PROPOSED RESIDENTIAL APARTMENTS DEVELOPMENT, 424 CHURCHILL AVENUE CITY OF OTTAWA

SCREENING AND SCOPING REPORT

Presented to:

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Project 7303

CASTLEGLENN CONSULTANTS LTD.

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1.0 INTRODUCTION AND SCREENING RESULTS

The 2017 City of Ottawa ñ*Transportation Impact Assessment Guidelines*ò set out a multi-step pre-application process where the scope, assumptions, study area and methodology to conduct a transportation impact assessment (TIA) are detailed and each sequential stage approved. This report represents the first two steps (Step 1 ï Screening and Step 2 ï Scoping) of the 4-step TIA process.

The Screening and Scoping report was submitted to the City of Ottawa on August 17, 2022. The comments were received on September 12, 2022. This version of the report addresses the feedback raised by the City of Ottawa. [Please note that Appendix ñGò contains City plannerôs comments and consultantsô responses.]

1.1 SUMMARY OF DEVELOPMENT

The proposed 424 Churchill Avenue Residential Apartment development is proposed to be comprised of a 7-storey residential apartment building with 58 apartment units. The development also proposes two levels of underground car parking. The motor vehicle access to the site would be facing Danforth Avenue which is closed to eastbound traffic just to the east of the proposed garage entrance. Hence, motor-vehicle traffic may enter the building by way of a westbound left-in or an eastbound right-turn movement. However, all vehicle traffic leaving the building must egress by way of a northbound left-turn egress movement onto Danforth Avenue westbound. Pedestrian accesses would be provided by way of building entrances on Churchill Avenue and Byron Avenue.

1.2 SCREENING: TRIP GENERATION TRIGGERS

The Screening Form has been completed and is included within Appendix ñBò. City of Ottawa TIA guidelines set the threshold for the trip generation trigger at 60 person-trips-or-more during the weekday peak hours. If the proposed development meets the trip threshold, both the Design Review and Network Impact components of the TIA need to be considered.

The threshold to meet a trip generation warrant for multifamily apartment is 90 apartment units[1]. Since the proposed developmentôs size is 58 units, **the traffic generation trigger would not be satisfied; therefore, the proposed development is not required to address the "Network Impact" component of a TIA.**

1 City of Ottawa Transportation Impact Assessment Guidelines. Dillon Consulting, June 2017

1.3 SCREENING: LOCATION TRIGGERS

The development site is located in close proximity to Richmond Road, and is zoned ñTM - Traditional Mainstreetò, which is considered a Design Priority Area; **therefore, the location trigger is satisfied.**

1.4 SCREENING SAFETY TRIGGERS

The proposed development proposes a left-in/left-out driveway access to/from a parking garage that connects to Danforth Avenue. The access is located approximately 100 meters away from the Byron Avenue / Churchill Avenue N intersection, and 130 meters away from the Richmond Road / Churchill Avenue North intersection, thus being considered within the ñarea of influenceò of both of these traffic signals[2]; **therefore, the safety trigger is satisfied.**

1.5 SCREENING CONCLUSIONS

The screening results indicate that since the Safety and Location Triggers are satisfied, while the Trip Generation Trigger is not, **therefore, the TIA is required to address only the "Design Review" component.**

The completed certification form is contained within Appendix ñAò and the completed stamped and signed screening form can be found within Appendix ñBò.

2 City of Ottawa Transportation Impact Assessment Guidelines. Dillon Consulting, June 2017. Pg. 17

2.0 SCOPING

2.1 EXISTING AND PLANNED CONDITIONS

2.1.1 Proposed Development

Exhibit 2-1 illustrates the proposed 58-unit residential apartments development located in the north-west quadrant of the Byron Avenue / Churchill Avenue North intersection. The development is presently envisioned as an 7-storey 58-unit residential rental apartment building with a 2-level 30-stall parking garage that has vehicle access onto Danforth Avenue. Two pedestrian accesses are envisioned connecting to Churchill Avenue North and Byron Avenue.

The parcel is currently zoned ñ*TM H(24)-Traditional Mainstreet*ò, which is acceptable zoning for the above-mentioned use. The site currently contains a single-storey building housing a laundromat / dry cleaning service. The existing building on site is to be demolished.

Exhibit 2-2 illustrates the proposed site plan (January, 2022) for the development. The full site plan can be found in Appendix ñCò.

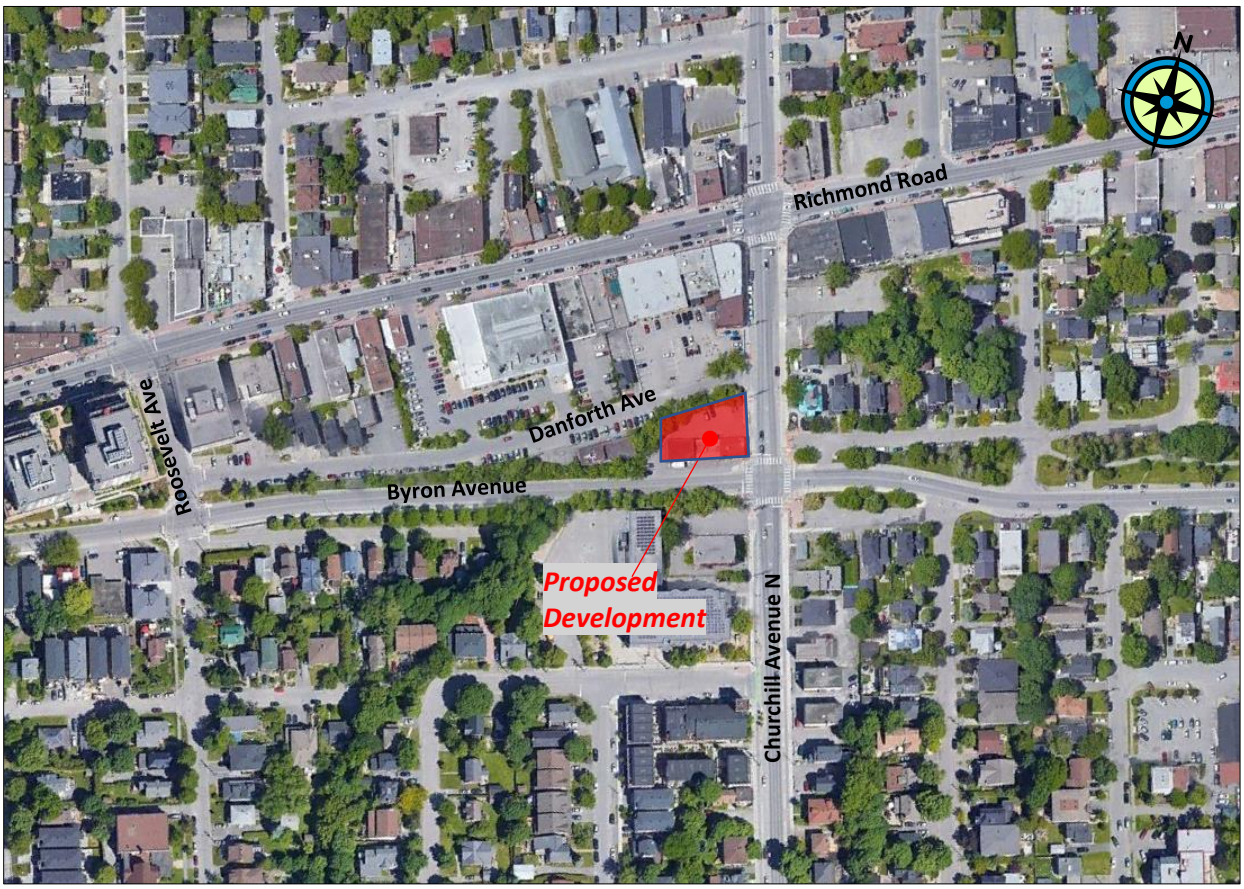


Exhibit 2-1: Location of Proposed Development

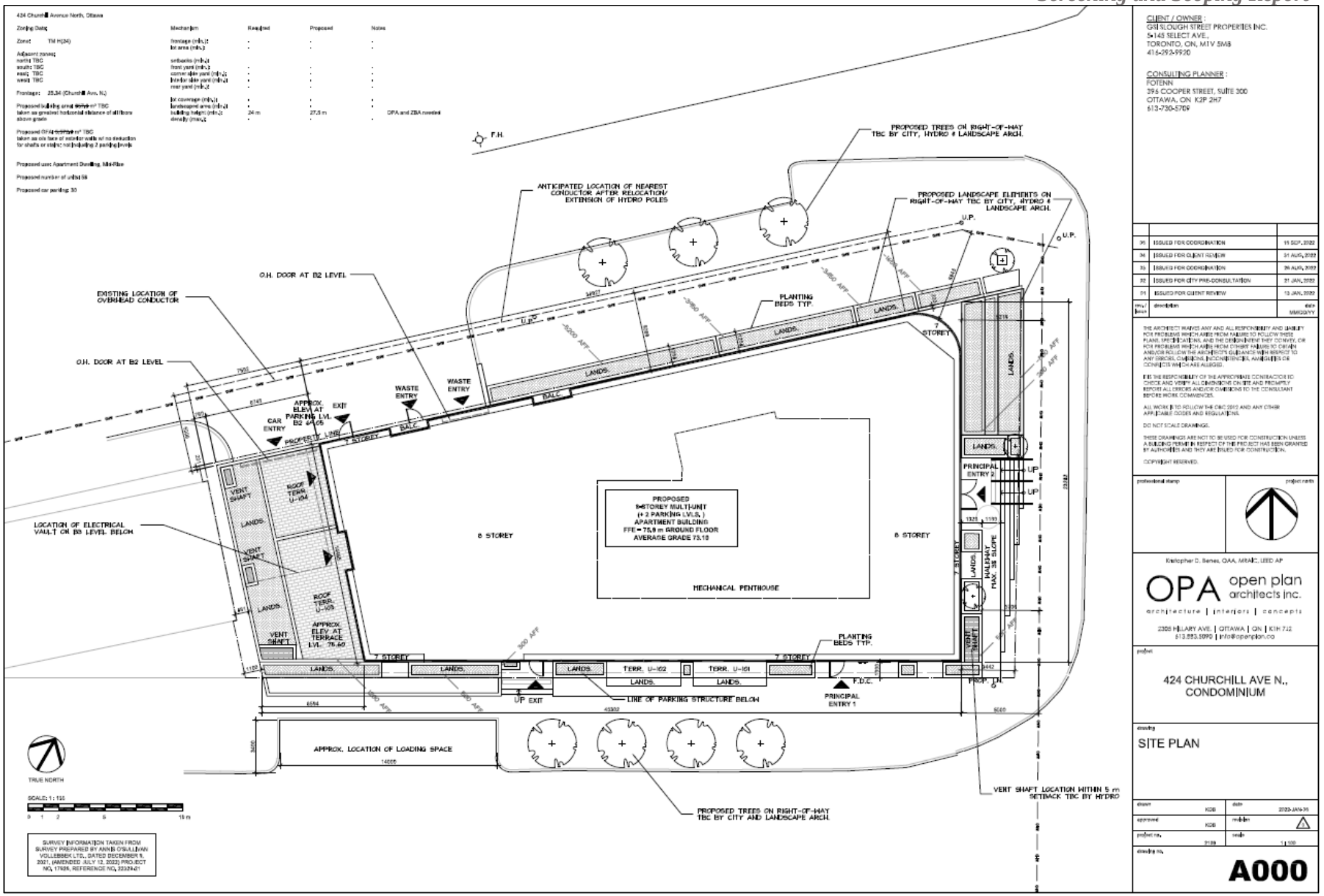


Exhibit 2-2: Site Plan (September 2022)

2.1.2 Existing Conditions

2.1.2.1 Study Area Roadways

The City of Ottawa TMP (Map 8) was referenced along with a desktop review of aerial photography to document the existing roadways that would serve the proposed development and surrounding area. The municipal-owned roadways in the vicinity of the proposed development include the following:

Richmond Road

- is an existing 2-lane undivided arterial roadway;
- unposted speed limit of 50 km/hr;
- a lane of parallel street parking is provided on each side of the roadway;
- sidewalks are provided on each side;

Churchill Avenue North

- is an existing 2-lane undivided roadway;
- designated as ñmajor collectorò south of Richmond Road and ñArterialò north of Richmond Road
- unposted speed limit of 50 km/hr;
- sidewalks are provided on each side;
- physically separated bicycle lanes are provided south of Byron Avenue;

Byron Avenue

- is an existing 2-lane undivided collector roadway;
- unposted speed limit of 50 km/hr;
- sidewalks are provided on each side except for the stretch of Byron Ave between Roosevelt Ave and Churchill Ave N, where the sidewalk is only provided on the south side of the road;
- an eastbound bicycle lane is provided.

Roosevelt Avenue

- is an existing 2-lane undivided local roadway;
- posted speed limit of 40 km/hr north of Byron Avenue;
- posted speed limit of 30 km/hr south of Byron Avenue
- sidewalks are provided on each side;

Danforth Avenue

- is an existing 2-lane undivided local roadway;
- at the intersection with Churchill Ave N, it operates a one-way (entrance only) single-lane westbound roadway;
- unposted speed limit of 50 km/hr is assumed, however the operating speed is likely lower;
- street parking is provided on both sides of the roadway, both parallel and perpendicular parking configurations are present;
- no sidewalks are provided.

2.1.2.2 Study Area Intersections

1. Richmond Road and Roosevelt Avenue

This intersection is a 4-leg traffic signal-controlled intersection.

- Both the westbound and eastbound major approaches along Richmond Road provides for one shared all-movement lane and a street parking lane (without right turn markings).
- Both northbound and southbound minor approaches provide for one shared all movement lane.
- The southbound minor approach provides for one shared all movement lane. One hour on-street parking (7am-to-7pm) is permitted on the east side of corridor on the more northerly 200 meters.
- The south leg of the intersection does not provide for on-street parking and the east side of the corridor is a designated loading zone.
- Pedestrian sidewalks are provided in each quadrant of the intersection. Cyclists cross the intersection in mixed traffic.

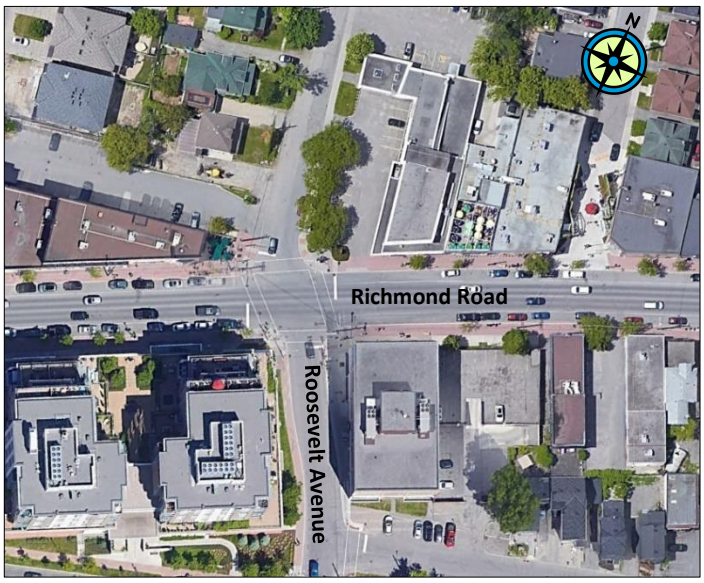


Exhibit 2-3: Richmond Road and Roosevelt Avenue Intersection

Exhibit 2-4: Roosevelt Avenue and Byron Avenue Intersection

2. Roosevelt Avenue and Byron Avenue

This 4-leg intersection is a traffic signal-controlled intersection.

- Both westbound and eastbound major approaches provide for one shared all-movement lane.
- Both northbound and southbound approaches provide for a shared all-movement lane.
- Sidewalks are provided along both sides of the north and west legs of the intersection.
- There is no continuous sidewalk along north side of Byron Avenue east of the intersection
- The east leg of the intersection has a sidewalk along the south side of the corridor, and the north leg has a sidewalk along the west side of the corridor.
- A continuous eastbound bike lane exists along the south side of Byron Avenue. Cyclists on other approaches cross in mixed traffic.

3. Richmond Road and Churchill Avenue North

This intersection is a 4-leg traffic signal-controlled intersection.

- Both westbound and eastbound major approaches provide for a single shared through-right turn lane and an auxiliary left turn lane.
- There are parking lanes present along each side of Richmond Road, which end about 10 meters away from the intersection STOP lines.
- Both northbound and southbound minor approaches along Churchill Avenue North provide for a single shared through-left turn lane and a right turn lane. However, the pavement markings that designate these two-lane approaches are no longer visible.
- Continuous sidewalks are provided along each side of all approaches to the intersection. Cyclists cross the intersection in mixed traffic.

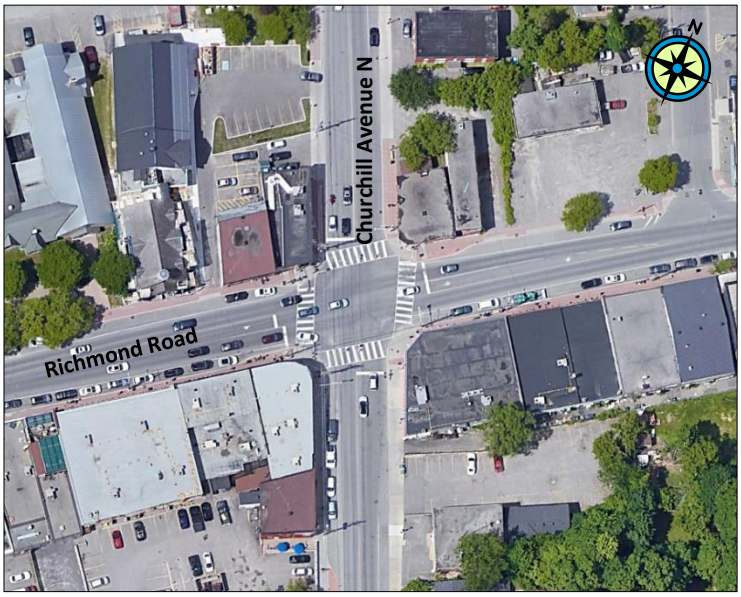


Exhibit 2-5 Richmond Road and Churchill Avenue North Intersection

Exhibit 2-6: Churchill Avenue North and Byron Avenue

4. Churchill Avenue North and Byron Avenue

This intersection is a 4-leg traffic signal-controlled intersection located immediately adjacent to the proposed site.

- Both northbound and southbound Churchill Avenue North approaches provide for one auxiliary left turn lane, and one shared through-right turn lane;
- Both westbound and eastbound Byron Avenue approaches provide for a single shared through-turn lane;
- A continuous sidewalk is not present along the north side of Byron Avenue west of the intersection, but exists in other quadrants.
- A continuous eastbound bike lane is provided along Byron Avenue. Bike lanes are provided along the east and west sides of Churchill Avenue but terminate about 20 meters south of the intersection. Cyclists cross the intersection in mixed traffic on all other approaches

5. Churchill Avenue North and Danforth Avenue

This intersection is a 3-leg minor leg STOP-controlled intersection.

- Danforth Avenue is a one-way street that permits only westbound (inbound) movements.
- Both northbound and southbound major approaches along Churchill Ave N provide for a single shared through-turn lane.
- On-Street parking is present north of the intersection on the both sides of Churchill Avenue N.
- Sidewalks are provided in each quadrant of the intersection; however, continuous sidewalks do not exist on either side of Danforth Avenue.
- Cyclists cross the intersection in mixed traffic

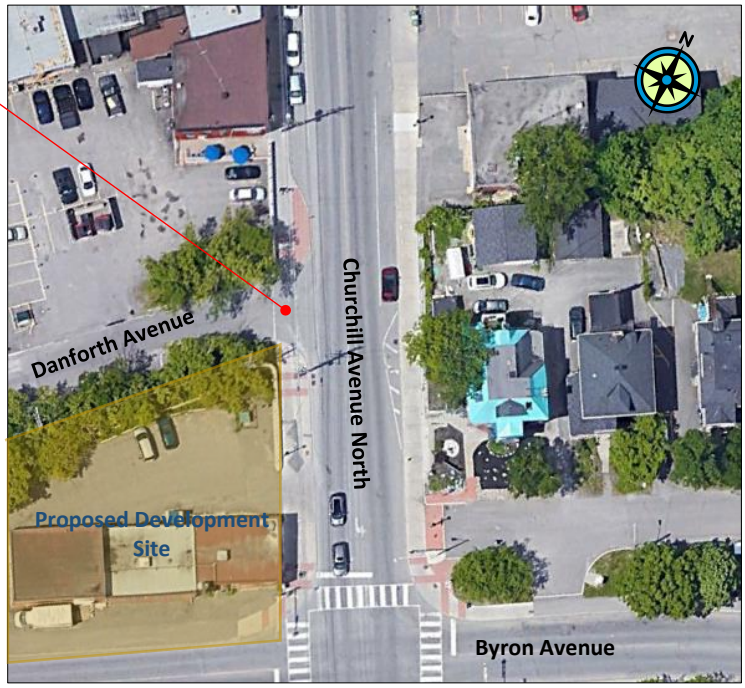


Exhibit 2-7: Churchill Avenue North and Danforth Avenue Intersection

6. Roosevelt Avenue and Danforth Avenue

Exhibit 2-8: Roosevelt Avenue and Danforth Avenue Intersection

This intersection is a 3-leg ñTò configured minor leg STOP-controlled intersection that is immediately adjacent (20 meters centre-to-centre) to the traffic signal-controlled Byron Avenue & Roosevelt Avenue intersection.

- Both northbound and southbound Roosevelt Avenue approaches provides for a single shared through-turn lane;
- The westbound minor approach provides for one shared through-turn lane;
- Sidewalks are provided in each quadrant of the intersection; however continuous sidewalks are not provided along Danforth Avenue;
- Cyclists cross the intersection in mixed traffic.

7. Danforth Avenue and MEC Parking Accesses

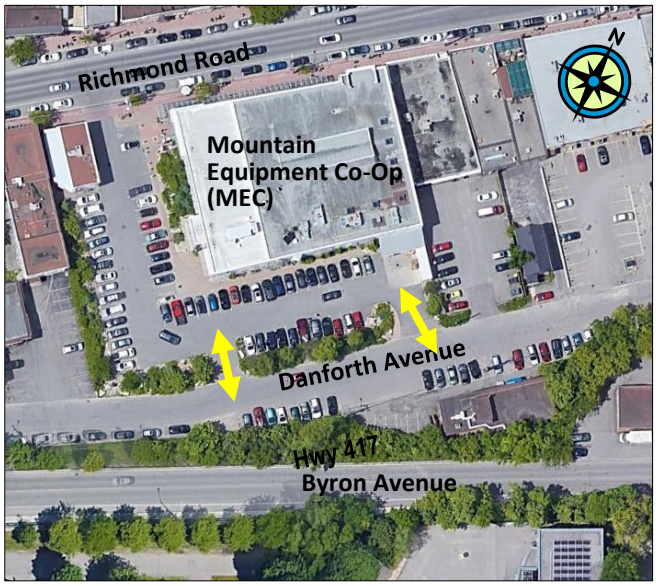


Exhibit 2-9: Danforth Avenue and MEC Parking Accesses

Danforth Avenue is accessed through the MEC (Mountain Equipment Co-Op) parking lot by way of two access.

- The two access roadways effectively form two intersections with Danforth Avenue;
- Each intersection provides one travel lane in each direction;
- No sidewalks or bicycle lanes are provided along Danforth Avenue or along the parking lot access;
- Intersection capacity analysis or MMLOS analysis will not be conducted for these accesses, however a traffic count was performed to evaluate the impacts of cut-through traffic from Richmond Road onto Danforth Avenue.

2.1.2.3 Existing Surrounding Driveways

Exhibit 2-10 illustrates the adjacent existing driveways within the immediate proximity (200 meters the access along each boundary street) of the proposed 424 Churchill Avenue Residential Apartments development. The existing site presently has access on both Byron Avenue and Churchill Avenue North. The proposed residential development would see these accesses closed and a new access connecting to Danforth Avenue.

The following adjacent driveways were identified along three boundary streets (Byron Avenue, Danforth Avenue, Churchill Avenue North):

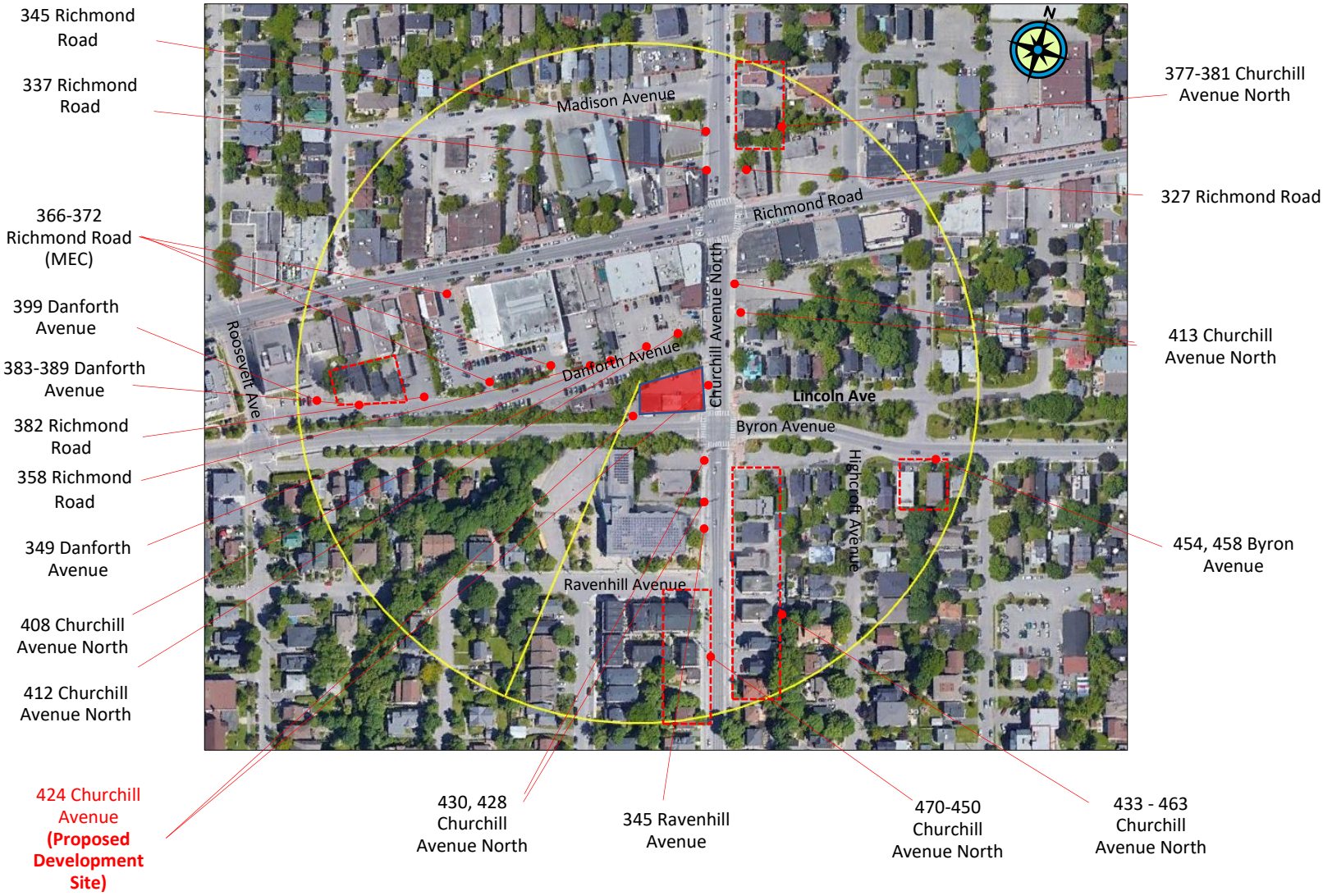
Danforth Avenue Accesses:

- *412 Churchill Avenue North* is a mixed-use building housing a coffee shop and office space. It is accessed by a single access approximately 35 meters east of the proposed development access. The access is shared with 408 Churchill Avenue North;
- *408 Churchill Avenue North* houses several retail stores and restaurants fronting Richmond Road. The parking lot in the back is accessed by two accesses - one approximately 15 meters east of the proposed development access, other shared with 412 Churchill Avenue North (see above);
- *349 Danforth Avenue* houses a doggy daycare business. It is accessed by a single access from Danforth Avenue, approximately opposite of the development access;
- *358 Richmond Road* houses several retail stores fronting Richmond Road. The parking lot in the back is accessed by a single access approximately 20 meters west of the proposed access.
- *366-372 Richmond Road (MEC)* is an outdoor equipment store. The parking lot is accessed by one access off Richmond Road and two accesses off Danforth Avenue that are approximately 35 and 80 meters west of the proposed development access;
- *382 Richmond Road* is a small real estate office building. The parking lot is accessed by a single access that is approximately 125 meters of the proposed development access;
- *383,385,387 & 389 Danforth Avenue* are four standalone former residential dwellings converted to commercial uses. There is 1 driveway for each building for a total of 4 driveways;
- *399 Danforth Avenue* is a mixed-use 4-storey office and commercial building. The parking lot is accessed by a single driveway approximately 190 meters west of the proposed development;

Byron Avenue Accesses:

- *454,458 Byron Avenue* are two low-rise apartment buildings with driveways onto Byron Avenue. They are located approximately 120 meters east of the Churchill Avenue North / Byron Avenue intersection;

Exhibit 2-10: Overview of Existing Adjacent Driveways



Churchill Avenue North Accesses:

- *470-450 Churchill Avenue North (even)* are residential buildings and an office building accessed by 4 driveways on the west side of Churchill Avenue;
- *345 Ravenhill Avenue* is Churchill Public School served by a driveway onto Churchill Avenue providing a layup area, as well as a driveway onto a parking lot from Ravenhill Avenue East;
- *430 Churchill Avenue* is Westboro Masonic Hall event centre served by a single driveway onto Churchill Avenue;
- *428 Churchill Avenue* is an Indigo parking lot with 17 parking spaces;
- *337 Richmond Road* is a restaurant with a parking / service area accessed from Churchill Avenue;

- *345 Richmond Road* is Churchill Seniorôs recreating centre. Access to the parking lot with 15 parking spaces is provided from Churchill Avenue North.
- *433-463 Churchill Avenue North* are 7 residential apartment buildings with 7 driveways onto Churchill Avenue North;
- *413 Churchill Avenue North* is a low-rise office building with 2 driveways providing access to parking lots adjacent to the building;
- *327 Richmond Road* is a low-rise office building with parking area access from Churchill Avenue;
- *377-381 Churchill Avenue North* are 3 residential and retail buildings with 3 driveways to Churchill Avenue North.

2.1.2.4 Pedestrian and Cycling Facilities

Concrete sidewalks are provided along both sides of the following roadways in the study area:

- Richmond Road;
- Churchill Avenue North;
- Roosevelt Avenue (Sidewalks exist on both sides between Richmond Road and Byron Avenue. South of Byron a sidewalk exists only on the west side.);

Byron Avenue between Churchill Avenue North and Roosevelt Avenue only has a sidewalk on the south side. There are no sidewalks along Danforth Avenue.

Richmond Road and Churchill Avenue North are classified as ñSpine Routesò, while Byron Avenue and Roosevelt Avenue are classified as ñLocal Routesò.

Physically separated bicycle lanes are provided along Churchill Avenue North, south of Byron Avenue (just outside of the study area). Byron Avenue provides for an eastbound bicycle lane. All other roadways have no dedicated bicycle infrastructure with cyclists riding in mixed traffic with motor vehicles.

2.1.2.5 Area Traffic Management

The City of Ottawa has developed the ñRichmond Road / Westboro Transportation Management Implementation Planò, which is intended to prepare the transportation network for intensification with advent of to LRT Stage 2. In addition, the following area traffic management strategies were identified in the study area:

- Two speed humps along Byron Avenue between Roosevelt Avenue and Churchill Avenue North;
- Danforth Avenue at Churchill Avenue North is open to westbound traffic;
- Heavy vehicles are prohibited from using Roosevelt Avenue (entering from Richmond Road); and
- Heavy vehicle turning restriction are in place at Churchill Avenue and Richmond Road. The left and right turns onto Churchill Avenue are prohibited between 11 PM and 6 AM.

2.1.2.6 Existing Transit Provisions

Exhibit 2-11 illustrates, and Table 2-1 describes, the existing transit (June 2022) operational service along roadways within the immediate proximity of the proposed development. Exhibit 2-12 illustrates the transit stops in the immediate vicinity of the proposed development.

The nearest transit routes adjacent to the proposed development include Routes 11 and 153 (which stops along Richmond Avenue), and Route 50 (which stops along Churchill Avenue North).

- Exhibit 2-13 illustrates that the proposed development is within 600 meters radius from the Westboro Transit Station and 550 meters from the Dominion Transit Station (as the crow flies).
- Exhibit 2-14 illustrates that, in terms of walking distance along public roadways/pathways, the development is located 770 meters from the Westboro Rapid Transit Station and 810 meters walking distance from the Dominion Transit Station.

