.0	23.6	20.4	9.6	20.2	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.2	30.2	12.0	23.6	20.4	9.6	20.2	0.2
LOS	B	C	B	C	C	A	C	A
Approach Delay		29.2		23.4		12.5		9.6
Approach LOS		C		C		B		A
Queue Length 50th (m)	3.6	70.3	0.7	51.4	0.8	0.1	6.5	0.0
Queue Length 95th (m)	7.0	79.2	2.5	58.7	4.3	5.3	18.1	0.0
Internal Link Dist (m)		213.7		548.0		112.2		176.6
Turn Bay Length (m)	40.0		40.0		10.0		30.0	
Base Capacity (vph)	457	940	368	961	561	687	586	929
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.50	0.02	0.40	0.01	0.03	0.11	0.08
Intersection Summary								
Cycle Length: 95								
Actuated Cycle Length: 95								
Offset: 83 (87%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green								
Natural Cycle: 60								
Control Type: Actuated-Coordinated								
Maximum v/c Ratio: 0.75								
Intersection Signal Delay: 24.1					Intersection LOS: C			
Intersection Capacity Utilization 55.3%					ICU Level of Service B			
Analysis Period (min) 15								

Splits and Phases: 4: West Village Private/Lanark Avenue & Scott Street



Lanes, Volumes, Timings
10: Churchill Avenue & Richmond Road

Existing AM
09/16/2025

									Ø4	Ø9	Ø10	Ø11
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Lane Configurations												
Traffic Volume (vph)	262	390	43	183	24	273	21	319				
Future Volume (vph)	262	390	43	183	24	273	21	319				
Lane Group Flow (vph)	291	465	48	224	27	395	0	527				
Turn Type	custom	NA	custom	NA	Perm	NA	Perm	NA				
Protected Phases	7	4 10		8 11		2		6	4	9	10	11
Permitted Phases	4		8		2		6					
Detector Phase	7	4 10	8	8 11	2	2	6	6				
Switch Phase												
Minimum Initial (s)	5.0		10.0		10.0	10.0	10.0	10.0	10.0	3.0	3.0	3.0
Minimum Split (s)	11.1		26.1		19.2	19.2	19.2	19.2	26.1	5.0	5.0	5.0
Total Split (s)	13.9		26.1		30.0	30.0	30.0	30.0	40.0	5.0	5.0	5.0
Total Split (%)	17.4%		32.6%		37.5%	37.5%	37.5%	37.5%	50%	6%	6%	6%
Yellow Time (s)	3.3		3.3		3.6	3.6	3.6	3.6	3.3	2.0	2.0	2.0
All-Red Time (s)	2.8		2.8		2.6	2.6	2.6	2.6	2.8	0.0	0.0	0.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0		0.0				
Total Lost Time (s)	6.1		6.1		6.2	6.2		6.2				
Lead/Lag	Lead				Lag	Lag	Lag	Lag		Lead		Lag
Lead-Lag Optimize?	Yes				Yes	Yes	Yes	Yes		Yes		Yes
Recall Mode	None		C-Max		None	None	None	None	C-Max	None	None	None
Act Effct Green (s)	38.9	33.9	20.0	20.0	27.8	27.8		27.8				
Actuated g/C Ratio	0.49	0.42	0.25	0.25	0.35	0.35		0.35				
v/c Ratio	0.63	0.63	0.24	0.53	0.14	0.69		0.94				
Control Delay	20.3	22.6	27.8	30.7	21.4	29.8		53.7				
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0				
Total Delay	20.3	22.6	27.8	30.7	21.4	29.8		53.7				
LOS	C	C	C	C	C	C		D				
Approach Delay		21.7		30.2		29.3		53.7				
Approach LOS		C		C		C		D				
Queue Length 50th (m)	26.1	53.0	5.8	28.6	2.7	47.2		72.0				
Queue Length 95th (m)	42.9	83.6	14.9	49.5	9.3	#96.4		#147.0				
Internal Link Dist (m)		201.3		218.6		353.2		312.2				
Turn Bay Length (m)	35.0		25.0		15.0							
Base Capacity (vph)	461	737	199	421	196	574		558				
Starvation Cap Reductn	0	0	0	0	0	0		0				
Spillback Cap Reductn	0	0	0	0	0	0		0				
Storage Cap Reductn	0	0	0	0	0	0		0				
Reduced v/c Ratio	0.63	0.63	0.24	0.53	0.14	0.69		0.94				

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 43 (54%), Referenced to phase 8:WBTL and 4:EBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.94

Intersection Signal Delay: 33.0

Intersection LOS: C

Intersection Capacity Utilization 93.7%

ICU Level of Service F

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 10: Churchill Avenue & Richmond Road

					
5 s	30 s	13.9 s		5 s	26.1 s
					
5 s	30 s	5 s	40 s		

Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	3.0
Minimum Split (s)	5.0
Total Split (s)	5.0
Total Split (%)	6%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings
11: McRae Avenue & Richmond Road

Existing AM
09/16/2025

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø9	Ø13
Lane Configurations										
Traffic Volume (vph)	99	333	9	247	15	15	72	16		
Future Volume (vph)	99	333	9	247	15	15	72	16		
Lane Group Flow (vph)	110	406	10	374	17	29	0	151		
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA		
Protected Phases		4		8		2		6	9	13
Permitted Phases	4		8		2		6			
Detector Phase	4	4	8	8	2	2	6	6		
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	3.0	3.0
Minimum Split (s)	35.2	35.2	35.2	35.2	22.5	22.5	22.5	22.5	5.0	5.0
Total Split (s)	47.0	47.0	47.0	47.0	23.0	23.0	23.0	23.0	5.0	5.0
Total Split (%)	62.7%	62.7%	62.7%	62.7%	30.7%	30.7%	30.7%	30.7%	7%	7%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	2.0	2.0
All-Red Time (s)	2.9	2.9	2.9	2.9	2.2	2.2	2.2	2.2	0.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0		
Total Lost Time (s)	6.2	6.2	6.2	6.2	5.5	5.5		5.5		
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	49.3	49.3	49.3	49.3	13.0	13.0		13.0		
Actuated g/C Ratio	0.66	0.66	0.66	0.66	0.17	0.17		0.17		
v/c Ratio	0.18	0.19	0.02	0.35	0.08	0.10		0.62		
Control Delay	7.4	5.8	6.6	6.9	24.9	18.0		32.9		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0		
Total Delay	7.4	5.8	6.6	6.9	24.9	18.0		32.9		
LOS	A	A	A	A	C	B		C		
Approach Delay		6.1		6.9		20.5		32.9		
Approach LOS		A		A		C		C		
Queue Length 50th (m)	4.8	8.8	0.2	3.3	2.1	2.1		15.4		
Queue Length 95th (m)	16.0	20.7	m1.3	47.7	6.6	7.8		30.9		
Internal Link Dist (m)		81.0		187.3		44.7		176.9		
Turn Bay Length (m)	40.0		55.0							
Base Capacity (vph)	597	2132	535	1054	276	395		316		
Starvation Cap Reductn	0	0	0	0	0	0		0		
Spillback Cap Reductn	0	0	0	0	0	0		0		
Storage Cap Reductn	0	0	0	0	0	0		0		
Reduced v/c Ratio	0.18	0.19	0.02	0.35	0.06	0.07		0.48		

Intersection Summary

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 16 (21%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.62

Intersection Signal Delay: 10.7

Intersection LOS: B

Intersection Capacity Utilization 62.7%

ICU Level of Service B

Analysis Period (min) 15

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

Splits and Phases: 11: McRae Avenue & Richmond Road



Lanes, Volumes, Timings
12: Kirkwood Avenue & Richmond Road

Existing AM
09/16/2025

												
Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	Ø1	Ø3	Ø9
Lane Configurations												
Traffic Volume (vph)	297	128	189	236	9	120	25	8	30			
Future Volume (vph)	297	128	189	236	9	120	25	8	30			
Lane Group Flow (vph)	330	142	0	472	10	133	167	0	44			
Turn Type	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA			
Protected Phases	4			8			2		6	1	3	9
Permitted Phases		4	8		8	2		6				
Detector Phase	4	4	8	8	8	2	2	6	6			
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	3.0	3.0	3.0
Minimum Split (s)	26.1	26.1	26.1	26.1	26.1	22.6	22.6	22.6	22.6	5.0	5.0	5.0
Total Split (s)	35.0	35.0	35.0	35.0	35.0	30.0	30.0	30.0	30.0	5.0	5.0	5.0
Total Split (%)	46.7%	46.7%	46.7%	46.7%	46.7%	40.0%	40.0%	40.0%	40.0%	7%	7%	7%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	2.0	2.0	2.0
All-Red Time (s)	2.8	2.8	2.8	2.8	2.8	2.3	2.3	2.3	2.3	0.0	0.0	0.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0		0.0			
Total Lost Time (s)	6.1	6.1		6.1	6.1	5.6	5.6		5.6			
Lead/Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None	None	None
Act Effct Green (s)	47.0	47.0		47.0	47.0	13.8	13.8		13.8			
Actuated g/C Ratio	0.63	0.63		0.63	0.63	0.18	0.18		0.18			
v/c Ratio	0.30	0.16		0.63	0.01	0.58	0.45		0.16			
Control Delay	6.8	1.0		17.4	0.0	37.5	10.9		24.4			
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0		0.0			
Total Delay	6.8	1.0		17.4	0.0	37.5	10.9		24.4			
LOS	A	A		B	A	D	B		C			
Approach Delay	5.0			17.1			22.7		24.4			
Approach LOS	A			B			C		C			
Queue Length 50th (m)	11.2	0.0		31.1	0.0	17.5	3.4		5.1			
Queue Length 95th (m)	30.4	2.0		#118.4	0.0	30.9	16.8		12.0			
Internal Link Dist (m)	187.3			176.5			528.9		134.6			
Turn Bay Length (m)		35.0										
Base Capacity (vph)	1085	905		755	837	405	552		481			
Starvation Cap Reductn	0	0		0	0	0	0		0			
Spillback Cap Reductn	0	0		0	0	0	0		0			
Storage Cap Reductn	0	0		0	0	0	0		0			
Reduced v/c Ratio	0.30	0.16		0.63	0.01	0.33	0.30		0.09			

Intersection Summary

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 25 (33%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.63

Intersection Signal Delay: 14.2

Intersection LOS: B

Intersection Capacity Utilization 69.5%

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: 12: Kirkwood Avenue & Richmond Road

			
5 s	30 s	5 s	35 s
			
5 s	30 s	5 s	35 s

Lane Group	Ø10
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	10
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	3.0
Minimum Split (s)	5.0
Total Split (s)	5.0
Total Split (%)	7%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings
13: Scott Street & Athlone Pedestrian Signal

Existing AM
09/16/2025

	→ ←			
Lane Group	EBT	WBT	Ø9	Ø10
Lane Configurations	↑	↑		
Traffic Volume (vph)	298	254		
Future Volume (vph)	298	254		
Lane Group Flow (vph)	331	282		
Turn Type	NA	NA		
Protected Phases	4	8	9	10
Permitted Phases				
Detector Phase	4	8		
Switch Phase				
Minimum Initial (s)	10.0	10.0	5.0	4.0
Minimum Split (s)	15.3	15.3	22.0	6.0
Total Split (s)	37.0	37.0	22.0	6.0
Total Split (%)	56.9%	56.9%	34%	9%
Yellow Time (s)	3.3	3.3	3.0	2.0
All-Red Time (s)	2.0	2.0	1.0	0.0
Lost Time Adjust (s)	0.0	0.0		
Total Lost Time (s)	5.3	5.3		
Lead/Lag			Lead	Lag
Lead-Lag Optimize?			Yes	Yes
Recall Mode	C-Max	C-Max	None	None
Act Effct Green (s)	48.6	48.6		
Actuated g/C Ratio	0.75	0.75		
v/c Ratio	0.29	0.25		
Control Delay	6.6	3.9		
Queue Delay	0.0	0.0		
Total Delay	6.6	3.9		
LOS	A	A		
Approach Delay	6.6	3.9		
Approach LOS	A	A		
Queue Length 50th (m)	19.1	7.8		
Queue Length 95th (m)	33.5	12.2		
Internal Link Dist (m)	226.0	5.6		
Turn Bay Length (m)				
Base Capacity (vph)	1134	1134		
Starvation Cap Reductn	0	0		
Spillback Cap Reductn	0	0		
Storage Cap Reductn	0	0		
Reduced v/c Ratio	0.29	0.25		

Intersection Summary

Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 62 (95%), Referenced to phase 4:EBT and 8:WBT, Start of Green	
Natural Cycle: 50	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.29	
Intersection Signal Delay: 5.4	Intersection LOS: A
Intersection Capacity Utilization 21.0%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 13: Scott Street & Athlone Pedestrian Signal

→ Ø4 (R) 37 s	→ Ø9 ← Ø8 (R) 22 s 37 s	→ Ø10 ← Ø6 (R) 6 s 37 s
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Lanes, Volumes, Timings
14: Scott Street & Tweedsmuir Pedestrian Signal

Existing AM
09/16/2025

	→	←	
Lane Group	EBT	WBT	Ø9
Lane Configurations	↑	↑	
Traffic Volume (vph)	318	257	
Future Volume (vph)	318	257	
Lane Group Flow (vph)	353	286	
Turn Type	NA	NA	
Protected Phases	4	8	9
Permitted Phases			
Detector Phase	4	8	
Switch Phase			
Minimum Initial (s)	10.0	10.0	5.0
Minimum Split (s)	15.5	15.5	22.0
Total Split (s)	43.0	43.0	22.0
Total Split (%)	66.2%	66.2%	34%
Yellow Time (s)	3.3	3.3	3.0
All-Red Time (s)	2.2	2.2	1.0
Lost Time Adjust (s)	0.0	0.0	
Total Lost Time (s)	5.5	5.5	
Lead/Lag			
Lead-Lag Optimize?			
Recall Mode	C-Max	C-Max	None
Act Effct Green (s)	48.5	48.5	
Actuated g/C Ratio	0.75	0.75	
v/c Ratio	0.31	0.25	
Control Delay	3.5	6.4	
Queue Delay	0.0	0.0	
Total Delay	3.5	6.4	
LOS	A	A	
Approach Delay	3.5	6.4	
Approach LOS	A	A	
Queue Length 50th (m)	8.2	16.0	
Queue Length 95th (m)	12.4	28.5	
Internal Link Dist (m)	0.1	213.7	
Turn Bay Length (m)			
Base Capacity (vph)	1132	1132	
Starvation Cap Reductn	0	0	
Spillback Cap Reductn	0	0	
Storage Cap Reductn	0	0	
Reduced v/c Ratio	0.31	0.25	

Intersection Summary

Cycle Length: 65
 Actuated Cycle Length: 65
 Offset: 58 (89%), Referenced to phase 4:EBT and 8:WBT, Start of Green
 Natural Cycle: 45
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.31
 Intersection Signal Delay: 4.8
 Intersection Capacity Utilization 22.3%
 Analysis Period (min) 15

Intersection LOS: A
 ICU Level of Service A

Splits and Phases: 14: Scott Street & Tweedsmuir Pedestrian Signal



Lanes, Volumes, Timings
15: Richmond Road & Athlone Pedestrian Signal

Existing AM
09/16/2025

	→	←	
Lane Group	EBT	WBT	Ø9
Lane Configurations	↑	↑	
Traffic Volume (vph)	451	330	
Future Volume (vph)	451	330	
Lane Group Flow (vph)	501	367	
Turn Type	NA	NA	
Protected Phases	4	8	9
Permitted Phases			
Detector Phase	4	8	
Switch Phase			
Minimum Initial (s)	10.0	10.0	5.0
Minimum Split (s)	16.0	16.0	23.0
Total Split (s)	42.0	42.0	23.0
Total Split (%)	64.6%	64.6%	35%
Yellow Time (s)	3.3	3.3	3.0
All-Red Time (s)	2.7	2.7	1.0
Lost Time Adjust (s)	0.0	0.0	
Total Lost Time (s)	6.0	6.0	
Lead/Lag			
Lead-Lag Optimize?			
Recall Mode	None	None	None
Act Effct Green (s)	24.4	24.4	
Actuated g/C Ratio	0.78	0.78	
v/c Ratio	0.36	0.26	
Control Delay	7.6	6.7	
Queue Delay	0.0	0.0	
Total Delay	7.6	6.7	
LOS	A	A	
Approach Delay	7.6	6.7	
Approach LOS	A	A	
Queue Length 50th (m)	0.0	0.0	
Queue Length 95th (m)	58.1	39.3	
Internal Link Dist (m)	218.6	2.9	
Turn Bay Length (m)			
Base Capacity (vph)	1555	1555	
Starvation Cap Reductn	0	0	
Spillback Cap Reductn	0	0	
Storage Cap Reductn	0	0	
Reduced v/c Ratio	0.32	0.24	
Intersection Summary			
Cycle Length: 65			
Actuated Cycle Length: 31.2			
Natural Cycle: 50			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.36			
Intersection Signal Delay: 7.2		Intersection LOS: A	
Intersection Capacity Utilization 30.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 15: Richmond Road & Athlone Pedestrian Signal

→ Ø4	← Ø8	← Ø9
42 s	42 s	23 s
← Ø8		
42 s		

HCM Unsignalized Intersection Capacity Analysis

2: Athlone Avenue & Scott Street

Existing AM
09/16/2025

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	290	8	23	231	3	28
Future Volume (Veh/h)	290	8	23	231	3	28
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	322	9	26	257	3	31
Pedestrians	64			16	17	
Lane Width (m)	3.7			3.7	3.7	
Walking Speed (m/s)	1.1			1.1	1.1	
Percent Blockage	6			1	2	
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	30			108		
pX, platoon unblocked			0.92		0.94	0.92
vC, conflicting volume			348		716	360
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			250		579	263
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		99	96
cM capacity (veh/h)			1193		406	693
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	331	283	34			
Volume Left	0	26	3			
Volume Right	9	0	31			
cSH	1700	1193	653			
Volume to Capacity	0.19	0.02	0.05			
Queue Length 95th (m)	0.0	0.5	1.3			
Control Delay (s)	0.0	0.9	10.8			
Lane LOS		A	B			
Approach Delay (s)	0.0	0.9	10.8			
Approach LOS			B			
Intersection Summary						
Average Delay			1.0			
Intersection Capacity Utilization			47.2%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis 3: Tweedsmuir Avenue & Scott Street

Existing AM
09/16/2025

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	315	3	7	250	4	35
Future Volume (Veh/h)	315	3	7	250	4	35
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	350	3	8	278	4	39
Pedestrians	6			122	15	
Lane Width (m)	3.7			3.7	3.7	
Walking Speed (m/s)	1.1			1.1	1.1	
Percent Blockage	1			11	1	
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	116			22		
pX, platoon unblocked			0.95		0.96	0.95
vC, conflicting volume			368		666	488
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			307		511	434
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		99	92
cM capacity (veh/h)			1173		488	516
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	353	286	43			
Volume Left	0	8	4			
Volume Right	3	0	39			
cSH	1700	1173	513			
Volume to Capacity	0.21	0.01	0.08			
Queue Length 95th (m)	0.0	0.2	2.1			
Control Delay (s)	0.0	0.3	12.7			
Lane LOS		A	B			
Approach Delay (s)	0.0	0.3	12.7			
Approach LOS			B			
Intersection Summary						
Average Delay			0.9			
Intersection Capacity Utilization			39.8%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
5: Athlone Avenue & Richmond Road

Existing AM
09/16/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	434	5	5	312	13	5	2	9	8	3	12
Future Volume (Veh/h)	12	434	5	5	312	13	5	2	9	8	3	12
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	13	482	6	6	347	14	6	2	10	9	3	13
Pedestrians		23			2			53			64	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		2			0			5			6	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		27			188							
pX, platoon unblocked				0.80			0.80	0.80	0.80	0.80	0.80	
vC, conflicting volume	425			541			968	1001	540	954	997	441
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	425			299			833	875	298	816	870	441
tC, single (s)	4.2			4.1			7.5	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.9	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			96	99	98	95	99	98
cM capacity (veh/h)	1037			967			162	203	565	197	204	571
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	501	367	18	25								
Volume Left	13	6	6	9								
Volume Right	6	14	10	13								
cSH	1037	967	278	301								
Volume to Capacity	0.01	0.01	0.06	0.08								
Queue Length 95th (m)	0.3	0.1	1.6	2.1								
Control Delay (s)	0.4	0.2	18.8	18.0								
Lane LOS	A	A	C	C								
Approach Delay (s)	0.4	0.2	18.8	18.0								
Approach LOS			C	C								
Intersection Summary												
Average Delay			1.2									
Intersection Capacity Utilization			46.9%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
6: Tweedsmuir Avenue & Richmond Road

Existing AM
09/16/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	399	11	8	303	9	5	13	23	9	8	22
Future Volume (Veh/h)	41	399	11	8	303	9	5	13	23	9	8	22
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	46	443	12	9	337	10	6	14	26	10	9	24
Pedestrians		1			4			4			46	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		0			0			0			4	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		110			105							
pX, platoon unblocked	0.96			0.82			0.84	0.84	0.82	0.84	0.84	0.96
vC, conflicting volume	393			459			930	956	457	979	952	384
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	347			233			716	747	230	774	742	338
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.4
p0 queue free %	96			99			98	95	96	95	97	96
cM capacity (veh/h)	1124			1102			254	262	664	218	264	632
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1							
Volume Total	501	346	10	46	43							
Volume Left	46	9	0	6	10							
Volume Right	12	0	10	26	24							
cSH	1124	1102	1700	396	365							
Volume to Capacity	0.04	0.01	0.01	0.12	0.12							
Queue Length 95th (m)	1.0	0.2	0.0	3.0	3.0							
Control Delay (s)	1.2	0.3	0.0	15.3	16.2							
Lane LOS	A	A		C	C							
Approach Delay (s)	1.2	0.3		15.3	16.2							
Approach LOS				C	C							
Intersection Summary												
Average Delay			2.2									
Intersection Capacity Utilization			57.2%			ICU Level of Service				B		
Analysis Period (min)			15									

Lanes, Volumes, Timings
1: Churchill Avenue & Transitway/Scott Street

Existing AM
09/16/2025



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	1	77	163	43	6	89	184	37	193
Future Volume (vph)	1	77	163	43	6	89	184	37	193
Lane Group Flow (vph)	0	100	181	79	0	106	204	0	256
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Over	Perm	NA
Protected Phases		4	3	8		2	3		6
Permitted Phases	4		8		2			6	
Detector Phase	4	4	3	8	2	2	3	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	25.4	25.4	11.8	25.4	27.4	27.4	11.8	27.4	27.4
Total Split (s)	26.0	26.0	41.0	67.0	28.0	28.0	41.0	28.0	28.0
Total Split (%)	27.4%	27.4%	43.2%	70.5%	29.5%	29.5%	43.2%	29.5%	29.5%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.3	3.3	3.0	3.3	3.3
All-Red Time (s)	4.4	4.4	3.8	4.4	3.1	3.1	3.8	3.1	3.1
Lost Time Adjust (s)		0.0	0.0	0.0		0.0	0.0		0.0
Total Lost Time (s)		7.4	6.8	7.4		6.4	6.8		6.4
Lead/Lag	Lag	Lag	Lead				Lead		
Lead-Lag Optimize?	Yes	Yes	Yes				Yes		
Recall Mode	Max	Max	Min	Max	None	None	Min	None	None
Act Effct Green (s)		34.3	60.3	59.7		18.2	18.6		18.2
Actuated g/C Ratio		0.37	0.66	0.65		0.20	0.20		0.20
v/c Ratio		0.28	0.23	0.11		0.31	0.71		0.80
Control Delay		24.9	7.5	5.0		33.6	47.4		53.4
Queue Delay		0.0	0.0	0.0		0.0	0.0		0.0
Total Delay		24.9	7.5	5.0		33.6	47.4		53.4
LOS		C	A	A		C	D		D
Approach Delay		24.9		6.7		42.7			53.4
Approach LOS		C		A		D			D
Queue Length 50th (m)		11.6	11.6	3.0		16.1	34.4		43.3
Queue Length 95th (m)		28.3	21.2	8.5		30.2	53.1		#71.3
Internal Link Dist (m)		133.0		226.0		312.2			409.2
Turn Bay Length (m)			70.0						
Base Capacity (vph)		363	877	703		404	529		383
Starvation Cap Reductn		0	0	0		0	0		0
Spillback Cap Reductn		0	0	0		0	0		0
Storage Cap Reductn		0	0	0		0	0		0
Reduced v/c Ratio		0.28	0.21	0.11		0.26	0.39		0.67

Intersection Summary

Cycle Length: 95

Actuated Cycle Length: 91.7

Natural Cycle: 70

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 33.6

Intersection LOS: C

Intersection Capacity Utilization 62.2%

ICU Level of Service B

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 1: Churchill Avenue & Transitway/Scott Street



Lanes, Volumes, Timings
4: West Village Private/Lanark Avenue & Scott Street

Existing AM
09/16/2025

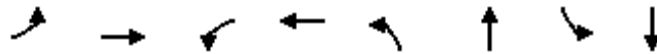
								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	30	414	6	307	7	1	57	0
Future Volume (vph)	30	414	6	307	7	1	57	0
Lane Group Flow (vph)	33	467	7	383	8	22	63	71
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	21.6	21.6	21.6	21.6	28.2	28.2	28.2	28.2
Total Split (s)	66.0	66.0	66.0	66.0	29.0	29.0	29.0	29.0
Total Split (%)	69.5%	69.5%	69.5%	69.5%	30.5%	30.5%	30.5%	30.5%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.3	3.3	3.3	3.3	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.2	6.2	6.2	6.2
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	39.4	39.4	39.4	39.4	42.8	42.8	42.8	42.8
Actuated g/C Ratio	0.41	0.41	0.41	0.41	0.45	0.45	0.45	0.45
v/c Ratio	0.11	0.75	0.03	0.60	0.01	0.03	0.11	0.08
Control Delay	14.2	30.2	12.0	23.6	20.4	9.6	20.2	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.2	30.2	12.0	23.6	20.4	9.6	20.2	0.2
LOS	B	C	B	C	C	A	C	A
Approach Delay		29.2		23.4		12.5		9.6
Approach LOS		C		C		B		A
Queue Length 50th (m)	3.6	70.3	0.7	51.4	0.8	0.1	6.5	0.0
Queue Length 95th (m)	7.0	79.2	2.5	58.7	4.3	5.3	18.1	0.0
Internal Link Dist (m)		213.7		548.0		112.2		176.6
Turn Bay Length (m)	40.0		40.0		10.0		30.0	
Base Capacity (vph)	457	940	368	961	561	687	586	929
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.50	0.02	0.40	0.01	0.03	0.11	0.08
Intersection Summary								
Cycle Length: 95								
Actuated Cycle Length: 95								
Offset: 83 (87%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green								
Natural Cycle: 60								
Control Type: Actuated-Coordinated								
Maximum v/c Ratio: 0.75								
Intersection Signal Delay: 24.1					Intersection LOS: C			
Intersection Capacity Utilization 55.3%					ICU Level of Service B			
Analysis Period (min) 15								

Splits and Phases: 4: West Village Private/Lanark Avenue & Scott Street



Lanes, Volumes, Timings
10: Churchill Avenue & Richmond Road

Existing AM
09/16/2025



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø4	Ø9	Ø10	Ø11
Lane Configurations												
Traffic Volume (vph)	262	390	43	183	24	273	21	319				
Future Volume (vph)	262	390	43	183	24	273	21	319				
Lane Group Flow (vph)	291	465	48	224	27	395	0	527				
Turn Type	custom	NA	custom	NA	Perm	NA	Perm	NA				
Protected Phases	7	4 10		8 11		2		6	4	9	10	11
Permitted Phases	4		8		2		6					
Detector Phase	7	4 10	8	8 11	2	2	6	6				
Switch Phase												
Minimum Initial (s)	5.0		10.0		10.0	10.0	10.0	10.0	10.0	3.0	3.0	3.0
Minimum Split (s)	11.1		26.1		19.2	19.2	19.2	19.2	26.1	5.0	5.0	5.0
Total Split (s)	13.9		26.1		30.0	30.0	30.0	30.0	40.0	5.0	5.0	5.0
Total Split (%)	17.4%		32.6%		37.5%	37.5%	37.5%	37.5%	50%	6%	6%	6%
Yellow Time (s)	3.3		3.3		3.6	3.6	3.6	3.6	3.3	2.0	2.0	2.0
All-Red Time (s)	2.8		2.8		2.6	2.6	2.6	2.6	2.8	0.0	0.0	0.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0		0.0				
Total Lost Time (s)	6.1		6.1		6.2	6.2		6.2				
Lead/Lag	Lead				Lag	Lag	Lag	Lag		Lead		Lag
Lead-Lag Optimize?	Yes				Yes	Yes	Yes	Yes		Yes		Yes
Recall Mode	None		C-Max		None	None	None	None	C-Max	None	None	None
Act Effct Green (s)	38.9	33.9	20.0	20.0	27.8	27.8		27.8				
Actuated g/C Ratio	0.49	0.42	0.25	0.25	0.35	0.35		0.35				
v/c Ratio	0.63	0.63	0.24	0.53	0.14	0.69		0.94				
Control Delay	20.3	22.6	27.8	30.7	21.4	29.8		53.7				
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0				
Total Delay	20.3	22.6	27.8	30.7	21.4	29.8		53.7				
LOS	C	C	C	C	C	C		D				
Approach Delay		21.7		30.2		29.3		53.7				
Approach LOS		C		C		C		D				
Queue Length 50th (m)	26.1	53.0	5.8	28.6	2.7	47.2		72.0				
Queue Length 95th (m)	42.9	83.6	14.9	49.5	9.3	#96.4		#147.0				
Internal Link Dist (m)		201.3		218.6		353.2		312.2				
Turn Bay Length (m)	35.0		25.0		15.0							
Base Capacity (vph)	461	737	199	421	196	574		558				
Starvation Cap Reductn	0	0	0	0	0	0		0				
Spillback Cap Reductn	0	0	0	0	0	0		0				
Storage Cap Reductn	0	0	0	0	0	0		0				
Reduced v/c Ratio	0.63	0.63	0.24	0.53	0.14	0.69		0.94				

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 43 (54%), Referenced to phase 8:WBTL and 4:EBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.94

Intersection Signal Delay: 33.0

Intersection LOS: C

Intersection Capacity Utilization 93.7%

ICU Level of Service F

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 10: Churchill Avenue & Richmond Road

5 s	30 s	13.9 s	5 s	26.1 s			
5 s	30 s	5 s	40 s				

Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	3.0
Minimum Split (s)	5.0
Total Split (s)	5.0
Total Split (%)	6%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings
11: McRae Avenue & Richmond Road

Existing AM
09/16/2025

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø9	Ø13
Lane Configurations										
Traffic Volume (vph)	99	333	9	247	15	15	72	16		
Future Volume (vph)	99	333	9	247	15	15	72	16		
Lane Group Flow (vph)	110	406	10	374	17	29	0	151		
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA		
Protected Phases		4		8		2		6	9	13
Permitted Phases	4		8		2		6			
Detector Phase	4	4	8	8	2	2	6	6		
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	3.0	3.0
Minimum Split (s)	35.2	35.2	35.2	35.2	22.5	22.5	22.5	22.5	5.0	5.0
Total Split (s)	47.0	47.0	47.0	47.0	23.0	23.0	23.0	23.0	5.0	5.0
Total Split (%)	62.7%	62.7%	62.7%	62.7%	30.7%	30.7%	30.7%	30.7%	7%	7%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	2.0	2.0
All-Red Time (s)	2.9	2.9	2.9	2.9	2.2	2.2	2.2	2.2	0.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0		
Total Lost Time (s)	6.2	6.2	6.2	6.2	5.5	5.5		5.5		
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	49.3	49.3	49.3	49.3	13.0	13.0		13.0		
Actuated g/C Ratio	0.66	0.66	0.66	0.66	0.17	0.17		0.17		
v/c Ratio	0.18	0.19	0.02	0.35	0.08	0.10		0.62		
Control Delay	7.4	5.8	6.6	6.9	24.9	18.0		32.9		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0		
Total Delay	7.4	5.8	6.6	6.9	24.9	18.0		32.9		
LOS	A	A	A	A	C	B		C		
Approach Delay		6.1		6.9		20.5		32.9		
Approach LOS		A		A		C		C		
Queue Length 50th (m)	4.8	8.8	0.2	3.3	2.1	2.1		15.4		
Queue Length 95th (m)	16.0	20.7	m1.3	47.7	6.6	7.8		30.9		
Internal Link Dist (m)		81.0		187.3		44.7		176.9		
Turn Bay Length (m)	40.0		55.0							
Base Capacity (vph)	597	2132	535	1054	276	395		316		
Starvation Cap Reductn	0	0	0	0	0	0		0		
Spillback Cap Reductn	0	0	0	0	0	0		0		
Storage Cap Reductn	0	0	0	0	0	0		0		
Reduced v/c Ratio	0.18	0.19	0.02	0.35	0.06	0.07		0.48		

Intersection Summary

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 16 (21%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.62

Intersection Signal Delay: 10.7

Intersection LOS: B

Intersection Capacity Utilization 62.7%

ICU Level of Service B

Analysis Period (min) 15

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

Splits and Phases: 11: McRae Avenue & Richmond Road



Lanes, Volumes, Timings
12: Kirkwood Avenue & Richmond Road

Existing AM
09/16/2025

												
Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	Ø1	Ø3	Ø9
Lane Configurations												
Traffic Volume (vph)	297	128	189	236	9	120	25	8	30			
Future Volume (vph)	297	128	189	236	9	120	25	8	30			
Lane Group Flow (vph)	330	142	0	472	10	133	167	0	44			
Turn Type	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA			
Protected Phases	4			8			2		6	1	3	9
Permitted Phases		4	8		8	2		6				
Detector Phase	4	4	8	8	8	2	2	6	6			
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	3.0	3.0	3.0
Minimum Split (s)	26.1	26.1	26.1	26.1	26.1	22.6	22.6	22.6	22.6	5.0	5.0	5.0
Total Split (s)	35.0	35.0	35.0	35.0	35.0	30.0	30.0	30.0	30.0	5.0	5.0	5.0
Total Split (%)	46.7%	46.7%	46.7%	46.7%	46.7%	40.0%	40.0%	40.0%	40.0%	7%	7%	7%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	2.0	2.0	2.0
All-Red Time (s)	2.8	2.8	2.8	2.8	2.8	2.3	2.3	2.3	2.3	0.0	0.0	0.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0		0.0			
Total Lost Time (s)	6.1	6.1		6.1	6.1	5.6	5.6		5.6			
Lead/Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None	None	None
Act Effct Green (s)	47.0	47.0		47.0	47.0	13.8	13.8		13.8			
Actuated g/C Ratio	0.63	0.63		0.63	0.63	0.18	0.18		0.18			
v/c Ratio	0.30	0.16		0.63	0.01	0.58	0.45		0.16			
Control Delay	6.8	1.0		17.4	0.0	37.5	10.9		24.4			
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0		0.0			
Total Delay	6.8	1.0		17.4	0.0	37.5	10.9		24.4			
LOS	A	A		B	A	D	B		C			
Approach Delay	5.0			17.1			22.7		24.4			
Approach LOS	A			B			C		C			
Queue Length 50th (m)	11.2	0.0		31.1	0.0	17.5	3.4		5.1			
Queue Length 95th (m)	30.4	2.0		#118.4	0.0	30.9	16.8		12.0			
Internal Link Dist (m)	187.3			176.5			528.9		134.6			
Turn Bay Length (m)		35.0										
Base Capacity (vph)	1085	905		755	837	405	552		481			
Starvation Cap Reductn	0	0		0	0	0	0		0			
Spillback Cap Reductn	0	0		0	0	0	0		0			
Storage Cap Reductn	0	0		0	0	0	0		0			
Reduced v/c Ratio	0.30	0.16		0.63	0.01	0.33	0.30		0.09			