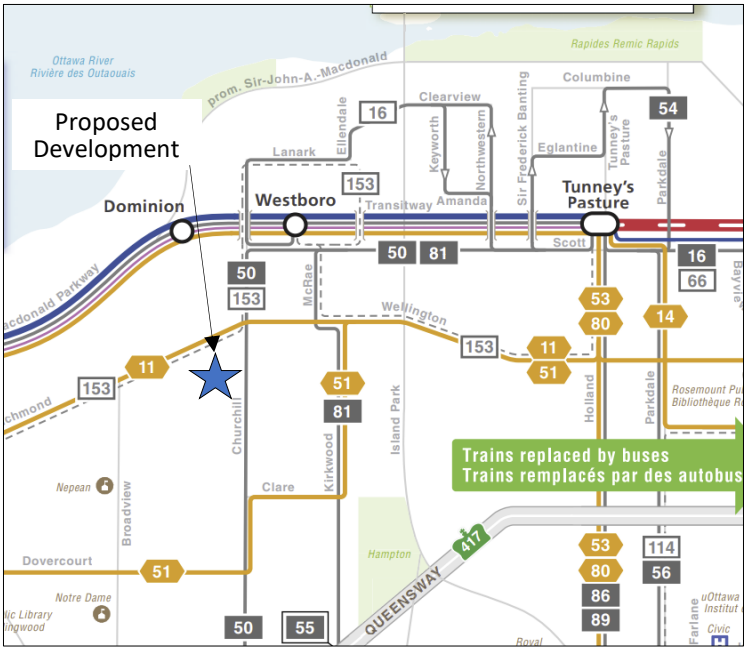


Exhibit 2-11: Transit Lines in the Study Area
(Not to Scale)

Both the Westboro and Dominion transit stations serve a variety of rapid transit routes that connect to the Tunneyôs Pasture LRT station (eastbound) and west-end suburbs (Bells Corners, Kanata, Stittsville, Barrhaven). At the time of writing this report, the LRT (O-Train Line 1) Stage 2 West Extension is planned to be completed in 2025. (See Section 2.1.3).

Table 2-1: Existing Transit Routes

Route	Description
11	This “Frequent” bus route connects Bayshore rapid transit station to downtown (Mackenzie King station) travelling via Richmond Road, Wellington Street and Somerset Street. The route runs Monday-thru-Sunday with peak hour headways of 15 minutes.
50	This is a “Local” bus route that connects the Tunney’s Pasture rapid transit station to neighbourhoods along Scott Street, Churchill Avenue North and Maitland Avenue. The route then connects to Iris, the Queensway and the Lincoln Fields stations. The buses run Monday-thru-Saturday with 30-minute headways.
153	This is a “Local” bus route that travels between Lincoln Fields station, the Carlingwood Mall and Tunney’s Pasture rapid bus station. Select trips only run between Lincoln Fields and Carlingwood Mall (outside of the study area). The headways are 1-2 hours.

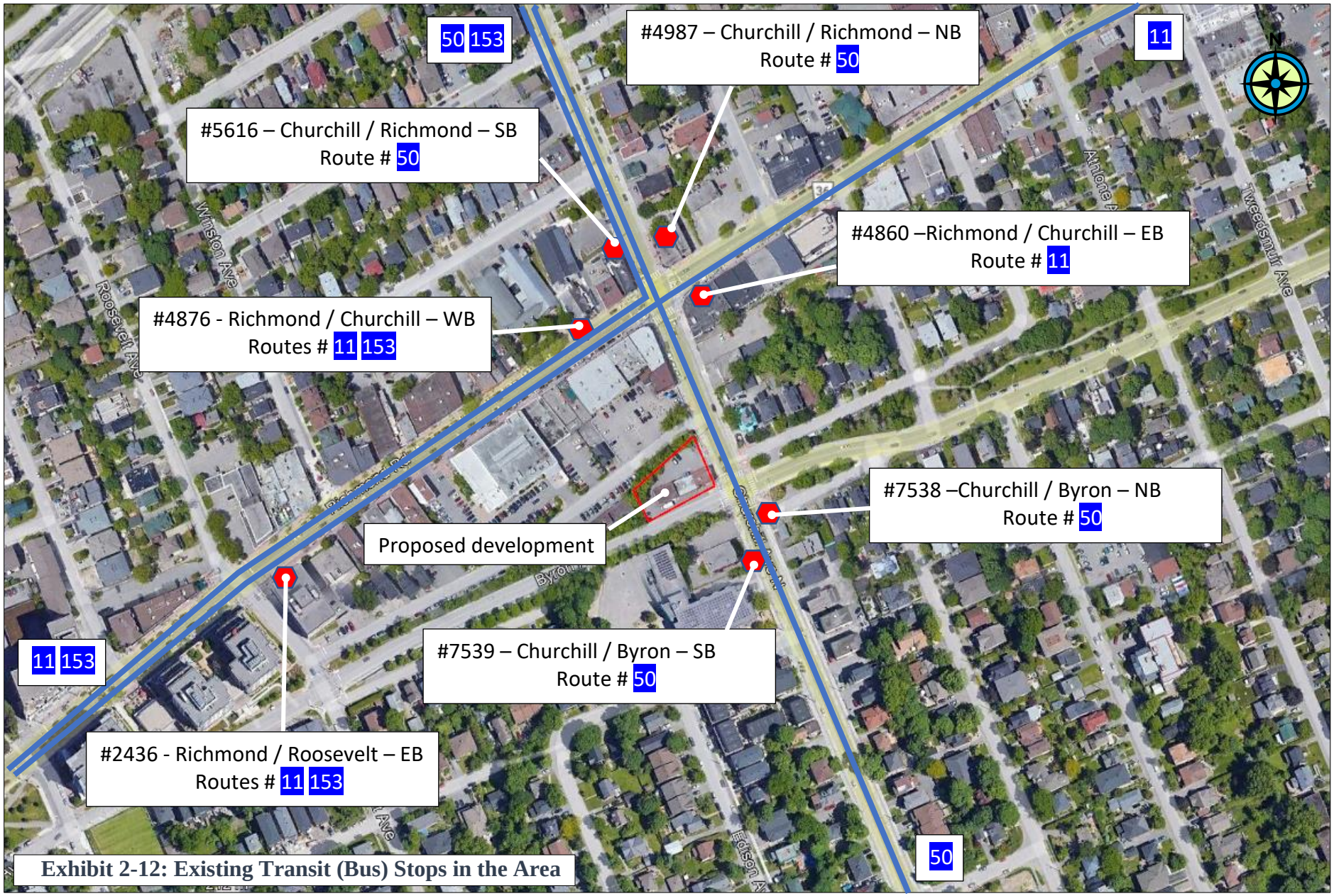


Exhibit 2-12: Existing Transit (Bus) Stops in the Area

Exhibit 2-13: Distance Around Dominion and Westboro Rapid Transit Stations

Exhibit 2-14: Walking Distances to Dominion and Westboro Rapid Transit Stations

2.1.2.7 Existing Peak Hour Travel Demands by Mode

Appendix ñDò provides the existing traffic counts information obtained on behalf of this TIA.

Pedestrian and Cyclist Travel Demand

Table 2-2 indicates pedestrian travel and Table 2-3 indicated cyclist travel for the (2017) morning & afternoon peak hours and 8-hour time periods. (Source: City of Ottawa: Four adjacent intersections to the site.)

Four of the intersection traffic counts indicated that they were conducted in the winter (January-thru-February) of 2019 and 2020 and may not be representative of peak summer-time active transportation activity on the corridors.

The traffic counts were undertaken at:

- the Richmond Road and Roosevelt Avenue intersection on Thursday, January 23, 2020;
- the Roosevelt Avenue and Byron Avenue intersection on Wednesday, February 27, 2019;
- the Richmond Road and Churchill Avenue North intersection on Thursday, January 23, 2020;
- the Churchill Avenue North and Byron Avenue intersection on Thursday, January 23, 2020;

The traffic counts indicate significant pedestrian and cyclist activity along the study area intersections, despite the counts being conducted during the winter months.

Table 2-2: Pedestrian Peak Hour and 8-Hour Traffic Volumes

Period	Pedestrians Crossing	Richmond Road and Roosevelt Avenue	Roosevelt Avenue and Byron Avenue	Richmond Road and Churchill Avenue North	Churchill Avenue North and Byron Avenue
8 Hour	Crossing East Leg	530	148	330	206
AM Peak		40	13	36	18
PM Peak		92	17	54	29
8 - Hour	Crossing West Leg	714	277	553	282
AM Peak		65	33	45	43
PM Peak		116	46	84	40
8 Hour	Crossing North Leg	912	72	589	107
AM Peak		74	8	34	13
PM Peak		135	9	86	10
8 Hour	Crossing South Leg	1032	78	822	125
AM Peak		69	13	68	13
PM Peak		182	7	163	11
Total		**3,188**	**575**	**2,294**	**720**

Table 2-3: Cyclist Peak Hour and 8-Hour Traffic Volumes

Period	Cyclists Travelling	Richmond Road and Roosevelt Avenue	Roosevelt Avenue and Byron Avenue	Richmond Road and Churchill Avenue North	Churchill Avenue North and Byron Avenue
8 Hour	Eastbound	26	5	26	5
AM Peak		7	0	11	1
PM Peak		3	2	2	1
8 - Hour	Westbound	19	3	10	5
AM Peak		4	0	1	0
PM Peak		9	1	4	1
8 Hour	Northbound	12	4	24	27
AM Peak		4	0	8	7
PM Peak		2	1	1	0
8 Hour	Southbound	14	3	14	16
AM Peak		4	0	0	0
PM Peak		5	0	3	6
Total		**71**	**15**	**74**	**53**

Vehicular Travel Demand

Exhibit 2-15 illustrates the existing (unbalanced) morning and afternoon peak hour traffic volumes within the study area using the traffic count information obtained at the following intersections:

1. Richmond Road and Roosevelt Avenue;
2. Roosevelt Avenue and Byron Avenue;
3. Richmond Road and Churchill Avenue North;
4. Churchill Avenue North and Byron Avenue;
5. Churchill Avenue North and Danforth Avenue;
6. Roosevelt Avenue and Danforth Avenue;
7. Danforth Avenue and MEC Parking Accesses.

Exhibit 2-16 illustrates the existing balanced morning and afternoon peak hour traffic volumes. The following steps were completed in order to bring the traffic to a balanced 2022 horizon year:

- Traffic volumes were balanced along Roosevelt Avenue, Byron Avenue and Churchill Avenue North with respect to the highest traffic volume recorded;
- Upon review of TRANS Long-Range Transportation Model (provided in Appendix E) and comparison of existing volumes (See Exhibit 2-15) with 2031 forecast volumes from TRANS, no background growth rate was applied to the 2019 traffic counts.

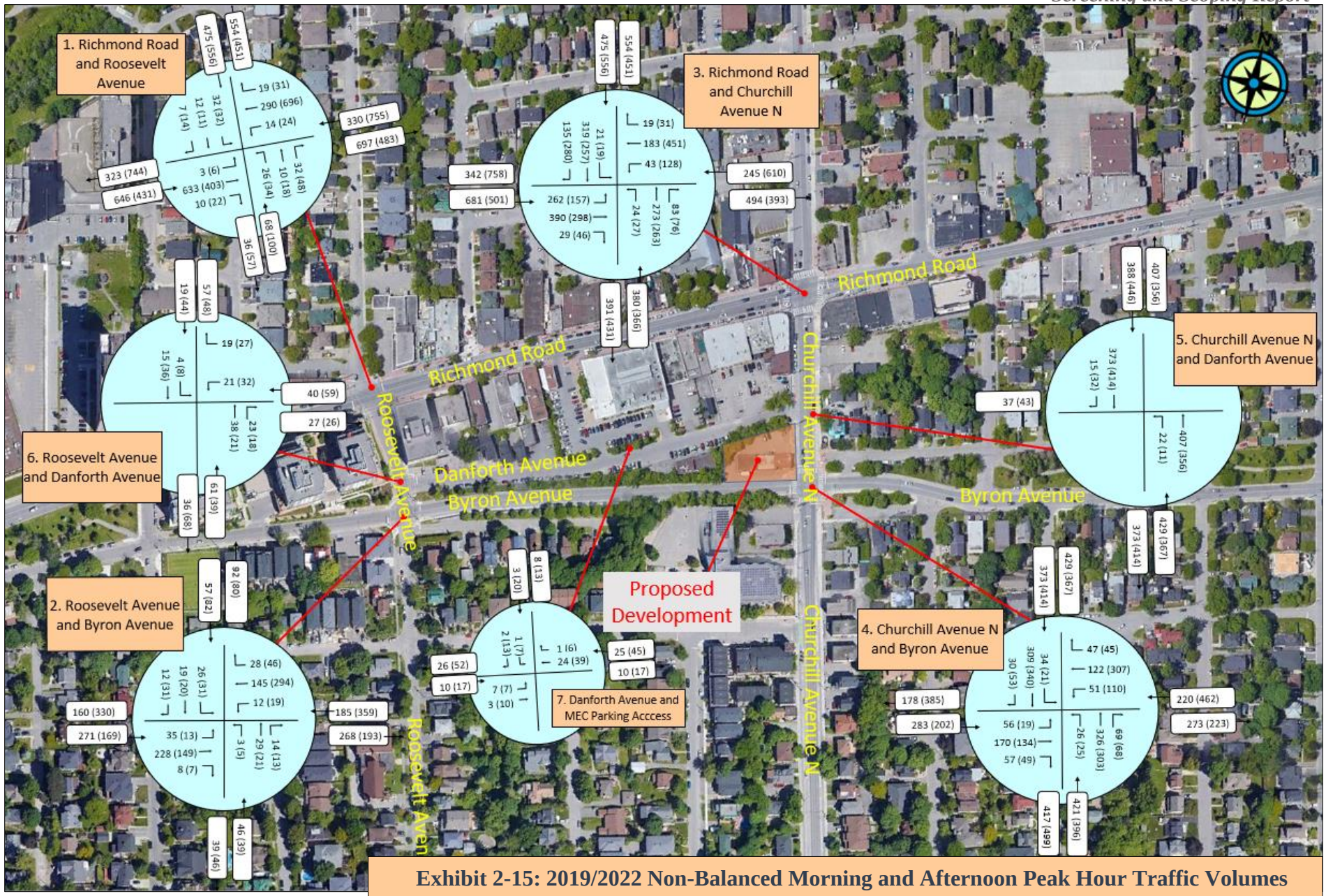


Exhibit 2-15: 2019/2022 Non-Balanced Morning and Afternoon Peak Hour Traffic Volumes

Morning (Afternoon), vph = vehicles-per-hour

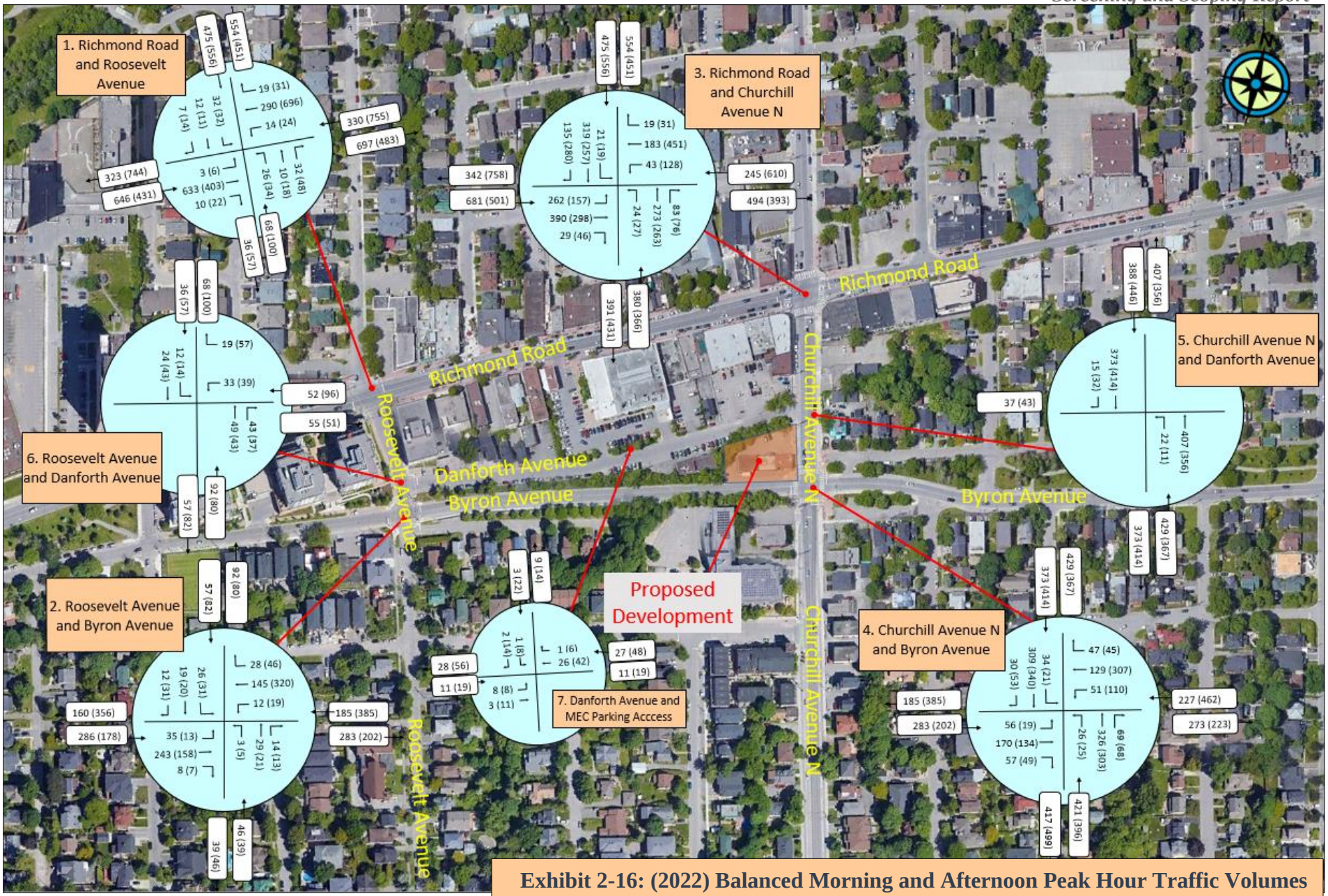


Exhibit 2-16: (2022) Balanced Morning and Afternoon Peak Hour Traffic Volumes

Morning (Afternoon), vph = vehicles-per-hour

Existing Traffic Volumes Intersection Capacity Analysis

Table 2-4 summarizes the existing (2022) intersection capacity analysis (See Exhibit 2-16 for traffic volumes) undertaken with Synchro™ 11 traffic analysis software. Appendix ñDò provides the traffic-signal timings phasing that were provided by the City of Ottawa.

This analysis assumes the development is not in place and only considers the effects of background growth and adjacent development traffic. Synchro analysis output sheets can be found in Appendix ñFò.

Table 2-4: Existing (2022) Traffic Analysis

Intersection	***Control Type***	***Weekday Morning Peak Hour (Afternoon Peak Hour)***				
		Critical Movement				
		Approach / Movement	95th Percentile Queue (m)	Delay (seconds)	LOS	v/c
1. Richmond Road and Roosevelt Avenue (Distance to Dominion Station – 440 m)	Traffic Signal	*EB-TH (WB-TH)*	144 (190)	24.3 (28.3)	D (D)	0.81 (0.88)
2. Roosevelt Avenue and Byron Avenue (Distance to Dominion Station – 530 m)	Traffic Signal	*SB-TH (NB-TH)*	14 (17)	20.0 (17.5)	A (A)	0.16 (0.11)
		EB-TH (WB-TH)	26 (36)	6.3 (6.8)	A (A)	0.28 (0.37)
3. Richmond Road and Churchill Avenue (Distance to Westboro Station – 650 m)	Traffic Signal	*NB-TH (NB-TH)*	31 (82)	31.1 (38.0)	D (C)	0.81 (0.70)
		SB-TH (SB-TH)	73 (72)	37.4 (35.2)	C (B)	0.78 (0.65)
4. Churchill Avenue North and Byron Avenue (Distance to Westboro Station – 800 m)	Traffic Signal	*EB-TH (WB-TH)*	53 (116)	19.1 (30.6)	A (C)	0.47 (0.77)
		NB-TH (SB-TH)	68 (90)	17.3 (27.1)	A (A)	0.51 (0.55)
		SB-LT (SB-LT)	2 (6)	4.8 (18.9)	A (A)	0.12 (0.08)
5. Churchill Avenue and Danforth Avenue (Distance to Westboro Station – 740 m)	Free Flow (Inbound only)	N/A				
6. Roosevelt Avenue and Danforth Avenue (Distance to Dominion Station – 500 m)	Minor Leg-STOP control	*WB (WB)*	2 (3)	9.3 (94)	A (A)	0.06 (0.11)

According to the City of Ottawaôs MMLOS guidelines, the minimum desirable vehicular LOS target (Auto-LOS) for each intersection that is within 600 meters (assumed to be walking distance) of a rapid transit stationò policy area is LOS ñEò[3]. All other intersectionsôtarget minimum desirable level of service is LOS ñDò. All of the intersection analyzed were found to be above these minimum desirable targets for level-of-service.

3 ñ*Multi-Modal Level of Service (MMLOS) Guidelines*ò, Supplement to the TIA Guidelines, City of Ottawa *September 2015*, IBI Group. Pages 21-24

Table 2-4 indicates the following:

- Intersections of Richmond Road and Roosevelt Avenue, as well as Richmond Road and Churchill Avenue North operate at an acceptable level of service ñDò;
- Intersection of Churchill Avenue North and Byron Avenue operates at a level of service ñCò during the afternoon peak hour of travel demand. The 95th percentile queues for southbound left turn were determined to be 6 meters (less than a single car length);
- All other study area intersections were found to operate at a level of service ñAò.

2.1.2.8 Existing Road Safety Information

Historical collision information was reviewed for each of the study area intersections and segments. The collision information was referenced from the City of Ottawa for the period 2016-through-2020. (See Appendix ñDò)

The collision information provided:

- the date and time of each collision;
- the type of collision (e.g., angle collision, rear-end);
- the severity of damage involved;
- vehicle details (truck, passenger vehicle, etc.);
- vehicle path/maneuver characteristics; and
- the number of pedestrians involved in the collision.

Table 2-5 provides a summary of both intersection and mid-block reported collision for the locations within the study area in terms of the type of collision and collision severity. As well, the table presents the calculated collision rate [as measured in number of collisions per million vehicles that travelled either through the intersection or along the corridor.] A standard collision rate based on the number of collisions- per-million-entering-vehicles (MEV) was calculated. The rate greater than 1.0 collisions/MEV was considered to indicate a potential concern.

Table 2-5 indicates the following:

- The Richmond Road and Churchill Avenue North 4-leg intersection was determined to have 25 collisions over a five-year period and exhibited an overall collision rate of 0.59 collisions/MEV which was considered to be within an acceptable range.
  - Å 32% of collisions were rear end collisions;
  - Å 28% of the collisions resulted in injuries; and
  - Å 12% of collisions involved a pedestrian.

- The Richmond Road and Roosevelt Avenue 4-leg intersection was determined to have 8 collisions over a five-year period and exhibited an overall collision rate of 0.27 collisions/MEV which was considered to be within an acceptable range.
  - Å 75% of collisions were rear end collisions; and
  - Å 13% of the collisions resulted in injuries.
- The Churchill Avenue North and Byron Avenue 4-leg intersection was determined to have 5 collisions over a five-year period and exhibited an overall collision rate of 0.17 collisions/MEV which was considered to be within an acceptable range.
  - Å 20% of collisions were rear end collisions;
  - Å 40% of collisions resulted in injuries; and
  - Å 20% of the collisions involved pedestrians.
- The Roosevelt Avenue / Byron Avenue, Churchill Avenue North / Danforth Avenue and Roosevelt Avenue / Danforth Avenue intersections all had less than 1 collision-per-year over the 5 year period evaluated. None of these collisions resulted in injuries.
- Additionally, there were five collisions reported along Danforth Avenue between Churchill Avenue North and Roosevelt Avenue. Two of these collisions were single-vehicle collisions. All collisions resulted in property damage only.
- Based on the available data that was reviewed, all 6 study area intersections presently exhibit an acceptable level of safety.

Table 2-5: Five -Year Collision History (January 1st, 2016 -to- December 31st, 2020)

Intersection / Mid-block Location		Richmond Road and Roosevelt Avenue	Roosevelt Avenue and Byron Avenue	Richmond Road and Churchill Avenue North	Churchill Avenue North and Byron Avenue	Churchill Avenue North and Danforth Avenue	Roosevelt Avenue and Danforth Avenue	Danforth Avenue between Churchill Avenue North and Roosevelt Avenue (mid-block)
Total Collisions		**8**	**3**	**25**	**5**	**1**	**1**	**5**
Collision Type	Rear End	6	-	8	1	-	-	-
	Single Vehicle	-	-	2	-	-	-	2
	Sideswipe	1	-	5	-	1	-	-
	Turning Movement	-	1	5	3	-	-	-
	Angle	-	-	2	-	-	-	2
	Pedestrian	-	-	3	1	-	-	
	Other	1	2	-	-	-	1	1
Collision Severity	Property Damage	7	3	18	3	1	1	5
	Non-Fatal Injury	1	-	7	2	-	-	-
	Fatal	-	-	-	-	-	-	-
Intersection AADT		**16,000**	**6,500**	**23,400**	**16,300**	**5,600**	**1,100**	**N/A**
Collision Rate per MEV		**0.27**	**0.25**	**0.59**	**0.17**	**0.10**	**0.5**	**N/A**

MEV = Millions of Vehicles Entering the Intersection or (mid-block) travelling along the corridor.
AADT = Average Annual Daily Traffic

2.1.3 Planned Conditions

2.1.3.1 Changes to the Study Area Transportation Network

The following projects were identified that could impact the transportation network:

- The City of Ottawaôs TMP affordable road network includes plans for transit signal priority and queue jump lanes at select intersections along Richmond Road, Wellington Street W and Somerset Street[4]. The project is meant to reduce travel time and improve reliability of OC Transpoôs Route 11 (formerly known as Route 2).
- The Byron Avenue, Highcroft Avenue, and Athlone Avenue integrated infrastructure replacement project is underway and is scheduled for completion by 2023. This project involves the sanitary sewer and watermain replacement along Byron Avenue, [between Churchill Avenue and Hilson Avenue (east of Churchill Avenue North and Byron Avenue intersection)]. The road is to be fully reinstated upon completion. Bike lanes along both sides of Byron Avenue are planned[5].
- Exhibit 2-17 illustrates OC Transpoôs LRT (O-Train Line 1) West Extension that is currently undergoing construction and is planned to enter service by 2025. The extension consists of two branches with 11 new stations includes two new termini. Existing Line 1 will be split up into two new lines: Line 1 ending at Algonquin station in Nepean and Line 3 ending at Moodie station in the greenbelt, just west of Crystal Bay / Britannia Village community.

The walking distance (See Exhibit 2-14)from the site:

- to the Westboro Station is 770m; and
- to the Kichi Sibi Station (presently known as Dominion Station) is 810m.

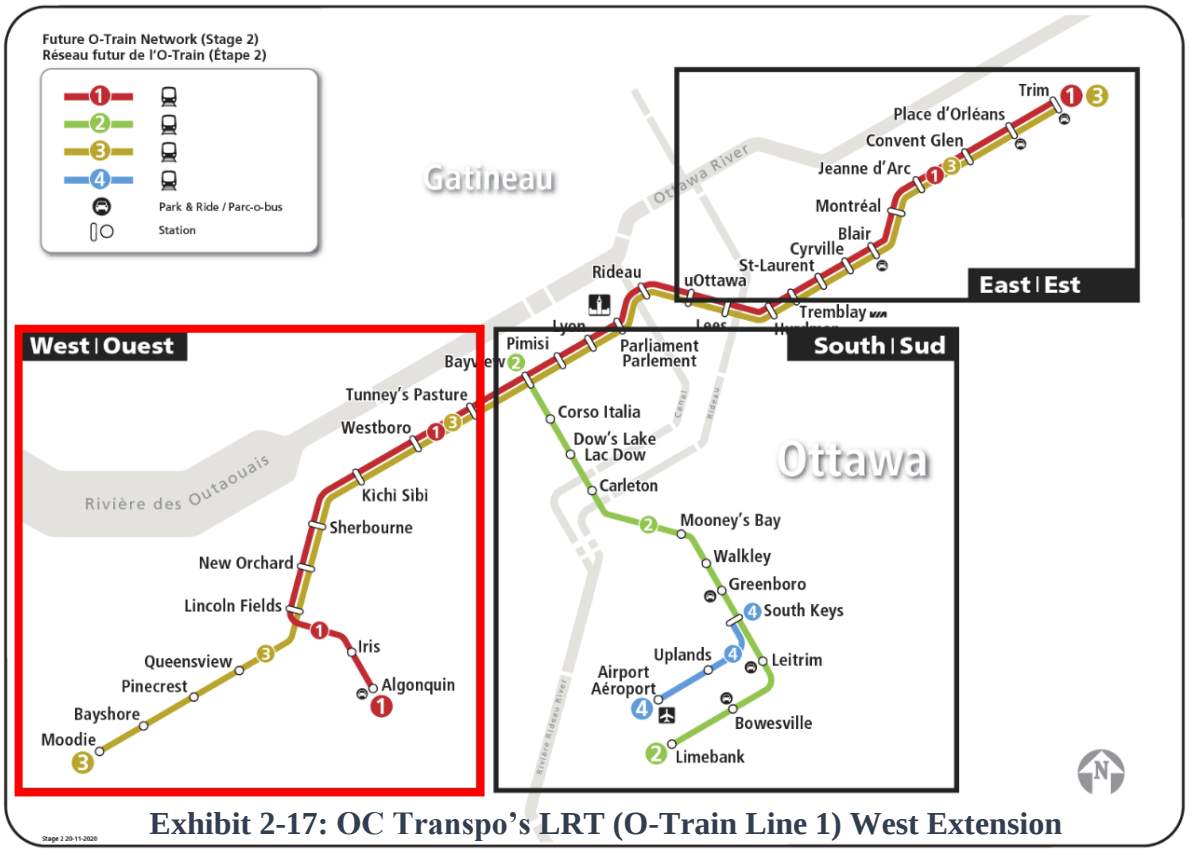


Exhibit 2-17: OC Transpo's LRT (O-Train Line 1) West Extension

4 ñ*Transportation Master Plan*ò, City of Ottawa, November 2013, pg.106
5 Byron Avenue, Highcroft Avenue, and Athlone Avenue integrated infrastructure replacement, City of Ottawa

2.1.3.2 Other Study Area Developments

A review of the City of Ottawaôs development applications website indicated 6 major development proposals with active applications adjacent to the study area that are anticipated to have an impact on the traffic volumes in the study areaôs transportation network. Exhibit 2-18 illustrates the location of the following adjacent development initiatives:

249-255 Richmond Road & 372 Tweedsmuir Avenue:

This is a proposal to redevelop an existing commercial retail and restaurant building with a mixed-use building containing 87 apartment units, 390 square meters of retail space and 240 meters of restaurant space. In terms of parking; 96 underground vehicle parking spaces along with 18 electric vehicle charging stations are proposed. The anticipated full occupancy year of the development is 2023. A TIA prepared by Novatech indicates that the redevelopment will add 18 vehicle trips during the morning peak hour of travel demand and remove 3 vehicle trips during the afternoon peak hour of travel demand.

319-327 Richmond Road, 380 Winona Avenue & 381 Churchill Avenue

This is a proposal to redevelop an existing car garage and maintenance shop, two retail stores and a residential apartment into a mixed-use building with 184 apartment units and 1,736 square meters of retail space. A total of 131 vehicle parking spots are proposed. The anticipated full occupancy year of the development is 2022. A TIA prepared by CGH indicates that the development will add 21 vehicle trips during the morning peak hour and 30 vehicle trips during the afternoon peak hour of travel demand.

335 Roosevelt Avenue

This is a proposal to construct two high-rise residential buildings with a total of 246 apartment units and two mid-rise residential buildings with a total of 17 apartment units. A total of 254 underground vehicle parking spots are proposed. The anticipated full occupancy year of the development is 2026. A TIA prepared by Novatech indicates that the development will add 15 vehicle trips during the morning peak hour and 16 vehicle trips during the afternoon peak hour of travel demand.

2050 Scott Street

This is a proposal to construct a mixed-use high-rise building with a total of 353 apartment units and 233 square meters of ground commercial space. 204 underground vehicle parking spots are proposed are proposed. The original full occupancy year of the development is stated as 2021. However, at the time of writing this report the construction at the site has not been started. Therefore, the new build-out year is assumed to be 2024. A TIA prepared by Parsons indicates that the development will add 35 vehicle trips during the morning peak hour and 35 vehicle trips during the afternoon peak hour of travel demand.

398-406 Roosevelt Avenue

This is a proposal to construct a mid-rise residential building with a total of 28 apartment units. A total of 49 underground vehicle parking stalls are proposed. The anticipated full occupancy year of the development is 2023. A TIA prepared by Parsons indicates that the development will add a negligible amount of vehicle trips during both the morning peak hour and afternoon peak hour of travel demand.

403 Richmond Road

This is a proposal to redevelop an existing funeral home and residential dwelling into a mixed-use high-rise building with a total of 141 apartment units and 491 square meters of ground commercial space. 150 underground vehicle parking spots are proposed are proposed. The occupancy year of the development is 2025. A TIA prepared by CIMA+ indicates that the development will add 19 vehicle trips during the morning peak hour and 21 vehicle trips during the afternoon peak hour of travel demand.