Intersection Summary

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 25 (33%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.63

Intersection Signal Delay: 14.2

Intersection LOS: B

Intersection Capacity Utilization 69.5%

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: 12: Kirkwood Avenue & Richmond Road

									
5 s	30 s			5 s	35 s			5 s	35 s
									
5 s	30 s			5 s	35 s			5 s	35 s

Lane Group	Ø10
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	10
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	3.0
Minimum Split (s)	5.0
Total Split (s)	5.0
Total Split (%)	7%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings
13: Scott Street & Athlone Pedestrian Signal

Existing AM
09/16/2025

	→ ←			
Lane Group	EBT	WBT	Ø9	Ø10
Lane Configurations	↑	↑		
Traffic Volume (vph)	298	254		
Future Volume (vph)	298	254		
Lane Group Flow (vph)	331	282		
Turn Type	NA	NA		
Protected Phases	4	8	9	10
Permitted Phases				
Detector Phase	4	8		
Switch Phase				
Minimum Initial (s)	10.0	10.0	5.0	4.0
Minimum Split (s)	15.3	15.3	22.0	6.0
Total Split (s)	37.0	37.0	22.0	6.0
Total Split (%)	56.9%	56.9%	34%	9%
Yellow Time (s)	3.3	3.3	3.0	2.0
All-Red Time (s)	2.0	2.0	1.0	0.0
Lost Time Adjust (s)	0.0	0.0		
Total Lost Time (s)	5.3	5.3		
Lead/Lag			Lead	Lag
Lead-Lag Optimize?			Yes	Yes
Recall Mode	C-Max	C-Max	None	None
Act Effct Green (s)	48.6	48.6		
Actuated g/C Ratio	0.75	0.75		
v/c Ratio	0.29	0.25		
Control Delay	6.6	3.9		
Queue Delay	0.0	0.0		
Total Delay	6.6	3.9		
LOS	A	A		
Approach Delay	6.6	3.9		
Approach LOS	A	A		
Queue Length 50th (m)	19.1	7.8		
Queue Length 95th (m)	33.5	12.2		
Internal Link Dist (m)	226.0	5.6		
Turn Bay Length (m)				
Base Capacity (vph)	1134	1134		
Starvation Cap Reductn	0	0		
Spillback Cap Reductn	0	0		
Storage Cap Reductn	0	0		
Reduced v/c Ratio	0.29	0.25		

Intersection Summary

Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 62 (95%), Referenced to phase 4:EBT and 8:WBT, Start of Green	
Natural Cycle: 50	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.29	
Intersection Signal Delay: 5.4	Intersection LOS: A
Intersection Capacity Utilization 21.0%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 13: Scott Street & Athlone Pedestrian Signal

→ Ø4 (R)	Ø9	Ø10
37 s	22 s	6 s
← Ø8 (R)		
37 s		

Lanes, Volumes, Timings
14: Scott Street & Tweedsmuir Pedestrian Signal

Existing AM
09/16/2025

	→	←	
Lane Group	EBT	WBT	Ø9
Lane Configurations	↑	↑	
Traffic Volume (vph)	318	257	
Future Volume (vph)	318	257	
Lane Group Flow (vph)	353	286	
Turn Type	NA	NA	
Protected Phases	4	8	9
Permitted Phases			
Detector Phase	4	8	
Switch Phase			
Minimum Initial (s)	10.0	10.0	5.0
Minimum Split (s)	15.5	15.5	22.0
Total Split (s)	43.0	43.0	22.0
Total Split (%)	66.2%	66.2%	34%
Yellow Time (s)	3.3	3.3	3.0
All-Red Time (s)	2.2	2.2	1.0
Lost Time Adjust (s)	0.0	0.0	
Total Lost Time (s)	5.5	5.5	
Lead/Lag			
Lead-Lag Optimize?			
Recall Mode	C-Max	C-Max	None
Act Effct Green (s)	48.5	48.5	
Actuated g/C Ratio	0.75	0.75	
v/c Ratio	0.31	0.25	
Control Delay	3.5	6.4	
Queue Delay	0.0	0.0	
Total Delay	3.5	6.4	
LOS	A	A	
Approach Delay	3.5	6.4	
Approach LOS	A	A	
Queue Length 50th (m)	8.2	16.0	
Queue Length 95th (m)	12.4	28.5	
Internal Link Dist (m)	0.1	213.7	
Turn Bay Length (m)			
Base Capacity (vph)	1132	1132	
Starvation Cap Reductn	0	0	
Spillback Cap Reductn	0	0	
Storage Cap Reductn	0	0	
Reduced v/c Ratio	0.31	0.25	

Intersection Summary

Cycle Length: 65
 Actuated Cycle Length: 65
 Offset: 58 (89%), Referenced to phase 4:EBT and 8:WBT, Start of Green
 Natural Cycle: 45
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.31
 Intersection Signal Delay: 4.8
 Intersection Capacity Utilization 22.3%
 Analysis Period (min) 15

Intersection LOS: A
 ICU Level of Service A

Splits and Phases: 14: Scott Street & Tweedsmuir Pedestrian Signal



HCM Unsignalized Intersection Capacity Analysis 2: Athlone Avenue & Scott Street

Existing PM
09/16/2025

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	356	9	21	433	3	39
Future Volume (Veh/h)	356	9	21	433	3	39
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	396	10	23	481	3	43
Pedestrians	87			10	16	
Lane Width (m)	3.7			3.7	3.7	
Walking Speed (m/s)	1.1			1.1	1.1	
Percent Blockage	8			1	1	
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	30			108		
pX, platoon unblocked			0.90		0.92	0.90
vC, conflicting volume			422		1031	427
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			304		748	310
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		99	93
cM capacity (veh/h)			1116		309	642
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	406	504	46			
Volume Left	0	23	3			
Volume Right	10	0	43			
cSH	1700	1116	600			
Volume to Capacity	0.24	0.02	0.08			
Queue Length 95th (m)	0.0	0.5	1.9			
Control Delay (s)	0.0	0.6	11.5			
Lane LOS		A	B			
Approach Delay (s)	0.0	0.6	11.5			
Approach LOS			B			
Intersection Summary						
Average Delay			0.9			
Intersection Capacity Utilization			55.2%	ICU Level of Service	B	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis 3: Tweedsmuir Avenue & Scott Street

Existing PM
09/16/2025

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	384	11	20	450	4	18
Future Volume (Veh/h)	384	11	20	450	4	18
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	427	12	22	500	4	20
Pedestrians	10			187	23	
Lane Width (m)	3.7			3.7	3.7	
Walking Speed (m/s)	1.1			1.1	1.1	
Percent Blockage	1			17	2	
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	116			22		
pX, platoon unblocked			0.92		0.89	0.92
vC, conflicting volume			462		1010	643
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			374		752	570
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		99	95
cM capacity (veh/h)			1068		320	388
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	439	522	24			
Volume Left	0	22	4			
Volume Right	12	0	20			
cSH	1700	1068	374			
Volume to Capacity	0.26	0.02	0.06			
Queue Length 95th (m)	0.0	0.5	1.6			
Control Delay (s)	0.0	0.6	15.3			
Lane LOS		A	C			
Approach Delay (s)	0.0	0.6	15.3			
Approach LOS			C			
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			62.1%	ICU Level of Service	B	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
5: Athlone Avenue & Richmond Road

Existing PM
09/16/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	525	12	11	542	14	3	3	14	10	1	17
Future Volume (Veh/h)	11	525	12	11	542	14	3	3	14	10	1	17
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	12	583	13	12	602	16	3	3	16	11	1	19
Pedestrians		46			9			104			113	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		4			1			10			11	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		27			188							
pX, platoon unblocked	0.84			0.79			0.87	0.87	0.79	0.87	0.87	0.84
vC, conflicting volume	731			700			1417	1472	702	1387	1471	769
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	583			487			987	1051	490	953	1049	628
tC, single (s)	4.1			4.1			7.1	6.5	6.3	7.1	7.5	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.4	3.5	4.9	3.4
p0 queue free %	98			98			98	98	96	92	99	94
cM capacity (veh/h)	751			775			134	156	392	146	106	341
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	608	630	22	31								
Volume Left	12	12	3	11								
Volume Right	13	16	16	19								
cSH	751	775	267	221								
Volume to Capacity	0.02	0.02	0.08	0.14								
Queue Length 95th (m)	0.4	0.4	2.0	3.6								
Control Delay (s)	0.4	0.4	19.7	23.9								
Lane LOS	A	A	C	C								
Approach Delay (s)	0.4	0.4	19.7	23.9								
Approach LOS			C	C								
Intersection Summary												
Average Delay			1.3									
Intersection Capacity Utilization			55.4%		ICU Level of Service				B			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis 6: Tweedsmuir Avenue & Richmond Road

Existing PM
09/16/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	482	14	42	535	16	14	7	38	9	7	18
Future Volume (Veh/h)	53	482	14	42	535	16	14	7	38	9	7	18
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	59	536	16	47	594	18	16	8	42	10	8	20
Pedestrians		2						31			45	
Lane Width (m)		3.7						3.7			3.7	
Walking Speed (m/s)		1.1						1.1			1.1	
Percent Blockage		0						3			4	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		110			105							
pX, platoon unblocked	0.78			0.80			0.88	0.88	0.80	0.88	0.88	0.78
vC, conflicting volume	657			583			1407	1444	575	1441	1434	641
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	420			348			874	916	337	912	904	399
tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	3.3
p0 queue free %	93			95			91	96	92	94	96	96
cM capacity (veh/h)	860			936			182	199	548	168	202	489
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1							
Volume Total	611	641	18	66	38							
Volume Left	59	47	0	16	10							
Volume Right	16	0	18	42	20							
cSH	860	936	1700	323	271							
Volume to Capacity	0.07	0.05	0.01	0.20	0.14							
Queue Length 95th (m)	1.7	1.2	0.0	5.7	3.7							
Control Delay (s)	1.8	1.3	0.0	19.0	20.4							
Lane LOS	A	A		C	C							
Approach Delay (s)	1.8	1.3		19.0	20.4							
Approach LOS				C	C							
Intersection Summary												
Average Delay			2.9									
Intersection Capacity Utilization			77.7%		ICU Level of Service					D		
Analysis Period (min)			15									

Future Background 2028

Lanes, Volumes, Timings
1: Churchill Avenue & Transitway/Scott Street

Future Background 2028 AM

09/16/2025

									
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	1	77	194	43	6	90	199	34	193
Future Volume (vph)	1	77	194	43	6	90	199	34	193
Lane Group Flow (vph)	0	90	194	71	0	96	199	0	228
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Over	Perm	NA
Protected Phases		4	3	8		2	3		6
Permitted Phases	4		8		2			6	
Detector Phase	4	4	3	8	2	2	3	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	25.4	25.4	11.8	25.4	27.4	27.4	11.8	27.4	27.4
Total Split (s)	26.0	26.0	41.0	67.0	28.0	28.0	41.0	28.0	28.0
Total Split (%)	27.4%	27.4%	43.2%	70.5%	29.5%	29.5%	43.2%	29.5%	29.5%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.3	3.3	3.0	3.3	3.3
All-Red Time (s)	4.4	4.4	3.8	4.4	3.1	3.1	3.8	3.1	3.1
Lost Time Adjust (s)		0.0	0.0	0.0		0.0	0.0		0.0
Total Lost Time (s)		7.4	6.8	7.4		6.4	6.8		6.4
Lead/Lag	Lag	Lag	Lead				Lead		
Lead-Lag Optimize?	Yes	Yes	Yes				Yes		
Recall Mode	Max	Max	Min	Max	None	None	Min	None	None
Act Effct Green (s)		34.8	60.3	59.7		17.0	18.1		17.0
Actuated g/C Ratio		0.38	0.67	0.66		0.19	0.20		0.19
v/c Ratio		0.24	0.25	0.10		0.30	0.70		0.74
Control Delay		23.5	7.3	4.8		33.7	47.0		49.8
Queue Delay		0.0	0.0	0.0		0.0	0.0		0.0
Total Delay		23.5	7.3	4.8		33.7	47.0		49.8
LOS		C	A	A		C	D		D
Approach Delay		23.5		6.6		42.7			49.8
Approach LOS		C		A		D			D
Queue Length 50th (m)		9.6	11.6	2.4		14.5	32.7		37.7
Queue Length 95th (m)		25.4	22.7	7.8		27.9	52.1		61.7
Internal Link Dist (m)		133.0		226.0		312.2			409.2
Turn Bay Length (m)			70.0						
Base Capacity (vph)		374	892	712		411	537		392
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		0.24	0.22	0.10		0.23	0.37		0.58

Intersection Summary

Cycle Length: 95

Actuated Cycle Length: 90.5

Natural Cycle: 70

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 31.7

Intersection LOS: C

Intersection Capacity Utilization 63.1%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Churchill Avenue & Transitway/Scott Street



Lanes, Volumes, Timings
4: West Village Private/Lanark Avenue & Scott Street

Future Background 2028 AM

09/16/2025

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	30	475	6	312	7	1	57	0
Future Volume (vph)	30	475	6	312	7	1	57	0
Lane Group Flow (vph)	30	481	6	350	7	20	57	64
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	21.6	21.6	21.6	21.6	28.2	28.2	28.2	28.2
Total Split (s)	66.0	66.0	66.0	66.0	29.0	29.0	29.0	29.0
Total Split (%)	69.5%	69.5%	69.5%	69.5%	30.5%	30.5%	30.5%	30.5%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.3	3.3	3.3	3.3	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.2	6.2	6.2	6.2
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	40.5	40.5	40.5	40.5	41.7	41.7	41.7	41.7
Actuated g/C Ratio	0.43	0.43	0.43	0.43	0.44	0.44	0.44	0.44
v/c Ratio	0.09	0.75	0.02	0.53	0.01	0.03	0.10	0.07
Control Delay	13.1	29.6	11.3	21.1	21.1	10.2	20.9	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.1	29.6	11.3	21.1	21.1	10.2	20.9	0.1
LOS	B	C	B	C	C	B	C	A
Approach Delay		28.6		20.9		13.0		9.9
Approach LOS		C		C		B		A
Queue Length 50th (m)	3.2	71.8	0.6	44.4	0.7	0.1	6.0	0.0
Queue Length 95th (m)	6.3	80.6	2.2	50.8	4.1	5.3	17.0	0.0
Internal Link Dist (m)		213.7		548.0		112.2		176.6
Turn Bay Length (m)	40.0		40.0		10.0		30.0	
Base Capacity (vph)	502	940	363	961	549	669	571	937
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.51	0.02	0.36	0.01	0.03	0.10	0.07
Intersection Summary								
Cycle Length: 95								
Actuated Cycle Length: 95								
Offset: 83 (87%), Referenced to phase 2:NBT and 6:SBTL, Start of Green								
Natural Cycle: 60								
Control Type: Actuated-Coordinated								
Maximum v/c Ratio: 0.75								
Intersection Signal Delay: 23.3					Intersection LOS: C			
Intersection Capacity Utilization 55.8%					ICU Level of Service B			
Analysis Period (min) 15								

Splits and Phases: 4: West Village Private/Lanark Avenue & Scott Street



Lanes, Volumes, Timings
10: Churchill Avenue & Richmond Road

Future Background 2028 AM

09/16/2025

												
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø4	Ø9	Ø10	Ø11
Lane Configurations												
Traffic Volume (vph)	265	394	43	188	24	284	23	351				
Future Volume (vph)	265	394	43	188	24	284	23	351				
Lane Group Flow (vph)	265	423	43	208	24	367	0	515				
Turn Type	custom	NA	custom	NA	Perm	NA	Perm	NA				
Protected Phases	7	4 10		8 11		2		6	4	9	10	11
Permitted Phases	4		8		2		6					
Detector Phase	7	4 10	8	8 11	2	2	6	6				
Switch Phase												
Minimum Initial (s)	5.0		10.0		10.0	10.0	10.0	10.0	10.0	3.0	3.0	3.0
Minimum Split (s)	11.1		26.1		19.2	19.2	19.2	19.2	26.1	5.0	5.0	5.0
Total Split (s)	11.2		26.5		32.3	32.3	32.3	32.3	37.7	5.0	5.0	5.0
Total Split (%)	14.0%		33.1%		40.4%	40.4%	40.4%	40.4%	47%	6%	6%	6%
Yellow Time (s)	3.3		3.3		3.6	3.6	3.6	3.6	3.3	2.0	2.0	2.0
All-Red Time (s)	2.8		2.8		2.6	2.6	2.6	2.6	2.8	0.0	0.0	0.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0		0.0				
Total Lost Time (s)	6.1		6.1		6.2	6.2		6.2				
Lead/Lag	Lead				Lag	Lag	Lag	Lag		Lead		Lag
Lead-Lag Optimize?	Yes				Yes	Yes	Yes	Yes		Yes		Yes
Recall Mode	None		C-Max		None	None	None	None	C-Max	None	None	None
Act Effct Green (s)	37.2	33.2	20.4	20.4	29.5	29.5		29.5				
Actuated g/C Ratio	0.46	0.42	0.26	0.26	0.37	0.37		0.37				
v/c Ratio	0.61	0.59	0.20	0.48	0.11	0.60		0.87				
Control Delay	21.8	22.6	26.5	29.1	18.9	24.6		40.6				
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0				
Total Delay	21.8	22.6	26.5	29.1	18.9	24.6		40.6				
LOS	C	C	C	C	B	C		D				
Approach Delay		22.3		28.7		24.3		40.6				
Approach LOS		C		C		C		D				
Queue Length 50th (m)	24.8	49.5	5.1	26.1	2.3	40.4		65.8				
Queue Length 95th (m)	41.5	78.4	13.5	45.6	8.0	74.1		#135.1				
Internal Link Dist (m)		201.3		218.6		353.2		312.2				
Turn Bay Length (m)	35.0		25.0		15.0							
Base Capacity (vph)	436	722	210	429	226	610		592				
Starvation Cap Reductn	0	0	0	0	0	0		0				
Spillback Cap Reductn	0	0	0	0	0	0		0				
Storage Cap Reductn	0	0	0	0	0	0		0				
Reduced v/c Ratio	0.61	0.59	0.20	0.48	0.11	0.60		0.87				

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 43 (54%), Referenced to phase 8:WBTL and 4:EBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 28.7

Intersection LOS: C

Intersection Capacity Utilization 97.8%

ICU Level of Service F

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 10: Churchill Avenue & Richmond Road

														
5 s	32.3 s					11.2 s		5 s		26.5 s				
														
5 s	32.3 s					5 s		37.7 s						

Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	3.0
Minimum Split (s)	5.0
Total Split (s)	5.0
Total Split (%)	6%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings
11: McRae Avenue & Richmond Road

Future Background 2028 AM

09/16/2025

	↖	→	↗	←	↖	↑	↗	↓		
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø9	Ø13
Lane Configurations	↖	↖↗	↖	↗	↖	↗		↕		
Traffic Volume (vph)	99	345	9	253	15	15	79	16		
Future Volume (vph)	99	345	9	253	15	15	79	16		
Lane Group Flow (vph)	99	377	9	343	15	26	0	143		
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA		
Protected Phases		4		8		2		6	9	13
Permitted Phases	4		8		2		6			
Detector Phase	4	4	8	8	2	2	6	6		
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	3.0	3.0
Minimum Split (s)	35.2	35.2	35.2	35.2	22.5	22.5	22.5	22.5	5.0	5.0
Total Split (s)	47.0	47.0	47.0	47.0	23.0	23.0	23.0	23.0	5.0	5.0
Total Split (%)	62.7%	62.7%	62.7%	62.7%	30.7%	30.7%	30.7%	30.7%	7%	7%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	2.0	2.0
All-Red Time (s)	2.9	2.9	2.9	2.9	2.2	2.2	2.2	2.2	0.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0		
Total Lost Time (s)	6.2	6.2	6.2	6.2	5.5	5.5		5.5		
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	53.8	53.8	53.8	53.8	12.9	12.9		12.9		
Actuated g/C Ratio	0.72	0.72	0.72	0.72	0.17	0.17		0.17		
v/c Ratio	0.14	0.16	0.01	0.30	0.07	0.09		0.60		
Control Delay	6.8	5.3	6.6	6.2	24.9	18.1		32.4		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0		
Total Delay	6.8	5.3	6.6	6.2	24.9	18.1		32.4		
LOS	A	A	A	A	C	B		C		
Approach Delay		5.6		6.2		20.6		32.4		
Approach LOS		A		A		C		C		
Queue Length 50th (m)	4.2	7.9	0.2	2.9	1.8	1.8		14.7		
Queue Length 95th (m)	14.2	19.3	m1.3	44.1	6.0	7.3		29.4		
Internal Link Dist (m)		81.0		187.3		44.7		176.9		
Turn Bay Length (m)	40.0		55.0							
Base Capacity (vph)	684	2325	601	1149	279	393		313		
Starvation Cap Reductn	0	0	0	0	0	0		0		
Spillback Cap Reductn	0	0	0	0	0	0		0		
Storage Cap Reductn	0	0	0	0	0	0		0		
Reduced v/c Ratio	0.14	0.16	0.01	0.30	0.05	0.07		0.46		

Intersection Summary

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 16 (21%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.60

Intersection Signal Delay: 10.2

Intersection LOS: B

Intersection Capacity Utilization 63.1%

ICU Level of Service B

Analysis Period (min) 15

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

Splits and Phases: 11: McRae Avenue & Richmond Road



Lanes, Volumes, Timings
12: Kirkwood Avenue & Richmond Road

Future Background 2028 AM

09/16/2025

												
Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	Ø1	Ø3	Ø9
Lane Configurations												
Traffic Volume (vph)	312	132	189	237	11	123	25	8	30			
Future Volume (vph)	312	132	189	237	11	123	25	8	30			
Lane Group Flow (vph)	312	132	0	426	11	123	150	0	40			
Turn Type	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA			
Protected Phases	4			8			2		6	1	3	9
Permitted Phases		4	8		8	2		6				
Detector Phase	4	4	8	8	8	2	2	6	6			
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	3.0	3.0	3.0
Minimum Split (s)	26.1	26.1	26.1	26.1	26.1	22.6	22.6	22.6	22.6	5.0	5.0	5.0
Total Split (s)	35.0	35.0	35.0	35.0	35.0	30.0	30.0	30.0	30.0	5.0	5.0	5.0
Total Split (%)	46.7%	46.7%	46.7%	46.7%	46.7%	40.0%	40.0%	40.0%	40.0%	7%	7%	7%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	2.0	2.0	2.0
All-Red Time (s)	2.8	2.8	2.8	2.8	2.8	2.3	2.3	2.3	2.3	0.0	0.0	0.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0		0.0			
Total Lost Time (s)	6.1	6.1		6.1	6.1	5.6	5.6		5.6			
Lead/Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None	None	None
Act Effct Green (s)	47.5	47.5		47.5	47.5	13.3	13.3		13.3			
Actuated g/C Ratio	0.63	0.63		0.63	0.63	0.18	0.18		0.18			
v/c Ratio	0.28	0.15		0.54	0.01	0.56	0.43		0.15			
Control Delay	6.4	1.0		14.5	0.0	37.2	11.2		24.8			
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0		0.0			
Total Delay	6.4	1.0		14.5	0.0	37.2	11.2		24.8			
LOS	A	A		B	A	D	B		C			
Approach Delay	4.8			14.2			22.9		24.8			
Approach LOS	A			B			C		C			
Queue Length 50th (m)	10.4	0.1		25.3	0.0	16.2	3.0		4.6			
Queue Length 95th (m)	29.1	2.1		#98.7	0.0	29.1	16.0		11.3			
Internal Link Dist (m)	187.3			176.5			528.9		134.6			
Turn Bay Length (m)		35.0										
Base Capacity (vph)	1097	910		782	845	406	543		483			
Starvation Cap Reductn	0	0		0	0	0	0		0			
Spillback Cap Reductn	0	0		0	0	0	0		0			
Storage Cap Reductn	0	0		0	0	0	0		0			
Reduced v/c Ratio	0.28	0.15		0.54	0.01	0.30	0.28		0.08			

Intersection Summary

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 25 (33%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.56

Intersection Signal Delay: 13.0

Intersection LOS: B

Intersection Capacity Utilization 70.4%

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: 12: Kirkwood Avenue & Richmond Road

			
Ø9	Ø2	Ø3	Ø4 (R)
5 s	30 s	5 s	35 s
			
Ø1	Ø6	Ø3	Ø8 (R)
5 s	30 s	5 s	35 s

Lane Group	Ø10
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	10
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	3.0
Minimum Split (s)	5.0
Total Split (s)	5.0
Total Split (%)	7%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings
13: Scott Street & Athlone Pedestrian Signal

Future Background 2028 AM
09/16/2025

	→	←		
Lane Group	EBT	WBT	Ø9	Ø10
Lane Configurations	↑	↑		
Traffic Volume (vph)	338	266		
Future Volume (vph)	338	266		
Lane Group Flow (vph)	338	266		
Turn Type	NA	NA		
Protected Phases	4	8	9	10
Permitted Phases				
Detector Phase	4	8		
Switch Phase				
Minimum Initial (s)	10.0	10.0	5.0	4.0
Minimum Split (s)	15.3	15.3	22.0	6.0
Total Split (s)	37.0	37.0	22.0	6.0
Total Split (%)	56.9%	56.9%	34%	9%
Yellow Time (s)	3.3	3.3	3.0	2.0
All-Red Time (s)	2.0	2.0	1.0	0.0
Lost Time Adjust (s)	0.0	0.0		
Total Lost Time (s)	5.3	5.3		
Lead/Lag			Lead	Lag
Lead-Lag Optimize?			Yes	Yes
Recall Mode	C-Max	C-Max	None	None
Act Effct Green (s)	48.6	48.6		
Actuated g/C Ratio	0.75	0.75		
v/c Ratio	0.30	0.23		
Control Delay	6.7	3.9		
Queue Delay	0.0	0.0		
Total Delay	6.7	3.9		
LOS	A	A		
Approach Delay	6.7	3.9		
Approach LOS	A	A		
Queue Length 50th (m)	19.6	7.4		
Queue Length 95th (m)	34.3	11.8		
Internal Link Dist (m)	226.0	5.6		
Turn Bay Length (m)				
Base Capacity (vph)	1134	1134		
Starvation Cap Reductn	0	0		
Spillback Cap Reductn	0	0		
Storage Cap Reductn	0	0		
Reduced v/c Ratio	0.30	0.23		

Intersection Summary

Cycle Length: 65	
Actuated Cycle Length: 65	
Offset: 62 (95%), Referenced to phase 4:EBT and 8:WBT, Start of Green	
Natural Cycle: 50	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.30	
Intersection Signal Delay: 5.4	Intersection LOS: A
Intersection Capacity Utilization 23.2%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 13: Scott Street & Athlone Pedestrian Signal

→ Ø4 (R)	Ø9	Ø10
37 s	22 s	6 s
← Ø8 (R)		
37 s		

Lanes, Volumes, Timings
14: Scott Street & Tweedsmuir Pedestrian Signal

Future Background 2028 AM
09/16/2025

	→	←	
Lane Group	EBT	WBT	Ø9
Lane Configurations	↑	↑	
Traffic Volume (vph)	369	269	
Future Volume (vph)	369	269	
Lane Group Flow (vph)	369	269	
Turn Type	NA	NA	
Protected Phases	4	8	9
Permitted Phases			
Detector Phase	4	8	
Switch Phase			
Minimum Initial (s)	10.0	10.0	5.0
Minimum Split (s)	15.5	15.5	22.0
Total Split (s)	43.0	43.0	22.0
Total Split (%)	66.2%	66.2%	34%
Yellow Time (s)	3.3	3.3	3.0
All-Red Time (s)	2.2	2.2	1.0
Lost Time Adjust (s)	0.0	0.0	
Total Lost Time (s)	5.5	5.5	
Lead/Lag			
Lead-Lag Optimize?			
Recall Mode	C-Max	C-Max	None
Act Effct Green (s)	48.5	48.5	
Actuated g/C Ratio	0.75	0.75	
v/c Ratio	0.33	0.24	
Control Delay	3.6	6.3	
Queue Delay	0.0	0.0	
Total Delay	3.6	6.3	
LOS	A	A	
Approach Delay	3.6	6.3	
Approach LOS	A	A	
Queue Length 50th (m)	8.6	14.8	
Queue Length 95th (m)	13.0	26.7	
Internal Link Dist (m)	0.1	213.7	
Turn Bay Length (m)			
Base Capacity (vph)	1132	1132	
Starvation Cap Reductn	0	0	
Spillback Cap Reductn	0	0	
Storage Cap Reductn	0	0	
Reduced v/c Ratio	0.33	0.24	
Intersection Summary			
Cycle Length: 65			
Actuated Cycle Length: 65			
Offset: 58 (89%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 45			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.33			
Intersection Signal Delay: 4.7		Intersection LOS: A	
Intersection Capacity Utilization 25.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 14: Scott Street & Tweedsmuir Pedestrian Signal



Lanes, Volumes, Timings
15: Richmond Road & Athlone Pedestrian Signal

Future Background 2028 AM
09/16/2025

	→	←	
Lane Group	EBT	WBT	Ø9
Lane Configurations	↑	↑	
Traffic Volume (vph)	457	338	
Future Volume (vph)	457	338	
Lane Group Flow (vph)	457	338	
Turn Type	NA	NA	
Protected Phases	4	8	9
Permitted Phases			
Detector Phase	4	8	
Switch Phase			
Minimum Initial (s)	10.0	10.0	5.0
Minimum Split (s)	16.0	16.0	23.0
Total Split (s)	42.0	42.0	23.0
Total Split (%)	64.6%	64.6%	35%
Yellow Time (s)	3.3	3.3	3.0
All-Red Time (s)	2.7	2.7	1.0
Lost Time Adjust (s)	0.0	0.0	
Total Lost Time (s)	6.0	6.0	
Lead/Lag			
Lead-Lag Optimize?			
Recall Mode	None	None	None
Act Effct Green (s)	23.0	23.0	
Actuated g/C Ratio	0.77	0.77	
v/c Ratio	0.33	0.25	
Control Delay	7.7	7.0	
Queue Delay	0.0	0.0	
Total Delay	7.7	7.0	
LOS	A	A	
Approach Delay	7.7	7.0	
Approach LOS	A	A	
Queue Length 50th (m)	0.0	0.0	
Queue Length 95th (m)	52.4	36.4	
Internal Link Dist (m)	218.6	2.9	
Turn Bay Length (m)			
Base Capacity (vph)	1579	1579	
Starvation Cap Reductn	0	0	
Spillback Cap Reductn	0	0	
Storage Cap Reductn	0	0	
Reduced v/c Ratio	0.29	0.21	
Intersection Summary			
Cycle Length: 65			
Actuated Cycle Length: 29.9			
Natural Cycle: 45			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.33			
Intersection Signal Delay: 7.4		Intersection LOS: A	
Intersection Capacity Utilization 30.4%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 15: Richmond Road & Athlone Pedestrian Signal

→ Ø4		← Ø9
42 s		23 s
← Ø8		
42 s		

HCM Unsignalized Intersection Capacity Analysis
2: Athlone Avenue & Scott Street

Future Background 2028 AM
09/16/2025

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	331	7	28	238	3	38
Future Volume (Veh/h)	331	7	28	238	3	38
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	331	7	28	238	3	38
Pedestrians	64			16	17	
Lane Width (m)	3.7			3.7	3.7	
Walking Speed (m/s)	1.1			1.1	1.1	
Percent Blockage	6			1	2	
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	30			108		
pX, platoon unblocked			0.92		0.93	0.92
vC, conflicting volume			355		710	368
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			254		582	268
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		99	94
cM capacity (veh/h)			1186		401	687
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	338	266	41			
Volume Left	0	28	3			
Volume Right	7	0	38			
cSH	1700	1186	653			
Volume to Capacity	0.20	0.02	0.06			
Queue Length 95th (m)	0.0	0.6	1.5			
Control Delay (s)	0.0	1.1	10.9			
Lane LOS		A	B			
Approach Delay (s)	0.0	1.1	10.9			
Approach LOS			B			
Intersection Summary						
Average Delay			1.1			
Intersection Capacity Utilization			51.7%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
3: Tweedsmuir Avenue & Scott Street

Future Background 2028 AM

09/16/2025

									
Movement	EBT	EBR	WBL	WBT	NBL	NBR			
Lane Configurations									
Traffic Volume (veh/h)	366	3	7	262	4	35			
Future Volume (Veh/h)	366	3	7	262	4	35			
Sign Control	Free			Free	Stop				
Grade	0%			0%	0%				
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00			
Hourly flow rate (vph)	366	3	7	262	4	35			
Pedestrians	6			122	15				
Lane Width (m)	3.7			3.7	3.7				
Walking Speed (m/s)	1.1			1.1	1.1				
Percent Blockage	1			11	1				
Right turn flare (veh)									
Median type	None			None					
Median storage (veh)									
Upstream signal (m)	116			22					
pX, platoon unblocked			0.94		0.97	0.94			
vC, conflicting volume			384		664	504			
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol			318		508	446			
tC, single (s)			4.1		6.4	6.2			
tC, 2 stage (s)									
tF (s)			2.2		3.5	3.3			
p0 queue free %			99		99	93			
cM capacity (veh/h)			1156		495	505			
Direction, Lane #	EB 1	WB 1	NB 1						
Volume Total	369	269	39						
Volume Left	0	7	4						
Volume Right	3	0	35						
cSH	1700	1156	504						
Volume to Capacity	0.22	0.01	0.08						
Queue Length 95th (m)	0.0	0.1	1.9						
Control Delay (s)	0.0	0.3	12.7						
Lane LOS		A	B						
Approach Delay (s)	0.0	0.3	12.7						
Approach LOS			B						
Intersection Summary									
Average Delay		0.8							
Intersection Capacity Utilization		40.5%	ICU Level of Service	A					
Analysis Period (min)		15							

HCM Unsignalized Intersection Capacity Analysis
5: Athlone Avenue & Richmond Road

Future Background 2028 AM

09/16/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	440	5	5	318	15	5	2	9	14	3	12
Future Volume (Veh/h)	12	440	5	5	318	15	5	2	9	14	3	12
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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
Hourly flow rate (vph)	12	440	5	5	318	15	5	2	9	14	3	12
Pedestrians		23			2			53			64	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		2			0			5			6	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		27			188							
pX, platoon unblocked				0.82			0.82	0.82	0.82	0.82	0.82	
vC, conflicting volume	397			498			892	926	498	878	922	412
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	397			274			756	798	274	739	792	412
tC, single (s)	4.2			4.1			7.5	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.9	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			97	99	98	94	99	98
cM capacity (veh/h)	1062			1010			189	231	597	229	233	592
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	457	338	16	29								
Volume Left	12	5	5	14								
Volume Right	5	15	9	12								
cSH	1062	1010	319	307								
Volume to Capacity	0.01	0.00	0.05	0.09								
Queue Length 95th (m)	0.3	0.1	1.2	2.4								
Control Delay (s)	0.3	0.2	16.9	17.9								
Lane LOS	A	A	C	C								
Approach Delay (s)	0.3	0.2	16.9	17.9								
Approach LOS			C	C								
Intersection Summary												
Average Delay			1.2									
Intersection Capacity Utilization			47.5%	ICU Level of Service						A		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
6: Tweedsmuir Avenue & Richmond Road

Future Background 2028 AM

09/16/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	407	11	8	306	12	5	13	23	13	8	27
Future Volume (Veh/h)	45	407	11	8	306	12	5	13	23	13	8	27
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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
Hourly flow rate (vph)	45	407	11	8	306	12	5	13	23	13	8	27
Pedestrians		1			4			4			46	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		0			0			0			4	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		110			105							
pX, platoon unblocked	0.98			0.85			0.86	0.86	0.85	0.86	0.86	0.98
vC, conflicting volume	364			422			860	886	420	904	880	353
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	343			229			707	737	227	757	729	332
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.4
p0 queue free %	96			99			98	95	97	94	97	96
cM capacity (veh/h)	1153			1142			263	272	688	231	275	652
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1							
Volume Total	463	314	12	41	48							
Volume Left	45	8	0	5	13							
Volume Right	11	0	12	23	27							
cSH	1153	1142	1700	409	379							
Volume to Capacity	0.04	0.01	0.01	0.10	0.13							
Queue Length 95th (m)	0.9	0.2	0.0	2.5	3.3							
Control Delay (s)	1.2	0.3	0.0	14.8	15.9							
Lane LOS	A	A		B	C							
Approach Delay (s)	1.2	0.3		14.8	15.9							
Approach LOS				B	C							
Intersection Summary												
Average Delay			2.3									
Intersection Capacity Utilization			59.3%		ICU Level of Service					B		
Analysis Period (min)			15									

Lanes, Volumes, Timings
1: Churchill Avenue & Transitway/Scott Street

Future Background 2028 PM

09/16/2025

									
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	2	60	321	82	12	127	285	41	113
Future Volume (vph)	2	60	321	82	12	127	285	41	113
Lane Group Flow (vph)	0	76	321	131	0	139	285	0	157
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Over	Perm	NA
Protected Phases		4	3	8		2	3		6
Permitted Phases	4		8		2			6	
Detector Phase	4	4	3	8	2	2	3	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	25.4	25.4	11.8	25.4	27.4	27.4	11.8	27.4	27.4
Total Split (s)	30.0	30.0	32.0	62.0	33.0	33.0	32.0	33.0	33.0
Total Split (%)	31.6%	31.6%	33.7%	65.3%	34.7%	34.7%	33.7%	34.7%	34.7%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.3	3.3	3.0	3.3	3.3
All-Red Time (s)	4.4	4.4	3.8	4.4	3.1	3.1	3.8	3.1	3.1
Lost Time Adjust (s)		0.0	0.0	0.0		0.0	0.0		0.0
Total Lost Time (s)		7.4	6.8	7.4		6.4	6.8		6.4
Lead/Lag	Lag	Lag	Lead				Lead		
Lead-Lag Optimize?	Yes	Yes	Yes				Yes		
Recall Mode	Max	Max	Min	Max	None	None	Min	None	None
Act Effct Green (s)		28.2	55.3	54.7		14.1	19.7		14.1
Actuated g/C Ratio		0.34	0.67	0.66		0.17	0.24		0.17
v/c Ratio		0.21	0.38	0.18		0.49	0.79		0.61
Control Delay		22.5	7.7	4.7		36.6	45.8		41.7
Queue Delay		0.0	0.0	0.0		0.0	0.0		0.0
Total Delay		22.5	7.7	4.7		36.6	45.8		41.7
LOS		C	A	A		D	D		D
Approach Delay		22.5		6.8		42.8			41.7
Approach LOS		C		A		D			D
Queue Length 50th (m)		7.0	17.3	4.0		20.0	41.3		22.9
Queue Length 95th (m)		20.7	37.6	12.8		36.1	70.2		41.0
Internal Link Dist (m)		133.0		226.0		312.2			409.2
Turn Bay Length (m)			70.0						
Base Capacity (vph)		360	884	721		541	463		488
Starvation Cap Reductn		0	0	0		0	0		0
Spillback Cap Reductn		0	0	0		0	0		0
Storage Cap Reductn		0	0	0		0	0		0
Reduced v/c Ratio		0.21	0.36	0.18		0.26	0.62		0.32

Intersection Summary

Cycle Length: 95

Actuated Cycle Length: 82.7

Natural Cycle: 75

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 26.6

Intersection LOS: C

Intersection Capacity Utilization 70.5%

ICU Level of Service C

Analysis Period (min) 15

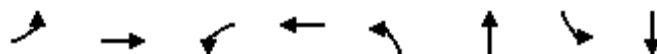
Splits and Phases: 1: Churchill Avenue & Transitway/Scott Street



Lanes, Volumes, Timings
4: West Village Private/Lanark Avenue & Scott Street

Future Background 2028 PM

09/16/2025



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	88	576	13	593	13	2	49	3
Future Volume (vph)	88	576	13	593	13	2	49	3
Lane Group Flow (vph)	88	592	13	629	13	11	49	35
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	21.6	21.6	21.6	21.6	28.2	28.2	28.2	28.2
Total Split (s)	71.0	71.0	71.0	71.0	29.0	29.0	29.0	29.0
Total Split (%)	71.0%	71.0%	71.0%	71.0%	29.0%	29.0%	29.0%	29.0%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.3	3.3	3.3	3.3	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.2	6.2	6.2	6.2
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	51.5	51.5	51.5	51.5	35.7	35.7	35.7	35.7
Actuated g/C Ratio	0.52	0.52	0.52	0.52	0.36	0.36	0.36	0.36
v/c Ratio	0.36	0.71	0.05	0.76	0.03	0.02	0.10	0.07
Control Delay	16.4	22.4	8.8	24.6	27.6	17.3	27.6	11.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.4	22.4	8.8	24.6	27.6	17.3	27.6	11.8
LOS	B	C	A	C	C	B	C	B
Approach Delay		21.7		24.3		22.9		21.0
Approach LOS		C		C		C		C
Queue Length 50th (m)	9.5	81.5	1.2	90.2	1.7	0.3	6.4	0.4
Queue Length 95th (m)	15.6	86.8	3.0	96.6	6.9	4.8	17.3	8.1
Internal Link Dist (m)		213.7		548.0		112.2		176.6
Turn Bay Length (m)	40.0		40.0		10.0		30.0	
Base Capacity (vph)	303	1043	311	1032	447	510	477	538
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.57	0.04	0.61	0.03	0.02	0.10	0.07

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 40 (40%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 22.8

Intersection LOS: C

Intersection Capacity Utilization 78.2%

ICU Level of Service D

Analysis Period (min) 15

Splits and Phases: 4: West Village Private/Lanark Avenue & Scott Street



Lanes, Volumes, Timings
10: Churchill Avenue & Richmond Road

Future Background 2028 PM

09/16/2025

												
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø4	Ø9	Ø10	Ø11
Lane Configurations												
Traffic Volume (vph)	162	296	128	450	27	289	20	275				
Future Volume (vph)	162	296	128	450	27	289	20	275				
Lane Group Flow (vph)	162	342	128	483	27	365	0	578				
Turn Type	custom	NA	custom	NA	Perm	NA	Perm	NA				
Protected Phases	7	4 10		8 11		2		6	4	9	10	11
Permitted Phases	4		8		2		6					
Detector Phase	7	4 10	8	8 11	2	2	6	6				
Switch Phase												
Minimum Initial (s)	5.0		10.0		10.0	10.0	10.0	10.0	10.0	3.0	3.0	3.0
Minimum Split (s)	11.1		26.1		19.2	19.2	19.2	19.2	26.1	5.0	5.0	5.0
Total Split (s)	11.0		35.0		44.0	44.0	44.0	44.0	46.0	5.0	5.0	5.0
Total Split (%)	11.0%		35.0%		44.0%	44.0%	44.0%	44.0%	46%	5%	5%	5%
Yellow Time (s)	3.3		3.3		3.6	3.6	3.6	3.6	3.3	2.0	2.0	2.0
All-Red Time (s)	2.8		2.8		2.6	2.6	2.6	2.6	2.8	0.0	0.0	0.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0		0.0				
Total Lost Time (s)	6.1		6.1		6.2	6.2		6.2				
Lead/Lag	Lead				Lag	Lag	Lag	Lag		Lead		Lag
Lead-Lag Optimize?	Yes				Yes	Yes	Yes	Yes		Yes		Yes
Recall Mode	None		C-Max		None	None	None	None	C-Max	None	None	None
Act Effct Green (s)	44.8	39.9	28.9	28.9	41.8	41.8		41.8				
Actuated g/C Ratio	0.45	0.40	0.29	0.29	0.42	0.42		0.42				
v/c Ratio	0.83	0.52	0.60	0.95	0.12	0.53		0.97				
Control Delay	54.4	25.5	43.8	64.5	20.4	24.6		57.7				
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0				
Total Delay	54.4	25.5	43.8	64.5	20.4	24.6		57.7				
LOS	D	C	D	E	C	C		E				
Approach Delay		34.8		60.2		24.3		57.7				
Approach LOS		C		E		C		E				
Queue Length 50th (m)	18.6	47.9	21.3	90.8	3.1	48.4		97.6				
Queue Length 95th (m)	#46.1	74.1	#41.8	#152.4	9.5	82.3		#181.5				
Internal Link Dist (m)		201.3		218.6		353.2		312.2				
Turn Bay Length (m)	35.0		25.0		15.0							
Base Capacity (vph)	195	663	215	510	234	695		596				
Starvation Cap Reductn	0	0	0	0	0	0		0				
Spillback Cap Reductn	0	0	0	0	0	0		0				
Storage Cap Reductn	0	0	0	0	0	0		0				
Reduced v/c Ratio	0.83	0.52	0.60	0.95	0.12	0.53		0.97				

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 0 (0%), Referenced to phase 8:WBTL and 4:EBTL, Start of Green

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.97

Intersection Signal Delay: 46.6

Intersection LOS: D

Intersection Capacity Utilization 106.9%

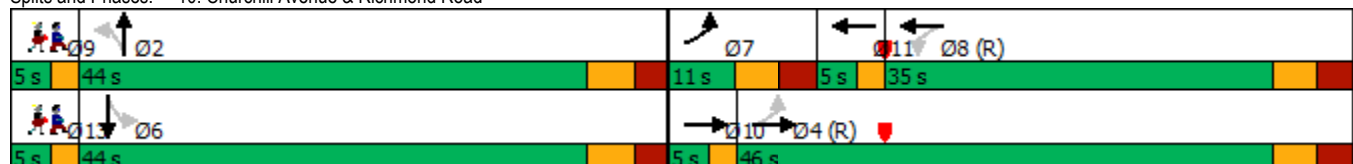
ICU Level of Service G

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 10: Churchill Avenue & Richmond Road



Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	3.0
Minimum Split (s)	5.0
Total Split (s)	5.0
Total Split (%)	5%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings
11: McRae Avenue & Richmond Road

Future Background 2028 PM

09/16/2025

	↖	→	↗	←	↖	↑	↗	↓		
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø9	Ø13
Lane Configurations	↖	↖↗	↖	↗	↖	↗		↕		
Traffic Volume (vph)	69	290	49	469	63	45	103	49		
Future Volume (vph)	69	290	49	469	63	45	103	49		
Lane Group Flow (vph)	69	370	49	577	63	90	0	279		
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	NA		
Protected Phases		4	3	8		2		6	9	13
Permitted Phases	4		8		2		6			
Detector Phase	4	4	3	8	2	2	6	6		
Switch Phase										
Minimum Initial (s)	10.0	10.0	4.9	10.0	10.0	10.0	10.0	10.0	3.0	3.0
Minimum Split (s)	35.2	35.2	11.0	35.2	22.5	22.5	22.5	22.5	5.0	5.0
Total Split (s)	40.0	40.0	11.0	51.0	29.0	29.0	29.0	29.0	5.0	5.0
Total Split (%)	47.1%	47.1%	12.9%	60.0%	34.1%	34.1%	34.1%	34.1%	6%	6%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	2.0	2.0
All-Red Time (s)	2.9	2.9	2.8	2.9	2.2	2.2	2.2	2.2	0.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0		
Total Lost Time (s)	6.2	6.2	6.1	6.2	5.5	5.5		5.5		
Lead/Lag	Lag	Lag	Lead							
Lead-Lag Optimize?	Yes	Yes	Yes							
Recall Mode	C-Max	C-Max	None	C-Max	None	None	None	None	None	None
Act Effct Green (s)	43.9	43.9	51.2	51.1	21.2	21.2		21.2		
Actuated g/C Ratio	0.52	0.52	0.60	0.60	0.25	0.25		0.25		
v/c Ratio	0.18	0.23	0.10	0.56	0.30	0.23		0.84		
Control Delay	17.2	12.5	8.1	11.3	28.3	14.7		47.5		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0		
Total Delay	17.2	12.5	8.1	11.3	28.3	14.7		47.5		
LOS	B	B	A	B	C	B		D		
Approach Delay		13.2		11.0		20.3		47.5		
Approach LOS		B		B		C		D		
Queue Length 50th (m)	6.7	16.5	2.9	45.7	8.0	5.5		34.7		
Queue Length 95th (m)	16.7	27.8	m5.8	55.8	18.5	16.5		#73.1		
Internal Link Dist (m)		81.0		187.3		44.7		176.9		
Turn Bay Length (m)	40.0		55.0							
Base Capacity (vph)	387	1635	513	1024	242	442		371		
Starvation Cap Reductn	0	0	0	0	0	0		0		
Spillback Cap Reductn	0	0	0	0	0	0		0		
Storage Cap Reductn	0	0	0	0	0	0		0		
Reduced v/c Ratio	0.18	0.23	0.10	0.56	0.26	0.20		0.75		

Intersection Summary

Cycle Length: 85

Actuated Cycle Length: 85

Offset: 1 (1%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 19.4

Intersection LOS: B

Intersection Capacity Utilization 83.0%

ICU Level of Service E

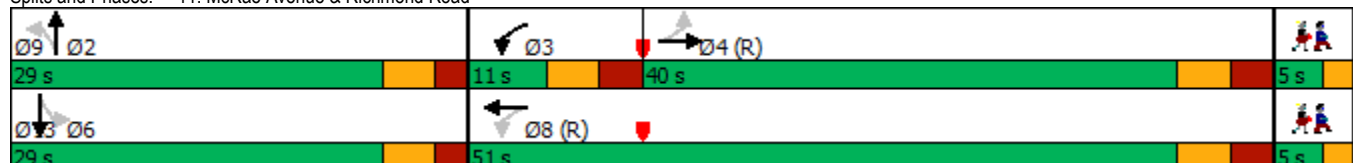
Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

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

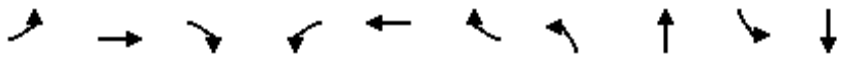
Splits and Phases: 11: McRae Avenue & Richmond Road



Lanes, Volumes, Timings
12: Kirkwood Avenue & Richmond Road

Future Background 2028 PM

09/16/2025

											Ø1	Ø3
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	Ø1	Ø3
Lane Configurations												
Traffic Volume (vph)	3	353	176	187	430	12	148	49	2	37		
Future Volume (vph)	3	353	176	187	430	12	148	49	2	37		
Lane Group Flow (vph)	0	356	176	0	617	12	148	273	0	40		
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA		
Protected Phases		4			8			2		6	1	3
Permitted Phases	4		4	8		8	2		6			
Detector Phase	4	4	4	8	8	8	2	2	6	6		
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	3.0	3.0
Minimum Split (s)	26.1	26.1	26.1	26.1	26.1	26.1	22.6	22.6	22.6	22.6	5.0	5.0
Total Split (s)	40.0	40.0	40.0	40.0	40.0	40.0	35.0	35.0	35.0	35.0	5.0	5.0
Total Split (%)	47.1%	47.1%	47.1%	47.1%	47.1%	47.1%	41.2%	41.2%	41.2%	41.2%	6%	6%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	2.0	2.0
All-Red Time (s)	2.8	2.8	2.8	2.8	2.8	2.8	2.3	2.3	2.3	2.3	0.0	0.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0		0.0		
Total Lost Time (s)		6.1	6.1		6.1	6.1	5.6	5.6		5.6		
Lead/Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)		55.4	55.4		55.4	55.4	15.4	15.4		15.4		
Actuated g/C Ratio		0.65	0.65		0.65	0.65	0.18	0.18		0.18		
v/c Ratio		0.30	0.20		0.72	0.01	0.63	0.61		0.13		
Control Delay		6.8	1.0		19.8	0.0	43.6	13.0		27.4		
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0		
Total Delay		6.8	1.0		19.8	0.0	43.6	13.0		27.4		
LOS		A	A		B	A	D	B		C		
Approach Delay		4.9			19.4			23.8		27.4		
Approach LOS		A			B			C		C		
Queue Length 50th (m)		13.9	0.0		51.4	0.0	22.6	6.9		5.4		
Queue Length 95th (m)		m43.0	m3.7		#169.2	0.0	37.5	26.3		12.3		
Internal Link Dist (m)		187.3			176.5			528.9		134.6		
Turn Bay Length (m)			35.0									
Base Capacity (vph)		1170	871		852	897	447	659		598		
Starvation Cap Reductn		0	0		0	0	0	0		0		
Spillback Cap Reductn		0	0		0	0	0	0		0		
Storage Cap Reductn		0	0		0	0	0	0		0		
Reduced v/c Ratio		0.30	0.20		0.72	0.01	0.33	0.41		0.07		

Intersection Summary

Cycle Length: 85

Actuated Cycle Length: 85

Offset: 79 (93%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 16.0

Intersection LOS: B

Intersection Capacity Utilization 87.9%

ICU Level of Service E

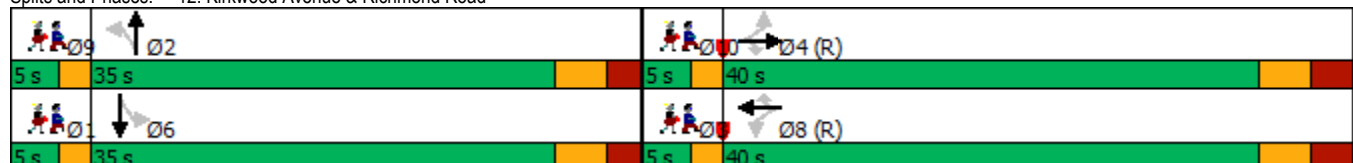
Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 12: Kirkwood Avenue & Richmond Road



Lane Group	Ø9	Ø10
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	9	10
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Recall Mode	None	None
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

Lanes, Volumes, Timings
13: Scott Street & Athlone Pedestrian Signal

Future Background 2028 PM
09/16/2025

Lane Group	EBT	WBT	Ø9	Ø10
Lane Configurations	↑	↑		
Traffic Volume (vph)	377	483		
Future Volume (vph)	377	483		
Lane Group Flow (vph)	377	483		
Turn Type	NA	NA		
Protected Phases	4	8	9	10
Permitted Phases				
Detector Phase	4	8		
Switch Phase				
Minimum Initial (s)	10.0	10.0	5.0	4.0
Minimum Split (s)	15.3	15.3	22.0	6.0
Total Split (s)	42.0	42.0	22.0	6.0
Total Split (%)	60.0%	60.0%	31%	9%
Yellow Time (s)	3.3	3.3	3.0	2.0
All-Red Time (s)	2.0	2.0	1.0	0.0
Lost Time Adjust (s)	0.0	0.0		
Total Lost Time (s)	5.3	5.3		
Lead/Lag			Lead	Lag
Lead-Lag Optimize?			Yes	Yes
Recall Mode	C-Max	C-Max	None	None
Act Effct Green (s)	53.6	53.6		
Actuated g/C Ratio	0.77	0.77		
v/c Ratio	0.32	0.42		
Control Delay	6.4	3.6		
Queue Delay	0.0	0.0		
Total Delay	6.4	3.6		
LOS	A	A		
Approach Delay	6.4	3.6		
Approach LOS	A	A		
Queue Length 50th (m)	22.7	11.0		
Queue Length 95th (m)	38.4	15.3		
Internal Link Dist (m)	226.0	5.6		
Turn Bay Length (m)				
Base Capacity (vph)	1162	1162		
Starvation Cap Reductn	0	14		
Spillback Cap Reductn	0	0		
Storage Cap Reductn	0	0		
Reduced v/c Ratio	0.32	0.42		
Intersection Summary				
Cycle Length: 70				
Actuated Cycle Length: 70				
Offset: 56 (80%), Referenced to phase 4:EBT and 8:WBT, Start of Green				
Natural Cycle: 60				
Control Type: Actuated-Coordinated				
Maximum v/c Ratio: 0.42				
Intersection Signal Delay: 4.9			Intersection LOS: A	
Intersection Capacity Utilization 31.3%			ICU Level of Service A	
Analysis Period (min) 15				

Splits and Phases: 13: Scott Street & Athlone Pedestrian Signal

→ Ø4 (R)	Ø9	Ø10
42 s	22 s	6 s
← Ø8 (R)		
42 s		

Lanes, Volumes, Timings
14: Scott Street & Tweedsmuir Pedestrian Signal

Future Background 2028 PM
09/16/2025

→

←

Lane Group	EBT	WBT	Ø9
Lane Configurations	↑	↑	
Traffic Volume (vph)	414	499	
Future Volume (vph)	414	499	
Lane Group Flow (vph)	414	499	
Turn Type	NA	NA	
Protected Phases	4	8	9
Permitted Phases			
Detector Phase	4	8	
Switch Phase			
Minimum Initial (s)	10.0	10.0	5.0
Minimum Split (s)	15.5	15.5	22.0
Total Split (s)	48.0	48.0	22.0
Total Split (%)	68.6%	68.6%	31%
Yellow Time (s)	3.3	3.3	3.0
All-Red Time (s)	2.2	2.2	1.0
Lost Time Adjust (s)	0.0	0.0	
Total Lost Time (s)	5.5	5.5	
Lead/Lag			
Lead-Lag Optimize?			
Recall Mode	C-Max	C-Max	None
Act Effct Green (s)	53.5	53.5	
Actuated g/C Ratio	0.76	0.76	
v/c Ratio	0.36	0.43	
Control Delay	3.7	7.7	
Queue Delay	0.0	0.0	
Total Delay	3.7	7.7	
LOS	A	A	
Approach Delay	3.7	7.7	
Approach LOS	A	A	
Queue Length 50th (m)	10.7	33.8	
Queue Length 95th (m)	15.5	57.1	
Internal Link Dist (m)	0.1	213.7	
Turn Bay Length (m)			
Base Capacity (vph)	1159	1159	
Starvation Cap Reductn	0	0	
Spillback Cap Reductn	0	0	
Storage Cap Reductn	0	0	
Reduced v/c Ratio	0.36	0.43	
Intersection Summary			
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 50 (71%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.43			
Intersection Signal Delay: 5.9		Intersection LOS: A	
Intersection Capacity Utilization 32.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 14: Scott Street & Tweedsmuir Pedestrian Signal

→ Ø4 (R)	Ø9
48 s	22 s
← Ø8 (R)	
48 s	

Lanes, Volumes, Timings
15: Richmond Road & Athlone Pedestrian Signal

Future Background 2028 PM

09/16/2025

	→	←	
Lane Group	EBT	WBT	Ø9
Lane Configurations	↑	↑	
Traffic Volume (vph)	547	574	
Future Volume (vph)	547	574	
Lane Group Flow (vph)	547	574	
Turn Type	NA	NA	
Protected Phases	4	8	9
Permitted Phases			
Detector Phase	4	8	
Switch Phase			
Minimum Initial (s)	10.0	10.0	5.0
Minimum Split (s)	16.0	16.0	23.0
Total Split (s)	42.0	42.0	23.0
Total Split (%)	64.6%	64.6%	35%
Yellow Time (s)	3.3	3.3	3.0
All-Red Time (s)	2.7	2.7	1.0
Lost Time Adjust (s)	0.0	0.0	
Total Lost Time (s)	6.0	6.0	
Lead/Lag			
Lead-Lag Optimize?			
Recall Mode	None	None	None
Act Effct Green (s)	27.6	27.6	
Actuated g/C Ratio	0.80	0.80	
v/c Ratio	0.38	0.40	
Control Delay	7.3	7.6	
Queue Delay	0.0	0.0	
Total Delay	7.3	7.6	
LOS	A	A	
Approach Delay	7.3	7.6	
Approach LOS	A	A	
Queue Length 50th (m)	0.0	0.0	
Queue Length 95th (m)	64.1	68.6	
Internal Link Dist (m)	218.6	2.9	
Turn Bay Length (m)			
Base Capacity (vph)	1521	1521	
Starvation Cap Reductn	0	0	
Spillback Cap Reductn	0	0	
Storage Cap Reductn	0	0	
Reduced v/c Ratio	0.36	0.38	
Intersection Summary			
Cycle Length: 65			
Actuated Cycle Length: 34.6			
Natural Cycle: 55			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.40			
Intersection Signal Delay: 7.5		Intersection LOS: A	
Intersection Capacity Utilization 36.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 15: Richmond Road & Athlone Pedestrian Signal

→ Ø4		← Ø9
42 s		23 s
← Ø8		
42 s		

HCM Unsignalized Intersection Capacity Analysis
2: Athlone Avenue & Scott Street

Future Background 2028 PM
09/16/2025

									
Movement	EBT	EBR	WBL	WBT	NBL	NBR			
Lane Configurations									
Traffic Volume (veh/h)	369	8	30	453	1	45			
Future Volume (Veh/h)	369	8	30	453	1	45			
Sign Control	Free			Free	Stop				
Grade	0%			0%	0%				
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00			
Hourly flow rate (vph)	369	8	30	453	1	45			
Pedestrians	87			10	16				
Lane Width (m)	3.7			3.7	3.7				
Walking Speed (m/s)	1.1			1.1	1.1				
Percent Blockage	8			1	1				
Right turn flare (veh)									
Median type	None			None					
Median storage (veh)									
Upstream signal (m)	30			108					
pX, platoon unblocked			0.91		0.92	0.91			
vC, conflicting volume			393		989	399			
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol			286		732	293			
tC, single (s)			4.1		6.4	6.2			
tC, 2 stage (s)									
tF (s)			2.2		3.5	3.3			
p0 queue free %			97		100	93			
cM capacity (veh/h)			1146		316	664			
Direction, Lane #	EB 1	WB 1	NB 1						
Volume Total	377	483	46						
Volume Left	0	30	1						
Volume Right	8	0	45						
cSH	1700	1146	649						
Volume to Capacity	0.22	0.03	0.07						
Queue Length 95th (m)	0.0	0.6	1.7						
Control Delay (s)	0.0	0.8	11.0						
Lane LOS		A	B						
Approach Delay (s)	0.0	0.8	11.0						
Approach LOS		B							
Intersection Summary									
Average Delay		1.0							
Intersection Capacity Utilization		64.5%	ICU Level of Service		C				
Analysis Period (min)		15							

HCM Unsignalized Intersection Capacity Analysis
3: Tweedsmuir Avenue & Scott Street

Future Background 2028 PM

09/16/2025

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	403	11	20	479	4	18
Future Volume (Veh/h)	403	11	20	479	4	18
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	403	11	20	479	4	18
Pedestrians	10			187	23	
Lane Width (m)	3.7			3.7	3.7	
Walking Speed (m/s)	1.1			1.1	1.1	
Percent Blockage	1			17	2	
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	116			22		
pX, platoon unblocked			0.93		0.90	0.93
vC, conflicting volume			437		960	618
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			361		729	555
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		99	96
cM capacity (veh/h)			1094		332	400
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	414	499	22			
Volume Left	0	20	4			
Volume Right	11	0	18			
cSH	1700	1094	386			
Volume to Capacity	0.24	0.02	0.06			
Queue Length 95th (m)	0.0	0.4	1.4			
Control Delay (s)	0.0	0.5	14.9			
Lane LOS		A	B			
Approach Delay (s)	0.0	0.5	14.9			
Approach LOS			B			
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			63.7%	ICU Level of Service	B	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
5: Athlone Avenue & Richmond Road

Future Background 2028 PM

09/16/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	524	12	11	543	20	3	3	14	14	1	17
Future Volume (Veh/h)	11	524	12	11	543	20	3	3	14	14	1	17
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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
Hourly flow rate (vph)	11	524	12	11	543	20	3	3	14	14	1	17
Pedestrians		46			9			104			113	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		4			1			10			11	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		27			188							
pX, platoon unblocked	0.88			0.81			0.87	0.87	0.81	0.87	0.87	0.88
vC, conflicting volume	676			640			1294	1354	643	1264	1350	712
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	569			442			966	1035	446	932	1030	610
tC, single (s)	4.1			4.1			7.1	6.5	6.3	7.1	7.5	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.4	3.5	4.9	3.4
p0 queue free %	99			99			98	98	97	91	99	95
cM capacity (veh/h)	802			828			140	160	428	153	109	369
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	547	574	20	32								
Volume Left	11	11	3	14								
Volume Right	12	20	14	17								
cSH	802	828	275	218								
Volume to Capacity	0.01	0.01	0.07	0.15								
Queue Length 95th (m)	0.3	0.3	1.8	3.8								
Control Delay (s)	0.4	0.4	19.1	24.3								
Lane LOS	A	A	C	C								
Approach Delay (s)	0.4	0.4	19.1	24.3								
Approach LOS			C	C								
Intersection Summary												
Average Delay			1.3									
Intersection Capacity Utilization			56.1%		ICU Level of Service				B			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
6: Tweedsmuir Avenue & Richmond Road

Future Background 2028 PM

09/16/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	487	14	42	543	15	14	7	38	8	7	17
Future Volume (Veh/h)	51	487	14	42	543	15	14	7	38	8	7	17
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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
Hourly flow rate (vph)	51	487	14	42	543	15	14	7	38	8	7	17
Pedestrians		2						31			45	
Lane Width (m)		3.7						3.7			3.7	
Walking Speed (m/s)		1.1						1.1			1.1	
Percent Blockage		0						3			4	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		110			105							
pX, platoon unblocked	0.83			0.83			0.91	0.91	0.83	0.91	0.91	0.83
vC, conflicting volume	603			532			1276	1314	525	1310	1306	590
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	415			329			829	870	320	865	861	400
tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	3.3
p0 queue free %	94			96			93	97	93	96	97	97
cM capacity (veh/h)	915			988			209	224	582	194	227	518
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1							
Volume Total	552	585	15	59	32							
Volume Left	51	42	0	14	8							
Volume Right	14	0	15	38	17							
cSH	915	988	1700	361	305							
Volume to Capacity	0.06	0.04	0.01	0.16	0.11							
Queue Length 95th (m)	1.3	1.0	0.0	4.4	2.6							
Control Delay (s)	1.5	1.1	0.0	16.9	18.2							
Lane LOS	A	A		C	C							
Approach Delay (s)	1.5	1.1		16.9	18.2							
Approach LOS				C	C							
Intersection Summary												
Average Delay			2.5									
Intersection Capacity Utilization			78.4%		ICU Level of Service					D		
Analysis Period (min)			15									

Future Background 2031/2036

Lanes, Volumes, Timings
1: Churchill Avenue & Transitway/Scott Street

Future Background 2031 AM

09/16/2025

									
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	1	77	205	43	6	90	205	34	193
Future Volume (vph)	1	77	205	43	6	90	205	34	193
Lane Group Flow (vph)	0	90	205	71	0	96	205	0	228
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Over	Perm	NA
Protected Phases		4	3	8		2	3		6
Permitted Phases	4		8		2			6	
Detector Phase	4	4	3	8	2	2	3	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	25.4	25.4	11.8	25.4	27.4	27.4	11.8	27.4	27.4
Total Split (s)	26.0	26.0	41.0	67.0	28.0	28.0	41.0	28.0	28.0
Total Split (%)	27.4%	27.4%	43.2%	70.5%	29.5%	29.5%	43.2%	29.5%	29.5%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.3	3.3	3.0	3.3	3.3
All-Red Time (s)	4.4	4.4	3.8	4.4	3.1	3.1	3.8	3.1	3.1
Lost Time Adjust (s)		0.0	0.0	0.0		0.0	0.0		0.0
Total Lost Time (s)		7.4	6.8	7.4		6.4	6.8		6.4
Lead/Lag	Lag	Lag	Lead				Lead		
Lead-Lag Optimize?	Yes	Yes	Yes				Yes		
Recall Mode	Max	Max	Min	Max	None	None	Min	None	None
Act Effct Green (s)		34.4	60.3	59.7		17.0	18.5		17.0
Actuated g/C Ratio		0.38	0.67	0.66		0.19	0.20		0.19
v/c Ratio		0.24	0.26	0.10		0.30	0.71		0.74
Control Delay		23.9	7.3	4.8		33.7	46.7		49.8
Queue Delay		0.0	0.0	0.0		0.0	0.0		0.0
Total Delay		23.9	7.3	4.8		33.7	46.7		49.8
LOS		C	A	A		C	D		D
Approach Delay		23.9		6.7		42.6			49.8
Approach LOS		C		A		D			D
Queue Length 50th (m)		9.7	12.3	2.4		14.5	33.7		37.7
Queue Length 95th (m)		25.7	23.9	7.8		27.9	53.2		61.7
Internal Link Dist (m)		133.0		226.0		312.2			409.2
Turn Bay Length (m)			70.0						
Base Capacity (vph)		370	892	712		411	537		392
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		0.24	0.23	0.10		0.23	0.38		0.58