397-399 Richmond Road

This development would see two existing homes on Winston Avenue being replaced by a new single seven-storey building with ground-floor commercial space, 42 residential units on the above-ground floors and two underground parking levels. Vehicle access to the site will take place by way of the Winston Avenue with the nearest northern intersection being the Madison Avenue/Winston Avenue intersection.

Exhibit 2-18: Adjacent Development Initiatives

2.2 STUDY AREA AND TIME PERIODS

2.2.1 Study Area

A total of 6 intersections adjacent to the site were analyzed:

1. Richmond Road and Roosevelt Avenue (Traffic Signal Controlled);
2. Roosevelt Avenue and Byron Avenue (Traffic Signal Controlled);
3. Richmond Road and Churchill Avenue North (Traffic Signal Controlled);
4. Churchill Avenue North and Byron Avenue (Traffic Signal Controlled);
5. Churchill Avenue North and Danforth Avenue (Minor Leg STOP-Controlled);
6. Roosevelt Avenue and Danforth Avenue (Minor Leg STOP-Controlled);

2.2.2 Time Periods

The study provided an analysis of the weekday morning and afternoon peak hours of travel demand which represent the ñworst-caseò scenario in terms of weekday commuter traffic volumes.

2.2.3 Horizon Years

The proposed development, at this point in time, is anticipated to be achieved by the end of 2025. The analysis includes a period five-years-after-buildout, or 2030.

2.3 EXEMPTION REQUEST

Table 2-6 reflects exemptions/reductions in scope of work that were requested subsequent to the submission of the Scoping document. The following exemptions would ordinarily be contained within the Design Review and Network Impact Components of the TIA.

Table 2-6: Exemptions as per TIA Guidelines

Module	Element	Exemption Considerations	Include Module in TIA
Design Review Component			
4.1 Development Design	**4.1.3 New Street Networks**	There are no new streets being proposed as part of this development.	No
4.2 Parking	**4.2.2 Spillover Parking**	The parking supply at the time of writing is not anticipated to be deficient.	No
Network Impact Component			
4.5 through 4.9	**All Elements**	The development is not expected to generate more than 60 vehicle-trips during the peak hours of travel demand. Therefore, the "Network Impact" component of the TIA is not required.	No

3.0 SIGN-OFF

Should you have any questions or comments, please do not hesitate to contact us.

We await your feedback prior to proceeding to the next stage of TIA (Forecasting and Strategy).

Yours truly,

Mr. Arthur Gordon B.A. P.Eng
Principal Engineer
Castleglenn Consultants Inc.

Mr. Andrey Kirillov B.Eng , EIT
Transportation Planner
Castleglenn Consultants Inc.

APPENDIX A: CERTIFICATION FORM FOR TIA STUDY PROJECT MANAGER

Certification Form for TIA Study PM

TIA Plan Reports

On 14 June 2017, the Council of the City of Ottawa adopted new Transportation Impact Assessment (TIA) Guidelines. In adopting the guidelines, Council established a requirement for those preparing and delivering transportation impact assessments and reports to sign a letter of certification.

Individuals submitting TIA reports will be responsible for all aspects of development-related transportation assessment and reporting, and undertaking such work, in accordance and compliance with the City of Ottawa's Official Plan, the Transportation Master Plan and the Transportation Impact Assessment (2017) Guidelines.

By submitting the attached TIA report (and any associated documents) and signing this document, the individual acknowledges that s/he meets the four criteria listed below.

CERTIFICATION

- ☑ I have reviewed and have a sound understanding of the objectives, needs and requirements of the City of Ottawa's Official Plan, Transportation Master Plan and the Transportation Impact Assessment (2017) Guidelines;
- ☑ I have a sound knowledge of industry standard practice with respect to the preparation of transportation impact assessment reports, including multi modal level of service review;
- ☑ I have substantial experience (more than 5 years) in undertaking and delivering transportation impact studies (analysis, reporting and geometric design) with strong background knowledge in transportation planning, engineering or traffic operations; and
- ☑ I am either a licensed[1] or registered[2] professional in good standing, whose field of expertise
  - ☑ is either transportation engineering
  - ☑ or transportation planning.

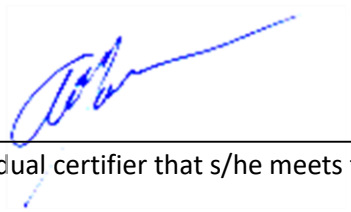
[1,2] License of registration body that oversees the profession is required to have a code of conduct and ethics guidelines that will ensure appropriate conduct and representation for transportation planning and/or transportation engineering works.

City Of Ottawa
Infrastructure Services and Community Sustainability
Planning and Growth Management
110 Laurier Avenue West, 4th fl.
Ottawa, ON K1P 1J1
Tel. : 613-580-2424
Fax: 613-560-6006

Dated at Ottawa (City) this 26th day of July, 20 22.

Name : Arthur E. Gordon

Professional title: Principal



Signature of individual certifier that s/he meets the above criteria

Office Contact Information (Please Print)
Address: 2460 Lancaster Road, Suite 200
City / Postal Code: K1B 4S5
Telephone / Extension: (613) 731-4052
E-Mail Address: agordon@castleglenn.ca

Stamp

APPENDIX B: SCREENING FORM

City of Ottawa 2017 TIA Guidelines Screening Form

1. Description of Proposed Development

Municipal Address	424 Churchill Avenue
Description of Location	7-storey residential building with 58 units
Land Use Classification	TM H(24) - Traditional Mainstreet
Development Size (units)	58 units
Development Size (m^2)	N/A
Number of Accesses and Locations	1 Access off Danforth Avenue
Phase of Development	1
Buildout Year	2025

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

2. Trip Generation Trigger

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

Land Use Type	Minimum Development Size
Single-family homes	40 units
Townhomes or apartments	90 units
Office	3,500 m^2
Industrial	5,000 m^2
Fast-food restaurant or coffee shop	100 m^2
Destination retail	1,000 m^2
Gas station or convenience market	75 m^2

** If the development has a land use type other than what is presented in the table above, estimates of person-trip generation may be made based on average trip generation characteristics represented in the current edition of the Institute of Transportation Engineers (ITE) Trip Generation Manual.*

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

3. Location Triggers

	Yes	No
Does the development propose a new driveway to a boundary street that is designated as part of the City's Transit Priority, Rapid Transit or Spine Bicycle Networks?		✓
Is the development in a Design Priority Area (DPA) or Transit-oriented Development (TOD) zone?*	✓	

**DPA and TOD are identified in the City of Ottawa Official Plan (DPA in Section 2.5.1 and Schedules A and B; TOD in Annex 6). See Chapter 4 for a list of City of Ottawa Planning and Engineering documents that support the completion of TIA).*

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

4. Safety Triggers

	Yes	No
Are posted speed limits on a boundary street are 80 km/hr or greater?		X
Are there any horizontal/vertical curvatures on a boundary street limits sight lines at a proposed driveway?		X
Is the proposed driveway 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)?	X	
Is the proposed driveway within auxiliary lanes of an intersection?		✓
Does the proposed driveway make use of an existing median break that serves an existing site?		X
Is there is a documented history of traffic operations or safety concerns on the boundary streets within 500 m of the development?		X
Does the development include a drive-thru facility?		X

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

5. Summary

	Yes	No
Does the development satisfy the Trip Generation Trigger?		✓
Does the development satisfy the Location Trigger?	X	
Does the development satisfy the Safety Trigger?	X	

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

APPENDIX C: SITE PLAN

424 Churchill Avenue North, Ottawa

Zoning Data:

Zone: TM H(24)

Adjacent zones:
north: TBC
south: TBC
east: TBC
west: TBC

Frontage: 25.34 (Churchill Ave. N.)

Proposed building area: ~~857.8~~ m² TBC
taken as greatest horizontal distance of all floors above grade

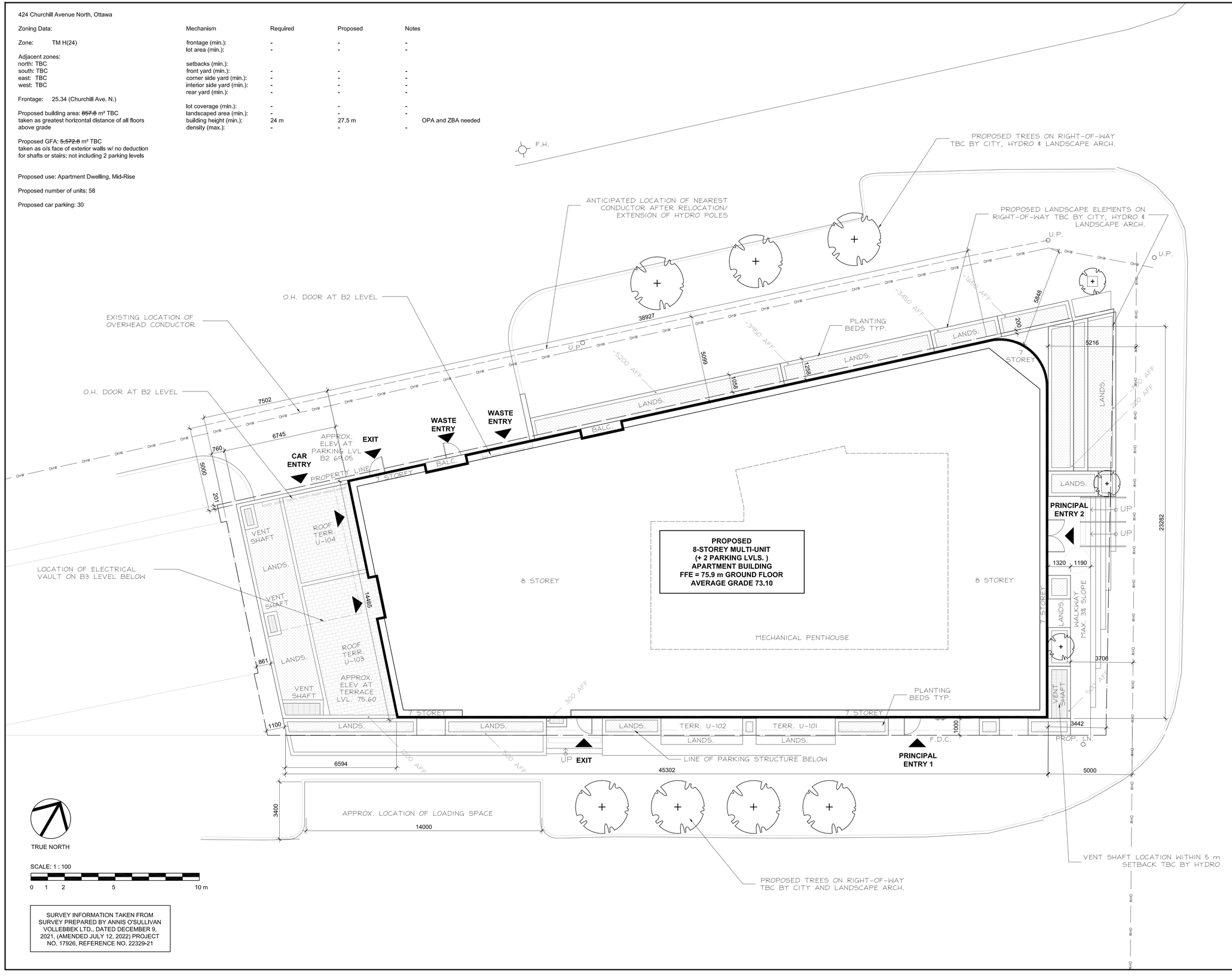
Proposed GFA: ~~5,572.8~~ m² TBC
taken as o/s face of exterior walls w/ no deduction for shafts or stairs; not including 2 parking levels

Proposed use: Apartment Dwelling, Mid-Rise

Proposed number of units: 58

Proposed car parking: 30

Mechanism	Required	Proposed	Notes
frontage (min.):	-	-	-
lot area (min.):	-	-	-
setbacks (min.):			
front yard (min.):	-	-	-
corner side yard (min.):	-	-	-
interior side yard (min.):	-	-	-
rear yard (min.):	-	-	-
lot coverage (min.):	-	-	-
landscaped area (min.):	-	-	-
building height (min.):	24 m	27.5 m	OPA and ZBA needed
density (max.):	-	-	-



TRUE NORTH

SCALE: 1 : 100

0 1 2 5 10 m

SURVEY INFORMATION TAKEN FROM SURVEY PREPARED BY ANNIS O'SULLIVAN VOLLEBBEK LTD., DATED DECEMBER 9, 2021, (AMENDED JULY 12, 2022) PROJECT NO. 17926, REFERENCE NO. 22329-21

CLIENT / OWNER :
GSI SLOUGH STREET PROPERTIES INC.
5-145 SELECT AVE.,
TORONTO, ON, M1V 5M8
416-292-9920

CONSULTING PLANNER :
FOTENN
396 COOPER STREET, SUITE 300
OTTAWA, ON K2P 2H7
613-730-5709

rev. / issue	description	date MM/DD/YY
05	ISSUED FOR COORDINATION	15 SEP. 2022
04	ISSUED FOR CLIENT REVIEW	31 AUG. 2022
03	ISSUED FOR COORDINATION	26 AUG. 2022
02	ISSUED FOR CITY PRE-CONSULTATION	21 JAN. 2022
01	ISSUED FOR CLIENT REVIEW	13 JAN. 2022

professional stamp

project north

Kristopher D. Benes, OAA, MRAIC, LEED AP

OPA open plan architects inc.
architecture | interiors | concepts

2305 HILLARY AVE. | OTTAWA | ON | K1H 7J2
613.883.5090 | info@openplan.ca

project

424 CHURCHILL AVE N.,
CONDOMINIUM

drawing

SITE PLAN

drawn: KDB	date: 2022-JAN-06
approved: KDB	revision: 0
project no.: 2109	scale: 1 : 100

drawing no.

A000

APPENDIX D: EXISTING TRAFFIC COUNTS, SIGNAL TIMINGS AND COLLISION DATA

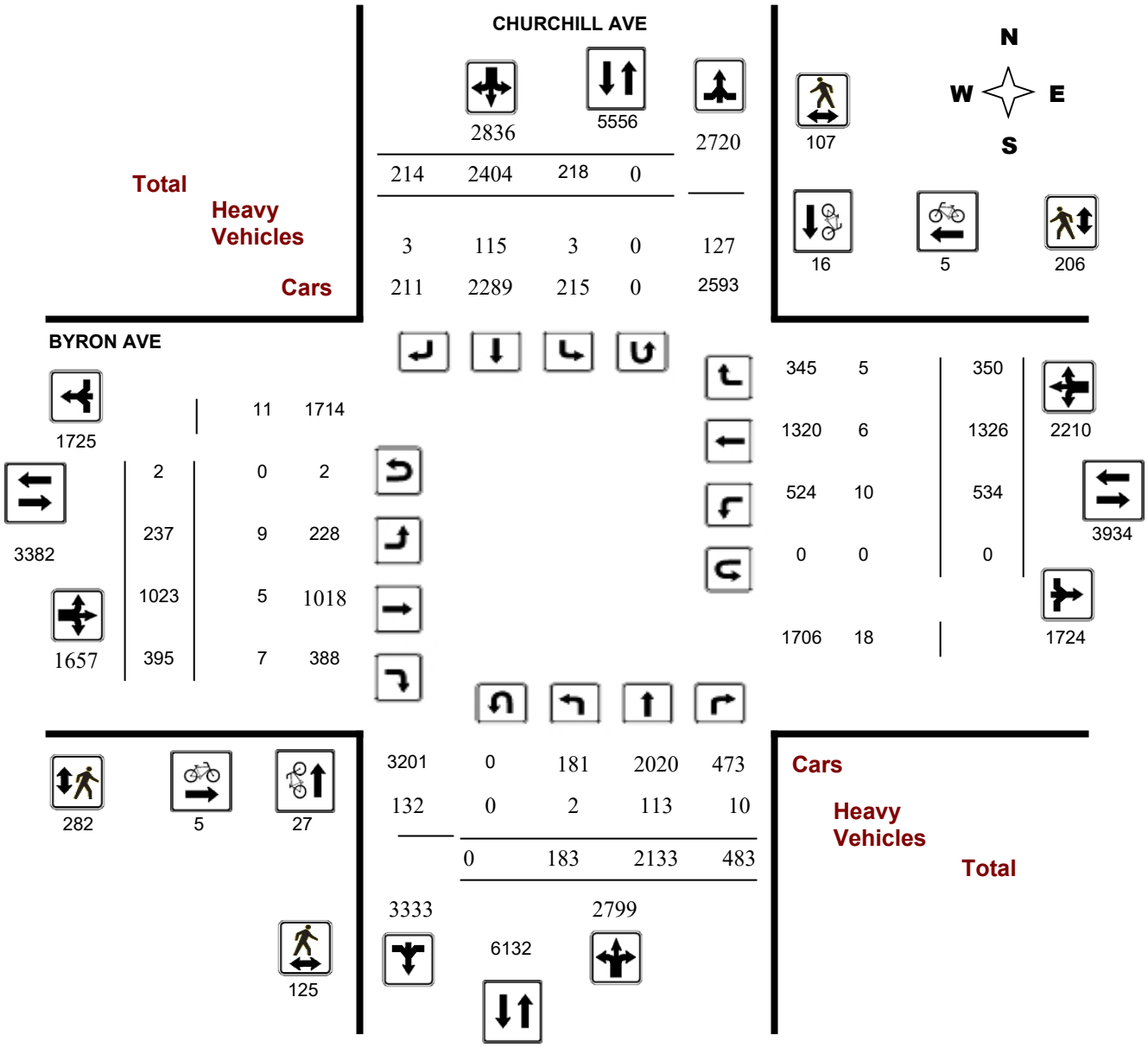
Transportation Services - Traffic Services

Turning Movement Count - Study Results

BYRON AVE @ CHURCHILL AVE

Survey Date: Thursday, January 23, 2020
Start Time: 07:00
WO No: 39387
Device: Miovision

Full Study Diagram



5472205 - THU JAN 23, 2020 - 8HRS - LORETTA

Transportation Services - Traffic Services

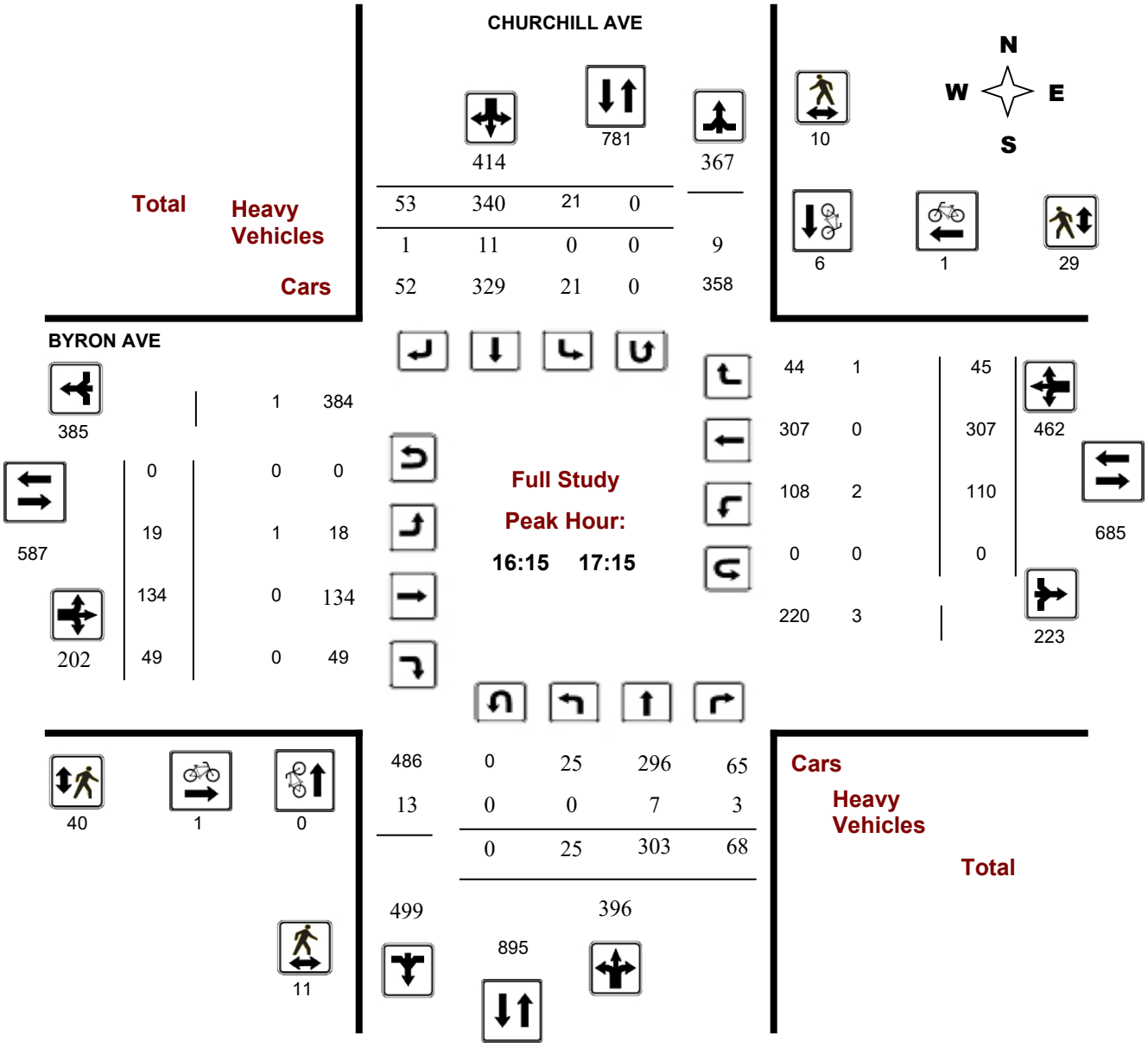
Turning Movement Count - Study Results

BYRON AVE @ CHURCHILL AVE

Survey Date: Thursday, January 23, 2020 **WO No:** 39387

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

Full Study Peak Hour Diagram



5472205 - THU JAN 23, 2020 - 8HRS - LORETTA

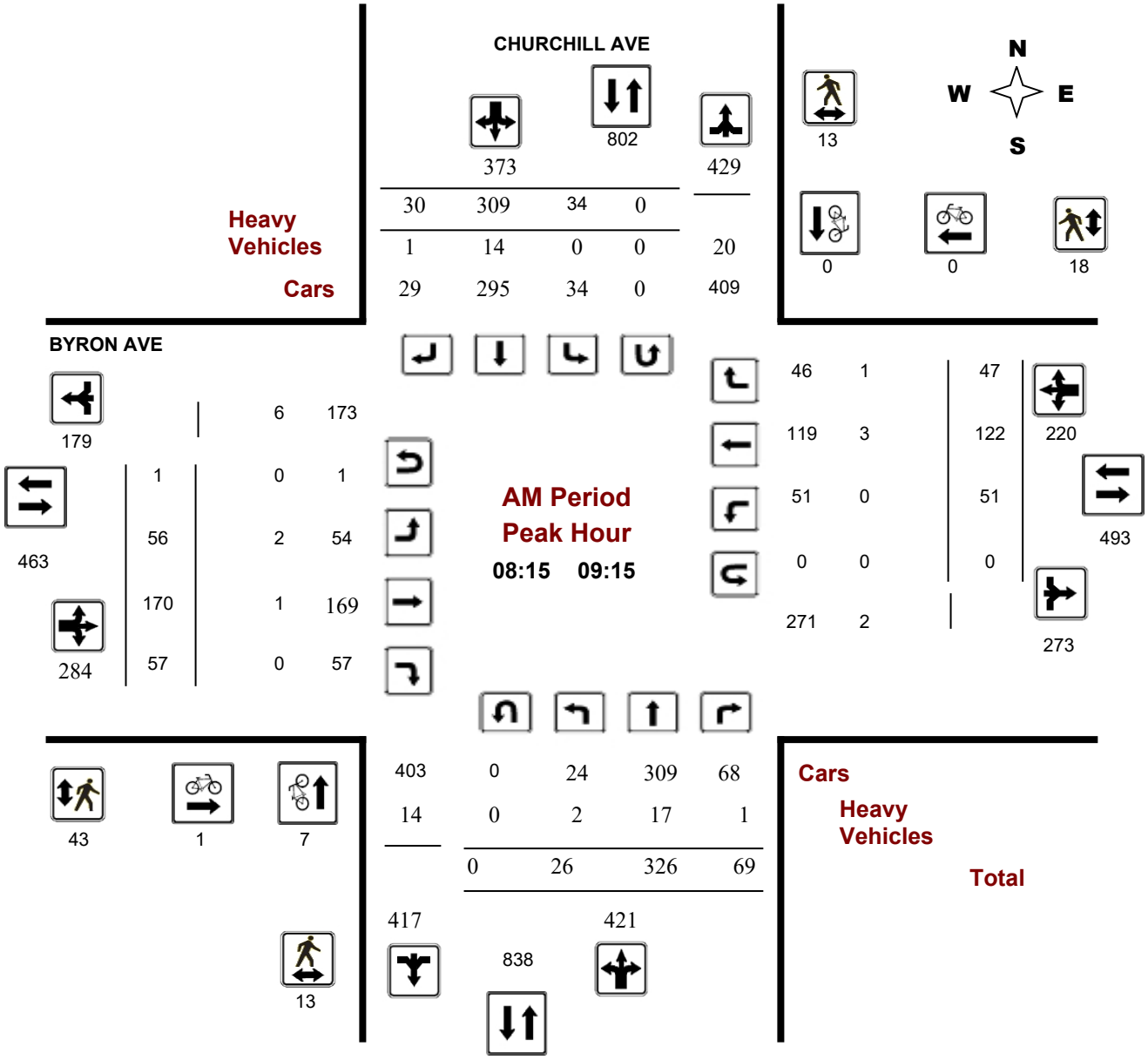
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

BYRON AVE @ CHURCHILL AVE

Survey Date: Thursday, January 23, 2020 **WO No:** 39387

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



Comments 5472205 - THU JAN 23, 2020 - 8HRS - LORETTA

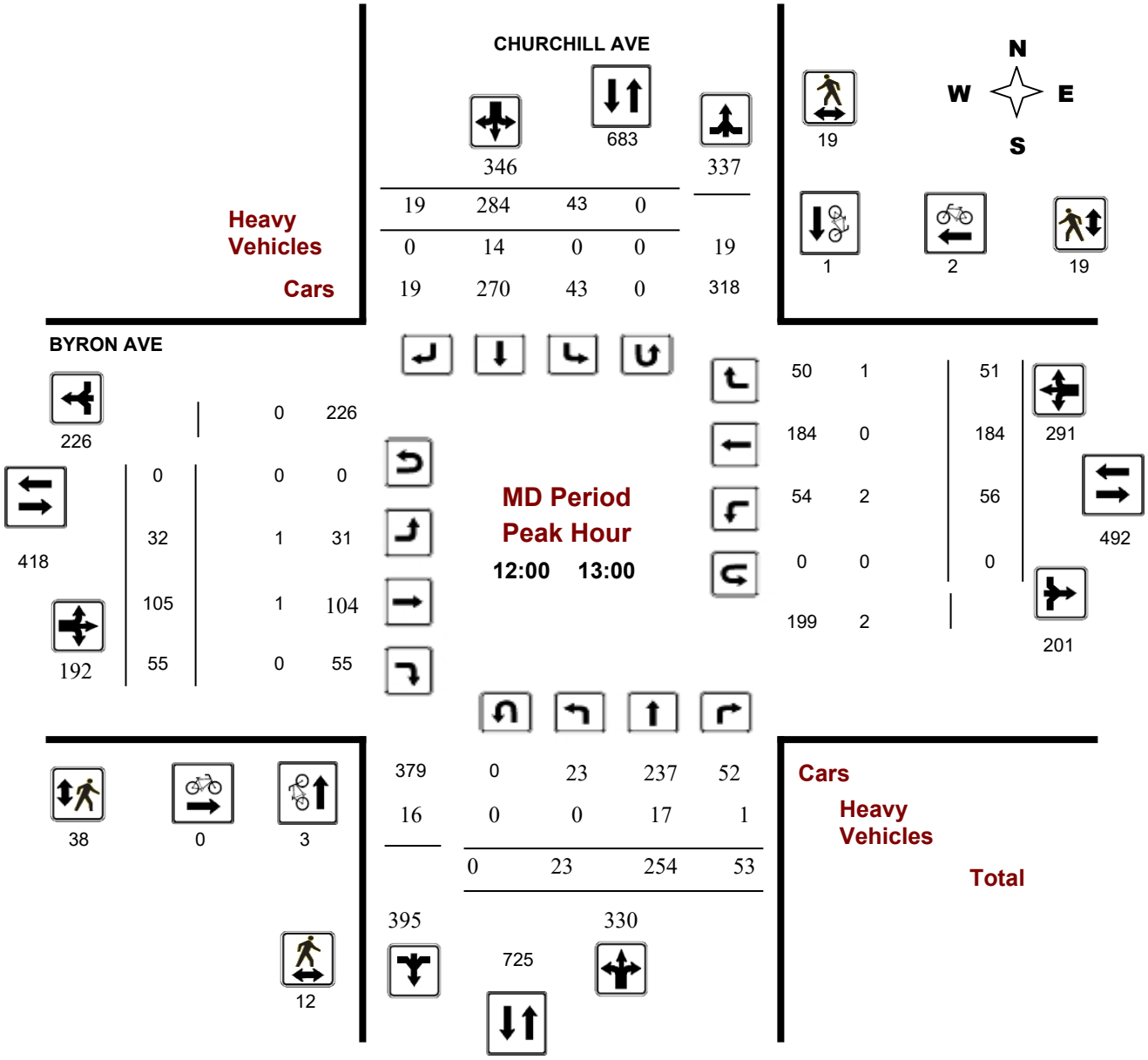
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

BYRON AVE @ CHURCHILL AVE

Survey Date: Thursday, January 23, 2020 **WO No:** 39387

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



Comments 5472205 - THU JAN 23, 2020 - 8HRS - LORETTA

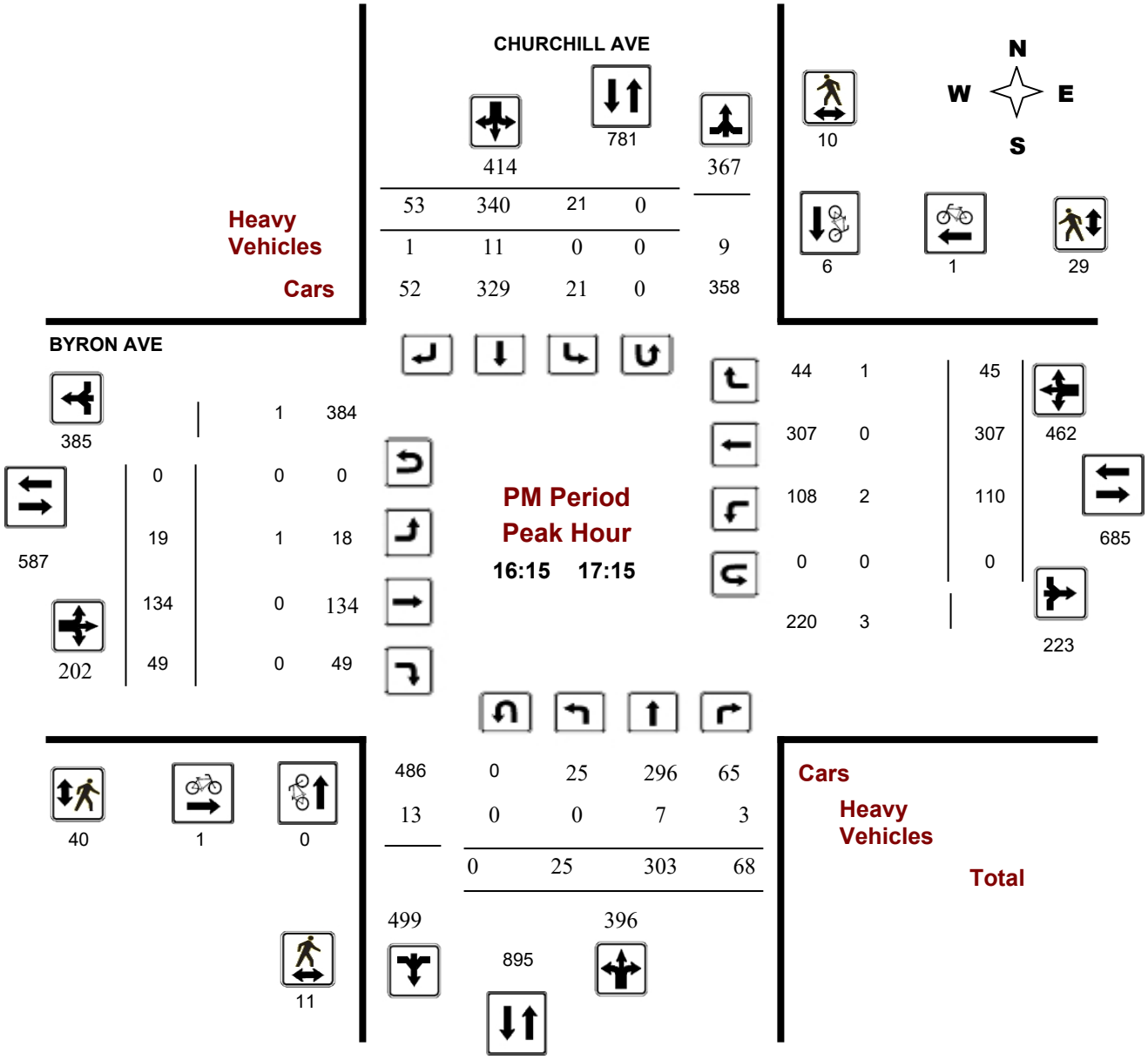
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

BYRON AVE @ CHURCHILL AVE

Survey Date: Thursday, January 23, 2020 **WO No:** 39387

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



Comments 5472205 - THU JAN 23, 2020 - 8HRS - LORETTA

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BYRON AVE @ CHURCHILL AVE

Survey Date: Thursday, January 23, 2020 **WO No:** 39387

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

Full Study Summary (8 HR Standard)

Survey Date: Thursday, January 23, 2020

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 2 Westbound: 0

AADT Factor

1.00

	CHURCHILL AVE									BYRON AVE									
	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	12	215	42	**269**	18	255	3	**276**	**545**	20	89	34	**143**	42	70	22	**134**	**277**	**822**
08:00 09:00	25	325	62	**412**	32	293	25	**350**	**762**	53	165	53	**271**	50	108	43	**201**	**472**	**1234**
09:00 10:00	23	273	65	**361**	19	257	25	**301**	**662**	36	125	51	**212**	32	99	48	**179**	**391**	**1053**
11:30 12:30	25	240	73	**338**	40	275	17	**332**	**670**	24	126	46	**196**	58	153	59	**270**	**466**	**1136**
12:30 13:30	23	240	49	**312**	39	284	26	**349**	**661**	27	105	48	**180**	56	192	39	**287**	**467**	**1128**
15:00 16:00	23	257	52	**332**	25	373	30	**428**	**760**	24	150	70	**244**	85	213	46	**344**	**588**	**1348**
16:00 17:00	22	293	72	**387**	22	346	50	**418**	**805**	25	122	46	**193**	111	280	49	**440**	**633**	**1438**
17:00 18:00	30	290	68	**388**	23	321	38	**382**	**770**	28	141	47	**216**	100	211	44	**355**	**571**	**1341**
Sub Total	183	2133	483	**2799**	218	2404	214	**2836**	**5635**	237	1023	395	**1655**	534	1326	350	**2210**	**3865**	**9500**
U Turns				**0**				**0**	**0**				**2**				**0**	**2**	**2**
Total	183	2133	483	**2799**	218	2404	214	**2836**	**5635**	237	1023	395	**1657**	534	1326	350	**2210**	**3867**	**9502**
EQ 12Hr	254	2965	671	**3891**	303	3342	297	**3942**	**7833**	329	1422	549	**2303**	742	1843	486	**3072**	**5375**	**13208**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	240	2794	633	**3667**	286	3149	280	**3715**	**7833**	310	1340	517	**2171**	700	1737	458	**2895**	**5375**	**13208**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**1**					
AVG 24Hr	314	3660	829	**4803**	374	4126	367	**4867**	**9670**	407	1756	678	**2844**	916	2276	601	**3793**	**6637**	**16307**
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

BYRON AVE @ CHURCHILL AVE

Survey Date: Thursday, January 23, 2020 **WO No:** 39387

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

Full Study 15 Minute Increments

		CHURCHILL AVE									BYRON AVE									
		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	40	10	52	4	53	0	57	4	1	15	7	23	5	3	7	15	4	147
07:15	07:30	0	32	7	39	5	56	1	62	4	4	31	10	45	6	20	1	27	4	173
07:30	07:45	6	62	11	79	3	64	2	69	10	3	17	12	32	17	15	6	38	10	218
07:45	08:00	4	81	14	99	6	82	0	88	7	12	26	5	43	14	32	8	54	7	284
08:00	08:15	7	80	9	96	5	66	6	77	7	8	38	8	54	10	12	9	31	7	258
08:15	08:30	6	89	14	109	16	83	3	102	7	13	38	15	66	10	17	15	42	7	319
08:30	08:45	5	85	22	112	8	67	11	86	8	20	45	14	79	15	31	9	55	8	332
08:45	09:00	7	71	17	95	3	77	5	85	8	12	44	16	73	15	48	10	73	8	326
09:00	09:15	8	81	16	105	7	82	11	100	12	11	43	12	66	11	26	13	50	12	321
09:15	09:30	2	62	15	79	5	69	5	79	16	14	37	13	64	8	24	12	44	16	266
09:30	09:45	4	71	14	89	4	53	7	64	12	4	18	16	38	4	19	9	32	12	223
09:45	10:00	9	59	20	88	3	53	2	58	10	7	27	10	44	9	30	14	53	10	243
11:30	11:45	6	54	27	87	6	75	3	84	19	2	37	9	48	11	24	14	49	19	268
11:45	12:00	7	71	20	98	9	56	7	72	13	6	37	9	52	17	42	14	73	13	295
12:00	12:15	6	62	15	83	14	77	2	93	12	9	26	13	48	15	43	16	74	12	298
12:15	12:30	6	53	11	70	11	67	5	83	5	7	26	15	48	15	44	15	74	5	275
12:30	12:45	5	68	11	84	11	74	4	89	10	7	28	14	49	13	34	8	55	10	277
12:45	13:00	6	71	16	93	7	66	8	81	5	9	25	13	47	13	63	12	88	5	309
13:00	13:15	7	52	11	70	6	77	10	93	9	5	28	11	44	17	45	8	70	9	277
13:15	13:30	5	49	11	65	15	67	4	86	11	6	24	10	40	13	50	11	74	11	265
15:00	15:15	5	65	11	81	7	103	4	114	9	5	45	23	73	18	47	12	77	9	345
15:15	15:30	5	64	10	79	5	99	8	112	5	8	50	17	76	21	55	14	90	5	357
15:30	15:45	7	60	18	85	9	81	7	97	3	5	25	14	44	18	50	9	77	3	303
15:45	16:00	6	68	13	87	4	90	11	105	3	6	30	16	52	28	61	11	100	3	344
16:00	16:15	10	71	25	106	4	91	5	100	5	7	30	11	48	25	53	13	91	5	345
16:15	16:30	7	82	17	106	6	73	18	97	8	7	33	16	56	30	78	9	117	8	376
16:30	16:45	3	73	14	90	6	93	13	112	7	4	23	10	37	25	77	13	115	7	354
16:45	17:00	2	67	16	85	6	89	14	109	5	7	36	9	52	31	72	14	117	5	363
17:00	17:15	13	81	21	115	3	85	8	96	2	1	42	14	57	24	80	9	113	2	381
17:15	17:30	5	76	14	95	4	86	10	100	4	10	35	9	54	28	48	7	83	4	332
17:30	17:45	7	63	16	86	8	80	10	98	5	8	36	13	57	18	52	13	83	5	324
17:45	18:00	5	70	17	92	8	70	10	88	1	9	28	11	48	30	31	15	76	1	304
Total:		183	2133	483	2799	218	2404	214	2836	246	237	1023	395	1657	534	1326	350	2210	246	9,502

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BYRON AVE @ CHURCHILL AVE

Survey Date: Thursday, January 23, 2020 **WO No:** 39387

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

Full Study Cyclist Volume

Time Period		CHURCHILL AVE			BYRON AVE			
		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00	07:15	1	0	1	0	0	0	1
07:15	07:30	1	1	2	0	0	0	2
07:30	07:45	1	0	1	1	1	2	3
07:45	08:00	4	0	4	0	0	0	4
08:00	08:15	6	0	6	0	0	0	6
08:15	08:30	4	0	4	0	0	0	4
08:30	08:45	1	0	1	1	0	1	2
08:45	09:00	0	0	0	0	0	0	0
09:00	09:15	2	0	2	0	0	0	2
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	1	0	1	0	0	0	1
11:30	11:45	0	0	0	0	0	0	0
11:45	12:00	1	0	1	0	0	0	1
12:00	12:15	2	1	3	0	0	0	3
12:15	12:30	0	0	0	0	0	0	0
12:30	12:45	0	0	0	0	1	1	1
12:45	13:00	1	0	1	0	1	1	2
13:00	13:15	0	0	0	0	0	0	0
13:15	13:30	0	0	0	0	0	0	0
15:00	15:15	0	0	0	0	0	0	0
15:15	15:30	0	0	0	0	0	0	0
15:30	15:45	0	0	0	0	0	0	0
15:45	16:00	0	1	1	1	0	1	2
16:00	16:15	0	1	1	0	0	0	1
16:15	16:30	0	0	0	0	0	0	0
16:30	16:45	0	1	1	0	0	0	1
16:45	17:00	0	0	0	0	0	0	0
17:00	17:15	0	5	5	1	1	2	7
17:15	17:30	0	3	3	0	0	0	3
17:30	17:45	0	3	3	0	1	1	4
17:45	18:00	2	0	2	0	0	0	2
Total		27	16	**43**	5	5	10	53

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BYRON AVE @ CHURCHILL AVE

Survey Date: Thursday, January 23, 2020 **WO No:** 39387

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

Full Study Pedestrian Volume

	CHURCHILL AVE			BYRON AVE			
Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00 07:15	0	0	**0**	2	1	**3**	**3**
07:15 07:30	6	0	**6**	1	6	**7**	**13**
07:30 07:45	5	3	**8**	7	3	**10**	**18**
07:45 08:00	11	5	**16**	22	5	**27**	**43**
08:00 08:15	18	6	**24**	18	6	**24**	**48**
08:15 08:30	2	5	**7**	12	2	**14**	**21**
08:30 08:45	6	0	**6**	11	6	**17**	**23**
08:45 09:00	2	3	**5**	13	4	**17**	**22**
09:00 09:15	3	5	**8**	7	6	**13**	**21**
09:15 09:30	2	4	**6**	3	7	**10**	**16**
09:30 09:45	2	2	**4**	3	3	**6**	**10**
09:45 10:00	6	6	**12**	7	7	**14**	**26**
11:30 11:45	3	2	**5**	6	1	**7**	**12**
11:45 12:00	4	2	**6**	10	7	**17**	**23**
12:00 12:15	4	9	**13**	8	2	**10**	**23**
12:15 12:30	3	5	**8**	10	4	**14**	**22**
12:30 12:45	3	1	**4**	13	3	**16**	**20**
12:45 13:00	2	4	**6**	7	10	**17**	**23**
13:00 13:15	2	1	**3**	6	7	**13**	**16**
13:15 13:30	3	2	**5**	4	6	**10**	**15**
15:00 15:15	2	2	**4**	8	10	**18**	**22**
15:15 15:30	2	5	**7**	13	6	**19**	**26**
15:30 15:45	4	10	**14**	13	17	**30**	**44**
15:45 16:00	4	4	**8**	7	7	**14**	**22**
16:00 16:15	5	3	**8**	10	7	**17**	**25**
16:15 16:30	2	4	**6**	18	10	**28**	**34**
16:30 16:45	2	1	**3**	6	5	**11**	**14**
16:45 17:00	4	3	**7**	11	11	**22**	**29**
17:00 17:15	3	2	**5**	5	3	**8**	**13**
17:15 17:30	8	2	**10**	8	13	**21**	**31**
17:30 17:45	1	2	**3**	9	10	**19**	**22**
17:45 18:00	1	4	**5**	4	11	**15**	**20**
Total	125	107	**232**	282	206	**488**	**720**

5472205 - THU JAN 23, 2020 - 8HRS - LORETTA

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BYRON AVE @ CHURCHILL AVE

Survey Date: Thursday, January 23, 2020 **WO No:** 39387

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

Full Study Heavy Vehicles

		CHURCHILL AVE									BYRON AVE									
		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	1	**3**	0	1	0	**1**	**4**	0	0	1	**1**	0	0	0	**0**	**1**	**5**
07:15	07:30	0	2	0	**2**	0	2	0	**2**	**4**	1	0	0	**1**	0	1	0	**1**	**2**	**6**
07:30	07:45	0	6	0	**6**	0	4	0	**4**	**10**	1	0	1	**2**	3	0	0	**3**	**5**	**15**
07:45	08:00	0	3	0	**3**	0	4	0	**4**	**7**	0	0	1	**1**	0	0	0	**0**	**1**	**8**
08:00	08:15	0	6	0	**6**	0	1	0	**1**	**7**	0	0	0	**0**	0	0	0	**0**	**0**	**7**
08:15	08:30	1	2	0	**3**	0	4	0	**4**	**7**	0	0	0	**0**	0	1	0	**1**	**1**	**8**
08:30	08:45	0	7	0	**7**	0	1	0	**1**	**8**	2	0	0	**2**	0	0	0	**0**	**2**	**10**
08:45	09:00	1	4	1	**6**	0	1	1	**2**	**8**	0	0	0	**0**	0	0	1	**1**	**1**	**9**
09:00	09:15	0	4	0	**4**	0	8	0	**8**	**12**	0	1	0	**1**	0	2	0	**2**	**3**	**15**
09:15	09:30	0	8	0	**8**	0	8	0	**8**	**16**	0	0	0	**0**	0	0	0	**0**	**0**	**16**
09:30	09:45	0	10	0	**10**	0	2	0	**2**	**12**	0	0	0	**0**	0	0	1	**1**	**1**	**13**
09:45	10:00	0	5	0	**5**	0	5	0	**5**	**10**	1	0	1	**2**	0	0	0	**0**	**2**	**12**
11:30	11:45	0	5	2	**7**	0	12	0	**12**	**19**	0	0	0	**0**	0	0	0	**0**	**0**	**19**
11:45	12:00	0	10	0	**10**	0	3	0	**3**	**13**	0	0	1	**1**	0	1	0	**1**	**2**	**15**
12:00	12:15	0	6	0	**6**	0	6	0	**6**	**12**	0	0	0	**0**	0	0	0	**0**	**0**	**12**
12:15	12:30	0	0	1	**1**	0	4	0	**4**	**5**	1	1	0	**2**	0	0	0	**0**	**2**	**7**
12:30	12:45	0	7	0	**7**	0	3	0	**3**	**10**	0	0	0	**0**	2	0	0	**2**	**2**	**12**
12:45	13:00	0	4	0	**4**	0	1	0	**1**	**5**	0	0	0	**0**	0	0	1	**1**	**1**	**6**
13:00	13:15	0	4	0	**4**	1	4	0	**5**	**9**	0	0	0	**0**	0	0	0	**0**	**0**	**9**
13:15	13:30	0	0	0	**0**	1	10	0	**11**	**11**	0	1	0	**1**	0	0	1	**1**	**2**	**13**
15:00	15:15	0	3	0	**3**	1	5	0	**6**	**9**	1	1	0	**2**	1	0	0	**1**	**3**	**12**
15:15	15:30	0	1	0	**1**	0	4	0	**4**	**5**	0	1	0	**1**	0	0	0	**0**	**1**	**6**
15:30	15:45	0	0	0	**0**	0	2	1	**3**	**3**	0	0	0	**0**	0	0	0	**0**	**0**	**3**
15:45	16:00	0	1	1	**2**	0	1	0	**1**	**3**	0	0	1	**1**	0	0	0	**0**	**1**	**4**
16:00	16:15	0	2	1	**3**	0	2	0	**2**	**5**	1	0	1	**2**	2	0	0	**2**	**4**	**9**
16:15	16:30	0	3	1	**4**	0	3	1	**4**	**8**	1	0	0	**1**	1	0	0	**1**	**2**	**10**
16:30	16:45	0	1	1	**2**	0	5	0	**5**	**7**	0	0	0	**0**	1	0	0	**1**	**1**	**8**
16:45	17:00	0	1	1	**2**	0	3	0	**3**	**5**	0	0	0	**0**	0	0	1	**1**	**1**	**6**
17:00	17:15	0	2	0	**2**	0	0	0	**0**	**2**	0	0	0	**0**	0	0	0	**0**	**0**	**2**
17:15	17:30	0	2	0	**2**	0	2	0	**2**	**4**	0	0	0	**0**	0	1	0	**1**	**1**	**5**
17:30	17:45	0	2	0	**2**	0	3	0	**3**	**5**	0	0	0	**0**	0	0	0	**0**	**0**	**5**
17:45	18:00	0	0	0	**0**	0	1	0	**1**	**1**	0	0	0	**0**	0	0	0	**0**	**0**	**1**
Total:	None	2	113	10	**125**	3	115	3	**121**	**246**	9	5	7	**21**	10	6	5	**21**	**42**	**288**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BYRON AVE @ CHURCHILL AVE

Survey Date: Thursday, January 23, 2020 **WO No:** 39387

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

Full Study 15 Minute U-Turn Total

		CHURCHILL AVE		BYRON AVE		
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	1	0	1
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	1	0	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	0	0	0
16:30	16:45	0	0	0	0	0
16:45	17:00	0	0	0	0	0
17:00	17:15	0	0	0	0	0
17:15	17:30	0	0	0	0	0
17:30	17:45	0	0	0	0	0
17:45	18:00	0	0	0	0	0
Total		0	0	2	0	2

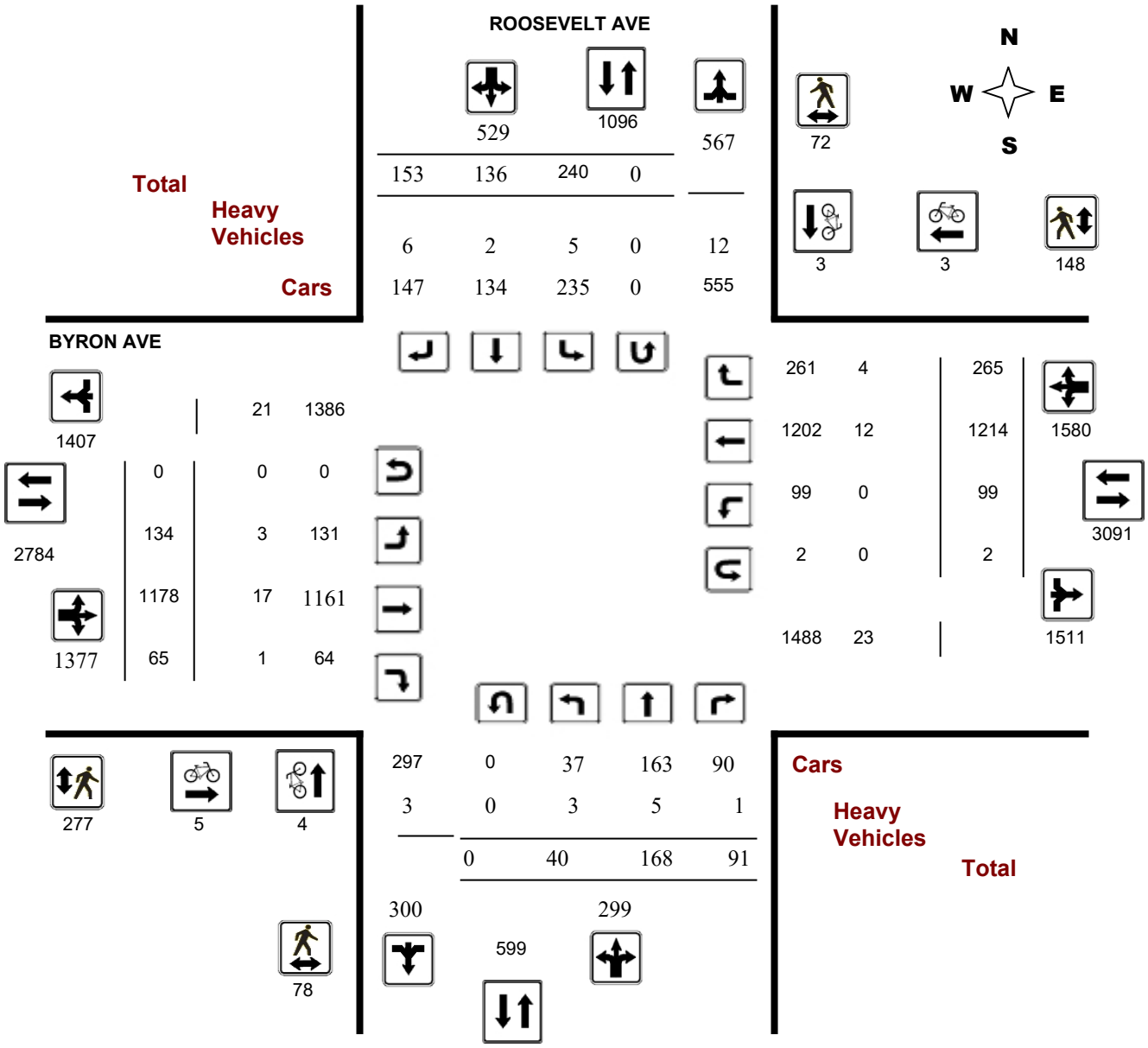
Transportation Services - Traffic Services

Turning Movement Count - Study Results

BYRON AVE @ ROOSEVELT AVE

Survey Date: Wednesday, February 27, 2019
Start Time: 07:00
WO No: 38395
Device: Miovision

Full Study Diagram



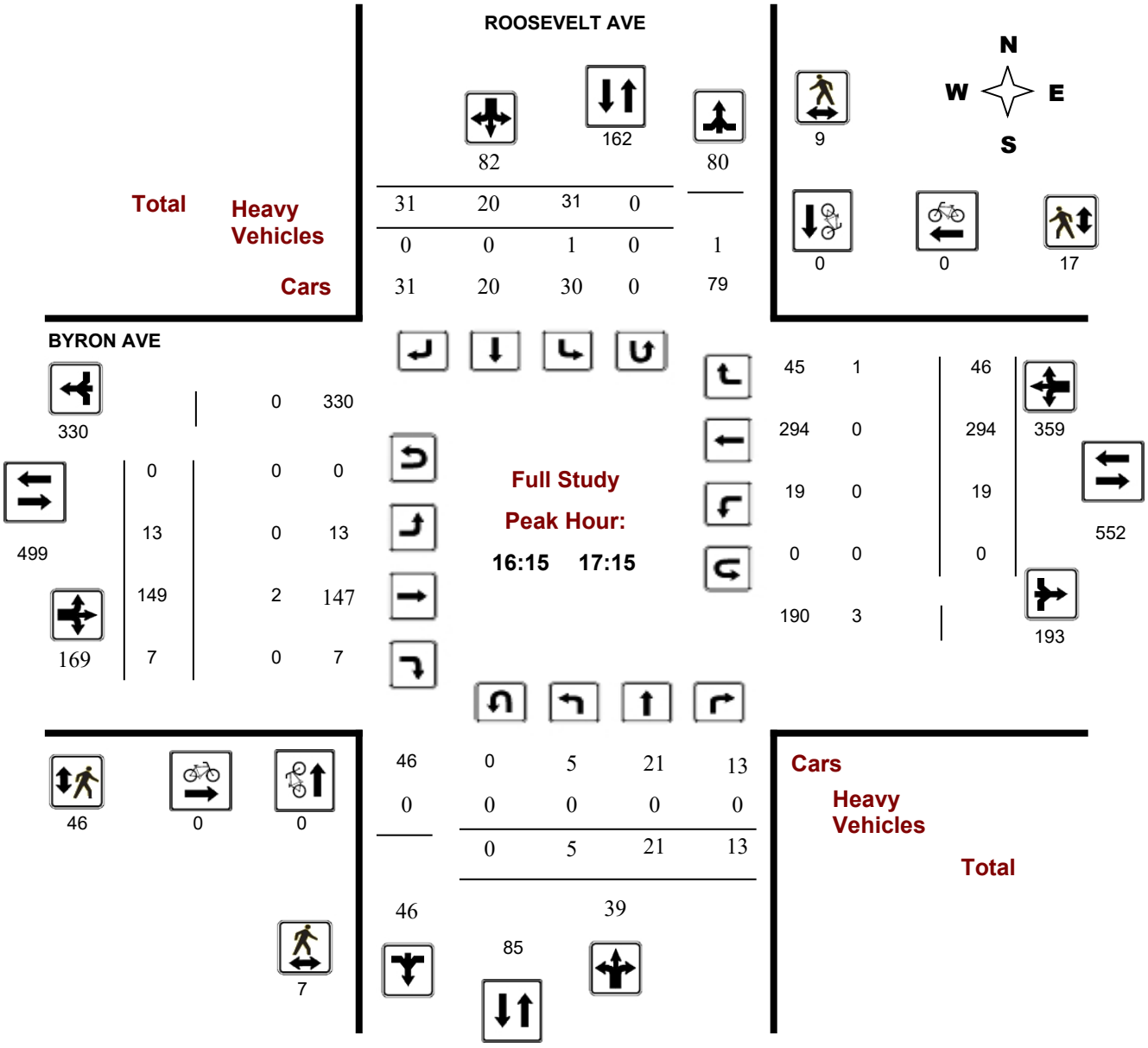
Transportation Services - Traffic Services

Turning Movement Count - Study Results

BYRON AVE @ ROOSEVELT AVE

Survey Date: Wednesday, February 27, 2019
Start Time: 07:00
WO No: 38395
Device: Miovision

Full Study Peak Hour Diagram



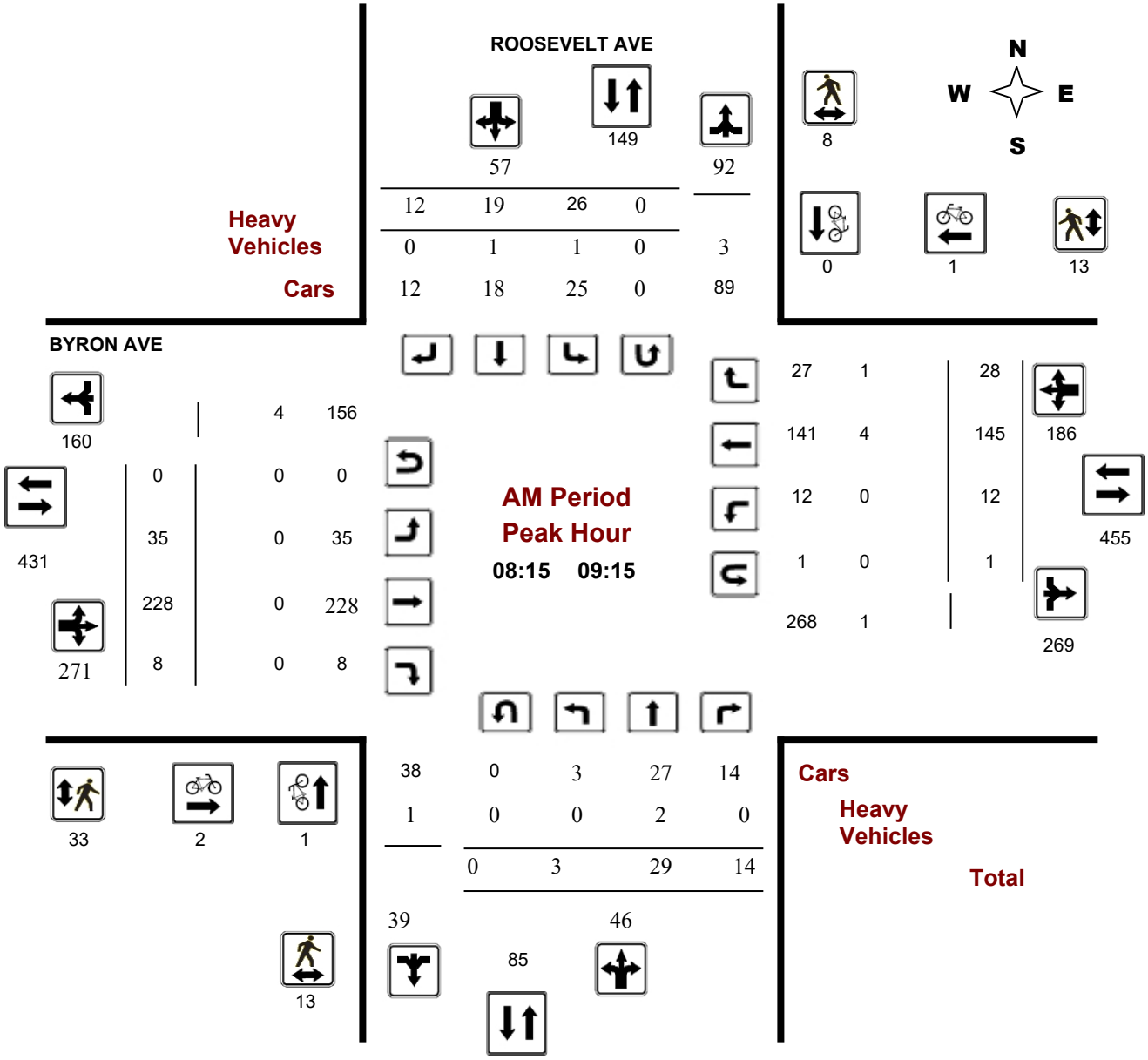
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

BYRON AVE @ ROOSEVELT AVE

Survey Date: Wednesday, February 27, 2019 **WO No:** 38395

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



Comments

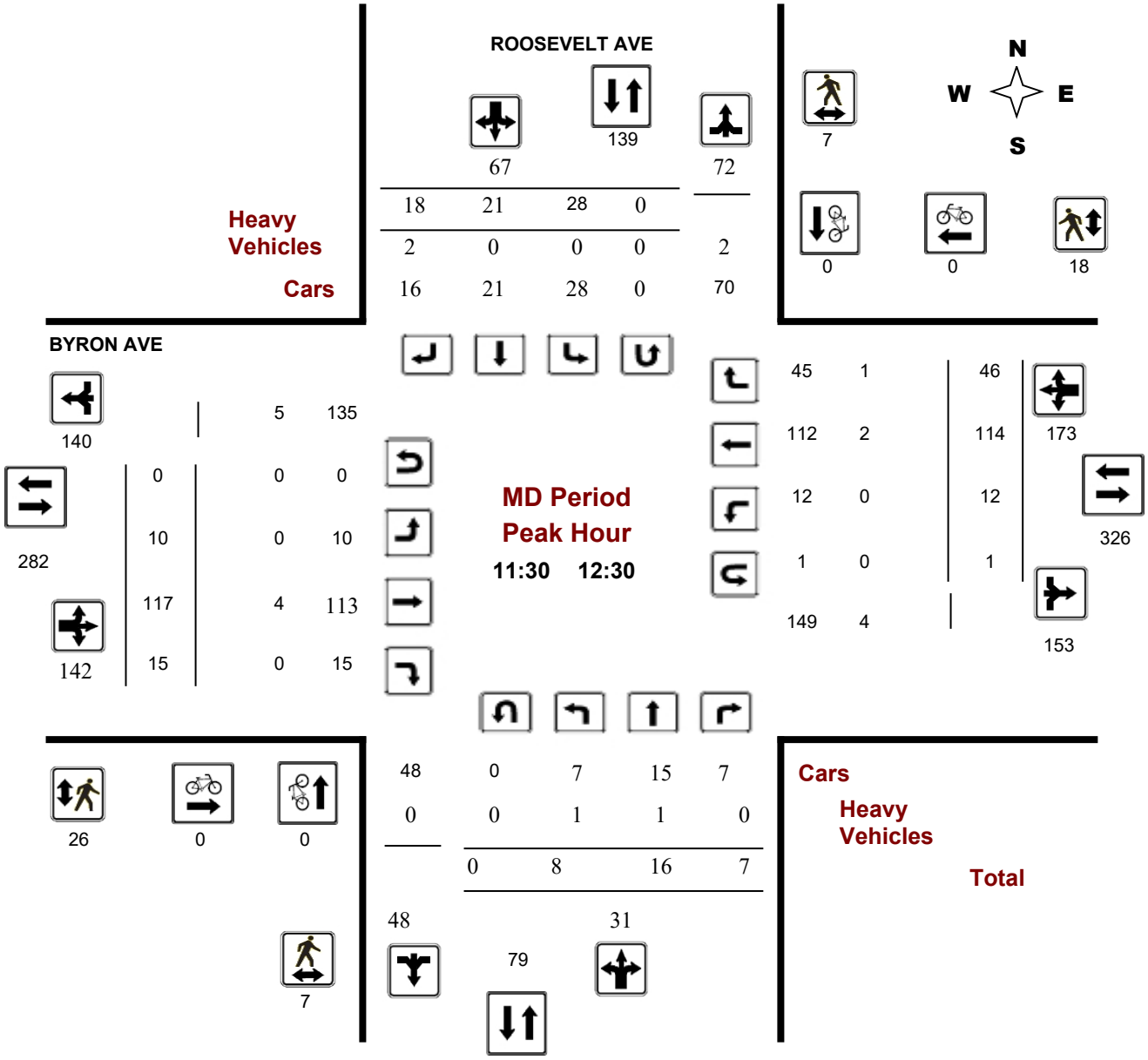
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