Intersection Summary

Cycle Length: 95

Actuated Cycle Length: 90.5

Natural Cycle: 70

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 31.5

Intersection LOS: C

Intersection Capacity Utilization 63.5%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Churchill Avenue & Transitway/Scott Street



Lanes, Volumes, Timings
4: West Village Private/Lanark Avenue & Scott Street

Future Background 2031 AM

09/16/2025

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	30	484	6	315	7	1	57	0
Future Volume (vph)	30	484	6	315	7	1	57	0
Lane Group Flow (vph)	30	490	6	353	7	20	57	64
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	21.6	21.6	21.6	21.6	28.2	28.2	28.2	28.2
Total Split (s)	66.0	66.0	66.0	66.0	29.0	29.0	29.0	29.0
Total Split (%)	69.5%	69.5%	69.5%	69.5%	30.5%	30.5%	30.5%	30.5%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.3	3.3	3.3	3.3	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.2	6.2	6.2	6.2
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	41.2	41.2	41.2	41.2	41.0	41.0	41.0	41.0
Actuated g/C Ratio	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43
v/c Ratio	0.09	0.75	0.02	0.53	0.01	0.03	0.10	0.07
Control Delay	12.7	29.1	11.0	20.6	21.7	10.4	21.4	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.7	29.1	11.0	20.6	21.7	10.4	21.4	0.1
LOS	B	C	B	C	C	B	C	A
Approach Delay		28.2		20.4		13.4		10.2
Approach LOS		C		C		B		B
Queue Length 50th (m)	3.1	72.8	0.6	44.2	0.7	0.1	6.1	0.0
Queue Length 95th (m)	6.1	80.8	2.1	50.3	4.1	5.3	17.2	0.0
Internal Link Dist (m)		213.7		548.0		112.2		176.6
Turn Bay Length (m)	40.0		40.0		10.0		30.0	
Base Capacity (vph)	503	940	361	961	540	658	562	929
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.52	0.02	0.37	0.01	0.03	0.10	0.07
Intersection Summary								
Cycle Length: 95								
Actuated Cycle Length: 95								
Offset: 83 (87%), Referenced to phase 2:NBT and 6:SBTL, Start of Green								
Natural Cycle: 60								
Control Type: Actuated-Coordinated								
Maximum v/c Ratio: 0.75								
Intersection Signal Delay: 23.0					Intersection LOS: C			
Intersection Capacity Utilization 56.3%					ICU Level of Service B			
Analysis Period (min) 15								

Splits and Phases: 4: West Village Private/Lanark Avenue & Scott Street



Lanes, Volumes, Timings
10: Churchill Avenue & Richmond Road

Future Background 2031 AM

09/16/2025

												
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø4	Ø9	Ø10	Ø11
Lane Configurations												
Traffic Volume (vph)	265	394	43	188	24	290	23	362				
Future Volume (vph)	265	394	43	188	24	290	23	362				
Lane Group Flow (vph)	265	423	43	208	24	373	0	526				
Turn Type	custom	NA	custom	NA	Perm	NA	Perm	NA				
Protected Phases	7	4 10		8 11		2		6	4	9	10	11
Permitted Phases	4		8		2		6					
Detector Phase	7	4 10	8	8 11	2	2	6	6				
Switch Phase												
Minimum Initial (s)	5.0		10.0		10.0	10.0	10.0	10.0	10.0	3.0	3.0	3.0
Minimum Split (s)	11.1		26.1		19.2	19.2	19.2	19.2	26.1	5.0	5.0	5.0
Total Split (s)	11.2		26.8		32.0	32.0	32.0	32.0	38.0	5.0	5.0	5.0
Total Split (%)	14.0%		33.5%		40.0%	40.0%	40.0%	40.0%	48%	6%	6%	6%
Yellow Time (s)	3.3		3.3		3.6	3.6	3.6	3.6	3.3	2.0	2.0	2.0
All-Red Time (s)	2.8		2.8		2.6	2.6	2.6	2.6	2.8	0.0	0.0	0.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0		0.0				
Total Lost Time (s)	6.1		6.1		6.2	6.2		6.2				
Lead/Lag	Lead				Lag	Lag	Lag	Lag		Lead		Lag
Lead-Lag Optimize?	Yes				Yes	Yes	Yes	Yes		Yes		Yes
Recall Mode	None		C-Max		None	None	None	None	C-Max	None	None	None
Act Effct Green (s)	36.9	31.9	20.7	20.7	29.8	29.8		29.8				
Actuated g/C Ratio	0.46	0.40	0.26	0.26	0.37	0.37		0.37				
v/c Ratio	0.62	0.61	0.20	0.48	0.11	0.61		0.88				
Control Delay	22.2	23.4	26.2	28.7	19.1	24.8		41.5				
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0				
Total Delay	22.2	23.4	26.2	28.7	19.1	24.8		41.5				
LOS	C	C	C	C	B	C		D				
Approach Delay		22.9		28.3		24.5		41.5				
Approach LOS		C		C		C		D				
Queue Length 50th (m)	24.6	49.0	5.1	25.9	2.3	41.6		68.4				
Queue Length 95th (m)	41.2	77.6	13.4	45.4	8.1	76.2		#140.0				
Internal Link Dist (m)		201.3		218.6		353.2		312.2				
Turn Bay Length (m)	35.0		25.0		15.0							
Base Capacity (vph)	427	694	213	435	226	616		599				
Starvation Cap Reductn	0	0	0	0	0	0		0				
Spillback Cap Reductn	0	0	0	0	0	0		0				
Storage Cap Reductn	0	0	0	0	0	0		0				
Reduced v/c Ratio	0.62	0.61	0.20	0.48	0.11	0.61		0.88				

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 0 (0%), Referenced to phase 8:WBTL and 4:EBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.88

Intersection Signal Delay: 29.2

Intersection LOS: C

Intersection Capacity Utilization 98.4%

ICU Level of Service F

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 10: Churchill Avenue & Richmond Road

					
5 s	32 s	11.2 s	5 s	26.8 s	
					
5 s	32 s	5 s	38 s		

Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	3.0
Minimum Split (s)	5.0
Total Split (s)	5.0
Total Split (%)	6%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings
11: McRae Avenue & Richmond Road

Future Background 2031 AM

09/16/2025

									Ø9	Ø13
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT		
Lane Configurations										
Traffic Volume (vph)	99	342	9	252	15	15	81	16		
Future Volume (vph)	99	342	9	252	15	15	81	16		
Lane Group Flow (vph)	99	374	9	343	15	26	0	145		
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA		
Protected Phases		4		8		2		6	9	13
Permitted Phases	4		8		2		6			
Detector Phase	4	4	8	8	2	2	6	6		
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	3.0	3.0
Minimum Split (s)	35.2	35.2	35.2	35.2	22.5	22.5	22.5	22.5	5.0	5.0
Total Split (s)	47.0	47.0	47.0	47.0	23.0	23.0	23.0	23.0	5.0	5.0
Total Split (%)	62.7%	62.7%	62.7%	62.7%	30.7%	30.7%	30.7%	30.7%	7%	7%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	2.0	2.0
All-Red Time (s)	2.9	2.9	2.9	2.9	2.2	2.2	2.2	2.2	0.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0		
Total Lost Time (s)	6.2	6.2	6.2	6.2	5.5	5.5		5.5		
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	49.3	49.3	49.3	49.3	13.0	13.0		13.0		
Actuated g/C Ratio	0.66	0.66	0.66	0.66	0.17	0.17		0.17		
v/c Ratio	0.16	0.18	0.02	0.32	0.07	0.09		0.61		
Control Delay	7.1	5.7	6.7	6.6	24.7	18.0		33.0		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0		
Total Delay	7.1	5.7	6.7	6.6	24.7	18.0		33.0		
LOS	A	A	A	A	C	B		C		
Approach Delay		6.0		6.6		20.5		33.0		
Approach LOS		A		A		C		C		
Queue Length 50th (m)	4.2	7.9	0.2	2.9	1.8	1.8		15.0		
Queue Length 95th (m)	14.3	19.2	m1.3	44.0	6.0	7.3		30.0		
Internal Link Dist (m)		81.0		187.3		44.7		176.9		
Turn Bay Length (m)	40.0		55.0							
Base Capacity (vph)	625	2134	554	1056	281	393		311		
Starvation Cap Reductn	0	0	0	0	0	0		0		
Spillback Cap Reductn	0	0	0	0	0	0		0		
Storage Cap Reductn	0	0	0	0	0	0		0		
Reduced v/c Ratio	0.16	0.18	0.02	0.32	0.05	0.07		0.47		

Intersection Summary

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 16 (21%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.61

Intersection Signal Delay: 10.7

Intersection LOS: B

Intersection Capacity Utilization 63.2%

ICU Level of Service B

Analysis Period (min) 15

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

Splits and Phases: 11: McRae Avenue & Richmond Road



Lanes, Volumes, Timings
12: Kirkwood Avenue & Richmond Road

Future Background 2031 AM

09/16/2025

	→	↘	↙	←	↖	↗	↑	↘	↓			
Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	Ø1	Ø3	Ø9
Lane Configurations												
Traffic Volume (vph)	311	132	189	237	11	123	25	8	30			
Future Volume (vph)	311	132	189	237	11	123	25	8	30			
Lane Group Flow (vph)	311	132	0	426	11	123	150	0	40			
Turn Type	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA			
Protected Phases	4			8			2		6	1	3	9
Permitted Phases		4	8		8	2		6				
Detector Phase	4	4	8	8	8	2	2	6	6			
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	3.0	3.0	3.0
Minimum Split (s)	26.1	26.1	26.1	26.1	26.1	22.6	22.6	22.6	22.6	5.0	5.0	5.0
Total Split (s)	35.0	35.0	35.0	35.0	35.0	30.0	30.0	30.0	30.0	5.0	5.0	5.0
Total Split (%)	46.7%	46.7%	46.7%	46.7%	46.7%	40.0%	40.0%	40.0%	40.0%	7%	7%	7%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	2.0	2.0	2.0
All-Red Time (s)	2.8	2.8	2.8	2.8	2.8	2.3	2.3	2.3	2.3	0.0	0.0	0.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0		0.0			
Total Lost Time (s)	6.1	6.1		6.1	6.1	5.6	5.6		5.6			
Lead/Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None	None	None
Act Effct Green (s)	47.5	47.5		47.5	47.5	13.3	13.3		13.3			
Actuated g/C Ratio	0.63	0.63		0.63	0.63	0.18	0.18		0.18			
v/c Ratio	0.28	0.15		0.54	0.01	0.56	0.43		0.15			
Control Delay	6.4	1.0		14.5	0.0	37.2	11.2		24.8			
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0		0.0			
Total Delay	6.4	1.0		14.5	0.0	37.2	11.2		24.8			
LOS	A	A		B	A	D	B		C			
Approach Delay	4.8			14.1			22.9		24.8			
Approach LOS	A			B			C		C			
Queue Length 50th (m)	10.3	0.1		25.3	0.0	16.2	3.0		4.6			
Queue Length 95th (m)	29.2	2.2		#98.7	0.0	29.1	16.0		11.3			
Internal Link Dist (m)	187.3			176.5			528.9		134.6			
Turn Bay Length (m)		35.0										
Base Capacity (vph)	1097	910		782	845	406	543		483			
Starvation Cap Reductn	0	0		0	0	0	0		0			
Spillback Cap Reductn	0	0		0	0	0	0		0			
Storage Cap Reductn	0	0		0	0	0	0		0			
Reduced v/c Ratio	0.28	0.15		0.54	0.01	0.30	0.28		0.08			

Intersection Summary

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 25 (33%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.56

Intersection Signal Delay: 13.0

Intersection LOS: B

Intersection Capacity Utilization 70.3%

ICU Level of Service C

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 12: Kirkwood Avenue & Richmond Road

5 s	30 s	5 s
5 s	30 s	5 s

Lane Group	Ø10
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	10
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	3.0
Minimum Split (s)	5.0
Total Split (s)	5.0
Total Split (%)	7%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings
13: Scott Street & Athlone Pedestrian Signal

Future Background 2031 AM

09/16/2025

	→ ←			
Lane Group	EBT	WBT	Ø9	Ø10
Lane Configurations	↑	↑		
Traffic Volume (vph)	359	271		
Future Volume (vph)	359	271		
Lane Group Flow (vph)	359	271		
Turn Type	NA	NA		
Protected Phases	4	8	9	10
Permitted Phases				
Detector Phase	4	8		
Switch Phase				
Minimum Initial (s)	10.0	10.0	5.0	4.0
Minimum Split (s)	15.3	15.3	22.0	6.0
Total Split (s)	37.0	37.0	22.0	6.0
Total Split (%)	56.9%	56.9%	34%	9%
Yellow Time (s)	3.3	3.3	3.0	2.0
All-Red Time (s)	2.0	2.0	1.0	0.0
Lost Time Adjust (s)	0.0	0.0		
Total Lost Time (s)	5.3	5.3		
Lead/Lag			Lead	Lag
Lead-Lag Optimize?			Yes	Yes
Recall Mode	C-Max	C-Max	None	None
Act Effct Green (s)	48.6	48.6		
Actuated g/C Ratio	0.75	0.75		
v/c Ratio	0.32	0.24		
Control Delay	6.8	3.8		
Queue Delay	0.0	0.0		
Total Delay	6.8	3.8		
LOS	A	A		
Approach Delay	6.8	3.8		
Approach LOS	A	A		
Queue Length 50th (m)	21.2	7.4		
Queue Length 95th (m)	36.9	11.7		
Internal Link Dist (m)	226.0	5.6		
Turn Bay Length (m)				
Base Capacity (vph)	1134	1134		
Starvation Cap Reductn	0	0		
Spillback Cap Reductn	0	0		
Storage Cap Reductn	0	0		
Reduced v/c Ratio	0.32	0.24		

Intersection Summary

Cycle Length: 65

Actuated Cycle Length: 65

Offset: 62 (95%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.32

Intersection Signal Delay: 5.5

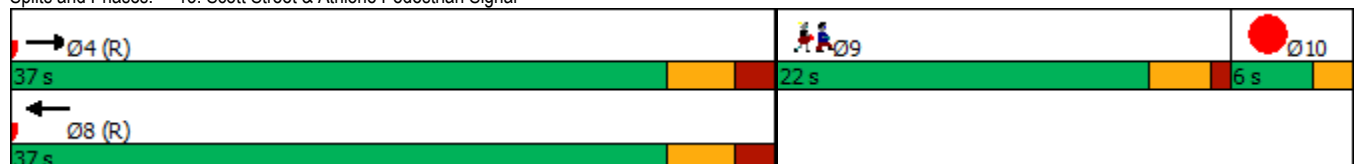
Intersection LOS: A

Intersection Capacity Utilization 24.4%

ICU Level of Service A

Analysis Period (min) 15

Splits and Phases: 13: Scott Street & Athlone Pedestrian Signal



Lanes, Volumes, Timings
14: Scott Street & Tweedsmuir Pedestrian Signal

Future Background 2031 AM
09/16/2025

	→	←	
Lane Group	EBT	WBT	Ø9
Lane Configurations	↑	↑	
Traffic Volume (vph)	380	274	
Future Volume (vph)	380	274	
Lane Group Flow (vph)	380	274	
Turn Type	NA	NA	
Protected Phases	4	8	9
Permitted Phases			
Detector Phase	4	8	
Switch Phase			
Minimum Initial (s)	10.0	10.0	5.0
Minimum Split (s)	15.5	15.5	22.0
Total Split (s)	43.0	43.0	22.0
Total Split (%)	66.2%	66.2%	34%
Yellow Time (s)	3.3	3.3	3.0
All-Red Time (s)	2.2	2.2	1.0
Lost Time Adjust (s)	0.0	0.0	
Total Lost Time (s)	5.5	5.5	
Lead/Lag			
Lead-Lag Optimize?			
Recall Mode	C-Max	C-Max	None
Act Effct Green (s)	48.5	48.5	
Actuated g/C Ratio	0.75	0.75	
v/c Ratio	0.34	0.24	
Control Delay	3.5	6.3	
Queue Delay	0.0	0.0	
Total Delay	3.5	6.3	
LOS	A	A	
Approach Delay	3.5	6.3	
Approach LOS	A	A	
Queue Length 50th (m)	8.5	15.2	
Queue Length 95th (m)	12.7	27.2	
Internal Link Dist (m)	0.1	213.7	
Turn Bay Length (m)			
Base Capacity (vph)	1132	1132	
Starvation Cap Reductn	0	0	
Spillback Cap Reductn	0	0	
Storage Cap Reductn	0	0	
Reduced v/c Ratio	0.34	0.24	
Intersection Summary			
Cycle Length: 65			
Actuated Cycle Length: 65			
Offset: 58 (89%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 45			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.34			
Intersection Signal Delay: 4.7		Intersection LOS: A	
Intersection Capacity Utilization 25.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 14: Scott Street & Tweedsmuir Pedestrian Signal



HCM Unsignalized Intersection Capacity Analysis
2: Athlone Avenue & Scott Street

Future Background 2031 AM
09/16/2025

									
Movement	EBT	EBR	WBL	WBT	NBL	NBR			
Lane Configurations									
Traffic Volume (veh/h)	352	7	22	249	3	28			
Future Volume (Veh/h)	352	7	22	249	3	28			
Sign Control	Free			Free	Stop				
Grade	0%			0%	0%				
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00			
Hourly flow rate (vph)	352	7	22	249	3	28			
Pedestrians	64			16	17				
Lane Width (m)	3.7			3.7	3.7				
Walking Speed (m/s)	1.1			1.1	1.1				
Percent Blockage	6			1	2				
Right turn flare (veh)									
Median type	None			None					
Median storage (veh)									
Upstream signal (m)	30			108					
pX, platoon unblocked			0.91		0.93	0.91			
vC, conflicting volume			376		730	388			
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol			267		592	281			
tC, single (s)			4.1		6.4	6.2			
tC, 2 stage (s)									
tF (s)			2.2		3.5	3.3			
p0 queue free %			98		99	96			
cM capacity (veh/h)			1163		395	670			
Direction, Lane #	EB 1	WB 1	NB 1						
Volume Total	359	271	31						
Volume Left	0	22	3						
Volume Right	7	0	28						
cSH	1700	1163	628						
Volume to Capacity	0.21	0.02	0.05						
Queue Length 95th (m)	0.0	0.4	1.2						
Control Delay (s)	0.0	0.8	11.0						
Lane LOS		A	B						
Approach Delay (s)	0.0	0.8	11.0						
Approach LOS			B						
Intersection Summary									
Average Delay		0.9							
Intersection Capacity Utilization		47.3%	ICU Level of Service		A				
Analysis Period (min)		15							

HCM Unsignalized Intersection Capacity Analysis
3: Tweedsmuir Avenue & Scott Street

Future Background 2031 AM

09/16/2025

									
Movement	EBT	EBR	WBL	WBT	NBL	NBR			
Lane Configurations									
Traffic Volume (veh/h)	377	3	7	267	4	35			
Future Volume (Veh/h)	377	3	7	267	4	35			
Sign Control	Free			Free	Stop				
Grade	0%			0%	0%				
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00			
Hourly flow rate (vph)	377	3	7	267	4	35			
Pedestrians	6			122	15				
Lane Width (m)	3.7			3.7	3.7				
Walking Speed (m/s)	1.1			1.1	1.1				
Percent Blockage	1			11	1				
Right turn flare (veh)									
Median type	None			None					
Median storage (veh)									
Upstream signal (m)	116			22					
pX, platoon unblocked			0.94		0.97	0.94			
vC, conflicting volume			395		680	516			
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol			319		508	447			
tC, single (s)			4.1		6.4	6.2			
tC, 2 stage (s)									
tF (s)			2.2		3.5	3.3			
p0 queue free %			99		99	93			
cM capacity (veh/h)			1145		494	499			
Direction, Lane #	EB 1	WB 1	NB 1						
Volume Total	380	274	39						
Volume Left	0	7	4						
Volume Right	3	0	35						
cSH	1700	1145	499						
Volume to Capacity	0.22	0.01	0.08						
Queue Length 95th (m)	0.0	0.1	1.9						
Control Delay (s)	0.0	0.3	12.8						
Lane LOS		A	B						
Approach Delay (s)	0.0	0.3	12.8						
Approach LOS		B							
Intersection Summary									
Average Delay		0.8							
Intersection Capacity Utilization		41.1%	ICU Level of Service	A					
Analysis Period (min)		15							

HCM Unsignalized Intersection Capacity Analysis
5: Athlone Avenue & Richmond Road

Future Background 2031 AM

09/16/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	440	5	5	318	14	5	2	9	11	3	12
Future Volume (Veh/h)	12	440	5	5	318	14	5	2	9	11	3	12
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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
Hourly flow rate (vph)	12	440	5	5	318	14	5	2	9	11	3	12
Pedestrians		23			2			53			64	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		2			0			5			6	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		27			188							
pX, platoon unblocked				0.82			0.82	0.82	0.82	0.82	0.82	
vC, conflicting volume	396			498			891	926	498	878	921	412
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	396			274			755	797	274	739	792	412
tC, single (s)	4.2			4.1			7.5	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.9	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			97	99	98	95	99	98
cM capacity (veh/h)	1063			1010			189	231	597	229	233	593
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	457	337	16	26								
Volume Left	12	5	5	11								
Volume Right	5	14	9	12								
cSH	1063	1010	319	320								
Volume to Capacity	0.01	0.00	0.05	0.08								
Queue Length 95th (m)	0.3	0.1	1.2	2.0								
Control Delay (s)	0.3	0.2	16.9	17.2								
Lane LOS	A	A	C	C								
Approach Delay (s)	0.3	0.2	16.9	17.2								
Approach LOS			C	C								
Intersection Summary												
Average Delay			1.1									
Intersection Capacity Utilization			47.3%	ICU Level of Service				A				
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
6: Tweedsmuir Avenue & Richmond Road

Future Background 2031 AM

09/16/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	45	404	11	8	305	12	5	13	23	13	8	27
Future Volume (Veh/h)	45	404	11	8	305	12	5	13	23	13	8	27
Sign Control	Free			Free			Stop			Stop		
Grade	0%			0%			0%			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
Hourly flow rate (vph)	45	404	11	8	305	12	5	13	23	13	8	27
Pedestrians	1			4			4			46		
Lane Width (m)	3.7			3.7			3.7			3.7		
Walking Speed (m/s)	1.1			1.1			1.1			1.1		
Percent Blockage	0			0			0			4		
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (m)	110			105								
pX, platoon unblocked	0.98			0.85			0.86	0.86	0.85	0.86	0.86	0.98
vC, conflicting volume	363			419			856	882	418	900	876	352
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	334			226			687	717	224	738	710	323
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.4
p0 queue free %	96			99			98	95	97	95	97	96
cM capacity (veh/h)	1154			1145			272	280	691	240	283	655
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1							
Volume Total	460	313	12	41	48							
Volume Left	45	8	0	5	13							
Volume Right	11	0	12	23	27							
cSH	1154	1145	1700	418	388							
Volume to Capacity	0.04	0.01	0.01	0.10	0.12							
Queue Length 95th (m)	0.9	0.2	0.0	2.5	3.2							
Control Delay (s)	1.2	0.3	0.0	14.5	15.6							
Lane LOS	A	A		B	C							
Approach Delay (s)	1.2	0.3		14.5	15.6							
Approach LOS				B	C							
Intersection Summary												
Average Delay	2.3											
Intersection Capacity Utilization	59.0%			ICU Level of Service					B			
Analysis Period (min)	15											

Lanes, Volumes, Timings
1: Churchill Avenue & Transitway/Scott Street

Future Background 2031 PM

09/16/2025

									
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	2	60	329	82	12	127	296	49	113
Future Volume (vph)	2	60	329	82	12	127	296	49	113
Lane Group Flow (vph)	0	76	329	131	0	139	296	0	165
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Over	Perm	NA
Protected Phases		4	3	8		2	3		6
Permitted Phases	4		8		2			6	
Detector Phase	4	4	3	8	2	2	3	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	25.4	25.4	11.8	25.4	27.4	27.4	11.8	27.4	27.4
Total Split (s)	30.0	30.0	32.0	62.0	33.0	33.0	32.0	33.0	33.0
Total Split (%)	31.6%	31.6%	33.7%	65.3%	34.7%	34.7%	33.7%	34.7%	34.7%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.3	3.3	3.0	3.3	3.3
All-Red Time (s)	4.4	4.4	3.8	4.4	3.1	3.1	3.8	3.1	3.1
Lost Time Adjust (s)		0.0	0.0	0.0		0.0	0.0		0.0
Total Lost Time (s)		7.4	6.8	7.4		6.4	6.8		6.4
Lead/Lag	Lag	Lag	Lead				Lead		
Lead-Lag Optimize?	Yes	Yes	Yes				Yes		
Recall Mode	Max	Max	Min	Max	None	None	Min	None	None
Act Effct Green (s)		27.5	55.3	54.7		14.5	20.4		14.5
Actuated g/C Ratio		0.33	0.67	0.66		0.17	0.25		0.17
v/c Ratio		0.22	0.39	0.18		0.47	0.79		0.63
Control Delay		23.2	7.9	4.8		36.1	45.5		42.9
Queue Delay		0.0	0.0	0.0		0.0	0.0		0.0
Total Delay		23.2	7.9	4.8		36.1	45.5		42.9
LOS		C	A	A		D	D		D
Approach Delay		23.2		7.1		42.5			42.9
Approach LOS		C		A		D			D
Queue Length 50th (m)		7.3	18.4	4.1		20.0	43.2		24.3
Queue Length 95th (m)		20.7	38.6	12.8		36.1	#73.4		43.1
Internal Link Dist (m)		133.0		226.0		312.2			409.2
Turn Bay Length (m)			70.0						
Base Capacity (vph)		349	879	718		538	461		477
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		0.22	0.37	0.18		0.26	0.64		0.35

Intersection Summary

Cycle Length: 95

Actuated Cycle Length: 83

Natural Cycle: 75

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 26.9

Intersection LOS: C

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.

Splits and Phases: 1: Churchill Avenue & Transitway/Scott Street



Lanes, Volumes, Timings
4: West Village Private/Lanark Avenue & Scott Street

Future Background 2031 PM

09/16/2025

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	88	581	13	600	13	2	49	3
Future Volume (vph)	88	581	13	600	13	2	49	3
Lane Group Flow (vph)	88	597	13	636	13	11	49	35
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	21.6	21.6	21.6	21.6	28.2	28.2	28.2	28.2
Total Split (s)	71.0	71.0	71.0	71.0	29.0	29.0	29.0	29.0
Total Split (%)	71.0%	71.0%	71.0%	71.0%	29.0%	29.0%	29.0%	29.0%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.3	3.3	3.3	3.3	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.2	6.2	6.2	6.2
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	52.0	52.0	52.0	52.0	35.2	35.2	35.2	35.2
Actuated g/C Ratio	0.52	0.52	0.52	0.52	0.35	0.35	0.35	0.35
v/c Ratio	0.36	0.71	0.05	0.76	0.03	0.02	0.10	0.07
Control Delay	16.2	22.1	8.8	24.4	27.8	17.4	27.9	11.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.2	22.1	8.8	24.4	27.8	17.4	27.9	11.8
LOS	B	C	A	C	C	B	C	B
Approach Delay		21.4		24.1		23.0		21.2
Approach LOS		C		C		C		C
Queue Length 50th (m)	9.3	80.8	1.2	89.7	1.7	0.3	6.5	0.4
Queue Length 95th (m)	15.6	87.9	3.0	98.4	6.9	4.8	17.3	8.1
Internal Link Dist (m)		213.7		548.0		112.2		176.6
Turn Bay Length (m)	40.0		40.0		10.0		30.0	
Base Capacity (vph)	302	1043	312	1033	442	504	471	532
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	0.29	0.57	0.04	0.62	0.03	0.02	0.10	0.07

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 40 (40%), Referenced to phase 2:NBT and 6:SBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.76

Intersection Signal Delay: 22.6

Intersection LOS: C

Intersection Capacity Utilization 78.6%

ICU Level of Service D

Analysis Period (min) 15

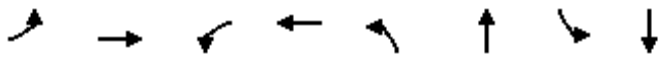
Splits and Phases: 4: West Village Private/Lanark Avenue & Scott Street



Lanes, Volumes, Timings
10: Churchill Avenue & Richmond Road

Future Background 2031 PM

09/16/2025

									Ø4	Ø9	Ø10	Ø11
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT				
Lane Configurations												
Traffic Volume (vph)	162	296	128	450	27	300	20	283				
Future Volume (vph)	162	296	128	450	27	300	20	283				
Lane Group Flow (vph)	162	342	128	483	27	376	0	586				
Turn Type	custom	NA	custom	NA	Perm	NA	Perm	NA				
Protected Phases	7	4 10		8 11		2		6	4	9	10	11
Permitted Phases	4		8		2		6					
Detector Phase	7	4 10	8	8 11	2	2	6	6				
Switch Phase												
Minimum Initial (s)	5.0		10.0		10.0	10.0	10.0	10.0	10.0	3.0	3.0	3.0
Minimum Split (s)	11.1		26.1		19.2	19.2	19.2	19.2	26.1	5.0	5.0	5.0
Total Split (s)	12.0		34.0		44.0	44.0	44.0	44.0	46.0	5.0	5.0	5.0
Total Split (%)	12.0%		34.0%		44.0%	44.0%	44.0%	44.0%	46%	5%	5%	5%
Yellow Time (s)	3.3		3.3		3.6	3.6	3.6	3.6	3.3	2.0	2.0	2.0
All-Red Time (s)	2.8		2.8		2.6	2.6	2.6	2.6	2.8	0.0	0.0	0.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0		0.0				
Total Lost Time (s)	6.1		6.1		6.2	6.2		6.2				
Lead/Lag	Lead				Lag	Lag	Lag	Lag		Lead		Lag
Lead-Lag Optimize?	Yes				Yes	Yes	Yes	Yes		Yes		Yes
Recall Mode	None		C-Max		None	None	None	None	C-Max	None	None	None
Act Effct Green (s)	44.9	39.9	27.9	27.9	41.8	41.8		41.8				
Actuated g/C Ratio	0.45	0.40	0.28	0.28	0.42	0.42		0.42				
v/c Ratio	0.81	0.52	0.62	0.98	0.12	0.54		0.98				
Control Delay	50.0	25.5	46.1	72.7	20.5	24.9		60.5				
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0				
Total Delay	50.0	25.5	46.1	72.7	20.5	24.9		60.5				
LOS	D	C	D	E	C	C		E				
Approach Delay		33.4		67.1		24.6		60.5				
Approach LOS		C		E		C		E				
Queue Length 50th (m)	18.6	47.9	21.6	92.2	3.1	50.3		100.3				
Queue Length 95th (m)	#44.9	74.1	#45.3	#156.1	9.5	84.9		#185.3				
Internal Link Dist (m)		201.3		218.6		353.2		312.2				
Turn Bay Length (m)	35.0		25.0		15.0							
Base Capacity (vph)	200	663	208	493	231	697		597				
Starvation Cap Reductn	0	0	0	0	0	0		0				
Spillback Cap Reductn	0	0	0	0	0	0		0				
Storage Cap Reductn	0	0	0	0	0	0		0				
Reduced v/c Ratio	0.81	0.52	0.62	0.98	0.12	0.54		0.98				

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 0 (0%), Referenced to phase 8:WBTL and 4:EBTL, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.98

Intersection Signal Delay: 49.1

Intersection LOS: D

Intersection Capacity Utilization 107.2%

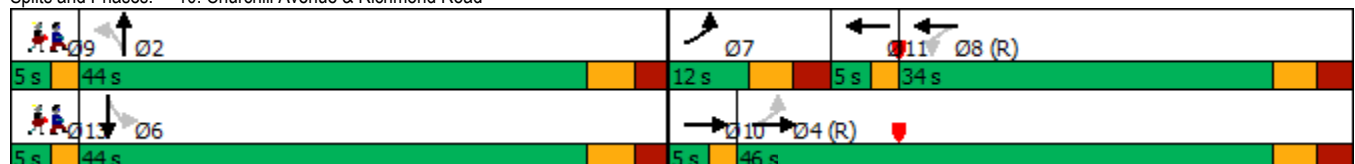
ICU Level of Service G

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 10: Churchill Avenue & Richmond Road



Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	3.0
Minimum Split (s)	5.0
Total Split (s)	5.0
Total Split (%)	5%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings
11: McRae Avenue & Richmond Road

Future Background 2031 PM

09/16/2025

	↖	→	↗	←	↖	↑	↗	↓		
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø9	Ø13
Lane Configurations										
Traffic Volume (vph)	69	288	49	466	63	45	105	49		
Future Volume (vph)	69	288	49	466	63	45	105	49		
Lane Group Flow (vph)	69	368	49	576	63	90	0	281		
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	NA		
Protected Phases		4	3	8		2		6	9	13
Permitted Phases	4		8		2		6			
Detector Phase	4	4	3	8	2	2	6	6		
Switch Phase										
Minimum Initial (s)	10.0	10.0	4.9	10.0	10.0	10.0	10.0	10.0	3.0	3.0
Minimum Split (s)	35.2	35.2	11.0	35.2	22.5	22.5	22.5	22.5	5.0	5.0
Total Split (s)	40.0	40.0	11.0	51.0	29.0	29.0	29.0	29.0	5.0	5.0
Total Split (%)	47.1%	47.1%	12.9%	60.0%	34.1%	34.1%	34.1%	34.1%	6%	6%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	2.0	2.0
All-Red Time (s)	2.9	2.9	2.8	2.9	2.2	2.2	2.2	2.2	0.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0		
Total Lost Time (s)	6.2	6.2	6.1	6.2	5.5	5.5		5.5		
Lead/Lag	Lag	Lag	Lead							
Lead-Lag Optimize?	Yes	Yes	Yes							
Recall Mode	C-Max	C-Max	None	C-Max	None	None	None	None	None	None
Act Effct Green (s)	43.7	43.7	50.9	50.8	21.5	21.5		21.5		
Actuated g/C Ratio	0.51	0.51	0.60	0.60	0.25	0.25		0.25		
v/c Ratio	0.18	0.23	0.10	0.57	0.29	0.23		0.84		
Control Delay	17.2	12.6	8.2	11.5	27.9	14.6		47.6		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0		
Total Delay	17.2	12.6	8.2	11.5	27.9	14.6		47.6		
LOS	B	B	A	B	C	B		D		
Approach Delay		13.3		11.2		20.1		47.6		
Approach LOS		B		B		C		D		
Queue Length 50th (m)	6.7	16.5	2.9	46.8	8.0	5.4		35.0		
Queue Length 95th (m)	16.7	27.6	m5.8	55.8	18.5	16.5		#74.2		
Internal Link Dist (m)		81.0		187.3		44.7		176.9		
Turn Bay Length (m)	40.0		55.0							
Base Capacity (vph)	384	1627	510	1018	244	444		370		
Starvation Cap Reductn	0	0	0	0	0	0		0		
Spillback Cap Reductn	0	0	0	0	0	0		0		
Storage Cap Reductn	0	0	0	0	0	0		0		
Reduced v/c Ratio	0.18	0.23	0.10	0.57	0.26	0.20		0.76		

Intersection Summary

Cycle Length: 85

Actuated Cycle Length: 85

Offset: 1 (1%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 19.6

Intersection LOS: B

Intersection Capacity Utilization 83.0%

ICU Level of Service E

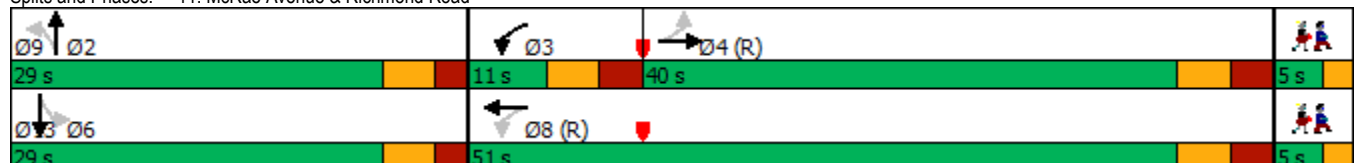
Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

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

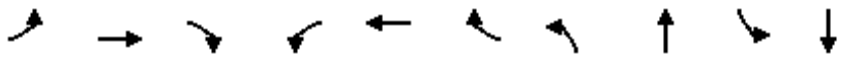
Splits and Phases: 11: McRae Avenue & Richmond Road



Lanes, Volumes, Timings
12: Kirkwood Avenue & Richmond Road

Future Background 2031 PM

09/16/2025

											Ø1	Ø3
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	Ø1	Ø3
Lane Configurations												
Traffic Volume (vph)	3	353	176	187	429	12	148	49	2	37		
Future Volume (vph)	3	353	176	187	429	12	148	49	2	37		
Lane Group Flow (vph)	0	356	176	0	616	12	148	273	0	40		
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA		
Protected Phases		4			8			2		6	1	3
Permitted Phases	4		4	8		8	2		6			
Detector Phase	4	4	4	8	8	8	2	2	6	6		
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	3.0	3.0
Minimum Split (s)	26.1	26.1	26.1	26.1	26.1	26.1	22.6	22.6	22.6	22.6	5.0	5.0
Total Split (s)	40.0	40.0	40.0	40.0	40.0	40.0	35.0	35.0	35.0	35.0	5.0	5.0
Total Split (%)	47.1%	47.1%	47.1%	47.1%	47.1%	47.1%	41.2%	41.2%	41.2%	41.2%	6%	6%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	2.0	2.0
All-Red Time (s)	2.8	2.8	2.8	2.8	2.8	2.8	2.3	2.3	2.3	2.3	0.0	0.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0		0.0		
Total Lost Time (s)		6.1	6.1		6.1	6.1	5.6	5.6		5.6		
Lead/Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)		55.4	55.4		55.4	55.4	15.4	15.4		15.4		
Actuated g/C Ratio		0.65	0.65		0.65	0.65	0.18	0.18		0.18		
v/c Ratio		0.30	0.20		0.72	0.01	0.63	0.61		0.13		
Control Delay		6.8	1.0		19.8	0.0	43.6	13.0		27.4		
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0		
Total Delay		6.8	1.0		19.8	0.0	43.6	13.0		27.4		
LOS		A	A		B	A	D	B		C		
Approach Delay		4.9			19.4			23.8		27.4		
Approach LOS		A			B			C		C		
Queue Length 50th (m)		13.8	0.0		51.3	0.0	22.6	6.9		5.4		
Queue Length 95th (m)		m43.1	m3.8		#169.0	0.0	37.5	26.3		12.3		
Internal Link Dist (m)		187.3			176.5			528.9		134.6		
Turn Bay Length (m)			35.0									
Base Capacity (vph)		1170	871		850	897	447	659		598		
Starvation Cap Reductn		0	0		0	0	0	0		0		
Spillback Cap Reductn		0	0		0	0	0	0		0		
Storage Cap Reductn		0	0		0	0	0	0		0		
Reduced v/c Ratio		0.30	0.20		0.72	0.01	0.33	0.41		0.07		

Intersection Summary

Cycle Length: 85

Actuated Cycle Length: 85

Offset: 79 (93%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.72

Intersection Signal Delay: 16.0

Intersection LOS: B

Intersection Capacity Utilization 87.8%

ICU Level of Service E

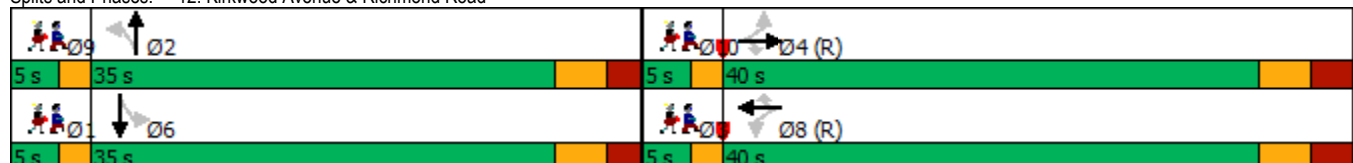
Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 12: Kirkwood Avenue & Richmond Road



Lane Group	Ø9	Ø10
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	9	10
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Recall Mode	None	None
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

Lanes, Volumes, Timings
13: Scott Street & Athlone Pedestrian Signal

Future Background 2031 PM

09/16/2025

	→	←		
Lane Group	EBT	WBT	Ø9	Ø10
Lane Configurations	↑	↑		
Traffic Volume (vph)	391	493		
Future Volume (vph)	391	493		
Lane Group Flow (vph)	391	493		
Turn Type	NA	NA		
Protected Phases	4	8	9	10
Permitted Phases				
Detector Phase	4	8		
Switch Phase				
Minimum Initial (s)	10.0	10.0	5.0	4.0
Minimum Split (s)	15.3	15.3	22.0	6.0
Total Split (s)	42.0	42.0	22.0	6.0
Total Split (%)	60.0%	60.0%	31%	9%
Yellow Time (s)	3.3	3.3	3.0	2.0
All-Red Time (s)	2.0	2.0	1.0	0.0
Lost Time Adjust (s)	0.0	0.0		
Total Lost Time (s)	5.3	5.3		
Lead/Lag			Lead	Lag
Lead-Lag Optimize?			Yes	Yes
Recall Mode	C-Max	C-Max	None	None
Act Effct Green (s)	53.6	53.6		
Actuated g/C Ratio	0.77	0.77		
v/c Ratio	0.34	0.42		
Control Delay	6.5	3.6		
Queue Delay	0.0	0.0		
Total Delay	6.5	3.6		
LOS	A	A		
Approach Delay	6.5	3.6		
Approach LOS	A	A		
Queue Length 50th (m)	23.7	10.9		
Queue Length 95th (m)	40.2	15.1		
Internal Link Dist (m)	226.0	5.6		
Turn Bay Length (m)				
Base Capacity (vph)	1162	1162		
Starvation Cap Reductn	0	12		
Spillback Cap Reductn	0	0		
Storage Cap Reductn	0	0		
Reduced v/c Ratio	0.34	0.43		

Intersection Summary

Cycle Length: 70	
Actuated Cycle Length: 70	
Offset: 56 (80%), Referenced to phase 4:EBT and 8:WBT, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.42	
Intersection Signal Delay: 4.9	Intersection LOS: A
Intersection Capacity Utilization 31.8%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 13: Scott Street & Athlone Pedestrian Signal

→ Ø4 (R)	Ø9	Ø10
42 s	22 s	6 s
← Ø8 (R)		
42 s		

Lanes, Volumes, Timings
14: Scott Street & Tweedsmuir Pedestrian Signal

Future Background 2031 PM

09/16/2025

	→	←	
Lane Group	EBT	WBT	Ø9
Lane Configurations	↑	↑	
Traffic Volume (vph)	421	509	
Future Volume (vph)	421	509	
Lane Group Flow (vph)	421	509	
Turn Type	NA	NA	
Protected Phases	4	8	9
Permitted Phases			
Detector Phase	4	8	
Switch Phase			
Minimum Initial (s)	10.0	10.0	5.0
Minimum Split (s)	15.5	15.5	22.0
Total Split (s)	48.0	48.0	22.0
Total Split (%)	68.6%	68.6%	31%
Yellow Time (s)	3.3	3.3	3.0
All-Red Time (s)	2.2	2.2	1.0
Lost Time Adjust (s)	0.0	0.0	
Total Lost Time (s)	5.5	5.5	
Lead/Lag			
Lead-Lag Optimize?			
Recall Mode	C-Max	C-Max	None
Act Effct Green (s)	53.5	53.5	
Actuated g/C Ratio	0.76	0.76	
v/c Ratio	0.36	0.44	
Control Delay	3.7	7.8	
Queue Delay	0.0	0.0	
Total Delay	3.7	7.8	
LOS	A	A	
Approach Delay	3.7	7.8	
Approach LOS	A	A	
Queue Length 50th (m)	10.7	34.8	
Queue Length 95th (m)	15.4	58.9	
Internal Link Dist (m)	0.1	213.7	
Turn Bay Length (m)			
Base Capacity (vph)	1159	1159	
Starvation Cap Reductn	0	0	
Spillback Cap Reductn	0	0	
Storage Cap Reductn	0	0	
Reduced v/c Ratio	0.36	0.44	
Intersection Summary			
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 50 (71%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.44			
Intersection Signal Delay: 5.9		Intersection LOS: A	
Intersection Capacity Utilization 32.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 14: Scott Street & Tweedsmuir Pedestrian Signal

→ Ø4 (R)	Ø9
48 s	22 s
← Ø8 (R)	
48 s	

Lanes, Volumes, Timings
15: Richmond Road & Athlone Pedestrian Signal

Future Background 2031 PM

09/16/2025

	→	←	
Lane Group	EBT	WBT	Ø9
Lane Configurations	↑	↑	
Traffic Volume (vph)	547	571	
Future Volume (vph)	547	571	
Lane Group Flow (vph)	547	571	
Turn Type	NA	NA	
Protected Phases	4	8	9
Permitted Phases			
Detector Phase	4	8	
Switch Phase			
Minimum Initial (s)	10.0	10.0	5.0
Minimum Split (s)	16.0	16.0	23.0
Total Split (s)	42.0	42.0	23.0
Total Split (%)	64.6%	64.6%	35%
Yellow Time (s)	3.3	3.3	3.0
All-Red Time (s)	2.7	2.7	1.0
Lost Time Adjust (s)	0.0	0.0	
Total Lost Time (s)	6.0	6.0	
Lead/Lag			
Lead-Lag Optimize?			
Recall Mode	None	None	None
Act Effct Green (s)	27.5	27.5	
Actuated g/C Ratio	0.80	0.80	
v/c Ratio	0.39	0.40	
Control Delay	7.4	7.6	
Queue Delay	0.0	0.0	
Total Delay	7.4	7.6	
LOS	A	A	
Approach Delay	7.4	7.6	
Approach LOS	A	A	
Queue Length 50th (m)	0.0	0.0	
Queue Length 95th (m)	64.2	68.5	
Internal Link Dist (m)	218.6	2.9	
Turn Bay Length (m)			
Base Capacity (vph)	1523	1523	
Starvation Cap Reductn	0	0	
Spillback Cap Reductn	0	0	
Storage Cap Reductn	0	0	
Reduced v/c Ratio	0.36	0.37	
Intersection Summary			
Cycle Length: 65			
Actuated Cycle Length: 34.5			
Natural Cycle: 55			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.40			
Intersection Signal Delay: 7.5		Intersection LOS: A	
Intersection Capacity Utilization 36.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 15: Richmond Road & Athlone Pedestrian Signal

→ Ø4		← Ø9
42 s		23 s
← Ø8		
42 s		

HCM Unsignalized Intersection Capacity Analysis
2: Athlone Avenue & Scott Street

Future Background 2031 PM
09/16/2025

									
Movement	EBT	EBR	WBL	WBT	NBL	NBR			
Lane Configurations									
Traffic Volume (veh/h)	383	8	20	473	1	38			
Future Volume (Veh/h)	383	8	20	473	1	38			
Sign Control	Free			Free	Stop				
Grade	0%			0%	0%				
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00			
Hourly flow rate (vph)	383	8	20	473	1	38			
Pedestrians	87			10	16				
Lane Width (m)	3.7			3.7	3.7				
Walking Speed (m/s)	1.1			1.1	1.1				
Percent Blockage	8			1	1				
Right turn flare (veh)									
Median type	None			None					
Median storage (veh)									
Upstream signal (m)	30			108					
pX, platoon unblocked			0.91		0.92	0.91			
vC, conflicting volume			407		1003	413			
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol			295		734	302			
tC, single (s)			4.1		6.4	6.2			
tC, 2 stage (s)									
tF (s)			2.2		3.5	3.3			
p0 queue free %			98		100	94			
cM capacity (veh/h)			1132		317	653			
Direction, Lane #	EB 1	WB 1	NB 1						
Volume Total	391	493	39						
Volume Left	0	20	1						
Volume Right	8	0	38						
cSH	1700	1132	636						
Volume to Capacity	0.23	0.02	0.06						
Queue Length 95th (m)	0.0	0.4	1.5						
Control Delay (s)	0.0	0.5	11.0						
Lane LOS		A	B						
Approach Delay (s)	0.0	0.5	11.0						
Approach LOS			B						
Intersection Summary									
Average Delay			0.7						
Intersection Capacity Utilization			56.4%	ICU Level of Service	B				
Analysis Period (min)			15						

HCM Unsignalized Intersection Capacity Analysis
3: Tweedsmuir Avenue & Scott Street

Future Background 2031 PM
09/16/2025

									
Movement	EBT	EBR	WBL	WBT	NBL	NBR			
Lane Configurations									
Traffic Volume (veh/h)	410	11	20	489	4	18			
Future Volume (Veh/h)	410	11	20	489	4	18			
Sign Control	Free			Free	Stop				
Grade	0%			0%	0%				
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00			
Hourly flow rate (vph)	410	11	20	489	4	18			
Pedestrians	10			187	23				
Lane Width (m)	3.7			3.7	3.7				
Walking Speed (m/s)	1.1			1.1	1.1				
Percent Blockage	1			17	2				
Right turn flare (veh)									
Median type	None			None					
Median storage (veh)									
Upstream signal (m)	116			22					
pX, platoon unblocked			0.93		0.89	0.93			
vC, conflicting volume			444		978	626			
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol			361		732	557			
tC, single (s)			4.1		6.4	6.2			
tC, 2 stage (s)									
tF (s)			2.2		3.5	3.3			
p0 queue free %			98		99	95			
cM capacity (veh/h)			1086		330	397			
Direction, Lane #	EB 1	WB 1	NB 1						
Volume Total	421	509	22						
Volume Left	0	20	4						
Volume Right	11	0	18						
cSH	1700	1086	383						
Volume to Capacity	0.25	0.02	0.06						
Queue Length 95th (m)	0.0	0.4	1.4						
Control Delay (s)	0.0	0.5	15.0						
Lane LOS		A	B						
Approach Delay (s)	0.0	0.5	15.0						
Approach LOS		B							
Intersection Summary									
Average Delay			0.6						
Intersection Capacity Utilization			64.3%	ICU Level of Service	C				
Analysis Period (min)			15						

HCM Unsignalized Intersection Capacity Analysis
5: Athlone Avenue & Richmond Road

Future Background 2031 PM

09/16/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	524	12	11	543	17	3	3	14	12	1	17
Future Volume (Veh/h)	11	524	12	11	543	17	3	3	14	12	1	17
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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
Hourly flow rate (vph)	11	524	12	11	543	17	3	3	14	12	1	17
Pedestrians		46			9			104			113	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		4			1			10			11	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		27			188							
pX, platoon unblocked	0.89			0.81			0.87	0.87	0.81	0.87	0.87	0.89
vC, conflicting volume	673			640			1293	1351	643	1263	1348	710
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	567			441			968	1035	445	934	1032	610
tC, single (s)	4.1			4.1			7.1	6.5	6.3	7.1	7.5	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.4	3.5	4.9	3.4
p0 queue free %	99			99			98	98	97	92	99	95
cM capacity (veh/h)	805			828			140	160	428	152	109	370
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	547	571	20	30								
Volume Left	11	11	3	12								
Volume Right	12	17	14	17								
cSH	805	828	274	224								
Volume to Capacity	0.01	0.01	0.07	0.13								
Queue Length 95th (m)	0.3	0.3	1.8	3.5								
Control Delay (s)	0.4	0.4	19.2	23.5								
Lane LOS	A	A	C	C								
Approach Delay (s)	0.4	0.4	19.2	23.5								
Approach LOS			C	C								
Intersection Summary												
Average Delay			1.3									
Intersection Capacity Utilization			55.8%		ICU Level of Service				B			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
6: Tweedsmuir Avenue & Richmond Road

Future Background 2031 PM

09/16/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	485	14	42	540	15	14	7	38	8	7	17
Future Volume (Veh/h)	51	485	14	42	540	15	14	7	38	8	7	17
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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
Hourly flow rate (vph)	51	485	14	42	540	15	14	7	38	8	7	17
Pedestrians		2						31			45	
Lane Width (m)		3.7						3.7			3.7	
Walking Speed (m/s)		1.1						1.1			1.1	
Percent Blockage		0						3			4	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		110			105							
pX, platoon unblocked	0.83			0.83			0.91	0.91	0.83	0.91	0.91	0.83
vC, conflicting volume	600			530			1272	1309	523	1304	1301	587
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	411			325			822	863	317	858	854	395
tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	3.3
p0 queue free %	94			96			93	97	93	96	97	97
cM capacity (veh/h)	917			990			211	226	584	196	229	520
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1							
Volume Total	550	582	15	59	32							
Volume Left	51	42	0	14	8							
Volume Right	14	0	15	38	17							
cSH	917	990	1700	363	307							
Volume to Capacity	0.06	0.04	0.01	0.16	0.10							
Queue Length 95th (m)	1.3	1.0	0.0	4.4	2.6							
Control Delay (s)	1.5	1.1	0.0	16.8	18.1							
Lane LOS	A	A		C	C							
Approach Delay (s)	1.5	1.1		16.8	18.1							
Approach LOS				C	C							
Intersection Summary												
Average Delay			2.5									
Intersection Capacity Utilization			78.2%		ICU Level of Service					D		
Analysis Period (min)			15									

Total Projected 2028

Lanes, Volumes, Timings
1: Churchill Avenue & Transitway/Scott Street

Total Projected 2028 AM

09/16/2025

									
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	1	77	199	43	6	90	201	34	193
Future Volume (vph)	1	77	199	43	6	90	201	34	193
Lane Group Flow (vph)	0	90	199	71	0	96	201	0	228
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Over	Perm	NA
Protected Phases		4	3	8		2	3		6
Permitted Phases	4		8		2			6	
Detector Phase	4	4	3	8	2	2	3	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	25.4	25.4	11.8	25.4	27.4	27.4	11.8	27.4	27.4
Total Split (s)	26.0	26.0	41.0	67.0	28.0	28.0	41.0	28.0	28.0
Total Split (%)	27.4%	27.4%	43.2%	70.5%	29.5%	29.5%	43.2%	29.5%	29.5%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.3	3.3	3.0	3.3	3.3
All-Red Time (s)	4.4	4.4	3.8	4.4	3.1	3.1	3.8	3.1	3.1
Lost Time Adjust (s)		0.0	0.0	0.0		0.0	0.0		0.0
Total Lost Time (s)		7.4	6.8	7.4		6.4	6.8		6.4
Lead/Lag	Lag	Lag	Lead				Lead		
Lead-Lag Optimize?	Yes	Yes	Yes				Yes		
Recall Mode	Max	Max	Min	Max	None	None	Min	None	None
Act Effct Green (s)		34.7	60.3	59.7		17.0	18.2		17.0
Actuated g/C Ratio		0.38	0.67	0.66		0.19	0.20		0.19
v/c Ratio		0.24	0.25	0.10		0.30	0.71		0.74
Control Delay		23.7	7.3	4.8		33.7	46.9		49.8
Queue Delay		0.0	0.0	0.0		0.0	0.0		0.0
Total Delay		23.7	7.3	4.8		33.7	46.9		49.8
LOS		C	A	A		C	D		D
Approach Delay		23.7		6.7		42.6			49.8
Approach LOS		C		A		D			D
Queue Length 50th (m)		9.7	12.0	2.4		14.5	33.0		37.7
Queue Length 95th (m)		25.5	23.3	7.8		27.9	52.6		61.7
Internal Link Dist (m)		133.0		226.0		312.2			409.2
Turn Bay Length (m)			70.0						
Base Capacity (vph)		373	892	712		411	537		392
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		0.24	0.22	0.10		0.23	0.37		0.58

Intersection Summary

Cycle Length: 95

Actuated Cycle Length: 90.5

Natural Cycle: 70

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 31.6

Intersection LOS: C

Intersection Capacity Utilization 63.3%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Churchill Avenue & Transitway/Scott Street



Lanes, Volumes, Timings
4: West Village Private/Lanark Avenue & Scott Street

Total Projected 2028 AM

09/16/2025

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	30	480	6	314	7	1	57	0
Future Volume (vph)	30	480	6	314	7	1	57	0
Lane Group Flow (vph)	30	486	6	352	7	20	57	64
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	21.6	21.6	21.6	21.6	28.2	28.2	28.2	28.2
Total Split (s)	66.0	66.0	66.0	66.0	29.0	29.0	29.0	29.0
Total Split (%)	69.5%	69.5%	69.5%	69.5%	30.5%	30.5%	30.5%	30.5%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.3	3.3	3.3	3.3	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.2	6.2	6.2	6.2
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	40.9	40.9	40.9	40.9	41.3	41.3	41.3	41.3
Actuated g/C Ratio	0.43	0.43	0.43	0.43	0.43	0.43	0.43	0.43
v/c Ratio	0.09	0.75	0.02	0.53	0.01	0.03	0.10	0.07
Control Delay	12.9	29.3	11.2	20.8	21.6	10.3	21.2	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.9	29.3	11.2	20.8	21.6	10.3	21.2	0.1
LOS	B	C	B	C	C	B	C	A
Approach Delay		28.3		20.6		13.3		10.1
Approach LOS		C		C		B		B
Queue Length 50th (m)	3.2	72.3	0.6	44.4	0.7	0.1	6.0	0.0
Queue Length 95th (m)	6.2	80.4	2.1	50.6	4.1	5.3	17.2	0.0
Internal Link Dist (m)		213.7		548.0		112.2		176.6
Turn Bay Length (m)	40.0		40.0		10.0		30.0	
Base Capacity (vph)	503	940	362	961	544	662	565	932
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.52	0.02	0.37	0.01	0.03	0.10	0.07
Intersection Summary								
Cycle Length: 95								
Actuated Cycle Length: 95								
Offset: 83 (87%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green								
Natural Cycle: 60								
Control Type: Actuated-Coordinated								
Maximum v/c Ratio: 0.75								
Intersection Signal Delay: 23.1					Intersection LOS: C			
Intersection Capacity Utilization 56.1%					ICU Level of Service B			
Analysis Period (min) 15								

Splits and Phases: 4: West Village Private/Lanark Avenue & Scott Street



Lanes, Volumes, Timings
10: Churchill Avenue & Richmond Road

Total Projected 2028 AM

09/16/2025

												
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø4	Ø9	Ø10	Ø11
Lane Configurations												
Traffic Volume (vph)	265	396	43	191	24	286	23	356				
Future Volume (vph)	265	396	43	191	24	286	23	356				
Lane Group Flow (vph)	265	425	43	211	24	369	0	520				
Turn Type	custom	NA	custom	NA	Perm	NA	Perm	NA				
Protected Phases	7	4 10		8 11		2		6	4	9	10	11
Permitted Phases	4		8		2		6					
Detector Phase	7	4 10	8	8 11	2	2	6	6				
Switch Phase												
Minimum Initial (s)	5.0		10.0		10.0	10.0	10.0	10.0	10.0	3.0	3.0	3.0
Minimum Split (s)	11.1		26.1		19.2	19.2	19.2	19.2	26.1	5.0	5.0	5.0
Total Split (s)	11.2		26.2		32.6	32.6	32.6	32.6	37.4	5.0	5.0	5.0
Total Split (%)	14.0%		32.8%		40.8%	40.8%	40.8%	40.8%	47%	6%	6%	6%
Yellow Time (s)	3.3		3.3		3.6	3.6	3.6	3.6	3.3	2.0	2.0	2.0
All-Red Time (s)	2.8		2.8		2.6	2.6	2.6	2.6	2.8	0.0	0.0	0.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0		0.0				
Total Lost Time (s)	6.1		6.1		6.2	6.2		6.2				
Lead/Lag	Lead				Lag	Lag	Lag	Lag		Lead		Lag
Lead-Lag Optimize?	Yes				Yes	Yes	Yes	Yes		Yes		Yes
Recall Mode	None		C-Max		None	None	None	None	C-Max	None	None	None
Act Effct Green (s)	37.0	33.0	20.1	20.1	29.7	29.7		29.7				
Actuated g/C Ratio	0.46	0.41	0.25	0.25	0.37	0.37		0.37				
v/c Ratio	0.62	0.59	0.21	0.50	0.11	0.60		0.87				
Control Delay	22.3	23.0	26.8	29.7	18.7	24.4		40.4				
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0				
Total Delay	22.3	23.0	26.8	29.7	18.7	24.4		40.4				
LOS	C	C	C	C	B	C		D				
Approach Delay		22.7		29.2		24.1		40.4				
Approach LOS		C		C		C		D				
Queue Length 50th (m)	25.0	50.1	5.2	26.6	2.3	40.5		66.2				
Queue Length 95th (m)	41.9	79.2	13.5	46.6	7.9	74.5		#136.1				
Internal Link Dist (m)		201.3		218.6		353.2		312.2				
Turn Bay Length (m)	35.0		25.0		15.0							
Base Capacity (vph)	430	717	207	423	227	613		597				
Starvation Cap Reductn	0	0	0	0	0	0		0				
Spillback Cap Reductn	0	0	0	0	0	0		0				
Storage Cap Reductn	0	0	0	0	0	0		0				
Reduced v/c Ratio	0.62	0.59	0.21	0.50	0.11	0.60		0.87				

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 0 (0%), Referenced to phase 8:WBTL and 4:EBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.87

Intersection Signal Delay: 28.9

Intersection LOS: C

Intersection Capacity Utilization 98.2%

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: 10: Churchill Avenue & Richmond Road

					
5 s	32.6 s	11.2 s	5 s	26.2 s	
					
5 s	32.6 s	5 s	37.4 s		

Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	3.0
Minimum Split (s)	5.0
Total Split (s)	5.0
Total Split (%)	6%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings
11: McRae Avenue & Richmond Road

Total Projected 2028 AM

09/16/2025

									Ø9	Ø13
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø9	Ø13
Lane Configurations										
Traffic Volume (vph)	99	355	9	258	15	15	79	16		
Future Volume (vph)	99	355	9	258	15	15	79	16		
Lane Group Flow (vph)	99	387	9	348	15	26	0	143		
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA		
Protected Phases		4		8		2		6	9	13
Permitted Phases	4		8		2		6			
Detector Phase	4	4	8	8	2	2	6	6		
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	3.0	3.0
Minimum Split (s)	35.2	35.2	35.2	35.2	22.5	22.5	22.5	22.5	5.0	5.0
Total Split (s)	47.0	47.0	47.0	47.0	23.0	23.0	23.0	23.0	5.0	5.0
Total Split (%)	62.7%	62.7%	62.7%	62.7%	30.7%	30.7%	30.7%	30.7%	7%	7%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	2.0	2.0
All-Red Time (s)	2.9	2.9	2.9	2.9	2.2	2.2	2.2	2.2	0.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0		
Total Lost Time (s)	6.2	6.2	6.2	6.2	5.5	5.5		5.5		
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	53.8	53.8	53.8	53.8	12.9	12.9		12.9		
Actuated g/C Ratio	0.72	0.72	0.72	0.72	0.17	0.17		0.17		
v/c Ratio	0.15	0.17	0.02	0.30	0.07	0.09		0.60		
Control Delay	6.8	5.3	6.7	6.3	24.9	18.1		32.4		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0		
Total Delay	6.8	5.3	6.7	6.3	24.9	18.1		32.4		
LOS	A	A	A	A	C	B		C		
Approach Delay		5.6		6.3		20.6		32.4		
Approach LOS		A		A		C		C		
Queue Length 50th (m)	4.2	8.1	0.2	2.9	1.8	1.8		14.7		
Queue Length 95th (m)	14.3	19.8	m1.3	44.9	6.0	7.3		29.4		
Internal Link Dist (m)		81.0		187.3		44.7		176.9		
Turn Bay Length (m)	40.0		55.0							
Base Capacity (vph)	681	2328	596	1149	279	393		313		
Starvation Cap Reductn	0	0	0	0	0	0		0		
Spillback Cap Reductn	0	0	0	0	0	0		0		
Storage Cap Reductn	0	0	0	0	0	0		0		
Reduced v/c Ratio	0.15	0.17	0.02	0.30	0.05	0.07		0.46		

Intersection Summary

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 16 (21%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.60

Intersection Signal Delay: 10.2

Intersection LOS: B

Intersection Capacity Utilization 63.1%

ICU Level of Service B

Analysis Period (min) 15

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

Splits and Phases: 11: McRae Avenue & Richmond Road



Lanes, Volumes, Timings
12: Kirkwood Avenue & Richmond Road

Total Projected 2028 AM

09/16/2025

	→	↘	↙	←	↖	↗	↑	↘	↓			
Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	Ø1	Ø3	Ø9
Lane Configurations												
Traffic Volume (vph)	314	140	189	238	11	127	25	8	30			
Future Volume (vph)	314	140	189	238	11	127	25	8	30			
Lane Group Flow (vph)	314	140	0	427	11	127	150	0	40			
Turn Type	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA			
Protected Phases	4			8			2		6	1	3	9
Permitted Phases		4	8		8	2		6				
Detector Phase	4	4	8	8	8	2	2	6	6			
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	3.0	3.0	3.0
Minimum Split (s)	26.1	26.1	26.1	26.1	26.1	22.6	22.6	22.6	22.6	5.0	5.0	5.0
Total Split (s)	35.0	35.0	35.0	35.0	35.0	30.0	30.0	30.0	30.0	5.0	5.0	5.0
Total Split (%)	46.7%	46.7%	46.7%	46.7%	46.7%	40.0%	40.0%	40.0%	40.0%	7%	7%	7%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	2.0	2.0	2.0
All-Red Time (s)	2.8	2.8	2.8	2.8	2.8	2.3	2.3	2.3	2.3	0.0	0.0	0.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0		0.0			
Total Lost Time (s)	6.1	6.1		6.1	6.1	5.6	5.6		5.6			
Lead/Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None	None	None
Act Effct Green (s)	47.3	47.3		47.3	47.3	13.5	13.5		13.5			
Actuated g/C Ratio	0.63	0.63		0.63	0.63	0.18	0.18		0.18			
v/c Ratio	0.29	0.15		0.55	0.01	0.57	0.42		0.15			
Control Delay	6.5	1.0		14.8	0.0	37.4	11.1		24.6			
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0		0.0			
Total Delay	6.5	1.0		14.8	0.0	37.4	11.1		24.6			
LOS	A	A		B	A	D	B		C			
Approach Delay	4.8			14.5			23.1		24.6			
Approach LOS	A			B			C		C			
Queue Length 50th (m)	10.5	0.0		25.7	0.0	16.8	3.0		4.6			
Queue Length 95th (m)	29.0	2.1		#100.3	0.0	29.9	15.9		11.3			
Internal Link Dist (m)	187.3			176.5			528.9		134.6			
Turn Bay Length (m)		35.0										
Base Capacity (vph)	1093	910		776	843	406	543		483			
Starvation Cap Reductn	0	0		0	0	0	0		0			
Spillback Cap Reductn	0	0		0	0	0	0		0			
Storage Cap Reductn	0	0		0	0	0	0		0			
Reduced v/c Ratio	0.29	0.15		0.55	0.01	0.31	0.28		0.08			

Intersection Summary

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 25 (33%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.57

Intersection Signal Delay: 13.2

Intersection LOS: B

Intersection Capacity Utilization 70.7%

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: 12: Kirkwood Avenue & Richmond Road

	Ø9		Ø2		Ø10		Ø4 (R)
5 s		30 s		5 s		35 s	
	Ø1		Ø6		Ø3		Ø8 (R)
5 s		30 s		5 s		35 s	

Lane Group	Ø10
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	10
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	3.0
Minimum Split (s)	5.0
Total Split (s)	5.0
Total Split (%)	7%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings
13: Scott Street & Athlone Pedestrian Signal

Total Projected 2028 AM
09/16/2025

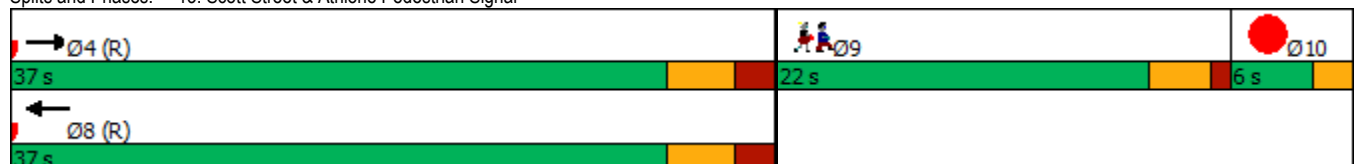
	→ ←			
Lane Group	EBT	WBT	Ø9	Ø10
Lane Configurations	↑	↑		
Traffic Volume (vph)	340	271		
Future Volume (vph)	340	271		
Lane Group Flow (vph)	340	271		
Turn Type	NA	NA		
Protected Phases	4	8	9	10
Permitted Phases				
Detector Phase	4	8		
Switch Phase				
Minimum Initial (s)	10.0	10.0	5.0	4.0
Minimum Split (s)	15.3	15.3	22.0	6.0
Total Split (s)	37.0	37.0	22.0	6.0
Total Split (%)	56.9%	56.9%	34%	9%
Yellow Time (s)	3.3	3.3	3.0	2.0
All-Red Time (s)	2.0	2.0	1.0	0.0
Lost Time Adjust (s)	0.0	0.0		
Total Lost Time (s)	5.3	5.3		
Lead/Lag			Lead	Lag
Lead-Lag Optimize?			Yes	Yes
Recall Mode	C-Max	C-Max	None	None
Act Effct Green (s)	48.6	48.6		
Actuated g/C Ratio	0.75	0.75		
v/c Ratio	0.30	0.24		
Control Delay	6.7	3.9		
Queue Delay	0.0	0.0		
Total Delay	6.7	3.9		
LOS	A	A		
Approach Delay	6.7	3.9		
Approach LOS	A	A		
Queue Length 50th (m)	19.7	7.7		
Queue Length 95th (m)	34.4	12.2		
Internal Link Dist (m)	226.0	5.6		
Turn Bay Length (m)				
Base Capacity (vph)	1134	1134		
Starvation Cap Reductn	0	0		
Spillback Cap Reductn	0	0		
Storage Cap Reductn	0	0		
Reduced v/c Ratio	0.30	0.24		