BYRON AVE @ ROOSEVELT AVE

Survey Date: Wednesday, February 27, 2019 **WO No:** 38395

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



Comments

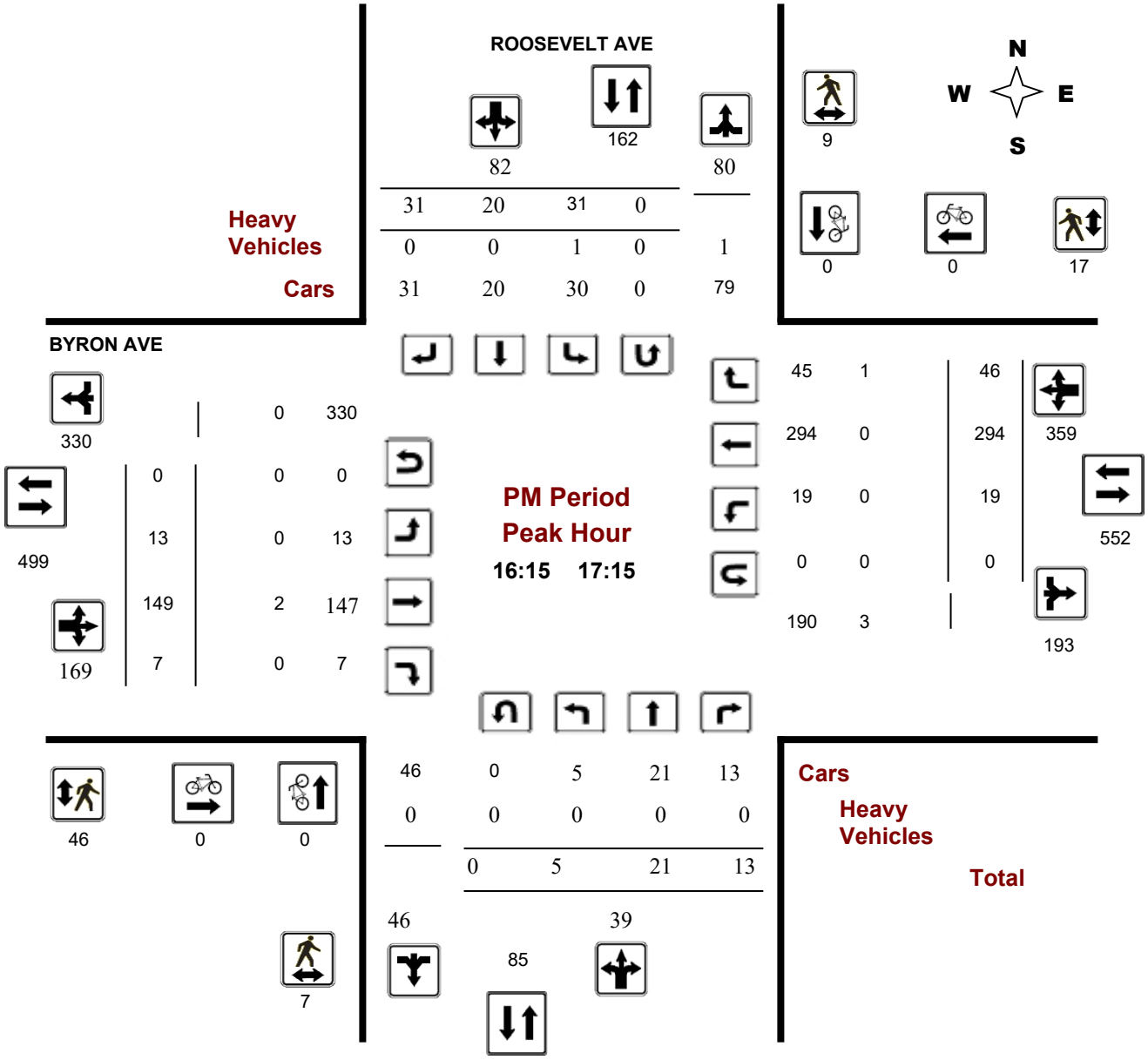
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

BYRON AVE @ ROOSEVELT AVE

Survey Date: Wednesday, February 27, 2019 **WO No:** 38395

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



Comments

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BYRON AVE @ ROOSEVELT AVE

Survey Date: Wednesday, February 27, 2019 **WO No:** 38395

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

Full Study Summary (8 HR Standard)

Survey Date: Wednesday, February 27, 2019

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 0 Westbound: 2

AADT Factor

1.00

	ROOSEVELT AVE								BYRON AVE									
	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	3	19	17	**39**	14	9	7	**30**	**69**	9	161	7	**177**	5	54	17	**76**	**253**	**322**
08:00 09:00	3	32	17	**52**	27	15	12	**54**	**106**	28	247	2	**277**	10	138	28	**176**	**453**	**559**
09:00 10:00	0	25	13	**38**	21	15	12	**48**	**86**	28	152	12	**192**	12	104	30	**146**	**338**	**424**
11:30 12:30	8	16	7	**31**	28	21	18	**67**	**98**	10	117	15	**142**	12	114	46	**172**	**314**	**412**
12:30 13:30	11	18	6	**35**	37	20	24	**81**	**116**	17	101	4	**122**	13	111	30	**154**	**276**	**392**
15:00 16:00	8	14	9	**31**	38	19	22	**79**	**110**	16	133	5	**154**	12	189	31	**232**	**386**	**496**
16:00 17:00	6	23	9	**38**	30	21	29	**80**	**118**	12	137	12	**161**	14	253	47	**314**	**475**	**593**
17:00 18:00	1	21	13	**35**	45	16	29	**90**	**125**	14	130	8	**152**	21	251	36	**308**	**460**	**585**
Sub Total	40	168	91	**299**	240	136	153	**529**	**828**	134	1178	65	**1377**	99	1214	265	**1578**	**2955**	**3783**
U Turns				**0**				**0**	**0**				**0**				**2**	**2**	**2**
Total	40	168	91	**299**	240	136	153	**529**	**828**	134	1178	65	**1377**	99	1214	265	**1580**	**2957**	**3785**
EQ 12Hr	56	234	126	**416**	334	189	213	**735**	**1151**	186	1637	90	**1914**	138	1687	368	**2196**	**4110**	**5261**
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														**1.39**					
AVG 12Hr	52	220	119	**392**	314	178	200	**693**	**1151**	176	1543	85	**1804**	130	1590	347	**2070**	**4110**	**5261**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**1**					
AVG 24Hr	69	288	156	**513**	412	233	263	**908**	**1421**	230	2022	112	**2363**	170	2083	455	**2711**	**5074**	**6495**
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

BYRON AVE @ ROOSEVELT AVE

Survey Date: Wednesday, February 27, 2019 **WO No:** 38395

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

Full Study 15 Minute Increments

		ROOSEVELT AVE									BYRON AVE									
		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	5	3	8	3	2	1	6	0	1	17	0	18	0	4	2	6	0	38
07:15	07:30	2	4	4	10	3	2	0	5	0	1	45	0	46	1	14	2	17	0	78
07:30	07:45	0	6	2	8	4	2	3	9	0	2	41	2	45	2	14	5	21	0	83
07:45	08:00	1	4	8	13	4	3	3	10	0	5	58	5	68	2	22	8	32	0	123
08:00	08:15	0	11	7	18	7	3	2	12	2	5	66	0	71	3	30	5	38	2	139
08:15	08:30	1	13	5	19	6	4	4	14	1	7	69	0	76	2	25	8	36	1	145
08:30	08:45	0	6	2	8	10	1	5	16	1	9	60	1	70	2	32	11	45	1	139
08:45	09:00	2	2	3	7	4	7	1	12	0	7	52	1	60	3	51	4	58	0	137
09:00	09:15	0	8	4	12	6	7	2	15	2	12	47	6	65	5	37	5	47	2	139
09:15	09:30	0	6	3	9	5	2	1	8	0	10	40	3	53	2	23	7	32	0	102
09:30	09:45	0	5	3	8	4	1	2	7	0	3	37	2	42	2	25	8	35	0	92
09:45	10:00	0	6	3	9	6	5	7	18	1	3	28	1	32	3	19	10	32	1	91
11:30	11:45	2	3	0	5	8	4	4	16	2	3	35	7	45	2	26	10	38	2	104
11:45	12:00	3	6	2	11	5	5	5	15	2	3	27	4	34	5	30	11	46	2	106
12:00	12:15	2	3	2	7	6	8	7	21	0	2	27	0	29	0	32	12	44	0	101
12:15	12:30	1	4	3	8	9	4	2	15	0	2	28	4	34	5	26	13	45	0	102
12:30	12:45	5	4	2	11	9	3	7	19	1	4	21	0	25	1	33	8	42	1	97
12:45	13:00	0	5	2	7	10	5	5	20	1	7	29	1	37	3	29	7	39	1	103
13:00	13:15	3	6	2	11	12	3	2	17	0	5	23	2	30	7	24	9	40	0	98
13:15	13:30	3	3	0	6	6	9	10	25	0	1	28	1	30	2	25	6	33	0	94
15:00	15:15	4	3	2	9	7	5	6	18	3	7	24	0	31	4	36	7	47	3	105
15:15	15:30	3	4	1	8	14	6	7	27	2	3	36	4	43	2	44	11	57	2	135
15:30	15:45	1	3	0	4	7	4	6	17	1	2	38	0	40	3	51	7	61	1	122
15:45	16:00	0	4	6	10	10	4	3	17	1	4	35	1	40	3	58	6	67	1	134
16:00	16:15	1	10	2	13	9	4	6	19	1	4	30	5	39	2	46	15	63	1	134
16:15	16:30	1	3	3	7	3	7	2	12	0	3	33	0	36	4	77	13	94	0	149
16:30	16:45	1	7	3	11	8	5	12	25	1	1	24	1	26	4	57	8	69	1	131
16:45	17:00	3	3	1	7	10	5	9	24	0	4	50	6	60	4	73	11	88	0	179
17:00	17:15	0	8	6	14	10	3	8	21	0	5	42	0	47	7	87	14	108	0	190
17:15	17:30	1	3	3	7	7	4	8	19	0	5	27	3	35	9	72	5	86	0	147
17:30	17:45	0	6	1	7	12	4	8	24	0	4	31	2	37	2	53	8	63	0	131
17:45	18:00	0	4	3	7	16	5	5	26	0	0	30	3	33	3	39	9	51	0	117
Total:		40	168	91	299	240	136	153	529	22	134	1178	65	1377	99	1214	265	1580	22	3,785

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BYRON AVE @ ROOSEVELT AVE

Survey Date: Wednesday, February 27, 2019 **WO No:** 38395

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

Full Study Cyclist Volume

Time Period		ROOSEVELT AVE			BYRON AVE			
		Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00	07:15	0	0	0	0	0	0	0
07:15	07:30	1	0	1	1	0	1	2
07:30	07:45	0	0	0	0	0	0	0
07:45	08:00	1	0	1	0	0	0	1
08:00	08:15	1	0	1	2	0	2	3
08:15	08:30	0	0	0	1	0	1	1
08:30	08:45	1	0	1	0	0	0	1
08:45	09:00	0	0	0	1	1	2	2
09:00	09:15	0	0	0	0	0	0	0
09:15	09:30	0	0	0	0	0	0	0
09:30	09:45	0	0	0	0	2	2	2
09:45	10:00	0	0	0	0	0	0	0
11:30	11:45	0	0	0	0	0	0	0
11:45	12:00	0	0	0	0	0	0	0
12:00	12:15	0	0	0	0	0	0	0
12:15	12:30	0	0	0	0	0	0	0
12:30	12:45	0	0	0	0	0	0	0
12:45	13:00	0	0	0	0	0	0	0
13:00	13:15	0	0	0	0	0	0	0
13:15	13:30	0	0	0	0	0	0	0
15:00	15:15	0	0	0	0	0	0	0
15:15	15:30	0	0	0	0	0	0	0
15:30	15:45	0	0	0	0	0	0	0
15:45	16:00	0	0	0	0	0	0	0
16:00	16:15	0	1	1	0	0	0	1
16:15	16:30	0	0	0	0	0	0	0
16:30	16:45	0	0	0	0	0	0	0
16:45	17:00	0	0	0	0	0	0	0
17:00	17:15	0	0	0	0	0	0	0
17:15	17:30	0	0	0	0	0	0	0
17:30	17:45	0	1	1	0	0	0	1
17:45	18:00	0	1	1	0	0	0	1
Total		4	3	**7**	5	3	8	15

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BYRON AVE @ ROOSEVELT AVE

Survey Date: Wednesday, February 27, 2019 **WO No:** 38395

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

Full Study Pedestrian Volume

	ROOSEVELT AVE			BYRON AVE			
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	2	0	**2**	4	1	**5**	**7**
07:15 07:30	2	1	**3**	7	2	**9**	**12**
07:30 07:45	1	0	**1**	5	2	**7**	**8**
07:45 08:00	2	0	**2**	13	4	**17**	**19**
08:00 08:15	2	1	**3**	9	5	**14**	**17**
08:15 08:30	5	2	**7**	12	2	**14**	**21**
08:30 08:45	4	3	**7**	7	4	**11**	**18**
08:45 09:00	3	3	**6**	10	5	**15**	**21**
09:00 09:15	1	0	**1**	4	2	**6**	**7**
09:15 09:30	2	3	**5**	9	0	**9**	**14**
09:30 09:45	1	1	**2**	3	3	**6**	**8**
09:45 10:00	1	0	**1**	0	3	**3**	**4**
11:30 11:45	1	0	**1**	6	1	**7**	**8**
11:45 12:00	1	4	**5**	10	8	**18**	**23**
12:00 12:15	2	1	**3**	7	6	**13**	**16**
12:15 12:30	3	2	**5**	3	3	**6**	**11**
12:30 12:45	16	17	**33**	26	18	**44**	**77**
12:45 13:00	1	0	**1**	10	7	**17**	**18**
13:00 13:15	2	3	**5**	12	8	**20**	**25**
13:15 13:30	1	2	**3**	6	2	**8**	**11**
15:00 15:15	6	4	**10**	4	8	**12**	**22**
15:15 15:30	0	1	**1**	0	6	**6**	**7**
15:30 15:45	1	3	**4**	9	7	**16**	**20**
15:45 16:00	2	5	**7**	14	5	**19**	**26**
16:00 16:15	3	2	**5**	14	6	**20**	**25**
16:15 16:30	0	1	**1**	9	8	**17**	**18**
16:30 16:45	0	4	**4**	11	1	**12**	**16**
16:45 17:00	3	4	**7**	11	4	**15**	**22**
17:00 17:15	4	0	**4**	15	4	**19**	**23**
17:15 17:30	4	2	**6**	10	6	**16**	**22**
17:30 17:45	1	1	**2**	13	3	**16**	**18**
17:45 18:00	1	2	**3**	4	4	**8**	**11**
Total	78	72	**150**	277	148	**425**	**575**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BYRON AVE @ ROOSEVELT AVE

Survey Date: Wednesday, February 27, 2019 **WO No:** 38395

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

Full Study Heavy Vehicles

		ROOSEVELT AVE									BYRON AVE									
		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	0	0	**0**	0	0	0	**0**	**0**	**0**
07:15	07:30	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	0	0	0	**0**	**0**	**0**
07:30	07:45	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	0	1	0	**1**	**1**	**1**
07:45	08:00	0	0	0	**0**	0	0	0	**0**	**0**	0	2	0	**2**	0	0	0	**0**	**2**	**2**
08:00	08:15	0	0	0	**0**	0	0	2	**2**	**2**	0	0	0	**0**	0	1	0	**1**	**1**	**3**
08:15	08:30	0	1	0	**1**	0	0	0	**0**	**1**	0	0	0	**0**	0	0	0	**0**	**0**	**1**
08:30	08:45	0	0	0	**0**	1	0	0	**1**	**1**	0	0	0	**0**	0	1	1	**2**	**2**	**3**
08:45	09:00	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	0	2	0	**2**	**2**	**2**
09:00	09:15	0	1	0	**1**	0	1	0	**1**	**2**	0	0	0	**0**	0	1	0	**1**	**1**	**3**
09:15	09:30	0	0	0	**0**	0	0	0	**0**	**0**	1	1	0	**2**	0	0	0	**0**	**2**	**2**
09:30	09:45	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	0	0	0	**0**	**0**	**0**
09:45	10:00	0	0	0	**0**	0	1	0	**1**	**1**	0	0	0	**0**	0	0	0	**0**	**0**	**1**
11:30	11:45	0	1	0	**1**	0	0	1	**1**	**2**	0	2	0	**2**	0	1	0	**1**	**3**	**5**
11:45	12:00	1	0	0	**1**	0	0	1	**1**	**2**	0	2	0	**2**	0	0	0	**0**	**2**	**4**
12:00	12:15	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	0	1	0	**1**	**1**	**1**
12:15	12:30	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	0	0	1	**1**	**1**	**1**
12:30	12:45	0	1	0	**1**	0	0	0	**0**	**1**	0	1	0	**1**	0	0	0	**0**	**1**	**2**
12:45	13:00	0	0	0	**0**	1	0	0	**1**	**1**	0	1	0	**1**	0	0	0	**0**	**1**	**2**
13:00	13:15	0	0	0	**0**	0	0	0	**0**	**0**	1	1	1	**3**	0	0	0	**0**	**3**	**3**
13:15	13:30	0	0	0	**0**	0	0	0	**0**	**0**	0	2	0	**2**	0	0	0	**0**	**2**	**2**
15:00	15:15	2	0	0	**2**	1	0	0	**1**	**3**	1	2	0	**3**	0	0	1	**1**	**4**	**7**
15:15	15:30	0	0	0	**0**	0	0	2	**2**	**2**	0	0	0	**0**	0	2	0	**2**	**2**	**4**
15:30	15:45	0	0	0	**0**	1	0	0	**1**	**1**	0	0	0	**0**	0	0	0	**0**	**0**	**1**
15:45	16:00	0	0	1	**1**	0	0	0	**0**	**1**	0	0	0	**0**	0	0	0	**0**	**0**	**1**
16:00	16:15	0	1	0	**1**	0	0	0	**0**	**1**	0	1	0	**1**	0	1	0	**1**	**2**	**3**
16:15	16:30	0	0	0	**0**	0	0	0	**0**	**0**	0	2	0	**2**	0	0	1	**1**	**3**	**3**
16:30	16:45	0	0	0	**0**	1	0	0	**1**	**1**	0	0	0	**0**	0	0	0	**0**	**0**	**1**
16:45	17:00	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	0	0	0	**0**	**0**	**0**
17:00	17:15	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	0	0	0	**0**	**0**	**0**
17:15	17:30	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	0	1	0	**1**	**1**	**1**
17:30	17:45	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	0	0	0	**0**	**0**	**0**
17:45	18:00	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**0**	0	0	0	**0**	**0**	**0**
Total:	None	3	5	1	**9**	5	2	6	**13**	**22**	3	17	1	**21**	0	12	4	**16**	**37**	**59**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

BYRON AVE @ ROOSEVELT AVE

Survey Date: Wednesday, February 27, 2019 **WO No:** 38395

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

Full Study 15 Minute U-Turn Total

Time Period		ROOSEVELT AVE Northbound U-Turn Total	ROOSEVELT AVE Southbound U-Turn Total	BYRON AVE Eastbound U-Turn Total	BYRON AVE 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	1	1
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	1	1
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	2	2

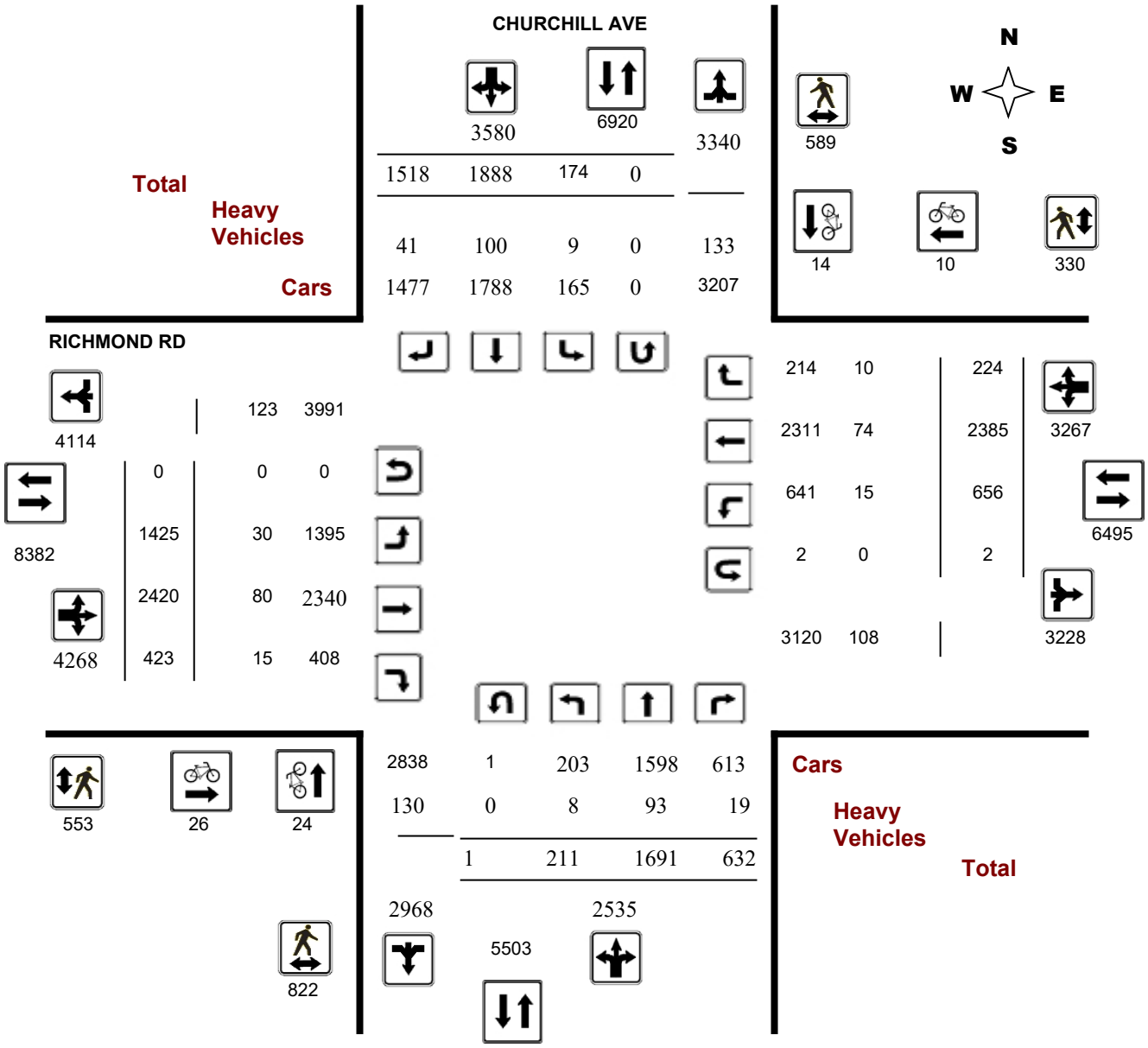
Transportation Services - Traffic Services

Turning Movement Count - Study Results

CHURCHILL AVE @ RICHMOND RD

Survey Date: Thursday, January 23, 2020
Start Time: 07:00
WO No: 39644
Device: Miovision

Full Study Diagram



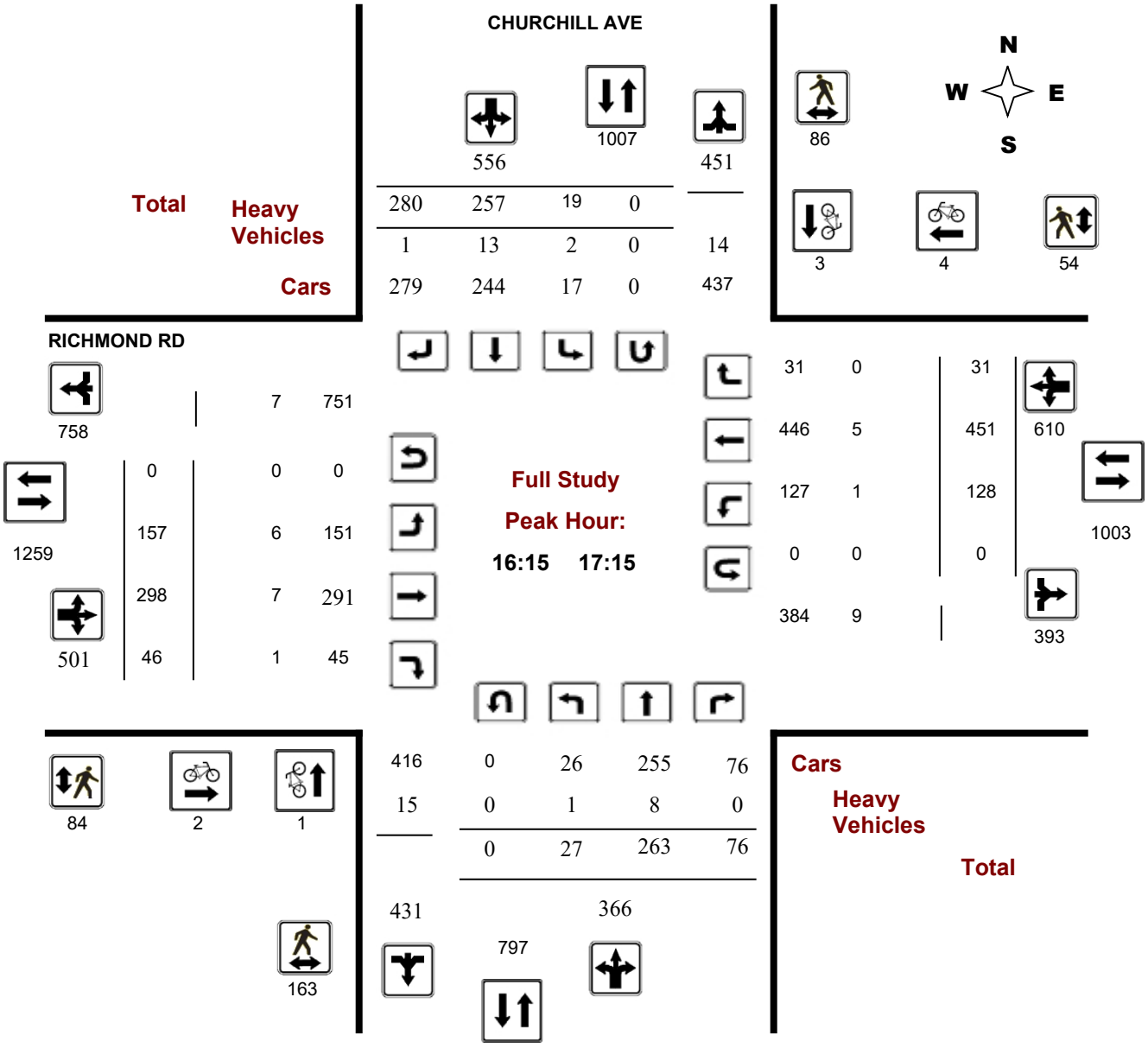
Transportation Services - Traffic Services

Turning Movement Count - Study Results

CHURCHILL AVE @ RICHMOND RD

Survey Date: Thursday, January 23, 2020
Start Time: 07:00
WO No: 39644
Device: Miovision

Full Study Peak Hour Diagram



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

Northbound: 1 Southbound: 0

Eastbound: 0 Westbound: 2

AADT Factor

1.00

	CHURCHILL 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	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	276	2215	828	**3321**	228	2473	1989	**4690**	**8500**	1867	3170	554	**5591**	859	3124	293	**4280**	**10474**	**18974**
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														**1**					
AVG 24Hr	362	2902	1085	**4350**	299	3240	2605	**6144**	**10494**	2445	4153	726	**7324**	1126	4093	384	**5606**	**12930**	**23424**
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.

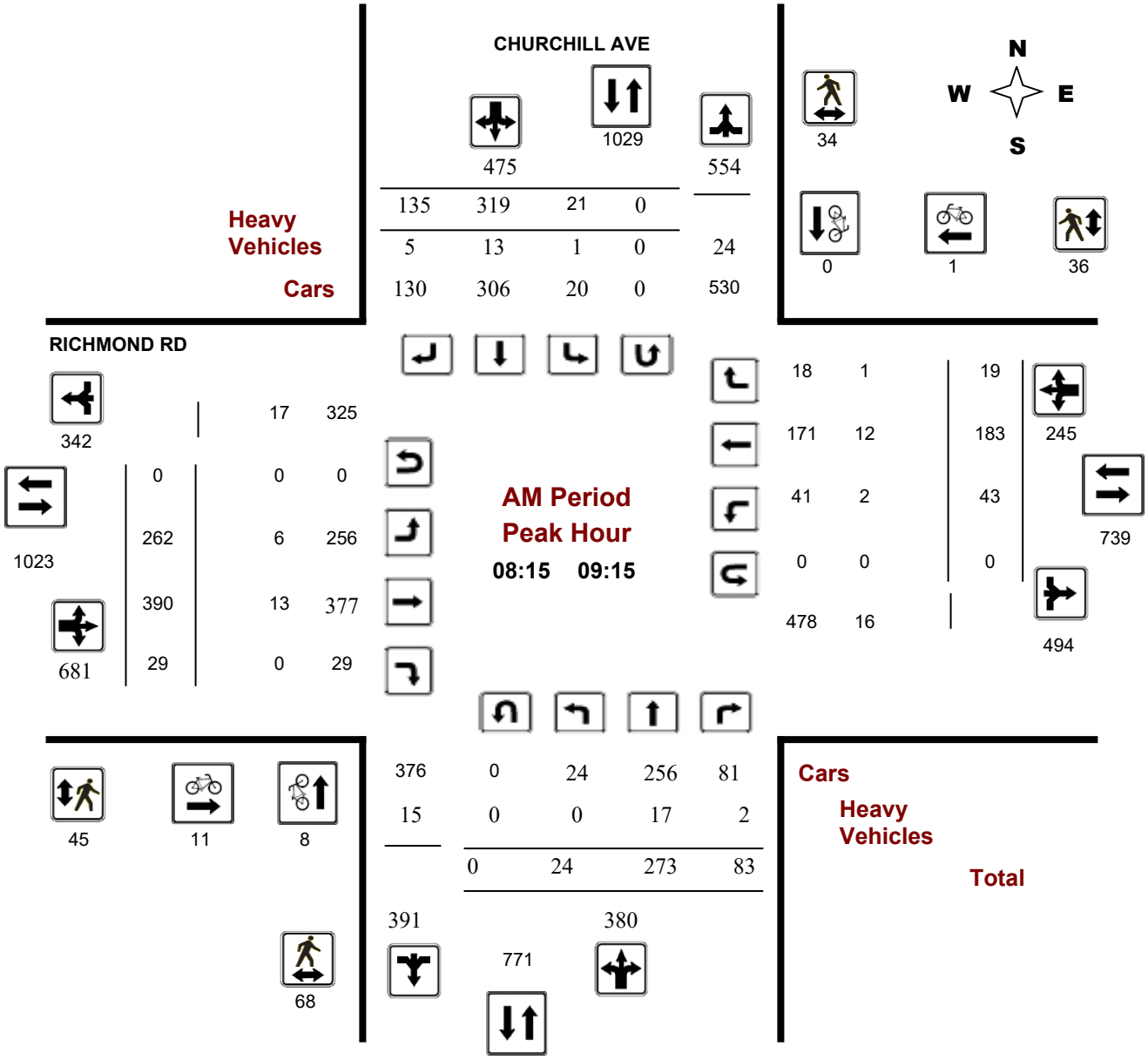
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

CHURCHILL AVE @ RICHMOND RD

Survey Date: Thursday, January 23, 2020 **WO No:** 39644

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



Comments

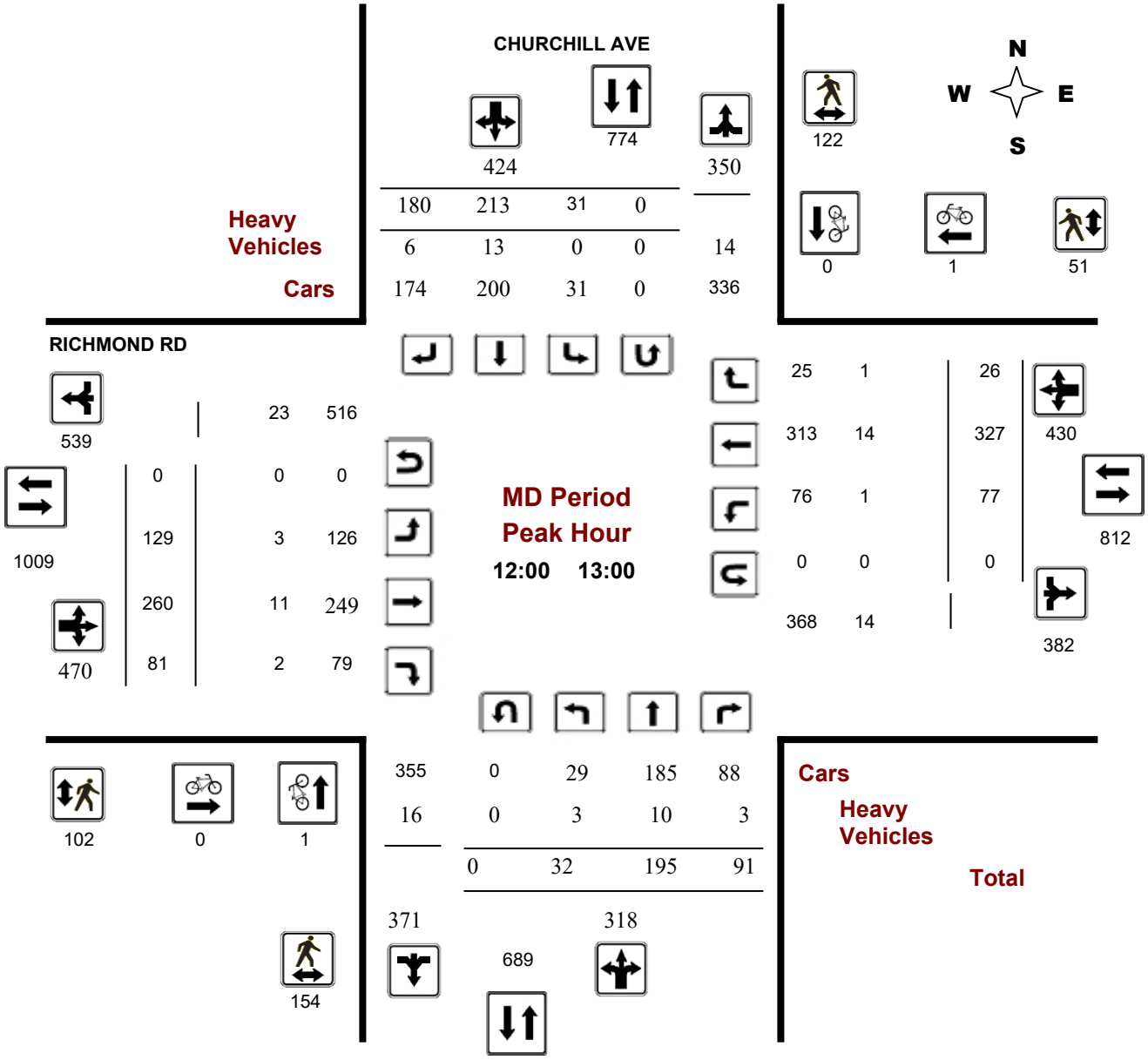
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

CHURCHILL AVE @ RICHMOND RD

Survey Date: Thursday, January 23, 2020 **WO No:** 39644

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



Comments

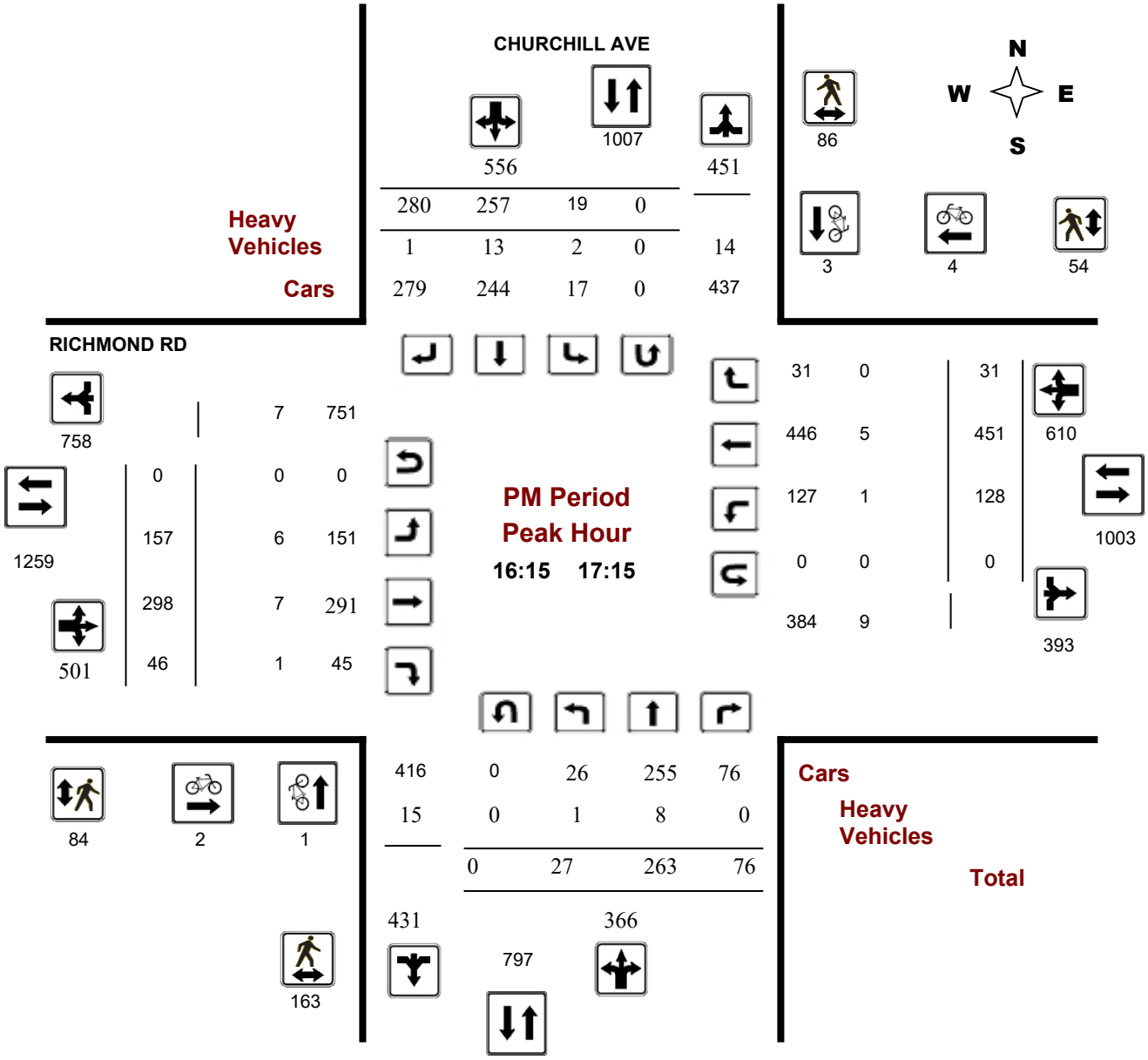
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

CHURCHILL AVE @ RICHMOND RD

Survey Date: Thursday, January 23, 2020 **WO No:** 39644

Start Time: 07:00 **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 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	4	56	75	5	136	7	27	6	40	4	284
07:15	07:30	4	28	8	40	2	50	19	71	6	63	91	5	159	5	35	2	42	6	312
07:30	07:45	2	37	18	57	9	59	24	92	13	80	85	10	175	11	26	4	41	13	365
07:45	08:00	4	71	23	98	2	71	27	100	8	75	96	4	175	12	38	10	60	8	433
08:00	08:15	1	69	22	93	6	60	32	98	10	72	83	11	166	11	39	3	53	10	410
08:15	08:30	6	60	30	96	7	83	29	119	7	77	95	7	179	9	43	7	59	7	453
08:30	08:45	4	66	20	90	3	74	36	113	11	76	83	8	167	8	53	4	65	11	435
08:45	09:00	5	75	21	101	5	79	39	123	8	62	112	6	180	12	47	2	61	8	465
09:00	09:15	9	72	12	93	6	83	31	120	12	47	100	8	155	14	40	6	60	12	428
09:15	09:30	4	48	27	79	5	55	39	99	13	46	79	12	137	14	37	6	58	13	373
09:30	09:45	6	46	19	71	4	43	34	81	17	38	74	8	120	19	56	10	85	17	357
09:45	10:00	8	39	23	70	3	38	33	74	12	31	76	7	114	17	40	11	68	12	326
11:30	11:45	9	32	16	57	12	46	29	87	14	28	75	13	116	22	78	11	111	14	371
11:45	12:00	15	52	19	86	8	43	39	90	14	31	73	22	126	19	63	12	94	14	396
12:00	12:15	10	48	22	80	7	59	44	110	14	31	82	20	133	17	90	6	113	14	436
12:15	12:30	8	41	20	69	9	47	49	105	5	32	59	17	108	21	77	4	102	5	384
12:30	12:45	5	46	25	76	9	51	41	101	10	31	52	27	110	16	77	6	99	10	386
12:45	13:00	9	60	24	93	6	56	46	108	6	35	67	17	119	23	83	10	116	6	436
13:00	13:15	11	42	13	66	6	50	56	112	9	30	70	24	124	17	83	4	104	9	406
13:15	13:30	6	35	21	62	9	58	44	111	12	32	65	15	112	17	97	7	121	12	406
15:00	15:15	10	48	16	74	5	61	62	128	7	32	77	34	143	28	98	11	137	7	482
15:15	15:30	10	53	24	87	6	66	71	143	8	46	74	18	138	32	84	7	123	8	491
15:30	15:45	4	49	15	68	6	57	61	124	4	35	68	9	112	30	110	8	148	4	452
15:45	16:00	4	51	29	84	1	63	82	146	3	32	64	17	113	26	101	3	131	3	474
16:00	16:15	4	53	15	72	4	57	62	123	7	28	60	18	106	36	114	5	155	7	456
16:15	16:30	8	70	12	90	4	60	68	132	6	37	76	12	125	29	113	7	149	6	496
16:30	16:45	6	64	23	93	4	71	67	142	8	43	72	13	128	35	114	7	156	8	519
16:45	17:00	10	73	21	104	4	68	73	145	7	37	71	14	122	32	112	6	150	7	521
17:00	17:15	3	56	20	79	7	58	72	137	4	40	79	7	126	32	112	11	155	4	497
17:15	17:30	10	62	16	88	5	61	68	134	4	44	52	16	112	28	116	8	152	4	486
17:30	17:45	8	59	22	89	3	68	66	137	6	40	72	5	117	28	89	7	124	6	467
17:45	18:00	4	61	26	91	4	47	55	106	1	38	63	14	115	29	93	13	135	1	447
Total:		211	1691	632	2535	174	1888	1518	3580	270	1425	2420	423	4268	656	2385	224	3267	270	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

Time Period		CHURCHILL AVE			RICHMOND RD			
		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	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	**2**	0	1	1	**2**	**4**	3	2	0	**5**	0	1	0	**1**	**6**	**10**
07:15	07:30	0	1	2	**3**	0	2	1	**3**	**6**	1	4	0	**5**	0	2	0	**2**	**7**	**13**
07:30	07:45	0	5	1	**6**	1	2	4	**7**	**13**	1	1	2	**4**	1	1	0	**2**	**6**	**19**
07:45	08:00	1	2	1	**4**	1	3	0	**4**	**8**	1	2	0	**3**	1	4	1	**6**	**9**	**17**
08:00	08:15	0	8	0	**8**	1	1	0	**2**	**10**	2	4	0	**6**	0	5	1	**6**	**12**	**22**
08:15	08:30	0	2	0	**2**	1	4	0	**5**	**7**	1	4	0	**5**	0	3	1	**4**	**9**	**16**
08:30	08:45	0	5	2	**7**	0	1	3	**4**	**11**	3	3	0	**6**	0	2	0	**2**	**8**	**19**
08:45	09:00	0	7	0	**7**	0	1	0	**1**	**8**	2	2	0	**4**	1	3	0	**4**	**8**	**16**
09:00	09:15	0	3	0	**3**	0	7	2	**9**	**12**	0	4	0	**4**	1	4	0	**5**	**9**	**21**
09:15	09:30	0	6	1	**7**	0	5	1	**6**	**13**	0	5	0	**5**	1	1	1	**3**	**8**	**21**
09:30	09:45	1	7	2	**10**	1	3	3	**7**	**17**	0	5	0	**5**	1	3	0	**4**	**9**	**26**
09:45	10:00	0	2	3	**5**	0	4	3	**7**	**12**	1	5	0	**6**	2	1	1	**4**	**10**	**22**
11:30	11:45	0	2	1	**3**	1	10	0	**11**	**14**	0	1	1	**2**	0	4	2	**6**	**8**	**22**
11:45	12:00	1	7	2	**10**	0	2	2	**4**	**14**	0	3	0	**3**	0	2	1	**3**	**6**	**20**
12:00	12:15	0	4	2	**6**	0	6	2	**8**	**14**	0	4	2	**6**	0	4	1	**5**	**11**	**25**
12:15	12:30	1	0	0	**1**	0	4	0	**4**	**5**	2	2	0	**4**	0	3	0	**3**	**7**	**12**
12:30	12:45	1	4	0	**5**	0	3	2	**5**	**10**	1	2	0	**3**	0	6	0	**6**	**9**	**19**
12:45	13:00	1	2	1	**4**	0	0	2	**2**	**6**	0	3	0	**3**	1	1	0	**2**	**5**	**11**
13:00	13:15	0	4	0	**4**	1	3	1	**5**	**9**	1	2	1	**4**	0	1	0	**1**	**5**	**14**
13:15	13:30	0	2	0	**2**	0	8	2	**10**	**12**	3	1	1	**5**	2	4	0	**6**	**11**	**23**
15:00	15:15	1	1	0	**2**	0	3	2	**5**	**7**	1	5	4	**10**	2	4	0	**6**	**16**	**23**
15:15	15:30	0	3	0	**3**	0	4	1	**5**	**8**	0	1	1	**2**	0	2	0	**2**	**4**	**12**
15:30	15:45	0	0	0	**0**	0	2	2	**4**	**4**	0	2	1	**3**	0	0	0	**0**	**3**	**7**
15:45	16:00	0	1	0	**1**	0	1	1	**2**	**3**	1	2	0	**3**	0	2	0	**2**	**5**	**8**
16:00	16:15	0	2	0	**2**	0	1	4	**5**	**7**	0	2	0	**2**	1	3	1	**5**	**7**	**14**
16:15	16:30	0	2	0	**2**	0	4	0	**4**	**6**	1	1	1	**3**	0	2	0	**2**	**5**	**11**
16:30	16:45	1	2	0	**3**	1	4	0	**5**	**8**	3	1	0	**4**	0	0	0	**0**	**4**	**12**
16:45	17:00	0	2	0	**2**	0	5	0	**5**	**7**	1	3	0	**4**	1	0	0	**1**	**5**	**12**
17:00	17:15	0	2	0	**2**	1	0	1	**2**	**4**	1	2	0	**3**	0	3	0	**3**	**6**	**10**
17:15	17:30	0	2	0	**2**	0	1	1	**2**	**4**	0	1	1	**2**	0	1	0	**1**	**3**	**7**
17:30	17:45	0	2	0	**2**	0	4	0	**4**	**6**	0	0	0	**0**	0	1	0	**1**	**1**	**7**
17:45	18:00	0	0	0	**0**	0	1	0	**1**	**1**	0	1	0	**1**	0	1	0	**1**	**2**	**3**
Total:	None	8	93	19	**120**	9	100	41	**150**	**270**	30	80	15	**125**	15	74	10	**99**	**224**	**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

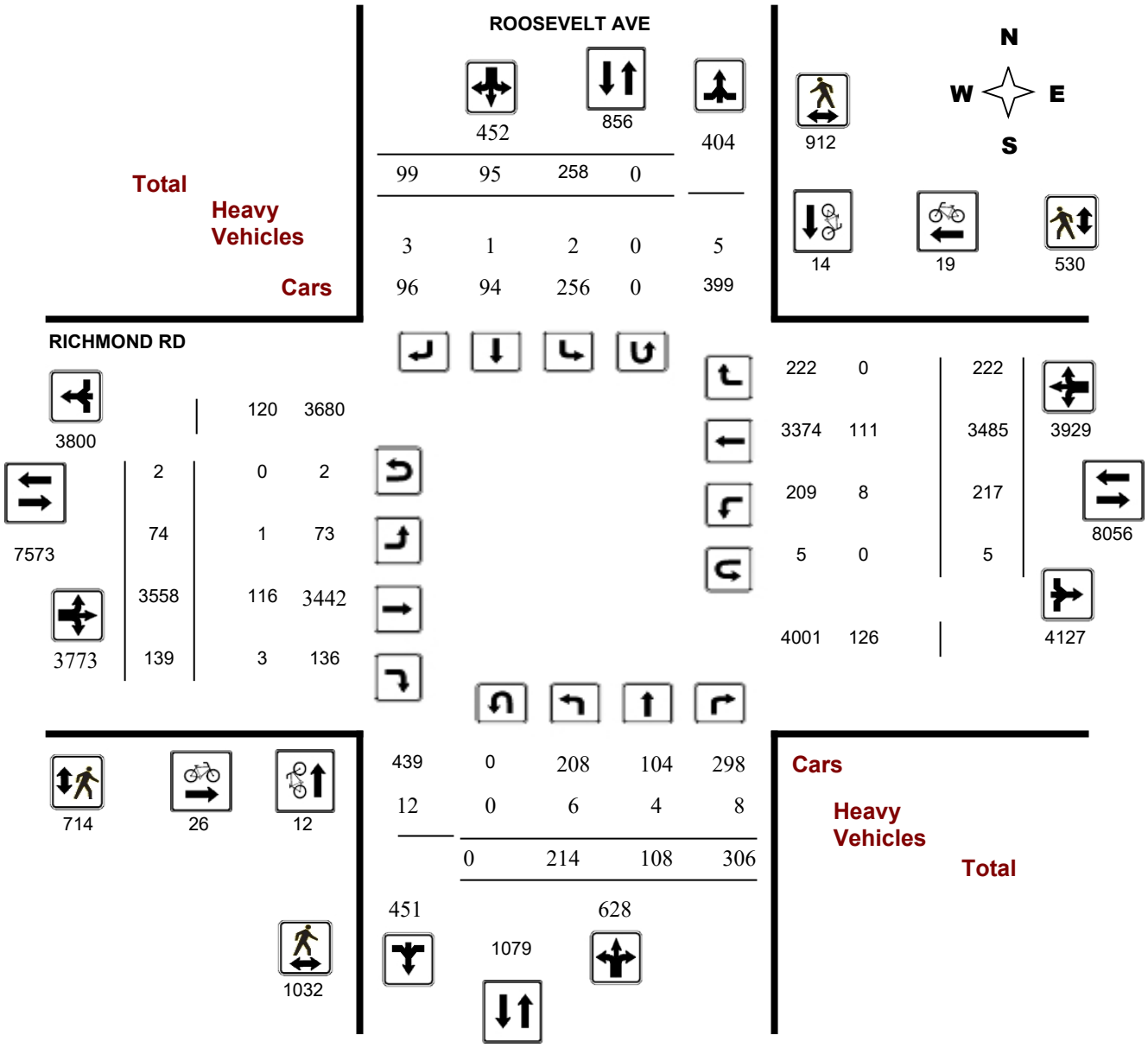
Transportation Services - Traffic Services

Turning Movement Count - Study Results

ROOSEVELT AVE @ RICHMOND RD

Survey Date: Thursday, January 23, 2020
Start Time: 07:00
WO No: 39385
Device: Miovision

Full Study Diagram



5472203 - THU JAN 23, 2020 - 8HRS - LORETTA

Transportation Services - Traffic Services

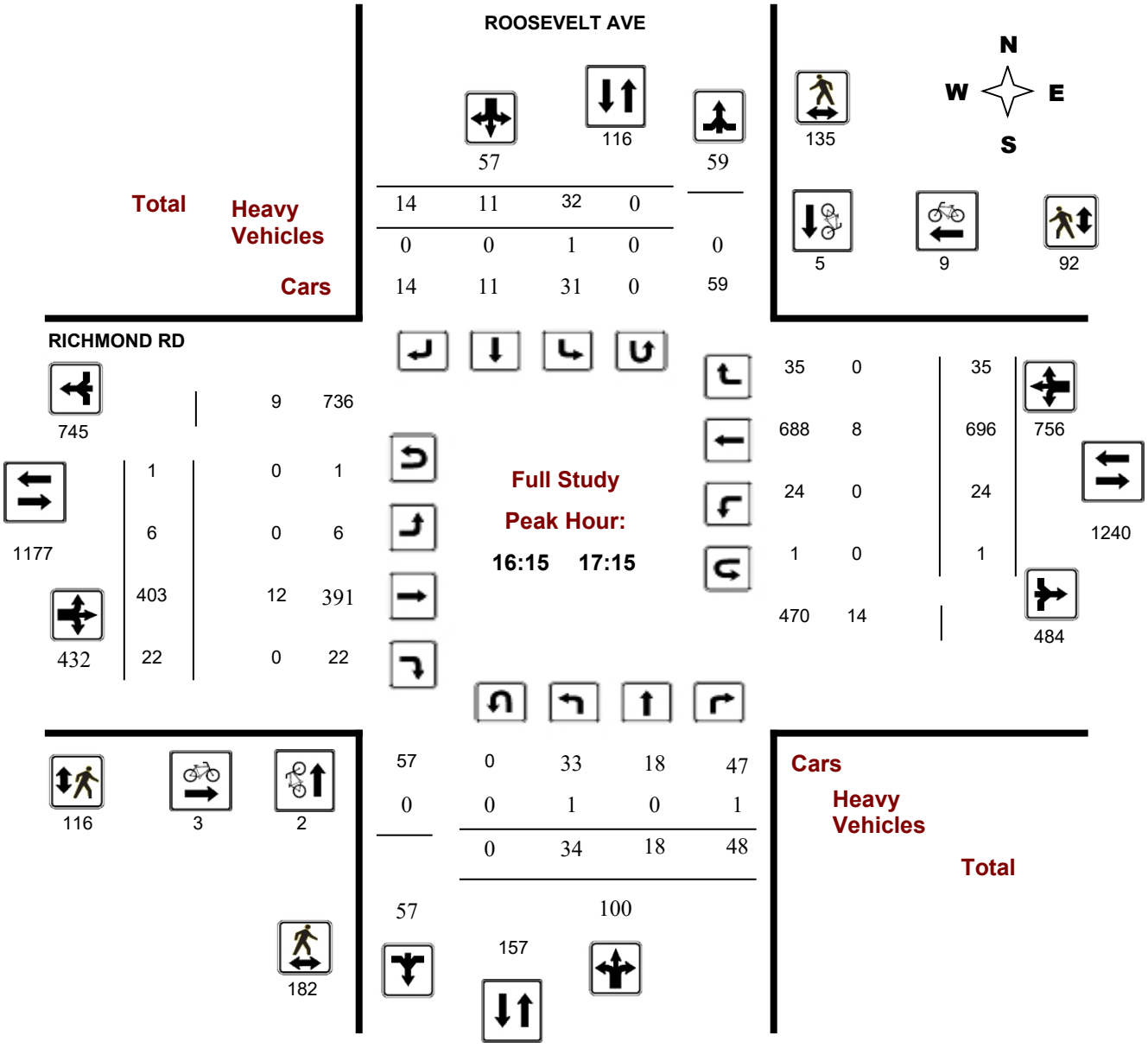
Turning Movement Count - Study Results

ROOSEVELT AVE @ RICHMOND RD

Survey Date: Thursday, January 23, 2020 **WO No:** 39385

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

Full Study Peak Hour Diagram



5472203 - THU JAN 23, 2020 - 8HRS - LORETTA

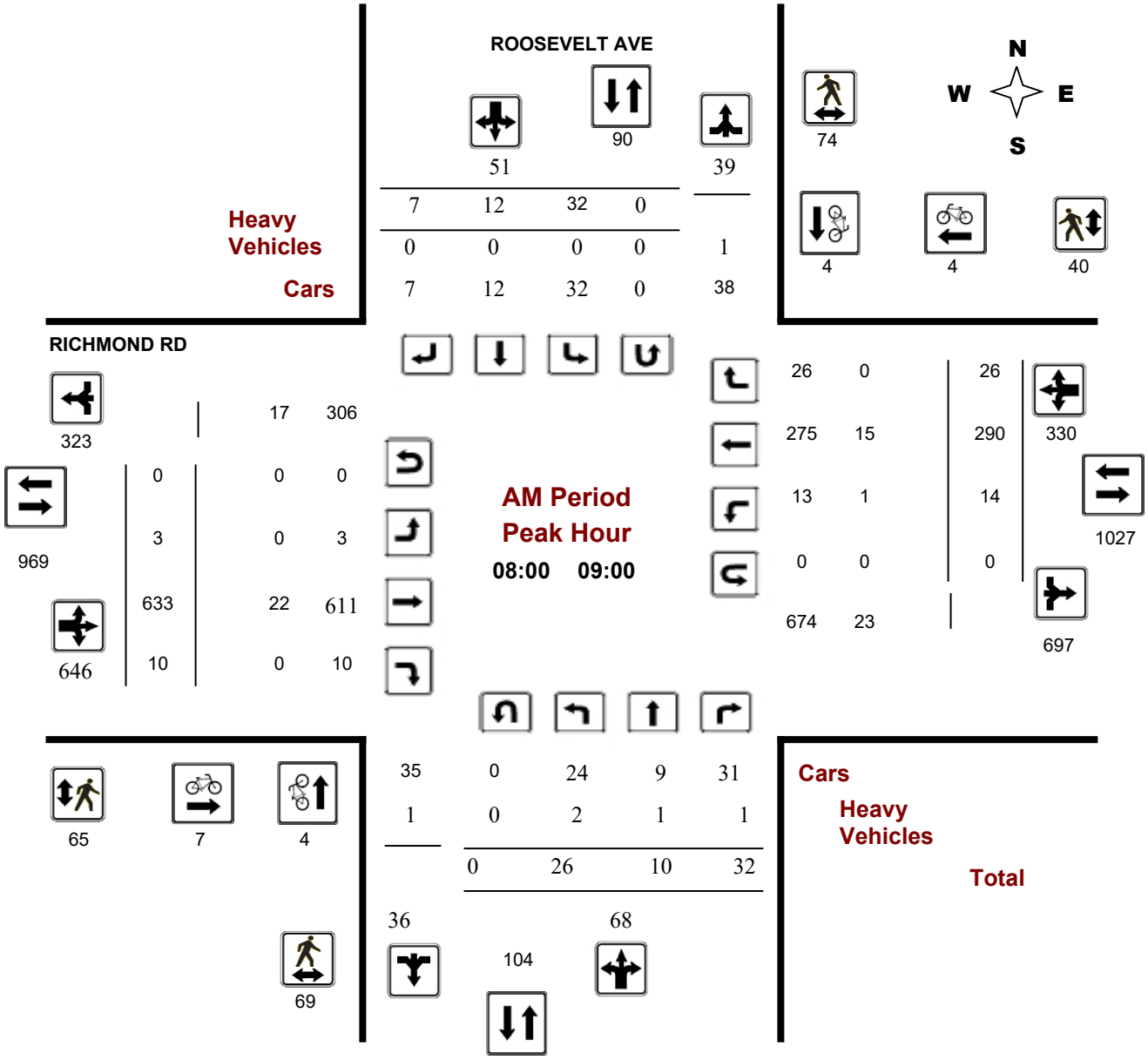
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

ROOSEVELT AVE @ RICHMOND RD

Survey Date: Thursday, January 23, 2020 **WO No:** 39385

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



Comments 5472203 - THU JAN 23, 2020 - 8HRS - LORETTA

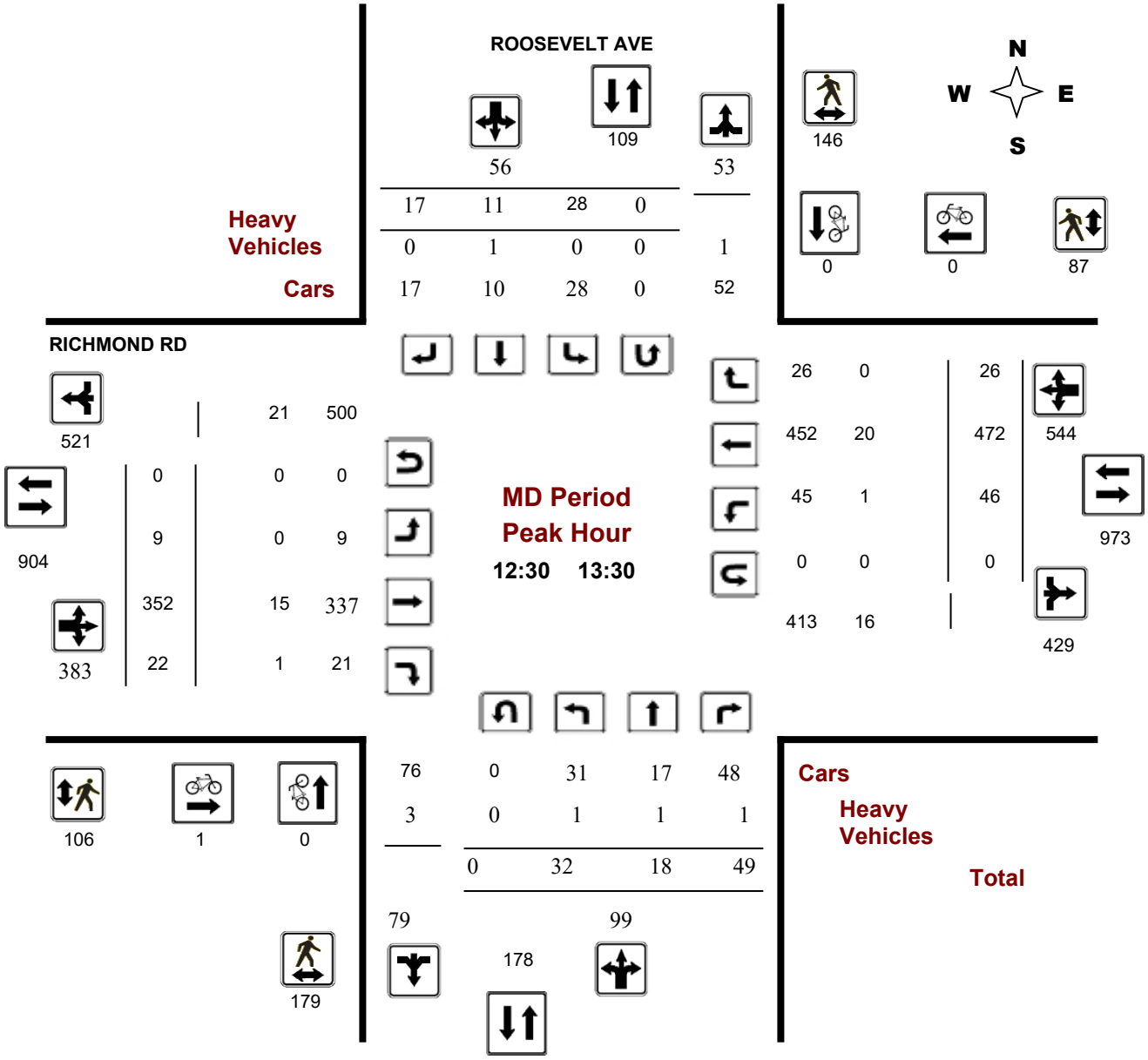
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

ROOSEVELT AVE @ RICHMOND RD

Survey Date: Thursday, January 23, 2020 **WO No:** 39385

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



Comments 5472203 - THU JAN 23, 2020 - 8HRS - LORETTA

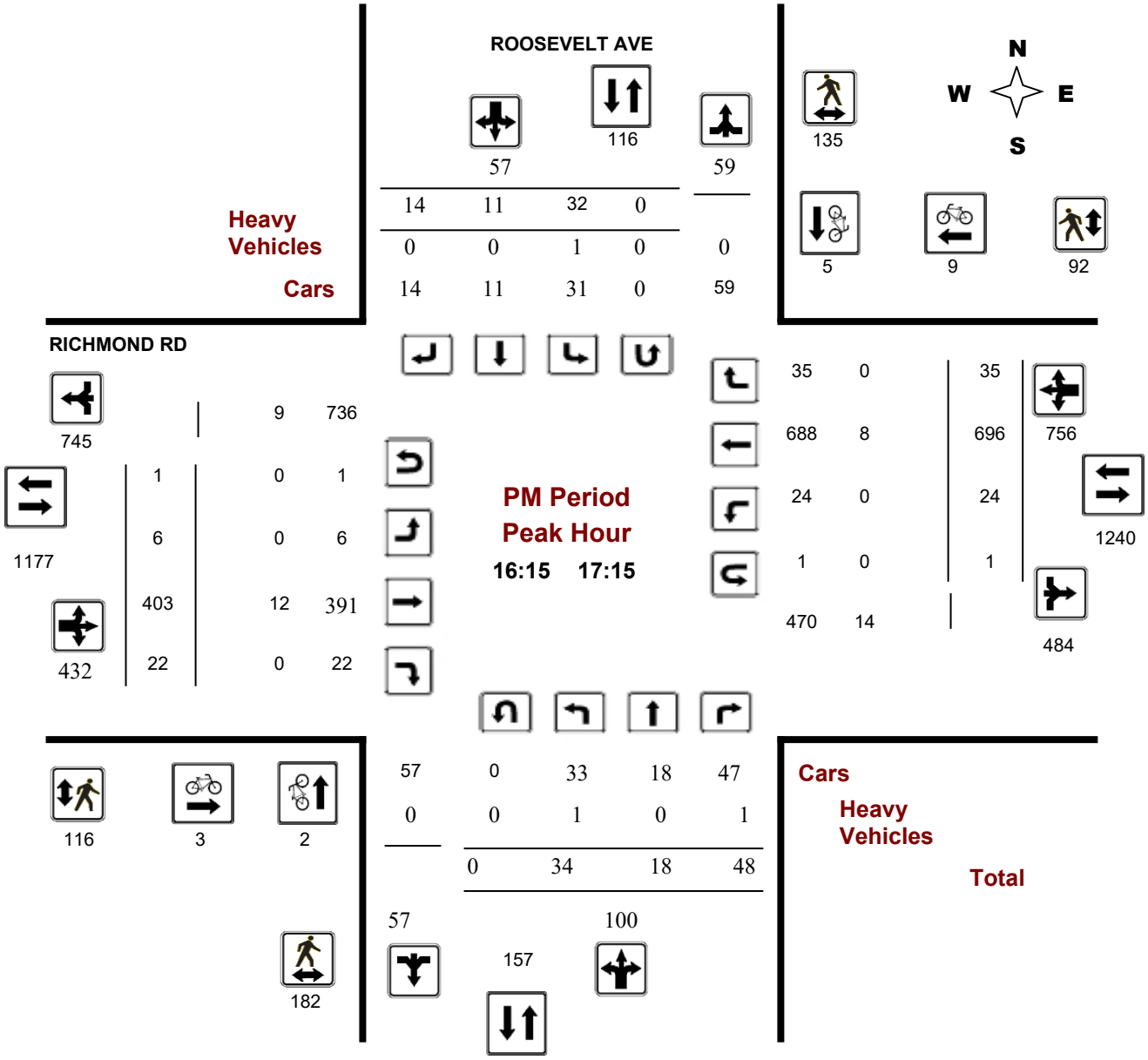
Transportation Services - Traffic Services