Intersection Summary

Cycle Length: 65
 Actuated Cycle Length: 65
 Offset: 62 (95%), Referenced to phase 4:EBT and 8:WBT, Start of Green
 Natural Cycle: 50
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.30
 Intersection Signal Delay: 5.5
 Intersection Capacity Utilization 23.3%
 Analysis Period (min) 15

Intersection LOS: A
ICU Level of Service A

Splits and Phases: 13: Scott Street & Athlone Pedestrian Signal



Lanes, Volumes, Timings
14: Scott Street & Tweedsmuir Pedestrian Signal

Total Projected 2028 AM
09/16/2025

			
Lane Group	EBT	WBT	Ø9
Lane Configurations			
Traffic Volume (vph)	371	271	
Future Volume (vph)	371	271	
Lane Group Flow (vph)	371	271	
Turn Type	NA	NA	
Protected Phases	4	8	9
Permitted Phases			
Detector Phase	4	8	
Switch Phase			
Minimum Initial (s)	10.0	10.0	5.0
Minimum Split (s)	15.5	15.5	22.0
Total Split (s)	43.0	43.0	22.0
Total Split (%)	66.2%	66.2%	34%
Yellow Time (s)	3.3	3.3	3.0
All-Red Time (s)	2.2	2.2	1.0
Lost Time Adjust (s)	0.0	0.0	
Total Lost Time (s)	5.5	5.5	
Lead/Lag			
Lead-Lag Optimize?			
Recall Mode	C-Max	C-Max	None
Act Effct Green (s)	48.5	48.5	
Actuated g/C Ratio	0.75	0.75	
v/c Ratio	0.33	0.24	
Control Delay	3.6	6.3	
Queue Delay	0.0	0.0	
Total Delay	3.6	6.3	
LOS	A	A	
Approach Delay	3.6	6.3	
Approach LOS	A	A	
Queue Length 50th (m)	8.8	15.0	
Queue Length 95th (m)	13.2	26.9	
Internal Link Dist (m)	0.1	213.7	
Turn Bay Length (m)			
Base Capacity (vph)	1132	1132	
Starvation Cap Reductn	0	0	
Spillback Cap Reductn	0	0	
Storage Cap Reductn	0	0	
Reduced v/c Ratio	0.33	0.24	
Intersection Summary			
Cycle Length: 65			
Actuated Cycle Length: 65			
Offset: 58 (89%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 45			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.33			
Intersection Signal Delay: 4.7		Intersection LOS: A	
Intersection Capacity Utilization 25.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 14: Scott Street & Tweedsmuir Pedestrian Signal



Lanes, Volumes, Timings
15: Richmond Road & Athlone Pedestrian Signal

Total Projected 2028 AM
09/16/2025

→

←

Lane Group	EBT	WBT	Ø9
Lane Configurations	↑	↑	
Traffic Volume (vph)	459	341	
Future Volume (vph)	459	341	
Lane Group Flow (vph)	459	341	
Turn Type	NA	NA	
Protected Phases	4	8	9
Permitted Phases			
Detector Phase	4	8	
Switch Phase			
Minimum Initial (s)	10.0	10.0	5.0
Minimum Split (s)	16.0	16.0	23.0
Total Split (s)	42.0	42.0	23.0
Total Split (%)	64.6%	64.6%	35%
Yellow Time (s)	3.3	3.3	3.0
All-Red Time (s)	2.7	2.7	1.0
Lost Time Adjust (s)	0.0	0.0	
Total Lost Time (s)	6.0	6.0	
Lead/Lag			
Lead-Lag Optimize?			
Recall Mode	None	None	None
Act Effct Green (s)	23.0	23.0	
Actuated g/C Ratio	0.77	0.77	
v/c Ratio	0.33	0.25	
Control Delay	7.7	7.0	
Queue Delay	0.0	0.0	
Total Delay	7.7	7.0	
LOS	A	A	
Approach Delay	7.7	7.0	
Approach LOS	A	A	
Queue Length 50th (m)	0.0	0.0	
Queue Length 95th (m)	52.7	36.9	
Internal Link Dist (m)	218.6	2.9	
Turn Bay Length (m)			
Base Capacity (vph)	1579	1579	
Starvation Cap Reductn	0	0	
Spillback Cap Reductn	0	0	
Storage Cap Reductn	0	0	
Reduced v/c Ratio	0.29	0.22	
Intersection Summary			
Cycle Length: 65			
Actuated Cycle Length: 29.9			
Natural Cycle: 45			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.33			
Intersection Signal Delay: 7.4		Intersection LOS: A	
Intersection Capacity Utilization 30.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 15: Richmond Road & Athlone Pedestrian Signal

→ Ø4	← Ø8	↑ Ø9
42 s	42 s	23 s
← Ø8	→ Ø4	↑ Ø9
42 s	42 s	23 s

HCM Unsignalized Intersection Capacity Analysis
2: Athlone Avenue & Scott Street

Total Projected 2028 AM
09/16/2025

									
Movement	EBT	EBR	WBL	WBT	NBL	NBR			
Lane Configurations									
Traffic Volume (veh/h)	333	7	28	243	3	38			
Future Volume (Veh/h)	333	7	28	243	3	38			
Sign Control	Free			Free	Stop				
Grade	0%			0%	0%				
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00			
Hourly flow rate (vph)	333	7	28	243	3	38			
Pedestrians	64			16	17				
Lane Width (m)	3.7			3.7	3.7				
Walking Speed (m/s)	1.1			1.1	1.1				
Percent Blockage	6			1	2				
Right turn flare (veh)									
Median type	None			None					
Median storage (veh)									
Upstream signal (m)	30			108					
pX, platoon unblocked			0.92		0.93	0.92			
vC, conflicting volume			357		716	370			
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol			256		589	269			
tC, single (s)			4.1		6.4	6.2			
tC, 2 stage (s)									
tF (s)			2.2		3.5	3.3			
p0 queue free %			98		99	94			
cM capacity (veh/h)			1184		397	685			
Direction, Lane #	EB 1	WB 1	NB 1						
Volume Total	340	271	41						
Volume Left	0	28	3						
Volume Right	7	0	38						
cSH	1700	1184	651						
Volume to Capacity	0.20	0.02	0.06						
Queue Length 95th (m)	0.0	0.6	1.5						
Control Delay (s)	0.0	1.0	10.9						
Lane LOS		A	B						
Approach Delay (s)	0.0	1.0	10.9						
Approach LOS			B						
Intersection Summary									
Average Delay		1.1							
Intersection Capacity Utilization		52.0%	ICU Level of Service		A				
Analysis Period (min)		15							

HCM Unsignalized Intersection Capacity Analysis
3: Tweedsmuir Avenue & Scott Street

Total Projected 2028 AM
09/16/2025

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	366	5	9	262	9	40
Future Volume (Veh/h)	366	5	9	262	9	40
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	366	5	9	262	9	40
Pedestrians	6			122	15	
Lane Width (m)	3.7			3.7	3.7	
Walking Speed (m/s)	1.1			1.1	1.1	
Percent Blockage	1			11	1	
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	116			22		
pX, platoon unblocked			0.94		0.97	0.94
vC, conflicting volume			386		670	506
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			319		511	446
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		98	92
cM capacity (veh/h)			1154		492	505
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	371	271	49			
Volume Left	0	9	9			
Volume Right	5	0	40			
cSH	1700	1154	502			
Volume to Capacity	0.22	0.01	0.10			
Queue Length 95th (m)	0.0	0.2	2.5			
Control Delay (s)	0.0	0.3	12.9			
Lane LOS		A	B			
Approach Delay (s)	0.0	0.3	12.9			
Approach LOS			B			
Intersection Summary						
Average Delay			1.1			
Intersection Capacity Utilization			42.1%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
5: Athlone Avenue & Richmond Road

Total Projected 2028 AM

09/16/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	12	442	5	5	321	15	5	2	9	14	3	12
Future Volume (Veh/h)	12	442	5	5	321	15	5	2	9	14	3	12
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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
Hourly flow rate (vph)	12	442	5	5	321	15	5	2	9	14	3	12
Pedestrians		23			2			53			64	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		2			0			5			6	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		27			188							
pX, platoon unblocked				0.82			0.82	0.82	0.82	0.82	0.82	
vC, conflicting volume	400			500			896	932	500	883	926	416
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	400			275			761	804	274	744	797	416
tC, single (s)	4.2			4.1			7.5	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.9	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			97	99	98	94	99	98
cM capacity (veh/h)	1059			1008			187	229	596	227	231	590
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	459	341	16	29								
Volume Left	12	5	5	14								
Volume Right	5	15	9	12								
cSH	1059	1008	316	305								
Volume to Capacity	0.01	0.00	0.05	0.10								
Queue Length 95th (m)	0.3	0.1	1.2	2.4								
Control Delay (s)	0.3	0.2	17.0	18.0								
Lane LOS	A	A	C	C								
Approach Delay (s)	0.3	0.2	17.0	18.0								
Approach LOS			C	C								
Intersection Summary												
Average Delay			1.2									
Intersection Capacity Utilization			47.6%	ICU Level of Service						A		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
6: Tweedsmuir Avenue & Richmond Road

Total Projected 2028 AM

09/16/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	47	407	11	8	306	17	5	13	23	23	8	30
Future Volume (Veh/h)	47	407	11	8	306	17	5	13	23	23	8	30
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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
Hourly flow rate (vph)	47	407	11	8	306	17	5	13	23	23	8	30
Pedestrians		1			4			4			46	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		0			0			0			4	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		110			105							
pX, platoon unblocked	0.98			0.85			0.86	0.86	0.85	0.86	0.86	0.98
vC, conflicting volume	369			422			868	896	420	908	884	353
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	350			227			716	749	225	764	736	334
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.4
p0 queue free %	96			99			98	95	97	90	97	95
cM capacity (veh/h)	1148			1142			257	266	689	228	271	651
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1							
Volume Total	465	314	17	41	61							
Volume Left	47	8	0	5	23							
Volume Right	11	0	17	23	30							
cSH	1148	1142	1700	403	346							
Volume to Capacity	0.04	0.01	0.01	0.10	0.18							
Queue Length 95th (m)	1.0	0.2	0.0	2.6	4.8							
Control Delay (s)	1.2	0.3	0.0	14.9	17.6							
Lane LOS	A	A		B	C							
Approach Delay (s)	1.2	0.3		14.9	17.6							
Approach LOS				B	C							
Intersection Summary												
Average Delay			2.6									
Intersection Capacity Utilization			62.4%			ICU Level of Service		B				
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
7: Tweedsmuir Avenue & Access A

Total Projected 2028 AM
09/16/2025

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	9	14	7	39	10	5
Future Volume (Veh/h)	9	14	7	39	10	5
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	9	14	7	39	10	5
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	66	12	15			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	66	12	15			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	99	100			
cM capacity (veh/h)	936	1068	1603			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	23	46	15			
Volume Left	9	7	0			
Volume Right	14	0	5			
cSH	1012	1603	1700			
Volume to Capacity	0.02	0.00	0.01			
Queue Length 95th (m)	0.5	0.1	0.0			
Control Delay (s)	8.6	1.1	0.0			
Lane LOS	A	A				
Approach Delay (s)	8.6	1.1	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			3.0			
Intersection Capacity Utilization		18.5%		ICU Level of Service	A	
Analysis Period (min)		15				

Lanes, Volumes, Timings
1: Churchill Avenue & Transitway/Scott Street

Total Projected 2028 PM

09/16/2025

									
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	2	60	324	82	12	127	290	41	113
Future Volume (vph)	2	60	324	82	12	127	290	41	113
Lane Group Flow (vph)	0	76	324	131	0	139	290	0	157
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Over	Perm	NA
Protected Phases		4	3	8		2	3		6
Permitted Phases	4		8		2			6	
Detector Phase	4	4	3	8	2	2	3	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	25.4	25.4	11.8	25.4	27.4	27.4	11.8	27.4	27.4
Total Split (s)	30.0	30.0	32.0	62.0	33.0	33.0	32.0	33.0	33.0
Total Split (%)	31.6%	31.6%	33.7%	65.3%	34.7%	34.7%	33.7%	34.7%	34.7%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.3	3.3	3.0	3.3	3.3
All-Red Time (s)	4.4	4.4	3.8	4.4	3.1	3.1	3.8	3.1	3.1
Lost Time Adjust (s)		0.0	0.0	0.0		0.0	0.0		0.0
Total Lost Time (s)		7.4	6.8	7.4		6.4	6.8		6.4
Lead/Lag	Lag	Lag	Lead				Lead		
Lead-Lag Optimize?	Yes	Yes	Yes				Yes		
Recall Mode	Max	Max	Min	Max	None	None	Min	None	None
Act Effct Green (s)		28.0	55.3	54.7		14.1	20.0		14.1
Actuated g/C Ratio		0.34	0.67	0.66		0.17	0.24		0.17
v/c Ratio		0.21	0.38	0.18		0.49	0.79		0.61
Control Delay		22.7	7.7	4.7		36.6	45.6		41.7
Queue Delay		0.0	0.0	0.0		0.0	0.0		0.0
Total Delay		22.7	7.7	4.7		36.6	45.6		41.7
LOS		C	A	A		D	D		D
Approach Delay		22.7		6.9		42.7			41.7
Approach LOS		C		A		D			D
Queue Length 50th (m)		7.1	17.5	4.0		20.0	42.0		22.9
Queue Length 95th (m)		20.7	38.0	12.8		36.1	71.6		41.0
Internal Link Dist (m)		133.0		226.0		312.2			409.2
Turn Bay Length (m)			70.0						
Base Capacity (vph)		356	883	721		541	463		488
Starvation Cap Reductn		0	0	0		0	0		0
Spillback Cap Reductn		0	0	0		0	0		0
Storage Cap Reductn		0	0	0		0	0		0
Reduced v/c Ratio		0.21	0.37	0.18		0.26	0.63		0.32

Intersection Summary

Cycle Length: 95

Actuated Cycle Length: 82.7

Natural Cycle: 75

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.79

Intersection Signal Delay: 26.6

Intersection LOS: C

Intersection Capacity Utilization 70.6%

ICU Level of Service C

Analysis Period (min) 15

Splits and Phases: 1: Churchill Avenue & Transitway/Scott Street



Lanes, Volumes, Timings
4: West Village Private/Lanark Avenue & Scott Street

Total Projected 2028 PM

09/16/2025

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	88	579	13	598	13	2	49	3
Future Volume (vph)	88	579	13	598	13	2	49	3
Lane Group Flow (vph)	88	595	13	634	13	11	49	35
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	21.6	21.6	21.6	21.6	28.2	28.2	28.2	28.2
Total Split (s)	71.0	71.0	71.0	71.0	29.0	29.0	29.0	29.0
Total Split (%)	71.0%	71.0%	71.0%	71.0%	29.0%	29.0%	29.0%	29.0%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.3	3.3	3.3	3.3	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.2	6.2	6.2	6.2
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	51.9	51.9	51.9	51.9	35.3	35.3	35.3	35.3
Actuated g/C Ratio	0.52	0.52	0.52	0.52	0.35	0.35	0.35	0.35
v/c Ratio	0.36	0.71	0.05	0.76	0.03	0.02	0.10	0.07
Control Delay	16.2	22.2	8.8	24.4	27.8	17.4	27.8	11.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.2	22.2	8.8	24.4	27.8	17.4	27.8	11.8
LOS	B	C	A	C	C	B	C	B
Approach Delay		21.4		24.1		23.0		21.2
Approach LOS		C		C		C		C
Queue Length 50th (m)	9.3	80.5	1.2	89.6	1.7	0.3	6.5	0.4
Queue Length 95th (m)	15.6	87.3	3.0	97.8	6.9	4.8	17.3	8.1
Internal Link Dist (m)		213.7		548.0		112.2		176.6
Turn Bay Length (m)	40.0		40.0		10.0		30.0	
Base Capacity (vph)	302	1043	311	1032	443	505	472	533
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	0.29	0.57	0.04	0.61	0.03	0.02	0.10	0.07
Intersection Summary								
Cycle Length: 100								
Actuated Cycle Length: 100								
Offset: 40 (40%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green								
Natural Cycle: 65								
Control Type: Actuated-Coordinated								
Maximum v/c Ratio: 0.76								
Intersection Signal Delay: 22.6					Intersection LOS: C			
Intersection Capacity Utilization 78.4%					ICU Level of Service D			
Analysis Period (min) 15								

Splits and Phases: 4: West Village Private/Lanark Avenue & Scott Street

			
Ø2 (R)		Ø4	
29 s		71 s	
			
Ø6 (R)		Ø8	
29 s		71 s	

Lanes, Volumes, Timings
10: Churchill Avenue & Richmond Road

Total Projected 2028 PM
09/16/2025

												
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø4	Ø9	Ø10	Ø11
Lane Configurations												
Traffic Volume (vph)	162	299	128	453	27	294	20	278				
Future Volume (vph)	162	299	128	453	27	294	20	278				
Lane Group Flow (vph)	162	345	128	486	27	370	0	581				
Turn Type	custom	NA	custom	NA	Perm	NA	Perm	NA				
Protected Phases	7	4 10		8 11		2		6	4	9	10	11
Permitted Phases	4		8		2		6					
Detector Phase	7	4 10	8	8 11	2	2	6	6				
Switch Phase												
Minimum Initial (s)	5.0		10.0		10.0	10.0	10.0	10.0	10.0	3.0	3.0	3.0
Minimum Split (s)	11.1		26.1		19.2	19.2	19.2	19.2	26.1	5.0	5.0	5.0
Total Split (s)	12.0		34.0		44.0	44.0	44.0	44.0	46.0	5.0	5.0	5.0
Total Split (%)	12.0%		34.0%		44.0%	44.0%	44.0%	44.0%	46%	5%	5%	5%
Yellow Time (s)	3.3		3.3		3.6	3.6	3.6	3.6	3.3	2.0	2.0	2.0
All-Red Time (s)	2.8		2.8		2.6	2.6	2.6	2.6	2.8	0.0	0.0	0.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0		0.0				
Total Lost Time (s)	6.1		6.1		6.2	6.2		6.2				
Lead/Lag	Lead				Lag	Lag	Lag	Lag		Lead		Lag
Lead-Lag Optimize?	Yes				Yes	Yes	Yes	Yes		Yes		Yes
Recall Mode	None		C-Max		None	None	None	None	C-Max	None	None	None
Act Effct Green (s)	44.9	39.9	27.9	27.9	41.8	41.8		41.8				
Actuated g/C Ratio	0.45	0.40	0.28	0.28	0.42	0.42		0.42				
v/c Ratio	0.82	0.52	0.62	0.99	0.12	0.53		0.97				
Control Delay	52.1	25.6	46.1	74.2	20.5	24.7		58.9				
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0				
Total Delay	52.1	25.6	46.1	74.2	20.5	24.7		58.9				
LOS	D	C	D	E	C	C		E				
Approach Delay		34.1		68.3		24.5		58.9				
Approach LOS		C		E		C		E				
Queue Length 50th (m)	18.6	48.4	21.6	92.9	3.1	49.3		98.7				
Queue Length 95th (m)	#45.4	74.6	#45.4	#157.7	9.5	83.5		#182.9				
Internal Link Dist (m)		201.3		218.6		353.2		312.2				
Turn Bay Length (m)	35.0		25.0		15.0							
Base Capacity (vph)	197	664	208	493	232	695		596				
Starvation Cap Reductn	0	0	0	0	0	0		0				
Spillback Cap Reductn	0	0	0	0	0	0		0				
Storage Cap Reductn	0	0	0	0	0	0		0				
Reduced v/c Ratio	0.82	0.52	0.62	0.99	0.12	0.53		0.97				

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 0 (0%), Referenced to phase 8:WBTL and 4:EBTL, Start of Green

Natural Cycle: 120

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.99

Intersection Signal Delay: 49.1

Intersection LOS: D

Intersection Capacity Utilization 107.2%

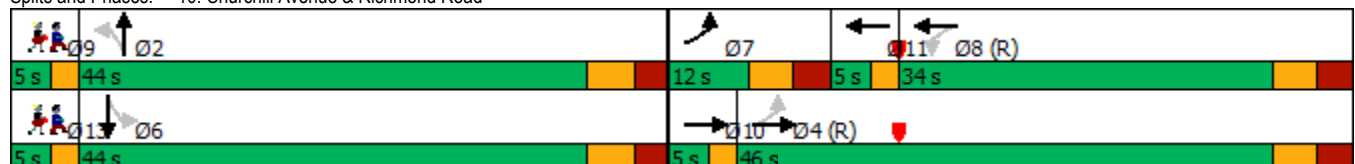
ICU Level of Service G

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 10: Churchill Avenue & Richmond Road



Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	3.0
Minimum Split (s)	5.0
Total Split (s)	5.0
Total Split (%)	5%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings
11: McRae Avenue & Richmond Road

Total Projected 2028 PM

09/16/2025

										
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø9	Ø13
Lane Configurations										
Traffic Volume (vph)	69	298	49	479	63	45	103	49		
Future Volume (vph)	69	298	49	479	63	45	103	49		
Lane Group Flow (vph)	69	378	49	587	63	90	0	279		
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	NA		
Protected Phases		4	3	8		2		6	9	13
Permitted Phases	4		8		2		6			
Detector Phase	4	4	3	8	2	2	6	6		
Switch Phase										
Minimum Initial (s)	10.0	10.0	4.9	10.0	10.0	10.0	10.0	10.0	3.0	3.0
Minimum Split (s)	35.2	35.2	11.0	35.2	22.5	22.5	22.5	22.5	5.0	5.0
Total Split (s)	40.0	40.0	11.0	51.0	29.0	29.0	29.0	29.0	5.0	5.0
Total Split (%)	47.1%	47.1%	12.9%	60.0%	34.1%	34.1%	34.1%	34.1%	6%	6%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	2.0	2.0
All-Red Time (s)	2.9	2.9	2.8	2.9	2.2	2.2	2.2	2.2	0.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0		
Total Lost Time (s)	6.2	6.2	6.1	6.2	5.5	5.5		5.5		
Lead/Lag	Lag	Lag	Lead							
Lead-Lag Optimize?	Yes	Yes	Yes							
Recall Mode	C-Max	C-Max	None	C-Max	None	None	None	None	None	None
Act Effct Green (s)	43.9	43.9	51.2	51.1	21.2	21.2		21.2		
Actuated g/C Ratio	0.52	0.52	0.60	0.60	0.25	0.25		0.25		
v/c Ratio	0.18	0.23	0.10	0.57	0.30	0.23		0.84		
Control Delay	17.3	12.6	8.2	11.5	28.3	14.7		47.5		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0		
Total Delay	17.3	12.6	8.2	11.5	28.3	14.7		47.5		
LOS	B	B	A	B	C	B		D		
Approach Delay		13.4		11.2		20.3		47.5		
Approach LOS		B		B		C		D		
Queue Length 50th (m)	6.7	17.1	3.0	46.9	8.0	5.5		34.7		
Queue Length 95th (m)	16.8	28.6	m5.8	57.9	18.5	16.5		#73.1		
Internal Link Dist (m)		81.0		187.3		44.7		176.9		
Turn Bay Length (m)	40.0		55.0							
Base Capacity (vph)	379	1636	510	1025	242	442		371		
Starvation Cap Reductn	0	0	0	0	0	0		0		
Spillback Cap Reductn	0	0	0	0	0	0		0		
Storage Cap Reductn	0	0	0	0	0	0		0		
Reduced v/c Ratio	0.18	0.23	0.10	0.57	0.26	0.20		0.75		

Intersection Summary

Cycle Length: 85

Actuated Cycle Length: 85

Offset: 1 (1%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 19.4

Intersection LOS: B

Intersection Capacity Utilization 83.5%

ICU Level of Service E

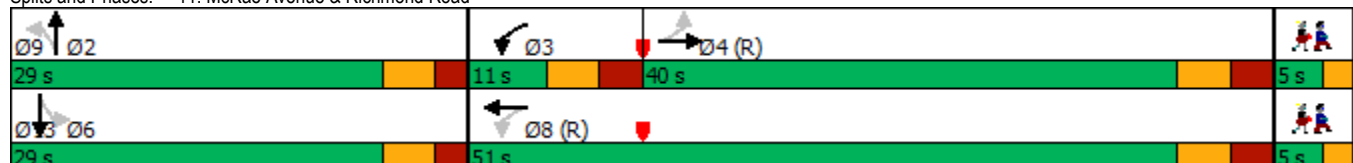
Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 11: McRae Avenue & Richmond Road



Lanes, Volumes, Timings
12: Kirkwood Avenue & Richmond Road

Total Projected 2028 PM

09/16/2025

											Ø1	Ø3
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	Ø1	Ø3
Lane Configurations												
Traffic Volume (vph)	3	355	182	187	432	12	156	49	2	37		
Future Volume (vph)	3	355	182	187	432	12	156	49	2	37		
Lane Group Flow (vph)	0	358	182	0	619	12	156	273	0	40		
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA		
Protected Phases		4			8			2		6	1	3
Permitted Phases	4		4	8		8	2		6			
Detector Phase	4	4	4	8	8	8	2	2	6	6		
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	3.0	3.0
Minimum Split (s)	26.1	26.1	26.1	26.1	26.1	26.1	22.6	22.6	22.6	22.6	5.0	5.0
Total Split (s)	40.0	40.0	40.0	40.0	40.0	40.0	35.0	35.0	35.0	35.0	5.0	5.0
Total Split (%)	47.1%	47.1%	47.1%	47.1%	47.1%	47.1%	41.2%	41.2%	41.2%	41.2%	6%	6%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	2.0	2.0
All-Red Time (s)	2.8	2.8	2.8	2.8	2.8	2.8	2.3	2.3	2.3	2.3	0.0	0.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0		0.0		
Total Lost Time (s)		6.1	6.1		6.1	6.1	5.6	5.6		5.6		
Lead/Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)		55.0	55.0		55.0	55.0	15.8	15.8		15.8		
Actuated g/C Ratio		0.65	0.65		0.65	0.65	0.19	0.19		0.19		
v/c Ratio		0.31	0.21		0.74	0.01	0.65	0.60		0.12		
Control Delay		7.1	1.0		20.6	0.0	43.8	12.6		26.8		
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0		
Total Delay		7.1	1.0		20.6	0.0	43.8	12.6		26.8		
LOS		A	A		C	A	D	B		C		
Approach Delay		5.0			20.2			23.9		26.8		
Approach LOS		A			C			C		C		
Queue Length 50th (m)		14.1	0.0		53.1	0.0	23.8	6.8		5.4		
Queue Length 95th (m)		m43.8	m3.8		#172.1	0.0	39.1	25.9		12.2		
Internal Link Dist (m)		187.3			176.5			528.9		134.6		
Turn Bay Length (m)			35.0									
Base Capacity (vph)		1160	867		841	890	447	659		598		
Starvation Cap Reductn		0	0		0	0	0	0		0		
Spillback Cap Reductn		0	0		0	0	0	0		0		
Storage Cap Reductn		0	0		0	0	0	0		0		
Reduced v/c Ratio		0.31	0.21		0.74	0.01	0.35	0.41		0.07		

Intersection Summary

Cycle Length: 85

Actuated Cycle Length: 85

Offset: 79 (93%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 16.4

Intersection LOS: B

Intersection Capacity Utilization 88.1%

ICU Level of Service E

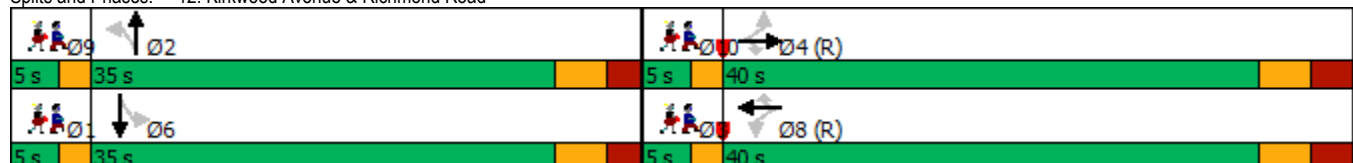
Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 12: Kirkwood Avenue & Richmond Road



Lane Group	Ø9	Ø10
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	9	10
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Recall Mode	None	None
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

Lanes, Volumes, Timings
13: Scott Street & Athlone Pedestrian Signal

Total Projected 2028 PM
09/16/2025

→

←

Lane Group	EBT	WBT	Ø9	Ø10
Lane Configurations	↑	↑		
Traffic Volume (vph)	382	486		
Future Volume (vph)	382	486		
Lane Group Flow (vph)	382	486		
Turn Type	NA	NA		
Protected Phases	4	8	9	10
Permitted Phases				
Detector Phase	4	8		
Switch Phase				
Minimum Initial (s)	10.0	10.0	5.0	4.0
Minimum Split (s)	15.3	15.3	22.0	6.0
Total Split (s)	42.0	42.0	22.0	6.0
Total Split (%)	60.0%	60.0%	31%	9%
Yellow Time (s)	3.3	3.3	3.0	2.0
All-Red Time (s)	2.0	2.0	1.0	0.0
Lost Time Adjust (s)	0.0	0.0		
Total Lost Time (s)	5.3	5.3		
Lead/Lag			Lead	Lag
Lead-Lag Optimize?			Yes	Yes
Recall Mode	C-Max	C-Max	None	None
Act Effct Green (s)	53.6	53.6		
Actuated g/C Ratio	0.77	0.77		
v/c Ratio	0.33	0.42		
Control Delay	6.5	3.6		
Queue Delay	0.0	0.0		
Total Delay	6.5	3.7		
LOS	A	A		
Approach Delay	6.5	3.7		
Approach LOS	A	A		
Queue Length 50th (m)	23.0	11.2		
Queue Length 95th (m)	39.1	15.6		
Internal Link Dist (m)	226.0	5.6		
Turn Bay Length (m)				
Base Capacity (vph)	1162	1162		
Starvation Cap Reductn	0	16		
Spillback Cap Reductn	0	0		
Storage Cap Reductn	0	0		
Reduced v/c Ratio	0.33	0.42		
Intersection Summary				
Cycle Length: 70				
Actuated Cycle Length: 70				
Offset: 56 (80%), Referenced to phase 4:EBT and 8:WBT, Start of Green				
Natural Cycle: 60				
Control Type: Actuated-Coordinated				
Maximum v/c Ratio: 0.42				
Intersection Signal Delay: 4.9			Intersection LOS: A	
Intersection Capacity Utilization 31.4%			ICU Level of Service A	
Analysis Period (min) 15				

Splits and Phases: 13: Scott Street & Athlone Pedestrian Signal

→ Ø4 (R)	Ø9	Ø10
42 s	22 s	6 s
← Ø8 (R)		
42 s		

Lanes, Volumes, Timings
14: Scott Street & Tweedsmuir Pedestrian Signal

Total Projected 2028 PM
09/16/2025

Lane Group	EBT	WBT	Ø9
Lane Configurations	↑	↑	
Traffic Volume (vph)	419	504	
Future Volume (vph)	419	504	
Lane Group Flow (vph)	419	504	
Turn Type	NA	NA	
Protected Phases	4	8	9
Permitted Phases			
Detector Phase	4	8	
Switch Phase			
Minimum Initial (s)	10.0	10.0	5.0
Minimum Split (s)	15.5	15.5	22.0
Total Split (s)	48.0	48.0	22.0
Total Split (%)	68.6%	68.6%	31%
Yellow Time (s)	3.3	3.3	3.0
All-Red Time (s)	2.2	2.2	1.0
Lost Time Adjust (s)	0.0	0.0	
Total Lost Time (s)	5.5	5.5	
Lead/Lag			
Lead-Lag Optimize?			
Recall Mode	C-Max	C-Max	None
Act Effct Green (s)	53.5	53.5	
Actuated g/C Ratio	0.76	0.76	
v/c Ratio	0.36	0.43	
Control Delay	3.8	7.7	
Queue Delay	0.0	0.0	
Total Delay	3.8	7.7	
LOS	A	A	
Approach Delay	3.8	7.7	
Approach LOS	A	A	
Queue Length 50th (m)	11.0	34.2	
Queue Length 95th (m)	15.8	57.8	
Internal Link Dist (m)	0.1	213.7	
Turn Bay Length (m)			
Base Capacity (vph)	1159	1159	
Starvation Cap Reductn	0	0	
Spillback Cap Reductn	0	0	
Storage Cap Reductn	0	0	
Reduced v/c Ratio	0.36	0.43	
Intersection Summary			
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 50 (71%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.43			
Intersection Signal Delay: 5.9		Intersection LOS: A	
Intersection Capacity Utilization 32.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 14: Scott Street & Tweedsmuir Pedestrian Signal

→ Ø4 (R)	Ø9
48 s	22 s
← Ø8 (R)	
48 s	

Lanes, Volumes, Timings
15: Richmond Road & Athlone Pedestrian Signal

Total Projected 2028 PM
09/16/2025

	→	←	
Lane Group	EBT	WBT	Ø9
Lane Configurations	↑	↑	
Traffic Volume (vph)	550	577	
Future Volume (vph)	550	577	
Lane Group Flow (vph)	550	577	
Turn Type	NA	NA	
Protected Phases	4	8	9
Permitted Phases			
Detector Phase	4	8	
Switch Phase			
Minimum Initial (s)	10.0	10.0	5.0
Minimum Split (s)	16.0	16.0	23.0
Total Split (s)	42.0	42.0	23.0
Total Split (%)	64.6%	64.6%	35%
Yellow Time (s)	3.3	3.3	3.0
All-Red Time (s)	2.7	2.7	1.0
Lost Time Adjust (s)	0.0	0.0	
Total Lost Time (s)	6.0	6.0	
Lead/Lag			
Lead-Lag Optimize?			
Recall Mode	None	None	None
Act Effct Green (s)	27.7	27.7	
Actuated g/C Ratio	0.80	0.80	
v/c Ratio	0.39	0.41	
Control Delay	7.3	7.6	
Queue Delay	0.0	0.0	
Total Delay	7.3	7.6	
LOS	A	A	
Approach Delay	7.3	7.6	
Approach LOS	A	A	
Queue Length 50th (m)	0.0	0.0	
Queue Length 95th (m)	64.5	69.3	
Internal Link Dist (m)	218.6	2.9	
Turn Bay Length (m)			
Base Capacity (vph)	1520	1520	
Starvation Cap Reductn	0	0	
Spillback Cap Reductn	0	0	
Storage Cap Reductn	0	0	
Reduced v/c Ratio	0.36	0.38	
Intersection Summary			
Cycle Length: 65			
Actuated Cycle Length: 34.7			
Natural Cycle: 55			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.41			
Intersection Signal Delay: 7.5		Intersection LOS: A	
Intersection Capacity Utilization 37.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 15: Richmond Road & Athlone Pedestrian Signal

→ Ø4		← Ø9
42 s		23 s
← Ø8		
42 s		

HCM Unsignalized Intersection Capacity Analysis
2: Athlone Avenue & Scott Street

Total Projected 2028 PM
09/16/2025

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	374	8	30	456	1	45
Future Volume (Veh/h)	374	8	30	456	1	45
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	374	8	30	456	1	45
Pedestrians	87			10	16	
Lane Width (m)	3.7			3.7	3.7	
Walking Speed (m/s)	1.1			1.1	1.1	
Percent Blockage	8			1	1	
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	30			108		
pX, platoon unblocked				0.91	0.92	0.91
vC, conflicting volume				398	997	404
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol				289	737	296
tC, single (s)				4.1	6.4	6.2
tC, 2 stage (s)						
tF (s)				2.2	3.5	3.3
p0 queue free %				97	100	93
cM capacity (veh/h)				1141	314	660
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	382	486	46			
Volume Left	0	30	1			
Volume Right	8	0	45			
cSH	1700	1141	645			
Volume to Capacity	0.22	0.03	0.07			
Queue Length 95th (m)	0.0	0.6	1.7			
Control Delay (s)	0.0	0.8	11.0			
Lane LOS		A	B			
Approach Delay (s)	0.0	0.8	11.0			
Approach LOS			B			
Intersection Summary						
Average Delay			1.0			
Intersection Capacity Utilization			64.6%		ICU Level of Service	
Analysis Period (min)			15		C	

HCM Unsignalized Intersection Capacity Analysis
3: Tweedsmuir Avenue & Scott Street

Total Projected 2028 PM
09/16/2025

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	403	16	25	479	7	21
Future Volume (Veh/h)	403	16	25	479	7	21
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	403	16	25	479	7	21
Pedestrians	10			187	23	
Lane Width (m)	3.7			3.7	3.7	
Walking Speed (m/s)	1.1			1.1	1.1	
Percent Blockage	1			17	2	
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	116			22		
pX, platoon unblocked			0.93		0.89	0.93
vC, conflicting volume			442		973	621
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			363		737	556
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		98	95
cM capacity (veh/h)			1089		327	399
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	419	504	28			
Volume Left	0	25	7			
Volume Right	16	0	21			
cSH	1700	1089	378			
Volume to Capacity	0.25	0.02	0.07			
Queue Length 95th (m)	0.0	0.5	1.8			
Control Delay (s)	0.0	0.7	15.3			
Lane LOS		A	C			
Approach Delay (s)	0.0	0.7	15.3			
Approach LOS			C			
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization			68.1%	ICU Level of Service	C	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
5: Athlone Avenue & Richmond Road

Total Projected 2028 PM

09/16/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	527	12	11	546	20	3	3	14	14	1	17
Future Volume (Veh/h)	11	527	12	11	546	20	3	3	14	14	1	17
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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
Hourly flow rate (vph)	11	527	12	11	546	20	3	3	14	14	1	17
Pedestrians		46			9			104			113	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		4			1			10			11	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		27			188							
pX, platoon unblocked	0.88			0.81			0.87	0.87	0.81	0.87	0.87	0.88
vC, conflicting volume	679			643			1300	1360	646	1270	1356	715
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	572			444			972	1040	448	937	1035	612
tC, single (s)	4.1			4.1			7.1	6.5	6.3	7.1	7.5	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.4	3.5	4.9	3.4
p0 queue free %	99			99			98	98	97	91	99	95
cM capacity (veh/h)	800			826			139	159	426	152	108	368
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	550	577	20	32								
Volume Left	11	11	3	14								
Volume Right	12	20	14	17								
cSH	800	826	273	217								
Volume to Capacity	0.01	0.01	0.07	0.15								
Queue Length 95th (m)	0.3	0.3	1.8	3.9								
Control Delay (s)	0.4	0.4	19.2	24.5								
Lane LOS	A	A	C	C								
Approach Delay (s)	0.4	0.4	19.2	24.5								
Approach LOS			C	C								
Intersection Summary												
Average Delay			1.3									
Intersection Capacity Utilization			56.3%		ICU Level of Service				B			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
6: Tweedsmuir Avenue & Richmond Road

Total Projected 2028 PM

09/16/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	54	487	14	42	543	25	14	7	38	16	7	20
Future Volume (Veh/h)	54	487	14	42	543	25	14	7	38	16	7	20
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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
Hourly flow rate (vph)	54	487	14	42	543	25	14	7	38	16	7	20
Pedestrians		2						31			45	
Lane Width (m)		3.7						3.7			3.7	
Walking Speed (m/s)		1.1						1.1			1.1	
Percent Blockage		0						3			4	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		110			105							
pX, platoon unblocked	0.82			0.82			0.91	0.91	0.82	0.91	0.91	0.82
vC, conflicting volume	613			532			1286	1330	525	1316	1312	590
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	423			326			832	881	318	865	861	395
tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	3.3
p0 queue free %	94			96			93	97	93	92	97	96
cM capacity (veh/h)	905			988			205	219	583	193	225	519
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1							
Volume Total	555	585	25	59	43							
Volume Left	54	42	0	14	16							
Volume Right	14	0	25	38	20							
cSH	905	988	1700	357	282							
Volume to Capacity	0.06	0.04	0.01	0.17	0.15							
Queue Length 95th (m)	1.4	1.0	0.0	4.4	4.0							
Control Delay (s)	1.6	1.1	0.0	17.1	20.1							
Lane LOS	A	A		C	C							
Approach Delay (s)	1.6	1.1		17.1	20.1							
Approach LOS				C	C							
Intersection Summary												
Average Delay			2.7									
Intersection Capacity Utilization			78.7%		ICU Level of Service					D		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
7: Tweedsmuir Avenue & Access A

Total Projected 2028 PM
09/16/2025

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	7	10	14	22	31	9
Future Volume (Veh/h)	7	10	14	22	31	9
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	7	10	14	22	31	9
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	86	36	40			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	86	36	40			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	99	99			
cM capacity (veh/h)	908	1037	1570			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	17	36	40			
Volume Left	7	14	0			
Volume Right	10	0	9			
cSH	980	1570	1700			
Volume to Capacity	0.02	0.01	0.02			
Queue Length 95th (m)	0.4	0.2	0.0			
Control Delay (s)	8.7	2.9	0.0			
Lane LOS	A	A				
Approach Delay (s)	8.7	2.9	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		2.7				
Intersection Capacity Utilization		18.7%		ICU Level of Service		A
Analysis Period (min)		15				

Total Projected 2031/2036

Lanes, Volumes, Timings
1: Churchill Avenue & Transitway/Scott Street

Total Projected 2031 AM

09/16/2025

									
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	1	77	215	43	6	90	209	34	193
Future Volume (vph)	1	77	215	43	6	90	209	34	193
Lane Group Flow (vph)	0	90	215	71	0	96	209	0	228
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Over	Perm	NA
Protected Phases		4	3	8		2	3		6
Permitted Phases	4		8		2			6	
Detector Phase	4	4	3	8	2	2	3	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	25.4	25.4	11.8	25.4	27.4	27.4	11.8	27.4	27.4
Total Split (s)	26.0	26.0	41.0	67.0	28.0	28.0	41.0	28.0	28.0
Total Split (%)	27.4%	27.4%	43.2%	70.5%	29.5%	29.5%	43.2%	29.5%	29.5%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.3	3.3	3.0	3.3	3.3
All-Red Time (s)	4.4	4.4	3.8	4.4	3.1	3.1	3.8	3.1	3.1
Lost Time Adjust (s)		0.0	0.0	0.0		0.0	0.0		0.0
Total Lost Time (s)		7.4	6.8	7.4		6.4	6.8		6.4
Lead/Lag	Lag	Lag	Lead				Lead		
Lead-Lag Optimize?	Yes	Yes	Yes				Yes		
Recall Mode	Max	Max	Min	Max	None	None	Min	None	None
Act Effct Green (s)		34.2	60.3	59.7		17.0	18.8		17.0
Actuated g/C Ratio		0.38	0.67	0.66		0.19	0.21		0.19
v/c Ratio		0.25	0.27	0.10		0.30	0.71		0.74
Control Delay		24.2	7.4	4.8		33.7	46.6		49.8
Queue Delay		0.0	0.0	0.0		0.0	0.0		0.0
Total Delay		24.2	7.4	4.8		33.7	46.6		49.8
LOS		C	A	A		C	D		D
Approach Delay		24.2		6.8		42.5			49.8
Approach LOS		C		A		D			D
Queue Length 50th (m)		9.8	13.1	2.4		14.5	34.3		37.7
Queue Length 95th (m)		25.8	25.1	7.8		27.9	54.0		61.7
Internal Link Dist (m)		133.0		226.0		312.2			409.2
Turn Bay Length (m)			70.0						
Base Capacity (vph)		367	892	712		411	537		392
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		0.25	0.24	0.10		0.23	0.39		0.58

Intersection Summary

Cycle Length: 95

Actuated Cycle Length: 90.5

Natural Cycle: 70

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.74

Intersection Signal Delay: 31.3

Intersection LOS: C

Intersection Capacity Utilization 63.8%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 1: Churchill Avenue & Transitway/Scott Street



Lanes, Volumes, Timings
4: West Village Private/Lanark Avenue & Scott Street

Total Projected 2031 AM

09/16/2025

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	30	494	6	319	7	1	57	0
Future Volume (vph)	30	494	6	319	7	1	57	0
Lane Group Flow (vph)	30	500	6	357	7	20	57	64
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	21.6	21.6	21.6	21.6	28.2	28.2	28.2	28.2
Total Split (s)	66.0	66.0	66.0	66.0	29.0	29.0	29.0	29.0
Total Split (%)	69.5%	69.5%	69.5%	69.5%	30.5%	30.5%	30.5%	30.5%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.3	3.3	3.3	3.3	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.2	6.2	6.2	6.2
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	41.9	41.9	41.9	41.9	40.3	40.3	40.3	40.3
Actuated g/C Ratio	0.44	0.44	0.44	0.44	0.42	0.42	0.42	0.42
v/c Ratio	0.08	0.75	0.02	0.52	0.01	0.03	0.10	0.07
Control Delay	12.3	28.7	10.7	20.1	22.3	10.7	22.0	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.3	28.7	10.7	20.1	22.3	10.7	22.0	0.1
LOS	B	C	B	C	C	B	C	A
Approach Delay		27.8		19.9		13.7		10.4
Approach LOS		C		B		B		B
Queue Length 50th (m)	3.1	73.7	0.6	44.2	0.7	0.1	6.2	0.0
Queue Length 95th (m)	6.0	81.3	2.1	49.8	4.2	5.4	17.4	0.0
Internal Link Dist (m)		213.7		548.0		112.2		176.6
Turn Bay Length (m)	40.0		40.0		10.0		30.0	
Base Capacity (vph)	503	940	357	961	530	646	551	919
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.53	0.02	0.37	0.01	0.03	0.10	0.07
Intersection Summary								
Cycle Length: 95								
Actuated Cycle Length: 95								
Offset: 83 (87%), Referenced to phase 2:NBT and 6:SBTL, Start of Green								
Natural Cycle: 60								
Control Type: Actuated-Coordinated								
Maximum v/c Ratio: 0.75								
Intersection Signal Delay: 22.6					Intersection LOS: C			
Intersection Capacity Utilization 56.9%					ICU Level of Service B			
Analysis Period (min) 15								

Splits and Phases: 4: West Village Private/Lanark Avenue & Scott Street



Lanes, Volumes, Timings
10: Churchill Avenue & Richmond Road

Total Projected 2031 AM

09/16/2025

												
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø4	Ø9	Ø10	Ø11
Lane Configurations												
Traffic Volume (vph)	265	398	43	195	24	294	23	372				
Future Volume (vph)	265	398	43	195	24	294	23	372				
Lane Group Flow (vph)	265	427	43	215	24	377	0	536				
Turn Type	custom	NA	custom	NA	Perm	NA	Perm	NA				
Protected Phases	7	4 10		8 11		2		6	4	9	10	11
Permitted Phases	4		8		2		6					
Detector Phase	7	4 10	8	8 11	2	2	6	6				
Switch Phase												
Minimum Initial (s)	5.0		10.0		10.0	10.0	10.0	10.0	10.0	3.0	3.0	3.0
Minimum Split (s)	11.1		26.1		19.2	19.2	19.2	19.2	26.1	5.0	5.0	5.0
Total Split (s)	11.2		26.6		32.2	32.2	32.2	32.2	37.8	5.0	5.0	5.0
Total Split (%)	14.0%		33.3%		40.3%	40.3%	40.3%	40.3%	47%	6%	6%	6%
Yellow Time (s)	3.3		3.3		3.6	3.6	3.6	3.6	3.3	2.0	2.0	2.0
All-Red Time (s)	2.8		2.8		2.6	2.6	2.6	2.6	2.8	0.0	0.0	0.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0		0.0				
Total Lost Time (s)	6.1		6.1		6.2	6.2		6.2				
Lead/Lag	Lead				Lag	Lag	Lag	Lag		Lead		Lag
Lead-Lag Optimize?	Yes				Yes	Yes	Yes	Yes		Yes		Yes
Recall Mode	None		C-Max		None	None	None	None	C-Max	None	None	None
Act Effct Green (s)	36.7	31.7	20.5	20.5	30.0	30.0		30.0				
Actuated g/C Ratio	0.46	0.40	0.26	0.26	0.38	0.38		0.38				
v/c Ratio	0.63	0.62	0.20	0.50	0.11	0.61		0.89				
Control Delay	22.9	23.9	26.4	29.4	19.0	24.8		42.5				
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0				
Total Delay	22.9	23.9	26.4	29.4	19.0	24.8		42.5				
LOS	C	C	C	C	B	C		D				
Approach Delay		23.5		28.9		24.5		42.5				
Approach LOS		C		C		C		D				
Queue Length 50th (m)	24.8	49.9	5.1	27.0	2.3	42.0		70.1				
Queue Length 95th (m)	41.5	79.1	13.4	47.2	8.0	77.0		#142.9				
Internal Link Dist (m)		201.3		218.6		353.2		312.2				
Turn Bay Length (m)	35.0		25.0		15.0							
Base Capacity (vph)	418	690	211	431	224	620		604				
Starvation Cap Reductn	0	0	0	0	0	0		0				
Spillback Cap Reductn	0	0	0	0	0	0		0				
Storage Cap Reductn	0	0	0	0	0	0		0				
Reduced v/c Ratio	0.63	0.62	0.20	0.50	0.11	0.61		0.89				

Intersection Summary

Cycle Length: 80

Actuated Cycle Length: 80

Offset: 0 (0%), Referenced to phase 8:WBTL and 4:EBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.89

Intersection Signal Delay: 29.8

Intersection LOS: C

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: 10: Churchill Avenue & Richmond Road

					
5 s	32.2 s	11.2 s	5 s	26.6 s	
					
5 s	32.2 s	5 s	37.8 s		

Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	3.0
Minimum Split (s)	5.0
Total Split (s)	5.0
Total Split (%)	6%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings
11: McRae Avenue & Richmond Road

Total Projected 2031 AM

09/16/2025

	↖	→	↗	←	↖	↑	↗	↓		
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø9	Ø13
Lane Configurations										
Traffic Volume (vph)	99	363	9	262	15	15	81	16		
Future Volume (vph)	99	363	9	262	15	15	81	16		
Lane Group Flow (vph)	99	395	9	353	15	26	0	145		
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA		
Protected Phases		4		8		2		6	9	13
Permitted Phases	4		8		2		6			
Detector Phase	4	4	8	8	2	2	6	6		
Switch Phase										
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	3.0	3.0
Minimum Split (s)	35.2	35.2	35.2	35.2	22.5	22.5	22.5	22.5	5.0	5.0
Total Split (s)	47.0	47.0	47.0	47.0	23.0	23.0	23.0	23.0	5.0	5.0
Total Split (%)	62.7%	62.7%	62.7%	62.7%	30.7%	30.7%	30.7%	30.7%	7%	7%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	2.0	2.0
All-Red Time (s)	2.9	2.9	2.9	2.9	2.2	2.2	2.2	2.2	0.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0		
Total Lost Time (s)	6.2	6.2	6.2	6.2	5.5	5.5		5.5		
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)	49.3	49.3	49.3	49.3	13.0	13.0		13.0		
Actuated g/C Ratio	0.66	0.66	0.66	0.66	0.17	0.17		0.17		
v/c Ratio	0.16	0.18	0.02	0.33	0.07	0.09		0.61		
Control Delay	7.1	5.8	6.7	6.7	24.7	18.0		33.0		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0		
Total Delay	7.1	5.8	6.7	6.7	24.7	18.0		33.0		
LOS	A	A	A	A	C	B		C		
Approach Delay		6.0		6.7		20.5		33.0		
Approach LOS		A		A		C		C		
Queue Length 50th (m)	4.2	8.5	0.2	2.9	1.8	1.8		15.0		
Queue Length 95th (m)	14.3	20.4	m1.3	45.9	6.0	7.3		30.0		
Internal Link Dist (m)		81.0		187.3		44.7		176.9		
Turn Bay Length (m)	40.0		55.0							
Base Capacity (vph)	615	2137	543	1057	281	393		311		
Starvation Cap Reductn	0	0	0	0	0	0		0		
Spillback Cap Reductn	0	0	0	0	0	0		0		
Storage Cap Reductn	0	0	0	0	0	0		0		
Reduced v/c Ratio	0.16	0.18	0.02	0.33	0.05	0.07		0.47		

Intersection Summary

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 16 (21%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 65

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.61

Intersection Signal Delay: 10.6

Intersection LOS: B

Intersection Capacity Utilization 63.2%

ICU Level of Service B

Analysis Period (min) 15

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

Splits and Phases: 11: McRae Avenue & Richmond Road



Lanes, Volumes, Timings
12: Kirkwood Avenue & Richmond Road

Total Projected 2031 AM

09/16/2025

	→	↘	↙	←	↖	↗	↑	↘	↓			
Lane Group	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	Ø1	Ø3	Ø9
Lane Configurations												
Traffic Volume (vph)	315	149	189	240	11	131	25	8	30			
Future Volume (vph)	315	149	189	240	11	131	25	8	30			
Lane Group Flow (vph)	315	149	0	429	11	131	150	0	40			
Turn Type	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA			
Protected Phases	4			8			2		6	1	3	9
Permitted Phases		4	8		8	2		6				
Detector Phase	4	4	8	8	8	2	2	6	6			
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	3.0	3.0	3.0
Minimum Split (s)	26.1	26.1	26.1	26.1	26.1	22.6	22.6	22.6	22.6	5.0	5.0	5.0
Total Split (s)	35.0	35.0	35.0	35.0	35.0	30.0	30.0	30.0	30.0	5.0	5.0	5.0
Total Split (%)	46.7%	46.7%	46.7%	46.7%	46.7%	40.0%	40.0%	40.0%	40.0%	7%	7%	7%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	2.0	2.0	2.0
All-Red Time (s)	2.8	2.8	2.8	2.8	2.8	2.3	2.3	2.3	2.3	0.0	0.0	0.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0		0.0			
Total Lost Time (s)	6.1	6.1		6.1	6.1	5.6	5.6		5.6			
Lead/Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None	None	None
Act Effct Green (s)	47.1	47.1		47.1	47.1	13.7	13.7		13.7			
Actuated g/C Ratio	0.63	0.63		0.63	0.63	0.18	0.18		0.18			
v/c Ratio	0.29	0.16		0.56	0.01	0.57	0.42		0.15			
Control Delay	6.6	1.0		15.2	0.0	37.4	10.9		24.2			
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0		0.0			
Total Delay	6.6	1.0		15.2	0.0	37.4	10.9		24.2			
LOS	A	A		B	A	D	B		C			
Approach Delay	4.8			14.8			23.2		24.3			
Approach LOS	A			B			C		C			
Queue Length 50th (m)	10.5	0.0		26.1	0.0	17.3	3.0		4.6			
Queue Length 95th (m)	29.2	2.1		#101.9	0.0	30.5	15.8		11.2			
Internal Link Dist (m)	187.3			176.5			528.9		134.6			
Turn Bay Length (m)		35.0										
Base Capacity (vph)	1088	910		772	839	406	543		483			
Starvation Cap Reductn	0	0		0	0	0	0		0			
Spillback Cap Reductn	0	0		0	0	0	0		0			
Storage Cap Reductn	0	0		0	0	0	0		0			
Reduced v/c Ratio	0.29	0.16		0.56	0.01	0.32	0.28		0.08			

Intersection Summary

Cycle Length: 75

Actuated Cycle Length: 75

Offset: 25 (33%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 70

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.57

Intersection Signal Delay: 13.3

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.

Splits and Phases: 12: Kirkwood Avenue & Richmond Road

	Ø9		Ø2		Ø1		Ø6		Ø3		Ø4 (R)		Ø8 (R)
5 s		30 s		5 s		35 s		5 s		35 s		5 s	
	Ø1		Ø6		Ø3		Ø8 (R)		Ø4 (R)		Ø9		Ø2
5 s		30 s		5 s		35 s		5 s		35 s		5 s	

Lane Group	Ø10
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	10
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	3.0
Minimum Split (s)	5.0
Total Split (s)	5.0
Total Split (%)	7%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings
13: Scott Street & Athlone Pedestrian Signal

Total Projected 2031 AM
09/16/2025

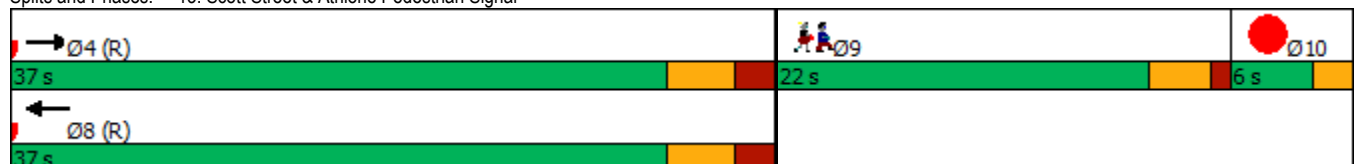
	→ ←			
Lane Group	EBT	WBT	Ø9	Ø10
Lane Configurations	↑	↑		
Traffic Volume (vph)	363	279		
Future Volume (vph)	363	279		
Lane Group Flow (vph)	363	279		
Turn Type	NA	NA		
Protected Phases	4	8	9	10
Permitted Phases				
Detector Phase	4	8		
Switch Phase				
Minimum Initial (s)	10.0	10.0	5.0	4.0
Minimum Split (s)	15.3	15.3	22.0	6.0
Total Split (s)	37.0	37.0	22.0	6.0
Total Split (%)	56.9%	56.9%	34%	9%
Yellow Time (s)	3.3	3.3	3.0	2.0
All-Red Time (s)	2.0	2.0	1.0	0.0
Lost Time Adjust (s)	0.0	0.0		
Total Lost Time (s)	5.3	5.3		
Lead/Lag			Lead	Lag
Lead-Lag Optimize?			Yes	Yes
Recall Mode	C-Max	C-Max	None	None
Act Effct Green (s)	48.6	48.6		
Actuated g/C Ratio	0.75	0.75		
v/c Ratio	0.32	0.25		
Control Delay	6.9	3.9		
Queue Delay	0.0	0.0		
Total Delay	6.9	3.9		
LOS	A	A		
Approach Delay	6.9	3.9		
Approach LOS	A	A		
Queue Length 50th (m)	21.5	7.8		
Queue Length 95th (m)	37.3	12.3		
Internal Link Dist (m)	226.0	5.6		
Turn Bay Length (m)				
Base Capacity (vph)	1134	1134		
Starvation Cap Reductn	0	0		
Spillback Cap Reductn	0	0		
Storage Cap Reductn	0	0		
Reduced v/c Ratio	0.32	0.25		

Intersection Summary

Cycle Length: 65
 Actuated Cycle Length: 65
 Offset: 62 (95%), Referenced to phase 4:EBT and 8:WBT, Start of Green
 Natural Cycle: 55
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.32
 Intersection Signal Delay: 5.6
 Intersection Capacity Utilization 24.6%
 Analysis Period (min) 15

Intersection LOS: A
 ICU Level of Service A

Splits and Phases: 13: Scott Street & Athlone Pedestrian Signal



Lanes, Volumes, Timings
14: Scott Street & Tweedsmuir Pedestrian Signal

Total Projected 2031 AM
09/16/2025

	→	←	
Lane Group	EBT	WBT	Ø9
Lane Configurations	↑	↑	
Traffic Volume (vph)	386	278	
Future Volume (vph)	386	278	
Lane Group Flow (vph)	386	278	
Turn Type	NA	NA	
Protected Phases	4	8	9
Permitted Phases			
Detector Phase	4	8	
Switch Phase			
Minimum Initial (s)	10.0	10.0	5.0
Minimum Split (s)	15.5	15.5	22.0
Total Split (s)	43.0	43.0	22.0
Total Split (%)	66.2%	66.2%	34%
Yellow Time (s)	3.3	3.3	3.0
All-Red Time (s)	2.2	2.2	1.0
Lost Time Adjust (s)	0.0	0.0	
Total Lost Time (s)	5.5	5.5	
Lead/Lag			
Lead-Lag Optimize?			
Recall Mode	C-Max	C-Max	None
Act Effct Green (s)	48.5	48.5	
Actuated g/C Ratio	0.75	0.75	
v/c Ratio	0.34	0.25	
Control Delay	3.6	6.4	
Queue Delay	0.0	0.0	
Total Delay	3.6	6.4	
LOS	A	A	
Approach Delay	3.6	6.4	
Approach LOS	A	A	
Queue Length 50th (m)	8.9	15.5	
Queue Length 95th (m)	13.3	27.6	
Internal Link Dist (m)	0.1	213.7	
Turn Bay Length (m)			
Base Capacity (vph)	1132	1132	
Starvation Cap Reductn	0	0	
Spillback Cap Reductn	0	0	
Storage Cap Reductn	0	0	
Reduced v/c Ratio	0.34	0.25	
Intersection Summary			
Cycle Length: 65			
Actuated Cycle Length: 65			
Offset: 58 (89%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 45			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.34			
Intersection Signal Delay: 4.7		Intersection LOS: A	
Intersection Capacity Utilization 26.0%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 14: Scott Street & Tweedsmuir Pedestrian Signal



Lanes, Volumes, Timings
15: Richmond Road & Athlone Pedestrian Signal

Total Projected 2031 AM
09/16/2025

Lane Group	EBT	WBT	Ø9
Lane Configurations	↑	↑	
Traffic Volume (vph)	461	344	
Future Volume (vph)	461	344	
Lane Group Flow (vph)	461	344	
Turn Type	NA	NA	
Protected Phases	4	8	9
Permitted Phases			
Detector Phase	4	8	
Switch Phase			
Minimum Initial (s)	10.0	10.0	5.0
Minimum Split (s)	16.0	16.0	23.0
Total Split (s)	42.0	42.0	23.0
Total Split (%)	64.6%	64.6%	35%
Yellow Time (s)	3.3	3.3	3.0
All-Red Time (s)	2.7	2.7	1.0
Lost Time Adjust (s)	0.0	0.0	
Total Lost Time (s)	6.0	6.0	
Lead/Lag			
Lead-Lag Optimize?			
Recall Mode	None	None	None
Act Effct Green (s)	23.1	23.1	
Actuated g/C Ratio	0.77	0.77	
v/c Ratio	0.34	0.25	
Control Delay	7.7	7.0	
Queue Delay	0.0	0.0	
Total Delay	7.7	7.0	
LOS	A	A	
Approach Delay	7.7	7.0	
Approach LOS	A	A	
Queue Length 50th (m)	0.0	0.0	
Queue Length 95th (m)	53.1	37.3	
Internal Link Dist (m)	218.6	2.9	
Turn Bay Length (m)			
Base Capacity (vph)	1578	1578	
Starvation Cap Reductn	0	0	
Spillback Cap Reductn	0	0	
Storage Cap Reductn	0	0	
Reduced v/c Ratio	0.29	0.22	
Intersection Summary			
Cycle Length: 65			
Actuated Cycle Length: 30			
Natural Cycle: 45			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.34			
Intersection Signal Delay: 7.4		Intersection LOS: A	
Intersection Capacity Utilization 30.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 15: Richmond Road & Athlone Pedestrian Signal

→ Ø4	← Ø8	↑ Ø9
42 s	42 s	23 s
← Ø8		
42 s		

HCM Unsignalized Intersection Capacity Analysis
2: Athlone Avenue & Scott Street

Total Projected 2031 AM
09/16/2025

									
Movement	EBT	EBR	WBL	WBT	NBL	NBR			
Lane Configurations									
Traffic Volume (veh/h)	355	8	23	256	6	31			
Future Volume (Veh/h)	355	8	23	256	6	31			
Sign Control	Free			Free	Stop				
Grade	0%			0%	0%				
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00			
Hourly flow rate (vph)	355	8	23	256	6	31			
Pedestrians	64			16	17				
Lane Width (m)	3.7			3.7	3.7				
Walking Speed (m/s)	1.1			1.1	1.1				
Percent Blockage	6			1	2				
Right turn flare (veh)									
Median type	None			None					
Median storage (veh)									
Upstream signal (m)	30			108					
pX, platoon unblocked			0.91		0.93	0.91			
vC, conflicting volume			380		742	392			
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol			270		604	283			
tC, single (s)			4.1		6.4	6.2			
tC, 2 stage (s)									
tF (s)			2.2		3.5	3.3			
p0 queue free %			98		98	95			
cM capacity (veh/h)			1159		388	667			
Direction, Lane #	EB 1	WB 1	NB 1						
Volume Total	363	279	37						
Volume Left	0	23	6						
Volume Right	8	0	31						
cSH	1700	1159	597						
Volume to Capacity	0.21	0.02	0.06						
Queue Length 95th (m)	0.0	0.5	1.5						
Control Delay (s)	0.0	0.8	11.4						
Lane LOS		A	B						
Approach Delay (s)	0.0	0.8	11.4						
Approach LOS			B						
Intersection Summary									
Average Delay		1.0							
Intersection Capacity Utilization		48.7%	ICU Level of Service	A					
Analysis Period (min)		15							

HCM Unsignalized Intersection Capacity Analysis
3: Tweedsmuir Avenue & Scott Street

Total Projected 2031 AM
09/16/2025

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	380	6	10	268	11	42
Future Volume (Veh/h)	380	6	10	268	11	42
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	380	6	10	268	11	42
Pedestrians	6			122	15	
Lane Width (m)	3.7			3.7	3.7	
Walking Speed (m/s)	1.1			1.1	1.1	
Percent Blockage	1			11	1	
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	116			22		
pX, platoon unblocked			0.93		0.97	0.93
vC, conflicting volume			401		692	520
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			323		517	451
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		98	92
cM capacity (veh/h)			1139		487	497
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	386	278	53			
Volume Left	0	10	11			
Volume Right	6	0	42			
cSH	1700	1139	494			
Volume to Capacity	0.23	0.01	0.11			
Queue Length 95th (m)	0.0	0.2	2.7			
Control Delay (s)	0.0	0.4	13.2			
Lane LOS		A	B			
Approach Delay (s)	0.0	0.4	13.2			
Approach LOS			B			
Intersection Summary						
Average Delay			1.1			
Intersection Capacity Utilization			43.3%	ICU Level of Service	A	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
5: Athlone Avenue & Richmond Road

Total Projected 2031 AM

09/16/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	443	5	5	323	16	5	2	9	17	3	14
Future Volume (Veh/h)	13	443	5	5	323	16	5	2	9	17	3	14
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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
Hourly flow rate (vph)	13	443	5	5	323	16	5	2	9	17	3	14
Pedestrians		23			2			53			64	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		2			0			5			6	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		27			188							
pX, platoon unblocked				0.82			0.82	0.82	0.82	0.82	0.82	
vC, conflicting volume	403			501			904	938	500	888	932	418
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	403			276			770	811	275	751	804	418
tC, single (s)	4.2			4.1			7.5	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.9	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			100			97	99	98	92	99	98
cM capacity (veh/h)	1057			1007			183	226	595	224	228	588
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	461	344	16	34								
Volume Left	13	5	5	17								
Volume Right	5	16	9	14								
cSH	1057	1007	312	301								
Volume to Capacity	0.01	0.00	0.05	0.11								
Queue Length 95th (m)	0.3	0.1	1.2	2.9								
Control Delay (s)	0.4	0.2	17.1	18.5								
Lane LOS	A	A	C	C								
Approach Delay (s)	0.4	0.2	17.1	18.5								
Approach LOS			C	C								
Intersection Summary												
Average Delay			1.3									
Intersection Capacity Utilization			48.6%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
6: Tweedsmuir Avenue & Richmond Road

Total Projected 2031 AM

09/16/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	48	410	11	8	307	20	5	13	23	28	8	32
Future Volume (Veh/h)	48	410	11	8	307	20	5	13	23	28	8	32
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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
Hourly flow rate (vph)	48	410	11	8	307	20	5	13	23	28	8	32
Pedestrians		1			4			4			46	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		0			0			0			4	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		110			105							
pX, platoon unblocked	0.98			0.85			0.86	0.86	0.85	0.86	0.86	0.98
vC, conflicting volume	373			425			876	904	424	914	890	354
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	345			230			708	742	228	753	725	325
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.4
p0 queue free %	96			99			98	95	97	88	97	95
cM capacity (veh/h)	1144			1138			260	270	686	233	276	653
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1							
Volume Total	469	315	20	41	68							
Volume Left	48	8	0	5	28							
Volume Right	11	0	20	23	32							
cSH	1144	1138	1700	406	343							
Volume to Capacity	0.04	0.01	0.01	0.10	0.20							
Queue Length 95th (m)	1.0	0.2	0.0	2.5	5.5							
Control Delay (s)	1.3	0.3	0.0	14.9	18.1							
Lane LOS	A	A		B	C							
Approach Delay (s)	1.3	0.3		14.9	18.1							
Approach LOS				B	C							
Intersection Summary												
Average Delay	2.8											
Intersection Capacity Utilization	64.3%			ICU Level of Service				C				
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis
7: Tweedsmuir Avenue & Access A

Total Projected 2031 AM
09/16/2025

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	9	14	7	43	17	5
Future Volume (Veh/h)	9	14	7	43	17	5
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	9	14	7	43	17	5
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	76	20	22			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	76	20	22			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	99	100			
cM capacity (veh/h)	923	1058	1593			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	23	50	22			
Volume Left	9	7	0			
Volume Right	14	0	5			
cSH	1001	1593	1700			
Volume to Capacity	0.02	0.00	0.01			
Queue Length 95th (m)	0.5	0.1	0.0			
Control Delay (s)	8.7	1.0	0.0			
Lane LOS	A	A				
Approach Delay (s)	8.7	1.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		2.7				
Intersection Capacity Utilization		18.7%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis
8: Athlone Avenue & Access B