Turning Movement Count - Peak Hour Diagram

ROOSEVELT AVE @ RICHMOND RD

Survey Date: Thursday, January 23, 2020 **WO No:** 39385

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



Comments 5472203 - THU JAN 23, 2020 - 8HRS - LORETTA

Transportation Services - Traffic Services

Turning Movement Count - Study Results

ROOSEVELT AVE @ RICHMOND RD

Survey Date: Thursday, January 23, 2020 **WO No:** 39385

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

Full Study Summary (8 HR Standard)

Survey Date: Thursday, January 23, 2020

Total Observed U-Turns

Northbound: 0 Southbound: 0

Eastbound: 2 Westbound: 5

AADT Factor

1.39

	ROOSEVELT 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	13	3	23	**39**	21	10	6	**37**	**76**	10	605	10	**625**	7	195	8	**210**	**835**	**911**
08:00 09:00	26	10	32	**68**	32	12	7	**51**	**119**	3	633	10	**646**	14	290	26	**330**	**976**	**1095**
09:00 10:00	20	18	27	**65**	34	15	8	**57**	**122**	4	462	12	**478**	25	263	21	**309**	**787**	**909**
11:30 12:30	30	16	62	**108**	39	15	16	**70**	**178**	15	359	20	**394**	41	375	48	**464**	**858**	**1036**
12:30 13:30	32	18	49	**99**	28	11	17	**56**	**155**	9	352	22	**383**	46	472	26	**544**	**927**	**1082**
15:00 16:00	31	14	27	**72**	36	10	21	**67**	**139**	16	401	27	**444**	32	603	27	**662**	**1106**	**1245**
16:00 17:00	27	18	50	**95**	27	13	13	**53**	**148**	8	376	22	**406**	17	670	37	**724**	**1130**	**1278**
17:00 18:00	35	11	36	**82**	41	9	11	**61**	**143**	9	370	16	**395**	35	617	29	**681**	**1076**	**1219**
Sub Total	214	108	306	**628**	258	95	99	**452**	**1080**	74	3558	139	**3771**	217	3485	222	**3924**	**7695**	**8775**
U Turns				**0**				**0**	**0**				**2**				**5**	**7**	**7**
Total	214	108	306	**628**	258	95	99	**452**	**1080**	74	3558	139	**3773**	217	3485	222	**3929**	**7702**	**8782**
EQ 12Hr	297	150	425	**873**	359	132	138	**628**	**1501**	103	4946	193	**5244**	302	4844	309	**5461**	**10706**	**12207**

Note: These values are calculated by multiplying the totals by the appropriate expansion factor. **1.39**

AVG 12Hr	297	150	425	**873**	359	132	138	**628**	**1501**	103	4946	193	**5244**	302	4844	309	**5461**	**10706**	**12207**

Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor. **1**

AVG 24Hr	390	197	557	**1144**	470	173	180	**823**	**1967**	135	6479	253	**6870**	395	6346	404	**7154**	**14024**	**15991**

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

ROOSEVELT AVE @ RICHMOND RD

Survey Date: Thursday, January 23, 2020 **WO No:** 39385

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

Full Study 15 Minute Increments

		ROOSEVELT 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	1	1	1	3	2	1	1	4	16	2	132	2	136	0	43	3	46	16	189
07:15	07:30	3	1	2	6	7	4	1	12	34	3	150	2	155	3	47	3	53	34	226
07:30	07:45	7	1	9	17	6	2	2	10	35	1	163	2	166	1	46	1	48	35	241
07:45	08:00	2	0	11	13	6	3	2	11	39	4	160	4	168	3	59	1	63	39	255
08:00	08:15	3	5	7	15	12	3	1	16	52	1	154	4	159	1	68	7	76	52	266
08:15	08:30	4	2	7	13	8	5	1	14	47	1	161	3	165	3	68	6	77	47	269
08:30	08:45	12	2	7	21	6	2	2	10	50	0	154	1	155	6	75	8	89	50	275
08:45	09:00	7	1	11	19	6	2	3	11	45	1	164	2	167	4	79	5	88	45	285
09:00	09:15	5	2	7	14	5	5	2	12	46	1	141	3	145	6	69	3	78	46	249
09:15	09:30	4	5	9	18	11	5	1	17	60	1	122	0	123	6	58	8	73	60	231
09:30	09:45	5	5	4	14	8	4	2	14	56	1	98	6	106	7	79	5	91	56	225
09:45	10:00	6	6	7	19	10	1	3	14	55	1	101	3	105	6	57	5	68	55	206
11:30	11:45	7	3	17	27	9	6	6	21	91	7	88	6	101	10	87	11	108	91	257
11:45	12:00	7	3	18	28	13	1	4	18	88	4	101	6	111	10	79	18	107	88	264
12:00	12:15	8	8	15	31	9	1	4	14	83	2	87	3	92	13	109	11	134	83	271
12:15	12:30	8	2	12	22	8	7	2	17	71	2	83	5	90	8	100	8	116	71	245
12:30	12:45	10	7	19	36	6	2	4	12	74	1	81	4	86	4	102	8	114	74	248
12:45	13:00	8	2	12	22	7	3	5	15	72	1	82	3	86	17	111	9	137	72	260
13:00	13:15	4	5	6	15	7	2	3	12	69	3	90	9	102	18	125	5	148	69	277
13:15	13:30	10	4	12	26	8	4	5	17	72	4	99	6	109	7	134	4	145	72	297
15:00	15:15	6	3	7	16	6	3	7	16	73	4	119	11	134	13	132	7	152	73	318
15:15	15:30	9	5	11	25	12	2	5	19	84	4	98	7	109	11	131	11	153	84	306
15:30	15:45	11	2	7	20	13	3	6	22	65	6	88	4	98	5	176	3	184	65	324
15:45	16:00	5	4	2	11	5	2	3	10	43	2	96	5	103	3	164	6	173	43	297
16:00	16:15	5	5	12	22	7	3	5	15	65	3	74	5	82	5	149	7	162	65	281
16:15	16:30	7	5	13	25	4	5	5	14	70	2	108	5	115	3	179	11	193	70	347
16:30	16:45	9	5	16	30	6	1	2	9	65	2	97	7	106	5	181	6	192	65	337
16:45	17:00	6	3	9	18	10	4	1	15	63	1	97	5	104	4	161	13	179	63	316
17:00	17:15	12	5	10	27	12	1	6	19	75	1	101	5	107	12	175	5	192	75	345
17:15	17:30	8	2	12	22	7	4	1	12	59	1	82	3	86	4	164	11	179	59	299
17:30	17:45	9	2	6	17	16	0	1	17	57	4	93	4	101	5	141	8	155	57	290
17:45	18:00	6	2	8	16	6	4	3	13	61	3	94	4	101	14	137	5	156	61	286
Total:		214	108	306	628	258	95	99	452	1935	74	3558	139	3773	217	3485	222	3929	1935	8,782

Note: U-Turns are included in Totals.

Transportation Services - Traffic Services

Turning Movement Count - Study Results

ROOSEVELT AVE @ RICHMOND RD

Survey Date: Thursday, January 23, 2020 **WO No:** 39385

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

Full Study Cyclist Volume

Time Period		ROOSEVELT AVE			RICHMOND RD			
		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	0	0	0	0
07:30	07:45	0	0	0	3	1	4	4
07:45	08:00	2	0	2	3	0	3	5
08:00	08:15	0	2	2	3	1	4	6
08:15	08:30	3	1	4	1	2	3	7
08:30	08:45	1	1	2	2	1	3	5
08:45	09:00	0	0	0	1	0	1	1
09:00	09:15	0	1	1	3	0	3	4
09:15	09:30	0	0	0	0	1	1	1
09:30	09:45	0	0	0	1	0	1	1
09:45	10:00	0	0	0	0	0	0	0
11:30	11:45	0	0	0	0	0	0	0
11:45	12:00	0	0	0	0	0	0	0
12:00	12:15	0	0	0	0	0	0	0
12:15	12:30	1	0	1	0	0	0	1
12:30	12:45	0	0	0	1	0	1	1
12:45	13:00	0	0	0	0	0	0	0
13:00	13:15	0	0	0	0	0	0	0
13:15	13:30	0	0	0	0	0	0	0
15:00	15:15	0	0	0	1	0	1	1
15:15	15:30	1	2	3	0	1	1	4
15:30	15:45	0	0	0	0	0	0	0
15:45	16:00	0	0	0	1	0	1	1
16:00	16:15	0	1	1	1	0	1	2
16:15	16:30	0	0	0	0	3	3	3
16:30	16:45	1	2	3	2	3	5	8
16:45	17:00	0	1	1	1	1	2	3
17:00	17:15	1	2	3	0	2	2	5
17:15	17:30	0	1	1	0	1	1	2
17:30	17:45	2	0	2	1	1	2	4
17:45	18:00	0	0	0	0	1	1	1
Total		12	14	**26**	26	19	45	71

Transportation Services - Traffic Services

Turning Movement Count - Study Results

ROOSEVELT AVE @ RICHMOND RD

Survey Date: Thursday, January 23, 2020 **WO No:** 39385

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

Full Study Pedestrian Volume

	ROOSEVELT 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	7	**10**	5	3	**8**	**18**
07:15 07:30	6	7	**13**	10	4	**14**	**27**
07:30 07:45	9	10	**19**	18	6	**24**	**43**
07:45 08:00	10	13	**23**	8	9	**17**	**40**
08:00 08:15	9	10	**19**	13	8	**21**	**40**
08:15 08:30	14	15	**29**	20	4	**24**	**53**
08:30 08:45	29	17	**46**	18	13	**31**	**77**
08:45 09:00	17	32	**49**	14	15	**29**	**78**
09:00 09:15	9	18	**27**	16	15	**31**	**58**
09:15 09:30	23	8	**31**	11	7	**18**	**49**
09:30 09:45	15	20	**35**	5	15	**20**	**55**
09:45 10:00	28	25	**53**	19	12	**31**	**84**
11:30 11:45	39	26	**65**	16	14	**30**	**95**
11:45 12:00	50	39	**89**	33	32	**65**	**154**
12:00 12:15	42	66	**108**	31	22	**53**	**161**
12:15 12:30	34	45	**79**	29	13	**42**	**121**
12:30 12:45	36	32	**68**	31	23	**54**	**122**
12:45 13:00	43	31	**74**	21	25	**46**	**120**
13:00 13:15	51	32	**83**	15	19	**34**	**117**
13:15 13:30	49	51	**100**	39	20	**59**	**159**
15:00 15:15	35	39	**74**	20	26	**46**	**120**
15:15 15:30	52	34	**86**	31	20	**51**	**137**
15:30 15:45	57	39	**96**	23	17	**40**	**136**
15:45 16:00	48	46	**94**	36	26	**62**	**156**
16:00 16:15	38	41	**79**	39	24	**63**	**142**
16:15 16:30	39	37	**76**	24	23	**47**	**123**
16:30 16:45	56	34	**90**	29	23	**52**	**142**
16:45 17:00	34	25	**59**	38	23	**61**	**120**
17:00 17:15	53	39	**92**	25	23	**48**	**140**
17:15 17:30	33	21	**54**	17	14	**31**	**85**
17:30 17:45	39	31	**70**	35	17	**52**	**122**
17:45 18:00	32	22	**54**	25	15	**40**	**94**
Total	1032	912	**1944**	714	530	**1244**	**3188**

5472203 - THU JAN 23, 2020 - 8HRS - LORETTA

Transportation Services - Traffic Services

Turning Movement Count - Study Results

ROOSEVELT AVE @ RICHMOND RD

Survey Date: Thursday, January 23, 2020 **WO No:** 39385

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

Full Study Heavy Vehicles

ROOSEVELT AVE **RICHMOND RD**

Time Period		Northbound				Southbound					Eastbound				Westbound					
		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	5	0	**7**	0	2	0	**7**	**14**	**7**
07:15	07:30	0	0	0	**2**	0	0	0	**0**	**2**	0	4	1	**8**	1	3	0	**8**	**16**	**9**
07:30	07:45	0	0	1	**1**	0	0	0	**0**	**1**	0	3	0	**8**	0	5	0	**9**	**17**	**9**
07:45	08:00	0	0	0	**0**	0	0	0	**0**	**0**	0	2	0	**5**	0	3	0	**5**	**10**	**5**
08:00	08:15	0	0	0	**0**	0	0	0	**0**	**0**	0	7	0	**12**	0	5	0	**12**	**24**	**12**
08:15	08:30	1	0	1	**2**	0	0	0	**0**	**2**	0	4	0	**9**	0	4	0	**9**	**18**	**10**
08:30	08:45	1	1	0	**3**	0	0	0	**1**	**4**	0	6	0	**10**	1	3	0	**10**	**20**	**12**
08:45	09:00	0	0	0	**0**	0	0	0	**0**	**0**	0	5	0	**8**	0	3	0	**8**	**16**	**8**
09:00	09:15	0	0	0	**0**	0	0	1	**2**	**2**	1	4	0	**12**	0	6	0	**10**	**22**	**12**
09:15	09:30	0	0	0	**0**	0	0	1	**1**	**1**	0	5	0	**8**	0	2	0	**7**	**15**	**8**
09:30	09:45	0	0	0	**0**	0	0	0	**0**	**0**	0	5	0	**11**	0	6	0	**11**	**22**	**11**
09:45	10:00	0	2	1	**3**	0	0	0	**2**	**5**	0	6	0	**10**	0	4	0	**11**	**21**	**13**
11:30	11:45	0	0	1	**2**	0	0	0	**0**	**2**	0	1	0	**4**	1	3	0	**6**	**10**	**6**
11:45	12:00	0	0	0	**2**	0	0	0	**0**	**2**	0	4	0	**7**	2	3	0	**9**	**16**	**9**
12:00	12:15	0	0	1	**2**	0	0	0	**0**	**2**	0	5	0	**11**	1	6	0	**13**	**24**	**13**
12:15	12:30	1	0	0	**2**	0	0	0	**0**	**2**	0	5	0	**9**	1	3	0	**9**	**18**	**10**
12:30	12:45	0	0	1	**2**	0	0	0	**0**	**2**	0	3	1	**13**	0	9	0	**13**	**26**	**14**
12:45	13:00	0	0	0	**1**	0	1	0	**1**	**2**	0	4	0	**8**	0	4	0	**8**	**16**	**9**
13:00	13:15	1	0	0	**2**	0	0	0	**0**	**2**	0	3	0	**5**	1	1	0	**5**	**10**	**6**
13:15	13:30	0	1	0	**1**	0	0	0	**1**	**2**	0	5	0	**11**	0	6	0	**11**	**22**	**12**
15:00	15:15	0	0	1	**1**	0	0	0	**0**	**1**	0	6	0	**8**	0	2	0	**9**	**17**	**9**
15:15	15:30	0	0	0	**0**	1	0	0	**1**	**1**	0	1	0	**6**	0	5	0	**7**	**13**	**7**
15:30	15:45	0	0	0	**0**	0	0	0	**0**	**0**	0	3	0	**5**	0	2	0	**5**	**10**	**5**
15:45	16:00	0	0	0	**0**	0	0	1	**1**	**1**	0	3	0	**7**	0	3	0	**6**	**13**	**7**
16:00	16:15	1	0	0	**2**	0	0	0	**0**	**2**	0	3	1	**11**	0	6	0	**9**	**20**	**11**
16:15	16:30	0	0	0	**0**	0	0	0	**0**	**0**	0	2	0	**5**	0	3	0	**5**	**10**	**5**
16:30	16:45	1	0	1	**2**	0	0	0	**0**	**2**	0	3	0	**5**	0	1	0	**5**	**10**	**6**
16:45	17:00	0	0	0	**0**	0	0	0	**0**	**0**	0	4	0	**4**	0	0	0	**4**	**8**	**4**
17:00	17:15	0	0	0	**0**	1	0	0	**1**	**1**	0	3	0	**7**	0	4	0	**8**	**15**	**8**
17:15	17:30	0	0	0	**0**	0	0	0	**0**	**0**	0	1	0	**2**	0	1	0	**2**	**4**	**2**
17:30	17:45	0	0	0	**0**	0	0	0	**0**	**0**	0	0	0	**2**	0	2	0	**2**	**4**	**2**
17:45	18:00	0	0	0	**0**	0	0	0	**0**	**0**	0	1	0	**2**	0	1	0	**2**	**4**	**2**
Total:	None	6	4	8	**30**	2	1	3	**11**	**41**	1	116	3	**240**	8	111	0	**245**	**485**	**263**

Transportation Services - Traffic Services

Turning Movement Count - Study Results

ROOSEVELT AVE @ RICHMOND RD

Survey Date: Thursday, January 23, 2020 **WO No:** 39385

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

Full Study 15 Minute U-Turn Total

Time Period		ROOSEVELT AVE Northbound U-Turn Total	ROOSEVELT AVE Southbound U-Turn Total	RICHMOND RD Eastbound U-Turn Total	RICHMOND RD 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	1	1
09:30	09:45	0	0	1	0	1
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	1	1
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	1	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	1	1	2
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	1	1
17:45	18:00	0	0	0	0	0
Total		0	0	2	5	7

Traffic Signal Timing

City of Ottawa, Public Works Department

Traffic Signal Operations Unit

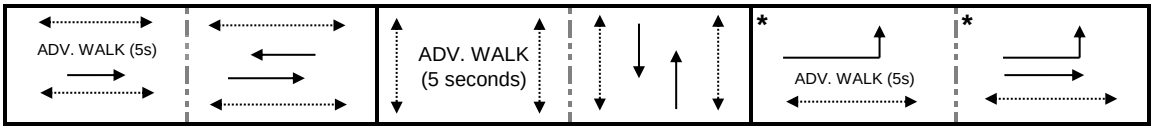
Intersection:	***Main:*** Richmond	***Side:***	Churchill
Controller:	**ATC3**	**TSD:**	**5229**
Author:	Matthew Anderson	**Date:**	26-May-2022

Existing Timing Plans†

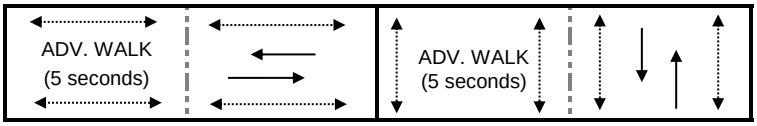
	Plan					**Ped Minimum Time**		
	AM Peak 1	**Off Peak** 2	**PM Peak** 3	**Night** 4	**Weekend** 5	***Walk***	***DW***	***A+R***
Cycle	80	75	90	65	75			
Offset	43	16	0	29	16			
EB Thru	45	43	57	33	43	14	11	3.3+2.8
WB Thru	31	31	45	33	31	14	11	3.3+2.8
NB Thru	35	32	33	32	32	7	11	3.6+2.6
SB Thru	35	32	33	32	32	7	11	3.6+2.6
EB Left	14	12	12	-	12	-	-	3.3+2.8

Phasing Sequence‡

Plan: 1,2,3,5



Plan: 4



Notes: 1) The Thru arrow is displayed during the East-West advanced walk, followed by the green ball.

Schedule

Weekday

Time	Plan
0:15	4
6:30	1
9:30	2
15:00	3
18:30	2
22:30	4

Saturday

Time	Plan
0:15	4
6:30	2
9:00	5
18:30	2
22:30	4

Sunday

Time	Plan
0:15	4
6:30	2
9:00	5
18:00	2
22:30	4

Notes

†: Time for each direction includes amber and all red intervals

‡: Start of first phase should be used as reference point for offset

Asterisk (*) Indicates actuated phase

(fp): Fully Protected Left Turn

◄·····► Pedestrian signal

Cost is $61.16 ($54.12 + HST)

Traffic Signal Timing

City of Ottawa, Public Works Department

Traffic Signal Operations Unit

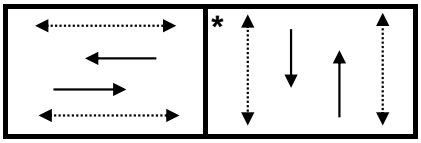
Intersection:	***Main:*** Richmond	***Side:***	Roosevelt
Controller:	MS 3200	**TSD:**	**5231**
Author:	Matthew Anderson	**Date:**	26-May-2022

Existing Timing Plans†

	Plan					**Ped Minimum Time**		
	AM Peak 1	**Off Peak** 2	**PM Peak** 3	**Night** 4	**Weekend** 5	***Walk***	***DW***	***A+R***
Cycle	75	70	85	65	70			
Offset	27	X	78	X	X			
EB Thru	45	40	55	35	40	18	8	3.3+2.1
WB Thru	45	40	55	35	40	18	8	3.3+2.1
NB Thru	30	30	30	30	30	14	10	3.3+2.3
SB Thru	30	30	30	30	30	14	10	3.3+2.3

Phasing Sequence‡

Plan: All



Schedule

Weekday

Time	Plan
0:15	4
6:30	1
9:00	2
15:00	3
18:30	2
23:00	4

Saturday

Time	Plan
0:15	4
9:10	5
18:30	2
23:30	4

Sunday

Time	Plan
0:15	4
9:10	2
22:30	4

Notes

†: Time for each direction includes amber and all red intervals

‡: Start of first phase should be used as reference point for offset

Asterisk (*) Indicates actuated phase

(fp): Fully Protected Left Turn

◄·····► Pedestrian signal

Cost is $61.16 ($54.12 + HST)

Traffic Signal Timing

City of Ottawa, Public Works Department

Traffic Signal Operations Unit

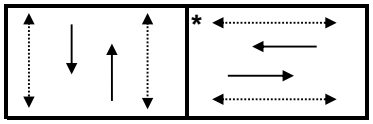
Intersection:	***Main:*** Churchill	***Side:***	Byron
Controller:	**ATC 3**	**TSD:**	**5634**
Author:	Matthew Anderson	**Date:**	26-May-2022

Existing Timing Plans†

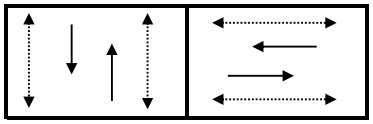
	Plan							Ped Minimum Time		
	AM Peak	**Off Peak**	**PM Peak**	**Night**	**Weekend**	**AM School**	**PM School**	***Walk***	***DW***	***A+R***
	1	2	3	4	5	11	12			
Cycle	80	75	90	60	75	80	75			
Offset	74	45	40	X	45	74	45			
NB Thru	42	40	45	32	40	42	40	10	11	3.3+2.1
SB Thru	42	40	45	32	40	42	40	10	11	3.3+2.1
EB Thru	38	35	45	28	35	38	35	10	15	3.3+2.3
WB Thru	38	35	45	28	35	38	35	10	15	3.3+2.3

Phasing Sequence‡

Plan: **1,2,3,4,5**



Plan: **11,12**



Notes: 1) In plan 4, the EW walk time is 7s

Schedule

Weekday

Time	Plan
0:15	4
6:30	1
7:45	11
8:15	1
9:30	2
14:15	12
15:00	3
18:30	2
22:30	4

Saturday

Time	Plan
0:15	4
6:30	2
9:00	5
18:30	2
22:30	4

Sunday

Time	Plan
0:15	4
6:30	2
9:00	5
18:00	2
22:30	4

Notes

†: Time for each direction includes amber and all red intervals

‡: Start of first phase should be used as reference point for offset

Asterisk (*) Indicates actuated phase

(fp): Fully Protected Left Turn

◄·····► Pedestrian signal

Cost is $61.16 ($54.12 + HST)

Traffic Signal Timing

City of Ottawa, Public Works Department

Traffic Signal Operations Unit

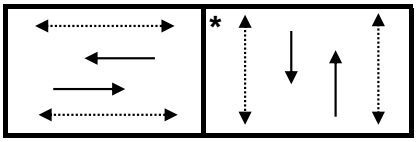
Intersection:	***Main:*** Byron	***Side:***	Roosevelt
Controller:	**ATC 3**	**TSD:**	**6765**
Author:	Matthew Anderson	**Date:**	26-May-2022

Existing Timing Plans†

	Plan					**Ped Minimum Time**		
	AM Peak 1	**Off Peak** 2	**PM Peak** 3	**Night** 4	**Weekend** 5	***Walk***	***DW***	***A+R***
Cycle	70	65	70	60	65			
Offset	X	X	X	X	X			
EB Thru	50	45	50	40	45	7	10	3.3+2.2
WB Thru	50	45	50	40	45	7	10	3.3+2.2
NB Thru	20	20	20	20	20	7	8	3.3+1.7
SB Thru	20	20	20	20	20	7	8	3.3+1.7

Phasing Sequence‡

Plan: All



Schedule

Weekday

Time	Plan
0:15	4
6:30	1
9:30	2
15:00	3
18:30	2
23:00	4

Saturday

Time	Plan
0:15	4
9:10	5
18:30	2
23:30	4

Sunday

Time	Plan
0:15	4
9:10	2
22:30	4

Notes

†: Time for each direction includes amber and all red intervals

‡: Start of first phase should be used as reference point for offset

Asterisk (*) Indicates actuated phase

(fp): Fully Protected Left Turn

◄·····► Pedestrian signal

Cost is $61.16 ($54.12 + HST)

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2016 **To:** December 31, 2020

Location: BYRON AVE @ CHURCHILL AVE

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

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Mar-26, Sat,12:30	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2016-Jun-11, Sat,09:49	Rain	Turning movement	P.D. only	Wet	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
					South	Stopped	Pick-up truck	Other motor vehicle	
2017-Sep-12, Tue,14:43	Clear	Turning movement	P.D. only	Dry	West	Turning right	Unknown	Cyclist	0
					West	Going ahead	Bicycle	Other motor vehicle	
2019-Nov-05, Tue,21:32	Clear	Turning movement	Non-fatal injury	Dry	East	Turning left	Automobile, station wagon	Cyclist	0
					West	Changing lanes	Bicycle	Other motor vehicle	
2020-Jan-30, Thu,08:58	Clear	SMV other	Non-fatal injury	Loose snow	South	Turning left	Passenger van	Pedestrian	1

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2016 **To:** December 31, 2020

Location: BYRON AVE @ ROOSEVELT AVE

Traffic Control: Traffic signal **Total Collisions:** 3

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2017-Feb-11, Sat,08:55	Clear	Other	P.D. only	Packed snow	East	Overtaking	Automobile, station wagon	Other motor vehicle	0
					West	Reversing	Truck - closed	Other motor vehicle	
2017-Mar-24, Fri,10:41	Snow	Other	P.D. only	Packed snow	West	Reversing	Pick-up truck	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Oct-12, Thu,15:26	Clear	Turning movement	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2016 **To:** December 31, 2020

Location: CHURCHILL AVE @ DANFORTH AVE

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

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2018-Mar-21, Wed,11:46	Clear	Sideswipe	P.D. only	Dry	South	Merging	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2016 **To:** December 31, 2020

Location: CHURCHILL AVE @ RICHMOND RD

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

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Jan-04, Mon,12:08	Clear	Rear end	P.D. only	Wet	South	Changing lanes	Pick-up truck	Other motor vehicle	0
					South	Turning right	Automobile, station wagon	Other motor vehicle	
2016-Jun-02, Thu,14:22	Clear	SMV other	Non-fatal injury	Dry	South	Turning right	Automobile, station wagon	Pedestrian	1
2016-Jun-17, Fri,05:29	Clear	Angle	P.D. only	Dry	East	Going ahead	Pick-up truck	Other motor vehicle	0
					South	Going ahead	Pick-up truck	Other motor vehicle	
2016-Aug-07, Sun,12:12	Clear	Rear end	P.D. only	Dry	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Pick-up truck	Other motor vehicle	
2016-Aug-13, Sat,00:00	Clear	SMV unattended vehicle	P.D. only	Dry	North	Unknown	Unknown	Unattended vehicle	0
2016-Dec-09, Fri,08:40	Clear	Rear end	P.D. only	Ice	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2016-Dec-31, Sat,12:01	Snow	SMV other	Non-fatal injury	Loose snow	East	Turning left	Automobile, station wagon	Pedestrian	1
2017-Jan-28, Sat,15:02	Snow	Rear end	Non-fatal injury	Wet	East	Going ahead	Automobile, station wagon	Other motor vehicle	1
					East	Stopped	Automobile, station wagon	Other motor vehicle	
					West	Stopped	Automobile, station wagon	Other motor vehicle	
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Sep-06, Wed,00:00	Clear	SMV unattended vehicle	P.D. only	Dry	Unknown	Unknown	Unknown	Unattended vehicle	0
2017-Sep-26, Tue,19:08	Clear	Turning movement	P.D. only	Dry	North	Going ahead	Pick-up truck	Other motor vehicle	0
					South	Turning left	Automobile, station wagon	Other motor vehicle	
2018-Feb-09, Fri,12:45	Clear	Sideswipe	P.D. only	Wet	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Mar-12, Mon,10:21	Clear	Turning movement	P.D. only	Dry	North	Stopped	Pick-up truck	Other motor vehicle	0
					North	Turning right	Truck - tractor	Other	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2016 **To:** December 31, 2020

Location: CHURCHILL AVE @ RICHMOND RD

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

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2018-Jun-09, Sat,10:48	Clear	Angle	P.D. only	Dry	North	Turning right	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Sep-11, Tue,18:51	Clear	Turning movement	P.D. only	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Oct-27, Sat,21:39	Snow	SMV other	Non-fatal injury	Wet	West	Turning left	Passenger van	Pedestrian	2
2018-Nov-06, Tue,13:25	Rain	Rear end	Non-fatal injury	Wet	East	Going ahead	Truck - closed	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Dec-17, Mon,10:39	Clear	Sideswipe	P.D. only	Dry	South	Turning right	Automobile, station wagon	Other motor vehicle	0
					South	Turning right	Truck - open	Other motor vehicle	
2019-Jan-31, Thu,07:25	Clear	Turning movement	P.D. only	Packed snow	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Mar-20, Wed,16:55	Clear	Rear end	P.D. only	Dry	West	Going ahead	Unknown	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Jul-12, Fri,21:01	Clear	Sideswipe	P.D. only	Dry	South	Overtaking	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Dec-09, Mon,14:41	Rain	Turning movement	Non-fatal injury	Wet	South	Overtaking	Automobile, station wagon	Other motor vehicle	0
					South	Turning right	Automobile, station wagon	Other motor vehicle	
2020-Jan-15, Wed,13:10	Clear	Sideswipe	P.D. only	Wet	North	Overtaking	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2020-May-17, Sun,17:18	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Pick-up truck	Other motor vehicle	
2020-Sep-26, Sat,17:07	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Delivery van	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2016 **To:** December 31, 2020

Location: CHURCHILL AVE @ RICHMOND RD

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

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2020-Dec-13, Sun,07:26	Clear	Rear end	Non-fatal injury	Wet	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
					East	Stopped	Automobile, station wagon	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2016 **To:** December 31, 2020

Location: DANFORTH AVE @ ROOSEVELT AVE

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

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2017-Aug-12, Sat,14:08	Clear	Other	P.D. only	Dry	West	Unknown	Unknown	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2016 **To:** December 31, 2020

Location: DANFORTH AVE btwn CHURCHILL AVE N & ROOSEVELT AVE

Traffic Control: No control **Total Collisions:** 5

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-May-12, Thu,15:51	Clear	Angle	P.D. only	Dry	North	Reversing	Pick-up truck	Other motor vehicle	0
					West	Going ahead	Pick-up truck	Other motor vehicle	
2018-Dec-21, Fri,10:00	Clear	Angle	P.D. only	Dry	South	Reversing	Unknown	Other motor vehicle	0
					West	Going ahead	Passenger van	Other motor vehicle	
2019-Feb-24, Sun,12:00	Rain	SMV unattended vehicle	P.D. only	Wet	West	Unknown	Unknown	Unattended vehicle	0
2019-Sep-13, Fri,11:30	Clear	Other	P.D. only	Dry	East	Reversing	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2020-Mar-03, Tue,00:00	Rain	SMV unattended vehicle	P.D. only	Wet	Unknown	Unknown	Unknown	Unattended vehicle	0

Transportation Services - Traffic Services

Collision Details Report - Public Version

From: January 1, 2016 **To:** December 31, 2020

Location: ROOSEVELT AVE @ RICHMOND RD

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

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Apr-09, Sat,10:57	Clear	Rear end	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Jan-02, Tue,12:14	Snow	Rear end	P.D. only	Loose snow	East	Slowing or stopping	Passenger van	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Jan-03, Thu,14:19	Snow	Rear end	Non-fatal injury	Loose snow	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2019-Jan-03, Thu,15:48	Snow	Rear end	P.D. only	Slush	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2019-Jul-26, Fri,07:45	Clear	Rear end	P.D. only	Dry	North	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Sep-17, Tue,13:51	Clear	Sideswipe	P.D. only	Dry	East	Pulling away from shoulder or curb	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Pick-up truck	Other motor vehicle	
2020-Jan-06, Mon,10:55	Snow	Rear end	P.D. only	Slush	East	Unknown	Unknown	Other motor vehicle	0
					East	Stopped	Pick-up truck	Other motor vehicle	
2020-Jul-22, Wed,08:44	Clear	Other	P.D. only	Dry	East	Reversing	Unknown	Other motor vehicle	0
					West	Stopped	Pick-up truck	Other motor vehicle	