Total Projected 2031 AM
09/16/2025

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	5	8	3	32	34	2
Future Volume (Veh/h)	5	8	3	32	34	2
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	5	8	3	32	34	2
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	73	35	36			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	73	35	36			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	99	100			
cM capacity (veh/h)	929	1038	1575			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	13	35	36			
Volume Left	5	3	0			
Volume Right	8	0	2			
cSH	993	1575	1700			
Volume to Capacity	0.01	0.00	0.02			
Queue Length 95th (m)	0.3	0.0	0.0			
Control Delay (s)	8.7	0.6	0.0			
Lane LOS	A	A				
Approach Delay (s)	8.7	0.6	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		1.6				
Intersection Capacity Utilization		14.4%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis
9: Tweedsmuir Avenue & Access C

Total Projected 2031 AM
09/16/2025

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	7	5	48	4	2	15
Future Volume (Veh/h)	7	5	48	4	2	15
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	7	5	48	4	2	15
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	69	50			52	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	69	50			52	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	934	1018			1554	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	12	52	17			
Volume Left	7	0	2			
Volume Right	5	4	0			
cSH	968	1700	1554			
Volume to Capacity	0.01	0.03	0.00			
Queue Length 95th (m)	0.3	0.0	0.0			
Control Delay (s)	8.8	0.0	0.9			
Lane LOS	A		A			
Approach Delay (s)	8.8	0.0	0.9			
Approach LOS	A					
Intersection Summary						
Average Delay		1.5				
Intersection Capacity Utilization		13.3%		ICU Level of Service		A
Analysis Period (min)		15				

Lanes, Volumes, Timings
1: Churchill Avenue & Transitway/Scott Street

Total Projected 2031 PM

09/16/2025

									
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	2	60	336	82	12	127	305	49	113
Future Volume (vph)	2	60	336	82	12	127	305	49	113
Lane Group Flow (vph)	0	76	336	131	0	139	305	0	165
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Over	Perm	NA
Protected Phases		4	3	8		2	3		6
Permitted Phases	4		8		2			6	
Detector Phase	4	4	3	8	2	2	3	6	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	5.0	10.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	25.4	25.4	11.8	25.4	27.4	27.4	11.8	27.4	27.4
Total Split (s)	30.0	30.0	32.0	62.0	33.0	33.0	32.0	33.0	33.0
Total Split (%)	31.6%	31.6%	33.7%	65.3%	34.7%	34.7%	33.7%	34.7%	34.7%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.3	3.3	3.0	3.3	3.3
All-Red Time (s)	4.4	4.4	3.8	4.4	3.1	3.1	3.8	3.1	3.1
Lost Time Adjust (s)		0.0	0.0	0.0		0.0	0.0		0.0
Total Lost Time (s)		7.4	6.8	7.4		6.4	6.8		6.4
Lead/Lag	Lag	Lag	Lead				Lead		
Lead-Lag Optimize?	Yes	Yes	Yes				Yes		
Recall Mode	Max	Max	Min	Max	None	None	Min	None	None
Act Effct Green (s)		27.1	55.3	54.7		14.5	20.8		14.5
Actuated g/C Ratio		0.33	0.67	0.66		0.17	0.25		0.17
v/c Ratio		0.22	0.40	0.18		0.47	0.80		0.63
Control Delay		23.4	8.0	4.8		36.1	46.2		42.9
Queue Delay		0.0	0.0	0.0		0.0	0.0		0.0
Total Delay		23.4	8.0	4.8		36.1	46.2		42.9
LOS		C	A	A		D	D		D
Approach Delay		23.4		7.1		43.0			42.9
Approach LOS		C		A		D			D
Queue Length 50th (m)		7.4	18.8	4.1		20.0	44.3		24.3
Queue Length 95th (m)		20.7	39.5	12.8		36.1	#80.9		43.1
Internal Link Dist (m)		133.0		226.0		312.2			409.2
Turn Bay Length (m)			70.0						
Base Capacity (vph)		344	879	718		538	461		477
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		0.22	0.38	0.18		0.26	0.66		0.35

Intersection Summary

Cycle Length: 95

Actuated Cycle Length: 83

Natural Cycle: 80

Control Type: Semi Act-Uncoord

Maximum v/c Ratio: 0.80

Intersection Signal Delay: 27.2

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: 1: Churchill Avenue & Transitway/Scott Street



Lanes, Volumes, Timings
4: West Village Private/Lanark Avenue & Scott Street

Total Projected 2031 PM

09/16/2025

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	88	588	13	609	13	2	49	3
Future Volume (vph)	88	588	13	609	13	2	49	3
Lane Group Flow (vph)	88	604	13	645	13	11	49	35
Turn Type	Perm	NA	Perm	NA	Perm	NA	Perm	NA
Protected Phases		4		8		2		6
Permitted Phases	4		8		2		6	
Detector Phase	4	4	8	8	2	2	6	6
Switch Phase								
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	21.6	21.6	21.6	21.6	28.2	28.2	28.2	28.2
Total Split (s)	71.0	71.0	71.0	71.0	29.0	29.0	29.0	29.0
Total Split (%)	71.0%	71.0%	71.0%	71.0%	29.0%	29.0%	29.0%	29.0%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	3.3	3.3	3.3	3.3	2.9	2.9	2.9	2.9
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.6	6.6	6.6	6.6	6.2	6.2	6.2	6.2
Lead/Lag								
Lead-Lag Optimize?								
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	52.5	52.5	52.5	52.5	34.7	34.7	34.7	34.7
Actuated g/C Ratio	0.52	0.52	0.52	0.52	0.35	0.35	0.35	0.35
v/c Ratio	0.36	0.71	0.05	0.77	0.03	0.02	0.11	0.07
Control Delay	16.0	21.9	8.6	24.2	28.1	17.5	28.2	11.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.0	21.9	8.6	24.2	28.1	17.5	28.2	11.9
LOS	B	C	A	C	C	B	C	B
Approach Delay		21.1		23.9		23.2		21.4
Approach LOS		C		C		C		C
Queue Length 50th (m)	9.2	81.0	1.1	90.3	1.7	0.3	6.5	0.4
Queue Length 95th (m)	15.7	89.8	3.0	100.7	6.9	4.8	17.3	8.1
Internal Link Dist (m)		213.7		548.0		112.2		176.6
Turn Bay Length (m)	40.0		40.0		10.0		30.0	
Base Capacity (vph)	299	1043	310	1033	435	496	464	524
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	0.29	0.58	0.04	0.62	0.03	0.02	0.11	0.07
Intersection Summary								
Cycle Length: 100								
Actuated Cycle Length: 100								
Offset: 40 (40%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green								
Natural Cycle: 65								
Control Type: Actuated-Coordinated								
Maximum v/c Ratio: 0.77								
Intersection Signal Delay: 22.4					Intersection LOS: C			
Intersection Capacity Utilization 79.1%					ICU Level of Service D			
Analysis Period (min) 15								

Splits and Phases: 4: West Village Private/Lanark Avenue & Scott Street

 Ø2 (R)	 Ø4
29 s	71 s
 Ø6 (R)	 Ø8
29 s	71 s

Lanes, Volumes, Timings
10: Churchill Avenue & Richmond Road

Total Projected 2031 PM

09/16/2025

												
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø4	Ø9	Ø10	Ø11
Lane Configurations												
Traffic Volume (vph)	162	303	128	455	27	309	20	290				
Future Volume (vph)	162	303	128	455	27	309	20	290				
Lane Group Flow (vph)	162	349	128	488	27	385	0	593				
Turn Type	custom	NA	custom	NA	Perm	NA	Perm	NA				
Protected Phases	7	4 10		8 11		2		6	4	9	10	11
Permitted Phases	4		8		2		6					
Detector Phase	7	4 10	8	8 11	2	2	6	6				
Switch Phase												
Minimum Initial (s)	5.0		10.0		10.0	10.0	10.0	10.0	10.0	3.0	3.0	3.0
Minimum Split (s)	11.1		26.1		19.2	19.2	19.2	19.2	26.1	5.0	5.0	5.0
Total Split (s)	12.0		34.0		44.0	44.0	44.0	44.0	46.0	5.0	5.0	5.0
Total Split (%)	12.0%		34.0%		44.0%	44.0%	44.0%	44.0%	46%	5%	5%	5%
Yellow Time (s)	3.3		3.3		3.6	3.6	3.6	3.6	3.3	2.0	2.0	2.0
All-Red Time (s)	2.8		2.8		2.6	2.6	2.6	2.6	2.8	0.0	0.0	0.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0		0.0				
Total Lost Time (s)	6.1		6.1		6.2	6.2		6.2				
Lead/Lag	Lead				Lag	Lag	Lag	Lag		Lead		Lag
Lead-Lag Optimize?	Yes				Yes	Yes	Yes	Yes		Yes		Yes
Recall Mode	None		C-Max		None	None	None	None	C-Max	None	None	None
Act Effct Green (s)	44.9	39.9	27.9	27.9	41.8	41.8		41.8				
Actuated g/C Ratio	0.45	0.40	0.28	0.28	0.42	0.42		0.42				
v/c Ratio	0.83	0.53	0.62	0.99	0.12	0.55		0.99				
Control Delay	52.8	25.7	46.3	75.2	20.6	25.3		63.0				
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0				
Total Delay	52.8	25.7	46.3	75.2	20.6	25.3		63.0				
LOS	D	C	D	E	C	C		E				
Approach Delay		34.3		69.2		25.0		63.0				
Approach LOS		C		E		C		E				
Queue Length 50th (m)	18.6	49.1	21.6	93.4	3.1	52.2		102.5				
Queue Length 95th (m)	#45.8	75.7	#45.5	#158.1	9.5	87.7		#188.1				
Internal Link Dist (m)		201.3		218.6		353.2		312.2				
Turn Bay Length (m)	35.0		25.0		15.0							
Base Capacity (vph)	196	664	207	493	228	697		598				
Starvation Cap Reductn	0	0	0	0	0	0		0				
Spillback Cap Reductn	0	0	0	0	0	0		0				
Storage Cap Reductn	0	0	0	0	0	0		0				
Reduced v/c Ratio	0.83	0.53	0.62	0.99	0.12	0.55		0.99				

Intersection Summary

Cycle Length: 100

Actuated Cycle Length: 100

Offset: 0 (0%), Referenced to phase 8:WBTL and 4:EBTL, Start of Green

Natural Cycle: 110

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.99

Intersection Signal Delay: 50.6

Intersection LOS: D

Intersection Capacity Utilization 107.8%

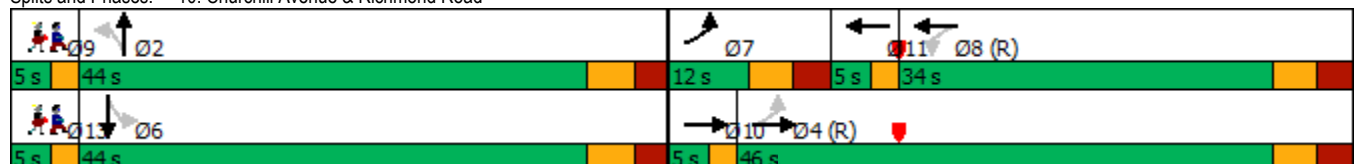
ICU Level of Service G

Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

Splits and Phases: 10: Churchill Avenue & Richmond Road



Lane Group	Ø13
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	13
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	3.0
Minimum Split (s)	5.0
Total Split (s)	5.0
Total Split (%)	5%
Yellow Time (s)	2.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (m)	
Queue Length 95th (m)	
Internal Link Dist (m)	
Turn Bay Length (m)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	
Intersection Summary	

Lanes, Volumes, Timings
11: McRae Avenue & Richmond Road

Total Projected 2031 PM

09/16/2025

	↖	→	↗	←	↖	↑	↘	↓		
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø9	Ø13
Lane Configurations	↖	↖↗	↖	↗	↖	↗		↕		
Traffic Volume (vph)	69	304	49	486	63	45	105	49		
Future Volume (vph)	69	304	49	486	63	45	105	49		
Lane Group Flow (vph)	69	384	49	596	63	90	0	281		
Turn Type	Perm	NA	pm+pt	NA	Perm	NA	Perm	NA		
Protected Phases		4	3	8		2		6	9	13
Permitted Phases	4		8		2		6			
Detector Phase	4	4	3	8	2	2	6	6		
Switch Phase										
Minimum Initial (s)	10.0	10.0	4.9	10.0	10.0	10.0	10.0	10.0	3.0	3.0
Minimum Split (s)	35.2	35.2	11.0	35.2	22.5	22.5	22.5	22.5	5.0	5.0
Total Split (s)	40.0	40.0	11.0	51.0	29.0	29.0	29.0	29.0	5.0	5.0
Total Split (%)	47.1%	47.1%	12.9%	60.0%	34.1%	34.1%	34.1%	34.1%	6%	6%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	2.0	2.0
All-Red Time (s)	2.9	2.9	2.8	2.9	2.2	2.2	2.2	2.2	0.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.0		
Total Lost Time (s)	6.2	6.2	6.1	6.2	5.5	5.5		5.5		
Lead/Lag	Lag	Lag	Lead							
Lead-Lag Optimize?	Yes	Yes	Yes							
Recall Mode	C-Max	C-Max	None	C-Max	None	None	None	None	None	None
Act Effct Green (s)	43.7	43.7	50.9	50.8	21.5	21.5		21.5		
Actuated g/C Ratio	0.51	0.51	0.60	0.60	0.25	0.25		0.25		
v/c Ratio	0.19	0.24	0.10	0.58	0.29	0.23		0.84		
Control Delay	17.4	12.8	8.4	11.9	27.9	14.6		47.6		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		0.0		
Total Delay	17.4	12.8	8.4	11.9	27.9	14.6		47.6		
LOS	B	B	A	B	C	B		D		
Approach Delay		13.5		11.6		20.1		47.6		
Approach LOS		B		B		C		D		
Queue Length 50th (m)	6.7	17.5	3.1	49.0	8.0	5.4		35.0		
Queue Length 95th (m)	16.9	29.2	m6.0	60.6	18.5	16.5		#74.2		
Internal Link Dist (m)		81.0		187.3		44.7		176.9		
Turn Bay Length (m)	40.0		55.0							
Base Capacity (vph)	369	1632	505	1020	244	444		370		
Starvation Cap Reductn	0	0	0	0	0	0		0		
Spillback Cap Reductn	0	0	0	0	0	0		0		
Storage Cap Reductn	0	0	0	0	0	0		0		
Reduced v/c Ratio	0.19	0.24	0.10	0.58	0.26	0.20		0.76		

Intersection Summary

Cycle Length: 85

Actuated Cycle Length: 85

Offset: 1 (1%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 75

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.84

Intersection Signal Delay: 19.6

Intersection LOS: B

Intersection Capacity Utilization 84.1%

ICU Level of Service E

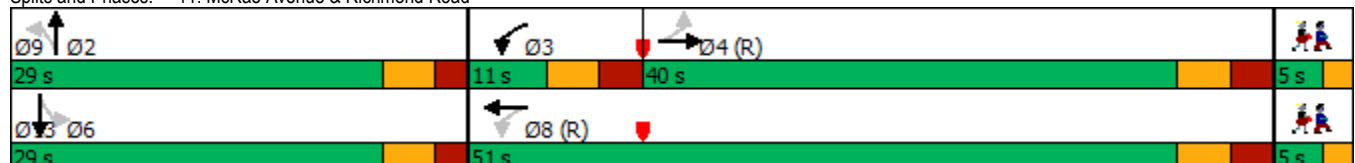
Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

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

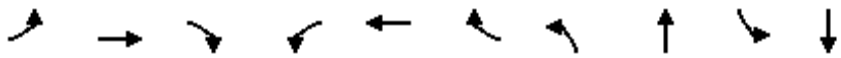
Splits and Phases: 11: McRae Avenue & Richmond Road



Lanes, Volumes, Timings
12: Kirkwood Avenue & Richmond Road

Total Projected 2031 PM

09/16/2025

											Ø1	Ø3
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	Ø1	Ø3
Lane Configurations												
Traffic Volume (vph)	3	357	188	187	433	12	164	49	2	37		
Future Volume (vph)	3	357	188	187	433	12	164	49	2	37		
Lane Group Flow (vph)	0	360	188	0	620	12	164	273	0	40		
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA		
Protected Phases		4			8			2		6	1	3
Permitted Phases	4		4	8		8	2		6			
Detector Phase	4	4	4	8	8	8	2	2	6	6		
Switch Phase												
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	3.0	3.0
Minimum Split (s)	26.1	26.1	26.1	26.1	26.1	26.1	22.6	22.6	22.6	22.6	5.0	5.0
Total Split (s)	40.0	40.0	40.0	40.0	40.0	40.0	35.0	35.0	35.0	35.0	5.0	5.0
Total Split (%)	47.1%	47.1%	47.1%	47.1%	47.1%	47.1%	41.2%	41.2%	41.2%	41.2%	6%	6%
Yellow Time (s)	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	2.0	2.0
All-Red Time (s)	2.8	2.8	2.8	2.8	2.8	2.8	2.3	2.3	2.3	2.3	0.0	0.0
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0		0.0		
Total Lost Time (s)		6.1	6.1		6.1	6.1	5.6	5.6		5.6		
Lead/Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	C-Max	C-Max	C-Max	C-Max	C-Max	C-Max	None	None	None	None	None	None
Act Effct Green (s)		54.4	54.4		54.4	54.4	16.4	16.4		16.4		
Actuated g/C Ratio		0.64	0.64		0.64	0.64	0.19	0.19		0.19		
v/c Ratio		0.31	0.22		0.75	0.01	0.66	0.58		0.12		
Control Delay		7.4	1.1		21.7	0.0	43.3	12.0		26.1		
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0		
Total Delay		7.4	1.1		21.7	0.0	43.3	12.0		26.1		
LOS		A	A		C	A	D	B		C		
Approach Delay		5.2			21.3			23.8		26.1		
Approach LOS		A			C			C		C		
Queue Length 50th (m)		14.4	0.0		54.9	0.0	24.9	6.7		5.3		
Queue Length 95th (m)		m45.6	m4.1		#176.6	0.0	39.9	25.1		11.9		
Internal Link Dist (m)		187.3			176.5			528.9		134.6		
Turn Bay Length (m)			35.0									
Base Capacity (vph)		1148	862		828	881	447	659		599		
Starvation Cap Reductn		0	0		0	0	0	0		0		
Spillback Cap Reductn		0	0		0	0	0	0		0		
Storage Cap Reductn		0	0		0	0	0	0		0		
Reduced v/c Ratio		0.31	0.22		0.75	0.01	0.37	0.41		0.07		

Intersection Summary

Cycle Length: 85

Actuated Cycle Length: 85

Offset: 79 (93%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 90

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.75

Intersection Signal Delay: 16.8

Intersection LOS: B

Intersection Capacity Utilization 88.3%

ICU Level of Service E

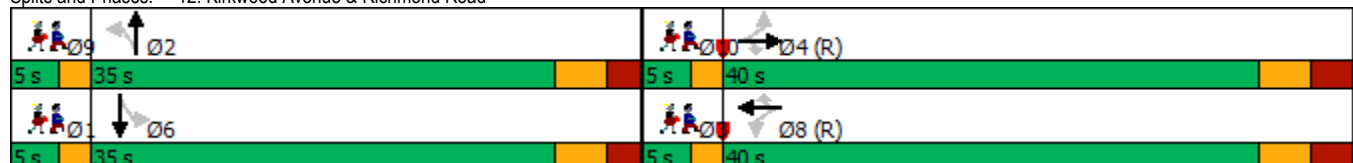
Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 12: Kirkwood Avenue & Richmond Road



Lane Group	Ø9	Ø10
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	9	10
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	3.0	3.0
Minimum Split (s)	5.0	5.0
Total Split (s)	5.0	5.0
Total Split (%)	6%	6%
Yellow Time (s)	2.0	2.0
All-Red Time (s)	0.0	0.0
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes
Recall Mode	None	None
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		
Approach Delay		
Approach LOS		
Queue Length 50th (m)		
Queue Length 95th (m)		
Internal Link Dist (m)		
Turn Bay Length (m)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		
Intersection Summary		

Lanes, Volumes, Timings
13: Scott Street & Athlone Pedestrian Signal

Total Projected 2031 PM
09/16/2025

	→	←		
Lane Group	EBT	WBT	Ø9	Ø10
Lane Configurations	↑	↑		
Traffic Volume (vph)	400	500		
Future Volume (vph)	400	500		
Lane Group Flow (vph)	400	500		
Turn Type	NA	NA		
Protected Phases	4	8	9	10
Permitted Phases				
Detector Phase	4	8		
Switch Phase				
Minimum Initial (s)	10.0	10.0	5.0	4.0
Minimum Split (s)	15.3	15.3	22.0	6.0
Total Split (s)	42.0	42.0	22.0	6.0
Total Split (%)	60.0%	60.0%	31%	9%
Yellow Time (s)	3.3	3.3	3.0	2.0
All-Red Time (s)	2.0	2.0	1.0	0.0
Lost Time Adjust (s)	0.0	0.0		
Total Lost Time (s)	5.3	5.3		
Lead/Lag			Lead	Lag
Lead-Lag Optimize?			Yes	Yes
Recall Mode	C-Max	C-Max	None	None
Act Effct Green (s)	53.6	53.6		
Actuated g/C Ratio	0.77	0.77		
v/c Ratio	0.34	0.43		
Control Delay	6.6	3.6		
Queue Delay	0.0	0.0		
Total Delay	6.6	3.7		
LOS	A	A		
Approach Delay	6.6	3.7		
Approach LOS	A	A		
Queue Length 50th (m)	24.4	11.3		
Queue Length 95th (m)	41.4	15.6		
Internal Link Dist (m)	226.0	5.6		
Turn Bay Length (m)				
Base Capacity (vph)	1162	1162		
Starvation Cap Reductn	0	14		
Spillback Cap Reductn	0	0		
Storage Cap Reductn	0	0		
Reduced v/c Ratio	0.34	0.44		

Intersection Summary

Cycle Length: 70	
Actuated Cycle Length: 70	
Offset: 56 (80%), Referenced to phase 4:EBT and 8:WBT, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.43	
Intersection Signal Delay: 5.0	Intersection LOS: A
Intersection Capacity Utilization 32.2%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 13: Scott Street & Athlone Pedestrian Signal

→ Ø4 (R)	Ø9	Ø10
42 s	22 s	6 s
← Ø8 (R)		
42 s		

Lanes, Volumes, Timings
14: Scott Street & Tweedsmuir Pedestrian Signal

Total Projected 2031 PM
09/16/2025

	→	←	
Lane Group	EBT	WBT	Ø9
Lane Configurations	↑	↑	
Traffic Volume (vph)	430	518	
Future Volume (vph)	430	518	
Lane Group Flow (vph)	430	518	
Turn Type	NA	NA	
Protected Phases	4	8	9
Permitted Phases			
Detector Phase	4	8	
Switch Phase			
Minimum Initial (s)	10.0	10.0	5.0
Minimum Split (s)	15.5	15.5	22.0
Total Split (s)	48.0	48.0	22.0
Total Split (%)	68.6%	68.6%	31%
Yellow Time (s)	3.3	3.3	3.0
All-Red Time (s)	2.2	2.2	1.0
Lost Time Adjust (s)	0.0	0.0	
Total Lost Time (s)	5.5	5.5	
Lead/Lag			
Lead-Lag Optimize?			
Recall Mode	C-Max	C-Max	None
Act Effct Green (s)	53.5	53.5	
Actuated g/C Ratio	0.76	0.76	
v/c Ratio	0.37	0.45	
Control Delay	3.8	7.9	
Queue Delay	0.0	0.0	
Total Delay	3.8	7.9	
LOS	A	A	
Approach Delay	3.8	7.9	
Approach LOS	A	A	
Queue Length 50th (m)	11.1	35.7	
Queue Length 95th (m)	16.0	60.2	
Internal Link Dist (m)	0.1	213.7	
Turn Bay Length (m)			
Base Capacity (vph)	1159	1159	
Starvation Cap Reductn	0	0	
Spillback Cap Reductn	0	0	
Storage Cap Reductn	0	0	
Reduced v/c Ratio	0.37	0.45	
Intersection Summary			
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 50 (71%), Referenced to phase 4:EBT and 8:WBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.45			
Intersection Signal Delay: 6.0		Intersection LOS: A	
Intersection Capacity Utilization 33.4%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 14: Scott Street & Tweedsmuir Pedestrian Signal

→ Ø4 (R)	Ø9
48 s	22 s
← Ø8 (R)	
48 s	

Lanes, Volumes, Timings
15: Richmond Road & Athlone Pedestrian Signal

Total Projected 2031 PM
09/16/2025

	→	←	
Lane Group	EBT	WBT	Ø9
Lane Configurations	↑	↑	
Traffic Volume (vph)	554	580	
Future Volume (vph)	554	580	
Lane Group Flow (vph)	554	580	
Turn Type	NA	NA	
Protected Phases	4	8	9
Permitted Phases			
Detector Phase	4	8	
Switch Phase			
Minimum Initial (s)	10.0	10.0	5.0
Minimum Split (s)	16.0	16.0	23.0
Total Split (s)	42.0	42.0	23.0
Total Split (%)	64.6%	64.6%	35%
Yellow Time (s)	3.3	3.3	3.0
All-Red Time (s)	2.7	2.7	1.0
Lost Time Adjust (s)	0.0	0.0	
Total Lost Time (s)	6.0	6.0	
Lead/Lag			
Lead-Lag Optimize?			
Recall Mode	None	None	None
Act Effct Green (s)	28.0	28.0	
Actuated g/C Ratio	0.80	0.80	
v/c Ratio	0.39	0.41	
Control Delay	7.3	7.5	
Queue Delay	0.0	0.0	
Total Delay	7.3	7.5	
LOS	A	A	
Approach Delay	7.3	7.5	
Approach LOS	A	A	
Queue Length 50th (m)	0.0	0.0	
Queue Length 95th (m)	65.2	69.7	
Internal Link Dist (m)	218.6	2.9	
Turn Bay Length (m)			
Base Capacity (vph)	1514	1514	
Starvation Cap Reductn	0	0	
Spillback Cap Reductn	0	0	
Storage Cap Reductn	0	0	
Reduced v/c Ratio	0.37	0.38	
Intersection Summary			
Cycle Length: 65			
Actuated Cycle Length: 35			
Natural Cycle: 55			
Control Type: Semi Act-Uncoord			
Maximum v/c Ratio: 0.41			
Intersection Signal Delay: 7.4		Intersection LOS: A	
Intersection Capacity Utilization 37.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 15: Richmond Road & Athlone Pedestrian Signal

→ Ø4	← Ø8	← Ø9
42 s	42 s	23 s
← Ø8		
42 s		

HCM Unsignalized Intersection Capacity Analysis
2: Athlone Avenue & Scott Street

Total Projected 2031 PM
09/16/2025

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	390	10	22	478	3	40
Future Volume (Veh/h)	390	10	22	478	3	40
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	390	10	22	478	3	40
Pedestrians	87			10	16	
Lane Width (m)	3.7			3.7	3.7	
Walking Speed (m/s)	1.1			1.1	1.1	
Percent Blockage	8			1	1	
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	30			108		
pX, platoon unblocked			0.90		0.92	0.90
vC, conflicting volume			416		1020	421
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			301		744	306
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			98		99	94
cM capacity (veh/h)			1122		312	647
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	400	500	43			
Volume Left	0	22	3			
Volume Right	10	0	40			
cSH	1700	1122	602			
Volume to Capacity	0.24	0.02	0.07			
Queue Length 95th (m)	0.0	0.5	1.7			
Control Delay (s)	0.0	0.6	11.4			
Lane LOS		A	B			
Approach Delay (s)	0.0	0.6	11.4			
Approach LOS			B			
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization			58.6%	ICU Level of Service		B
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
3: Tweedsmuir Avenue & Scott Street

Total Projected 2031 PM
09/16/2025

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	412	18	27	491	9	23
Future Volume (Veh/h)	412	18	27	491	9	23
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	412	18	27	491	9	23
Pedestrians	10			187	23	
Lane Width (m)	3.7			3.7	3.7	
Walking Speed (m/s)	1.1			1.1	1.1	
Percent Blockage	1			17	2	
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	116			22		
pX, platoon unblocked			0.92		0.89	0.92
vC, conflicting volume			453		999	631
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			367		747	560
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			97		97	94
cM capacity (veh/h)			1077		321	394
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	430	518	32			
Volume Left	0	27	9			
Volume Right	18	0	23			
cSH	1700	1077	370			
Volume to Capacity	0.25	0.03	0.09			
Queue Length 95th (m)	0.0	0.6	2.1			
Control Delay (s)	0.0	0.7	15.6			
Lane LOS		A	C			
Approach Delay (s)	0.0	0.7	15.6			
Approach LOS			C			
Intersection Summary						
Average Delay			0.9			
Intersection Capacity Utilization			70.5%	ICU Level of Service	C	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
5: Athlone Avenue & Richmond Road

Total Projected 2031 PM

09/16/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	13	529	12	11	547	22	3	3	14	16	1	18
Future Volume (Veh/h)	13	529	12	11	547	22	3	3	14	16	1	18
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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
Hourly flow rate (vph)	13	529	12	11	547	22	3	3	14	16	1	18
Pedestrians		46			9			104			113	
Lane Width (m)		3.7			3.7			3.7			3.7	
Walking Speed (m/s)		1.1			1.1			1.1			1.1	
Percent Blockage		4			1			10			11	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		27			188							
pX, platoon unblocked	0.88			0.81			0.87	0.87	0.81	0.87	0.87	0.88
vC, conflicting volume	682			645			1310	1369	648	1278	1364	717
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	571			445			973	1042	449	938	1036	611
tC, single (s)	4.1			4.1			7.1	6.5	6.3	7.1	7.5	6.3
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.4	3.5	4.9	3.4
p0 queue free %	98			99			98	98	97	89	99	95
cM capacity (veh/h)	797			824			138	158	425	151	108	367
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	554	580	20	35								
Volume Left	13	11	3	16								
Volume Right	12	22	14	18								
cSH	797	824	272	213								
Volume to Capacity	0.02	0.01	0.07	0.16								
Queue Length 95th (m)	0.4	0.3	1.8	4.4								
Control Delay (s)	0.4	0.4	19.3	25.2								
Lane LOS	A	A	C	D								
Approach Delay (s)	0.4	0.4	19.3	25.2								
Approach LOS			C	D								
Intersection Summary												
Average Delay			1.5									
Intersection Capacity Utilization			56.2%		ICU Level of Service				B			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
6: Tweedsmuir Avenue & Richmond Road

Total Projected 2031 PM

09/16/2025

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	56	489	14	42	545	30	14	7	38	20	7	21
Future Volume (Veh/h)	56	489	14	42	545	30	14	7	38	20	7	21
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			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
Hourly flow rate (vph)	56	489	14	42	545	30	14	7	38	20	7	21
Pedestrians		2						31			45	
Lane Width (m)		3.7						3.7			3.7	
Walking Speed (m/s)		1.1						1.1			1.1	
Percent Blockage		0						3			4	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (m)		110			105							
pX, platoon unblocked	0.82			0.82			0.91	0.91	0.82	0.91	0.91	0.82
vC, conflicting volume	620			534			1294	1343	527	1324	1320	592
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	424			328			836	890	319	868	865	390
tC, single (s)	4.1			4.1			7.2	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.6	4.0	3.3	3.5	4.0	3.3
p0 queue free %	94			96			93	97	93	89	97	96
cM capacity (veh/h)	898			986			202	215	581	190	222	519
Direction, Lane #	EB 1	WB 1	WB 2	NB 1	SB 1							
Volume Total	559	587	30	59	48							
Volume Left	56	42	0	14	20							
Volume Right	14	0	30	38	21							
cSH	898	986	1700	353	271							
Volume to Capacity	0.06	0.04	0.02	0.17	0.18							
Queue Length 95th (m)	1.5	1.0	0.0	4.5	4.8							
Control Delay (s)	1.7	1.1	0.0	17.3	21.1							
Lane LOS	A	A		C	C							
Approach Delay (s)	1.7	1.1		17.3	21.1							
Approach LOS				C	C							
Intersection Summary												
Average Delay			2.8									
Intersection Capacity Utilization			79.8%		ICU Level of Service					D		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis
7: Tweedsmuir Avenue & Access A

Total Projected 2031 PM
09/16/2025

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	7	10	14	29	36	9
Future Volume (Veh/h)	7	10	14	29	36	9
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	7	10	14	29	36	9
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	98	40	45			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	98	40	45			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	99	99	99			
cM capacity (veh/h)	894	1031	1563			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	17	43	45			
Volume Left	7	14	0			
Volume Right	10	0	9			
cSH	969	1563	1700			
Volume to Capacity	0.02	0.01	0.03			
Queue Length 95th (m)	0.4	0.2	0.0			
Control Delay (s)	8.8	2.4	0.0			
Lane LOS	A	A				
Approach Delay (s)	8.8	2.4	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		2.4				
Intersection Capacity Utilization		19.1%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis
8: Athlone Avenue & Access B

Total Projected 2031 PM
09/16/2025

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	4	5	7	45	32	4
Future Volume (Veh/h)	4	5	7	45	32	4
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	4	5	7	45	32	4
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	93	34	36			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	93	34	36			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	100	100	100			
cM capacity (veh/h)	903	1039	1575			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	9	52	36			
Volume Left	4	7	0			
Volume Right	5	0	4			
cSH	974	1575	1700			
Volume to Capacity	0.01	0.00	0.02			
Queue Length 95th (m)	0.2	0.1	0.0			
Control Delay (s)	8.7	1.0	0.0			
Lane LOS	A	A				
Approach Delay (s)	8.7	1.0	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			1.4			
Intersection Capacity Utilization		18.8%		ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis
9: Tweedsmuir Avenue & Access C

Total Projected 2031 PM
09/16/2025

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	5	3	29	7	4	40
Future Volume (Veh/h)	5	3	29	7	4	40
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	5	3	29	7	4	40
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	80	32			36	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	80	32			36	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			100	
cM capacity (veh/h)	919	1041			1575	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	8	36	44			
Volume Left	5	0	4			
Volume Right	3	7	0			
cSH	962	1700	1575			
Volume to Capacity	0.01	0.02	0.00			
Queue Length 95th (m)	0.2	0.0	0.1			
Control Delay (s)	8.8	0.0	0.7			
Lane LOS	A		A			
Approach Delay (s)	8.8	0.0	0.7			
Approach LOS	A					
Intersection Summary						
Average Delay			1.1			
Intersection Capacity Utilization			15.7%	ICU Level of Service	A	
Analysis Period (min)			15			