APPENDIX E: TRANS SNAPSHOTS, 2011 AND 2031 HORIZON YEARS

TRANS Regional Model

Version 2.15 - Assigned June 16, 2020

AM Peak Hour Total Traffic Volume

Richmond Road and Churchill Ave

2011 Model - Basecase

N/A

User Initials: KN
Plot Prepared: July 4, 2022
EMME Scenario: 21713

TRANS

Legend

AM Peak Hour Total Traffic Volume

1000 2000 3000 4000 5000

N

Distance (m)

50 100 150 200 250

TRANS Regional Model

Version 2.15 - Assigned June 16, 2020

AM Peak Hour Total Traffic Volume

Richmond Rd and Churchill Ave

2031 Model - Basecase

N/A

User Initials: KN
Plot Prepared: July 4, 2022
EMME Scenario: 21715

TRANS

Legend

AM Peak Hour Total Traffic Volume

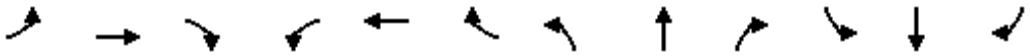
1000 2000 3000 4000 5000

N

Distance (m)

50 100 150 200 250

APPENDIX F: EXISTING (2022) SYNCHRO ANALYSIS

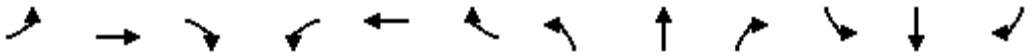


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	633	10	14	290	19	26	10	32	32	12	7
Future Volume (vph)	3	633	10	14	290	19	26	10	32	32	12	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	4.0	3.7	3.7	4.5	3.7	3.7	4.5	3.7
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.992			0.936			0.981	
Flt Protected					0.998			0.981			0.969	
Satd. Flow (prot)	0	1676	0	0	1687	0	0	1812	0	0	1987	0
Flt Permitted		0.999			0.963			0.896			0.824	
Satd. Flow (perm)	0	1675	0	0	1628	0	0	1655	0	0	1689	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		2			6			36			8	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		154.9			294.4			54.7			103.0	
Travel Time (s)		11.2			21.2			3.9			7.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	3%	0%	7%	5%	0%	8%	10%	3%	0%	0%	0%
Parking (#/hr)		0			0							
Adj. Flow (vph)	3	703	11	16	322	21	29	11	36	36	13	8
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	717	0	0	359	0	0	76	0	0	57	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	30.6	30.6		30.6	30.6		30.0	30.0		30.0	30.0	
Total Split (s)	45.0	45.0		45.0	45.0		30.0	30.0		30.0	30.0	
Total Split (%)	60.0%	60.0%		60.0%	60.0%		40.0%	40.0%		40.0%	40.0%	
Maximum Green (s)	39.4	39.4		39.4	39.4		24.4	24.4		24.4	24.4	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.3	2.3		2.3	2.3		2.3	2.3		2.3	2.3	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.6			5.6			5.6			5.6	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		Max	Max		Max	Max	
Walk Time (s)	14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		39.4			39.4			24.4			24.4	
Actuated g/C Ratio		0.53			0.53			0.33			0.33	
v/c Ratio		0.81			0.42			0.14			0.10	
Control Delay		24.3			12.5			11.7			16.4	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		24.3			12.5			11.7			16.4	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		C			B			B			B	
Approach Delay		24.3			12.5			11.7			16.4	
Approach LOS		C			B			B			B	
Queue Length 50th (m)		78.2			28.2			3.9			4.8	
Queue Length 95th (m)		#144.0			46.8			12.4			12.3	
Internal Link Dist (m)		130.9			270.4			30.7			79.0	
Turn Bay Length (m)												
Base Capacity (vph)		880			858			562			554	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.81			0.42			0.14			0.10	

Intersection Summary			
Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 27 (36%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 19.7		Intersection LOS: B	
Intersection Capacity Utilization 48.9%		ICU Level of Service A	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 1: Roosevelt Avenue & Richmond Road

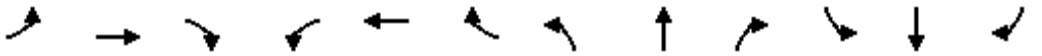


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	243	8	12	145	28	3	29	14	26	19	12
Future Volume (vph)	35	243	8	12	145	28	3	29	14	26	19	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	4.1	3.7	3.7	4.5	3.7	3.7	4.8	3.7
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996			0.980			0.958			0.972	
Flt Protected		0.994			0.997			0.997			0.978	
Satd. Flow (prot)	0	1902	0	0	1903	0	0	1912	0	0	1978	0
Flt Permitted		0.949			0.977			0.987			0.865	
Satd. Flow (perm)	0	1816	0	0	1865	0	0	1893	0	0	1749	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			25			16			13	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		113.7			54.4			135.0			20.2	
Travel Time (s)		8.2			3.9			9.7			1.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	0%	0%	0%	3%	4%	0%	7%	0%	4%	5%	0%
Adj. Flow (vph)	39	270	9	13	161	31	3	32	16	29	21	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	318	0	0	205	0	0	51	0	0	63	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Minimum Split (s)	23.5	23.5		23.5	23.5		20.0	20.0		20.0	20.0	
Total Split (s)	50.0	50.0		50.0	50.0		20.0	20.0		20.0	20.0	
Total Split (%)	71.4%	71.4%		71.4%	71.4%		28.6%	28.6%		28.6%	28.6%	
Maximum Green (s)	44.5	44.5		44.5	44.5		15.0	15.0		15.0	15.0	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.2	2.2		2.2	2.2		1.7	1.7		1.7	1.7	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.5			5.5			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		8.0	8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		44.5			44.5			15.0			15.0	
Actuated g/C Ratio		0.64			0.64			0.21			0.21	
v/c Ratio		0.28			0.17			0.12			0.16	
Control Delay		6.3			5.0			17.7			20.0	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		6.3			5.0			17.7			20.0	
LOS		A			A			B			C	
Approach Delay		6.3			5.0			17.7			20.0	
Approach LOS		A			A			B			C	
Queue Length 50th (m)		15.7			8.2			3.7			5.3	
Queue Length 95th (m)		26.2			15.4			11.6			14.3	
Internal Link Dist (m)		89.7			30.4			111.0			0.1	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (m)												
Base Capacity (vph)		1155			1194			418			385	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.28			0.17			0.12			0.16	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.28			
Intersection Signal Delay: 8.2		Intersection LOS: A	
Intersection Capacity Utilization 42.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 2: Roosevelt Avenue & Byron Avenue



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	262	390	29	43	183	19	24	273	83	21	319	135
Future Volume (vph)	262	390	29	43	183	19	24	273	83	21	319	135
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.3	4.0	3.7	3.3	4.0	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Storage Length (m)	33.0		0.0	27.0		0.0	0.0		25.0	0.0		35.0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.990			0.986				0.850			0.850
Flt Protected	0.950			0.950				0.996			0.997	
Satd. Flow (prot)	1711	1911	0	1662	1832	0	0	1814	1601	0	1841	1570
Flt Permitted	0.493			0.496				0.800			0.947	
Satd. Flow (perm)	888	1911	0	868	1832	0	0	1457	1601	0	1748	1570
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			7				180			180
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		294.4			106.1			75.8			111.4	
Travel Time (s)		21.2			7.6			5.5			8.0	
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
Heavy Vehicles (%)	2%	3%	0%	5%	7%	5%	0%	6%	2%	5%	4%	4%
Adj. Flow (vph)	291	433	32	48	203	21	27	303	92	23	354	150
Shared Lane Traffic (%)												
Lane Group Flow (vph)	291	465	0	48	224	0	0	330	92	0	377	150
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2			6			4		4	8		8
Detector Phase	5	2		6	6		4	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.1	31.1		31.0	31.0		24.2	24.2	24.2	24.2	24.2	24.2
Total Split (s)	14.0	40.0		31.0	31.0		30.0	30.0	30.0	30.0	30.0	30.0
Total Split (%)	17.5%	50.0%		38.8%	38.8%		37.5%	37.5%	37.5%	37.5%	37.5%	37.5%
Maximum Green (s)	7.9	33.9		24.9	24.9		23.8	23.8	23.8	23.8	23.8	23.8
Yellow Time (s)	3.3	3.3		3.3	3.3		3.6	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	2.8	2.8		2.8	2.8		2.6	2.6	2.6	2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Lost Time (s)	6.1	6.1		6.1	6.1			6.2	6.2		6.2	6.2
Lead/Lag	Lead	Lag		Lag	Lag		Lag	Lag	Lag	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		C-Max	C-Max		None	None	None	None	None	None
Walk Time (s)		14.0		14.0	14.0		7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)		0		0	0		0	0	0	0	0	0
Act Effct Green (s)	45.5	45.5		29.4	29.4			22.2	22.2		22.2	22.2
Actuated g/C Ratio	0.57	0.57		0.37	0.37			0.28	0.28		0.28	0.28
v/c Ratio	0.48	0.43		0.15	0.33			0.81	0.16		0.78	0.27
Control Delay	13.5	12.4		21.2	21.1			31.1	0.5		37.4	3.2

Lane Group	Ø1	Ø3	Ø7
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Ideal Flow (vphpl)			
Lane Width (m)			
Storage Length (m)			
Storage Lanes			
Taper Length (m)			
Lane Util. Factor			
Frt			
Flt Protected			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Right Turn on Red			
Satd. Flow (RTOR)			
Link Speed (k/h)			
Link Distance (m)			
Travel Time (s)			
Peak Hour Factor			
Heavy Vehicles (%)			
Adj. Flow (vph)			
Shared Lane Traffic (%)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	1	3	7
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	3.0	3.0	1.0
Minimum Split (s)	5.0	5.0	5.0
Total Split (s)	5.0	5.0	5.0
Total Split (%)	6%	6%	6%
Maximum Green (s)	3.0	3.0	3.0
Yellow Time (s)	2.0	2.0	2.0
All-Red Time (s)	0.0	0.0	0.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0
Recall Mode	None	None	None
Walk Time (s)			
Flash Dont Walk (s)			
Pedestrian Calls (#/hr)			
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			

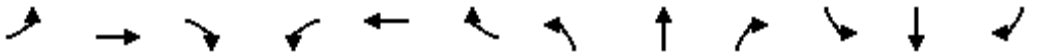
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Delay	13.5	12.4		21.2	21.1			31.1	0.5		37.4	3.2
LOS	B	B		C	C			C	A		D	A
Approach Delay		12.8			21.1			24.4			27.7	
Approach LOS		B			C			C			C	
Queue Length 50th (m)	21.5	37.2		5.2	24.9			24.5	0.0		52.0	0.0
Queue Length 95th (m)	42.7	69.3		13.3	43.9			30.5	0.0		73.0	7.7
Internal Link Dist (m)		270.4			82.1			51.8			87.4	
Turn Bay Length (m)	33.0			27.0					25.0			35.0
Base Capacity (vph)	607	1088		318	677			457	626		549	616
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	0.48	0.43		0.15	0.33			0.72	0.15		0.69	0.24

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 52 (65%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 20.4		Intersection LOS: C	
Intersection Capacity Utilization 76.0%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 3: Churchill Avenue N & Richmond Road

Lane Group	Ø1	Ø3	Ø7
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

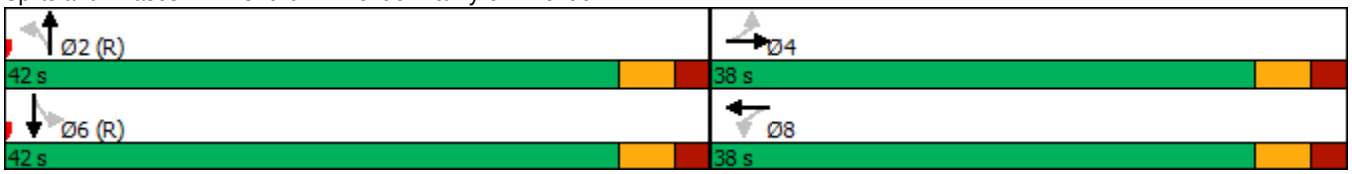


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	56	170	57	51	129	47	26	326	69	34	309	30
Future Volume (vph)	56	170	57	51	129	47	26	326	69	34	309	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (m)	3.7	3.7	3.7	3.7	3.7	3.7	3.0	4.0	3.7	3.0	4.0	3.7
Storage Length (m)	0.0		0.0	0.0		0.0	15.0		0.0	18.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.973			0.972			0.974			0.987	
Flt Protected		0.990			0.989		0.950			0.950		
Satd. Flow (prot)	0	1825	0	0	1819	0	1560	1853	0	1685	1869	0
Flt Permitted		0.889			0.869		0.449			0.389		
Satd. Flow (perm)	0	1639	0	0	1598	0	737	1853	0	690	1869	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		19			20			18			8	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		222.5			63.6			184.9			45.3	
Travel Time (s)		16.0			4.6			13.3			3.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	4%	1%	0%	0%	2%	2%	8%	5%	1%	0%	5%	3%
Adj. Flow (vph)	62	189	63	57	143	52	29	362	77	38	343	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	314	0	0	252	0	29	439	0	38	376	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	30.6	30.6		30.6	30.6		26.4	26.4		26.4	26.4	
Total Split (s)	38.0	38.0		38.0	38.0		42.0	42.0		42.0	42.0	
Total Split (%)	47.5%	47.5%		47.5%	47.5%		52.5%	52.5%		52.5%	52.5%	
Maximum Green (s)	32.4	32.4		32.4	32.4		36.6	36.6		36.6	36.6	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.3	2.3		2.3	2.3		2.1	2.1		2.1	2.1	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.6			5.6		5.4	5.4		5.4	5.4	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		32.4			32.4		36.6	36.6		36.6	36.6	
Actuated g/C Ratio		0.40			0.40		0.46	0.46		0.46	0.46	
v/c Ratio		0.47			0.38		0.09	0.51		0.12	0.44	
Control Delay		19.1			17.5		13.2	17.3		4.8	5.1	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.2	
Total Delay		19.1			17.5		13.2	17.3		4.8	5.3	
LOS		B			B		B	B		A	A	
Approach Delay		19.1			17.5			17.1			5.3	
Approach LOS		B			B			B			A	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (m)		31.7			23.9		2.4	43.3		1.0	9.7	
Queue Length 95th (m)		53.4			41.7		7.0	68.2		m2.2	18.2	
Internal Link Dist (m)		198.5			39.6			160.9			21.3	
Turn Bay Length (m)							15.0			18.0		
Base Capacity (vph)		675			659		337	857		315	859	
Starvation Cap Reductn		0			0		0	0		0	97	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.47			0.38		0.09	0.51		0.12	0.49	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 60			
Control Type: Pretimed			
Maximum v/c Ratio: 0.51			
Intersection Signal Delay: 14.2		Intersection LOS: B	
Intersection Capacity Utilization 57.4%		ICU Level of Service B	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 4: Churchill Avenue N & Byron Avenue



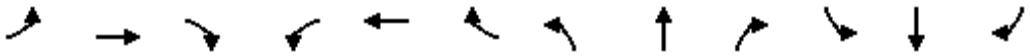
Intersection	
Int Delay, s/veh	3.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	33	19	49	43	12	24
Future Vol, veh/h	33	19	49	43	12	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	0	0	5	0	0	5
Mvmt Flow	37	21	54	48	13	27

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	131	78	0	0	102	0
Stage 1	78	-	-	-	-	-
Stage 2	53	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	868	988	-	-	1503	-
Stage 1	950	-	-	-	-	-
Stage 2	975	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	860	988	-	-	1503	-
Mov Cap-2 Maneuver	860	-	-	-	-	-
Stage 1	950	-	-	-	-	-
Stage 2	966	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.3	0	2.5
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	903	1503	-
HCM Lane V/C Ratio	-	-	0.064	0.009	-
HCM Control Delay (s)	-	-	9.3	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.2	0	-

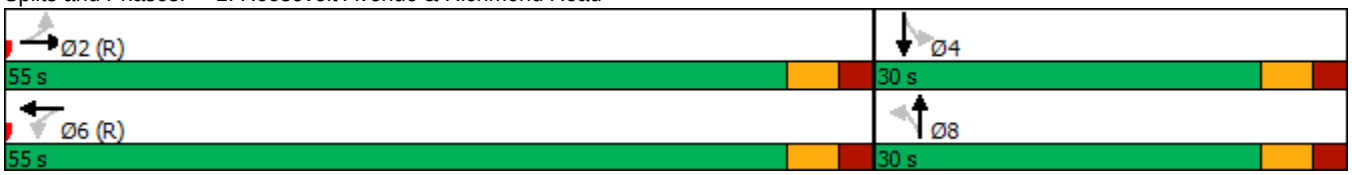


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	403	22	24	696	31	34	18	48	32	11	14
Future Volume (vph)	6	403	22	24	696	31	34	18	48	32	11	14
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (m)	3.7	3.7	3.7	3.7	4.0	3.7	3.7	4.5	3.7	3.7	4.5	3.7
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.993			0.994			0.936			0.966	
Flt Protected		0.999			0.998			0.983			0.973	
Satd. Flow (prot)	0	1581	0	0	1663	0	0	1786	0	0	1830	0
Flt Permitted		0.989			0.977			0.891			0.819	
Satd. Flow (perm)	0	1565	0	0	1628	0	0	1619	0	0	1540	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5			4			53			16	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		154.9			294.4			54.7			103.0	
Travel Time (s)		11.2			21.2			3.9			7.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	3%	0%	0%	1%	0%	3%	0%	2%	3%	0%	0%
Parking (#/hr)		0			0							
Adj. Flow (vph)	7	448	24	27	773	34	38	20	53	36	12	16
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	479	0	0	834	0	0	111	0	0	64	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Detector Phase	2	2		6	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		4.0	4.0		4.0	4.0	
Minimum Split (s)	30.6	30.6		30.6	30.6		30.0	30.0		30.0	30.0	
Total Split (s)	55.0	55.0		55.0	55.0		30.0	30.0		30.0	30.0	
Total Split (%)	64.7%	64.7%		64.7%	64.7%		35.3%	35.3%		35.3%	35.3%	
Maximum Green (s)	49.4	49.4		49.4	49.4		24.4	24.4		24.4	24.4	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.3	2.3		2.3	2.3		2.3	2.3		2.3	2.3	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.6			5.6			5.6			5.6	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	C-Max	C-Max		C-Max	C-Max		Max	Max		Max	Max	
Walk Time (s)	14.0	14.0		14.0	14.0		14.0	14.0		14.0	14.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		49.4			49.4			24.4			24.4	
Actuated g/C Ratio		0.58			0.58			0.29			0.29	
v/c Ratio		0.53			0.88			0.22			0.14	
Control Delay		13.2			28.3			14.4			19.0	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		13.2			28.3			14.4			19.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS		B			C			B			B	
Approach Delay		13.2			28.3			14.4			19.0	
Approach LOS		B			C			B			B	
Queue Length 50th (m)		42.7			106.3			6.9			5.7	
Queue Length 95th (m)		67.5			#190.3			18.9			14.9	
Internal Link Dist (m)		130.9			270.4			30.7			79.0	
Turn Bay Length (m)												
Base Capacity (vph)		911			947			502			453	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.53			0.88			0.22			0.14	

Intersection Summary			
Area Type:	Other		
Cycle Length: 85			
Actuated Cycle Length: 85			
Offset: 27 (32%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 22.0		Intersection LOS: C	
Intersection Capacity Utilization 71.2%		ICU Level of Service C	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 1: Roosevelt Avenue & Richmond Road

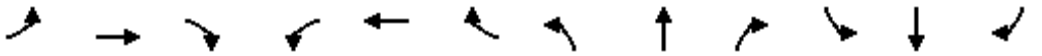


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	13	158	7	19	320	46	5	21	13	31	20	31
Future Volume (vph)	13	158	7	19	320	46	5	21	13	31	20	31
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (m)	3.7	3.7	3.7	3.7	4.1	3.7	3.7	4.5	3.7	3.7	4.8	3.7
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995			0.984			0.956			0.949	
Flt Protected		0.996			0.998			0.993			0.981	
Satd. Flow (prot)	0	1788	0	0	1861	0	0	1880	0	0	1878	0
Flt Permitted		0.967			0.983			0.964			0.883	
Satd. Flow (perm)	0	1736	0	0	1833	0	0	1825	0	0	1690	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6			19			14			34	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		113.7			54.4			135.0			20.2	
Travel Time (s)		8.2			3.9			9.7			1.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	0%	1%	0%	0%	0%	2%	0%	0%	0%	3%	0%	0%
Adj. Flow (vph)	14	176	8	21	356	51	6	23	14	34	22	34
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	198	0	0	428	0	0	43	0	0	90	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	2			6			8			4		
Minimum Split (s)	23.5	23.5		23.5	23.5		20.0	20.0		20.0	20.0	
Total Split (s)	50.0	50.0		50.0	50.0		20.0	20.0		20.0	20.0	
Total Split (%)	71.4%	71.4%		71.4%	71.4%		28.6%	28.6%		28.6%	28.6%	
Maximum Green (s)	44.5	44.5		44.5	44.5		15.0	15.0		15.0	15.0	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.2	2.2		2.2	2.2		1.7	1.7		1.7	1.7	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.5			5.5			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	10.0	10.0		10.0	10.0		8.0	8.0		8.0	8.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		44.5			44.5			15.0			15.0	
Actuated g/C Ratio		0.64			0.64			0.21			0.21	
v/c Ratio		0.18			0.37			0.11			0.23	
Control Delay		5.6			6.8			17.5			17.3	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		5.6			6.8			17.5			17.3	
LOS		A			A			B			B	
Approach Delay		5.6			6.8			17.5			17.3	
Approach LOS		A			A			B			B	
Queue Length 50th (m)		8.9			21.7			3.1			6.0	
Queue Length 95th (m)		16.3			35.7			10.3			16.8	
Internal Link Dist (m)		89.7			30.4			111.0			0.1	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (m)												
Base Capacity (vph)		1105			1172			402			388	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.18			0.37			0.11			0.23	

Intersection Summary			
Area Type:	Other		
Cycle Length: 70			
Actuated Cycle Length: 70			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.37			
Intersection Signal Delay: 8.3		Intersection LOS: A	
Intersection Capacity Utilization 46.1%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 2: Roosevelt Avenue & Byron Avenue



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	157	298	46	128	451	31	27	263	76	19	257	280
Future Volume (vph)	157	298	46	128	451	31	27	263	76	19	257	280
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (m)	3.3	4.0	3.7	3.3	4.0	3.7	3.7	3.7	3.7	3.7	3.7	3.7
Storage Length (m)	33.0		0.0	27.0		0.0	0.0		25.0	0.0		35.0
Storage Lanes	1		0	1		0	0		1	0		1
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.980			0.990				0.850			0.850
Flt Protected	0.950			0.950				0.995			0.997	
Satd. Flow (prot)	1589	1806	0	1637	1844	0	0	1757	1547	0	1721	1547
Flt Permitted	0.250			0.535				0.917			0.960	
Satd. Flow (perm)	418	1806	0	922	1844	0	0	1619	1547	0	1658	1547
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		13			5				160			300
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		294.4			106.1			75.8			111.4	
Travel Time (s)		21.2			7.6			5.5			8.0	
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
Heavy Vehicles (%)	4%	2%	2%	1%	1%	0%	4%	3%	0%	11%	5%	0%
Adj. Flow (vph)	174	331	51	142	501	34	30	292	84	21	286	311
Shared Lane Traffic (%)												
Lane Group Flow (vph)	174	382	0	142	535	0	0	322	84	0	307	311
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	5	2			6			4			8	
Permitted Phases	2			6			4		4	8		8
Detector Phase	5	2		6	6		4	4	4	8	8	8
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.1	31.1		32.0	32.0		24.2	24.2	24.2	24.2	24.2	24.2
Total Split (s)	12.0	52.0		45.0	45.0		28.0	28.0	28.0	28.0	28.0	28.0
Total Split (%)	13.3%	57.8%		50.0%	50.0%		31.1%	31.1%	31.1%	31.1%	31.1%	31.1%
Maximum Green (s)	5.9	45.9		38.9	38.9		21.8	21.8	21.8	21.8	21.8	21.8
Yellow Time (s)	3.3	3.3		3.3	3.3		3.6	3.6	3.6	3.6	3.6	3.6
All-Red Time (s)	2.8	2.8		2.8	2.8		2.6	2.6	2.6	2.6	2.6	2.6
Lost Time Adjust (s)	0.0	0.0		0.0	0.0			0.0	0.0		0.0	0.0
Total Lost Time (s)	6.1	6.1		6.1	6.1			6.2	6.2		6.2	6.2
Lead/Lag	Lead	Lag		Lag	Lag		Lag	Lag	Lag	Lag	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max		C-Max	C-Max		None	None	None	None	None	None
Walk Time (s)		14.0		14.0	14.0		7.0	7.0	7.0	7.0	7.0	7.0
Flash Dont Walk (s)		11.0		11.0	11.0		11.0	11.0	11.0	11.0	11.0	11.0
Pedestrian Calls (#/hr)		0		0	0		0	0	0	0	0	0
Act Effct Green (s)	52.0	52.0		39.8	39.8			25.7	25.7		25.7	25.7
Actuated g/C Ratio	0.58	0.58		0.44	0.44			0.29	0.29		0.29	0.29
v/c Ratio	0.54	0.36		0.35	0.65			0.70	0.15		0.65	0.47
Control Delay	16.5	11.3		20.1	24.6			38.0	7.4		35.2	6.2

Lane Group	Ø1	Ø3	Ø7
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Ideal Flow (vphpl)			
Lane Width (m)			
Storage Length (m)			
Storage Lanes			
Taper Length (m)			
Lane Util. Factor			
Frt			
Flt Protected			
Satd. Flow (prot)			
Flt Permitted			
Satd. Flow (perm)			
Right Turn on Red			
Satd. Flow (RTOR)			
Link Speed (k/h)			
Link Distance (m)			
Travel Time (s)			
Peak Hour Factor			
Heavy Vehicles (%)			
Adj. Flow (vph)			
Shared Lane Traffic (%)			
Lane Group Flow (vph)			
Turn Type			
Protected Phases	1	3	7
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	3.0	3.0	1.0
Minimum Split (s)	5.0	5.0	5.0
Total Split (s)	5.0	5.0	5.0
Total Split (%)	6%	6%	6%
Maximum Green (s)	3.0	3.0	3.0
Yellow Time (s)	2.0	2.0	2.0
All-Red Time (s)	0.0	0.0	0.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag	Lead	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0
Recall Mode	None	None	None
Walk Time (s)			
Flash Dont Walk (s)			
Pedestrian Calls (#/hr)			
Act Effct Green (s)			
Actuated g/C Ratio			
v/c Ratio			
Control Delay			

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0		0.1	0.0			0.0	0.0		0.0	0.0
Total Delay	16.5	11.3		20.3	24.6			38.0	7.4		35.2	6.2
LOS	B	B		C	C			D	A		D	A
Approach Delay		12.9			23.7			31.7			20.6	
Approach LOS		B			C			C			C	
Queue Length 50th (m)	13.7	32.5		16.0	71.0			54.7	2.6		45.5	1.4
Queue Length 95th (m)	23.8	50.6		30.7	106.2			m82.3	m9.9		72.4	19.3
Internal Link Dist (m)		270.4			82.1			51.8			87.4	
Turn Bay Length (m)	33.0			27.0					25.0			35.0
Base Capacity (vph)	321	1049		407	817			463	557		474	657
Starvation Cap Reductn	0	0		0	0			0	0		0	0
Spillback Cap Reductn	0	46		23	0			0	0		0	0
Storage Cap Reductn	0	0		0	0			0	0		0	0
Reduced v/c Ratio	0.54	0.38		0.37	0.65			0.70	0.15		0.65	0.47

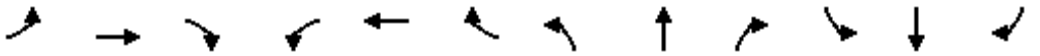
Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay: 21.6		Intersection LOS: C	
Intersection Capacity Utilization 88.3%		ICU Level of Service E	
Analysis Period (min) 15			

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

Splits and Phases: 3: Churchill Avenue N & Richmond Road

Lane Group	Ø1	Ø3	Ø7
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



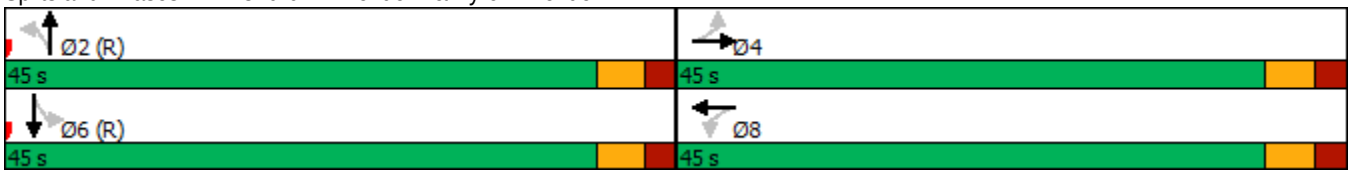
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	134	49	110	307	45	25	303	69	21	340	53
Future Volume (vph)	19	134	49	110	307	45	25	303	69	21	340	53
Ideal Flow (vphpl)	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800	1800
Lane Width (m)	3.7	3.7	3.7	3.7	3.7	3.7	3.0	4.0	3.7	3.0	4.0	3.7
Storage Length (m)	0.0		0.0	0.0		0.0	15.0		0.0	18.0		0.0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (m)	7.6			7.6			7.6			7.6		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.967			0.987			0.972			0.980	
Flt Protected		0.995			0.988		0.950			0.950		
Satd. Flow (prot)	0	1717	0	0	1740	0	1565	1792	0	1565	1806	0
Flt Permitted		0.936			0.859		0.371			0.393		
Satd. Flow (perm)	0	1615	0	0	1513	0	611	1792	0	647	1806	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		23			8			16			11	
Link Speed (k/h)		50			50			50			50	
Link Distance (m)		222.5			63.6			184.9			45.3	
Travel Time (s)		16.0			4.6			13.3			3.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	21	149	54	122	341	50	28	337	77	23	378	59
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	224	0	0	513	0	28	414	0	23	437	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Minimum Split (s)	30.6	30.6		30.6	30.6		26.4	26.4		26.4	26.4	
Total Split (s)	45.0	45.0		45.0	45.0		45.0	45.0		45.0	45.0	
Total Split (%)	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	39.4	39.4		39.4	39.4		39.6	39.6		39.6	39.6	
Yellow Time (s)	3.3	3.3		3.3	3.3		3.3	3.3		3.3	3.3	
All-Red Time (s)	2.3	2.3		2.3	2.3		2.1	2.1		2.1	2.1	
Lost Time Adjust (s)		0.0			0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		5.6			5.6		5.4	5.4		5.4	5.4	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Flash Dont Walk (s)	15.0	15.0		15.0	15.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0		0	0		0	0		0	0	
Act Effct Green (s)		39.4			39.4		39.6	39.6		39.6	39.6	
Actuated g/C Ratio		0.44			0.44		0.44	0.44		0.44	0.44	
v/c Ratio		0.31			0.77		0.10	0.52		0.08	0.55	
Control Delay		16.1			30.6		16.2	20.4		18.9	25.7	
Queue Delay		0.0			0.0		0.0	0.0		0.0	1.4	
Total Delay		16.1			30.6		16.2	20.4		18.9	27.1	
LOS		B			C		B	C		B	C	
Approach Delay		16.1			30.6			20.2			26.7	
Approach LOS		B			C			C			C	
Queue Length 50th (m)		21.6			71.9		2.8	48.3		2.8	56.5	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (m)		37.7			#115.6		8.0	74.6		m6.0	90.0	
Internal Link Dist (m)		198.5			39.6			160.9			21.3	
Turn Bay Length (m)							15.0			18.0		
Base Capacity (vph)		719			666		268	797		284	800	
Starvation Cap Reductn		0			0		0	0		0	189	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.31			0.77		0.10	0.52		0.08	0.72	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 60
Control Type: Pretimed
Maximum v/c Ratio: 0.77
Intersection Signal Delay: 24.7 Intersection LOS: C
Intersection Capacity Utilization 74.2% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Churchill Avenue N & Byron Avenue



Intersection	
Int Delay, s/veh	4.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	39	57	43	37	14	43
Future Vol, veh/h	39	57	43	37	14	43
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	42	62	47	40	15	47

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	144	67	0	0	87	0
Stage 1	67	-	-	-	-	-
Stage 2	77	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	849	997	-	-	1509	-
Stage 1	956	-	-	-	-	-
Stage 2	946	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	841	997	-	-	1509	-
Mov Cap-2 Maneuver	841	-	-	-	-	-
Stage 1	956	-	-	-	-	-
Stage 2	937	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	9.4	0	1.8
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	927	1509	-
HCM Lane V/C Ratio	-	-	0.113	0.01	-
HCM Control Delay (s)	-	-	9.4	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q(veh)	-	-	0.4	0	-

APPENDIX G: RESPONSE TO SCREENING AND SCOPING COMMENTS

The following email was received on September 12, 2022 regarding the Screening and Scoping Report submission:

From: McMahon, Patrick <patrick.mcmahon@ottawa.ca>
Sent: Monday, September 12, 2022 7:59 AM
To: Andrey Kirillov <akirillov@castleglenn.ca>
Cc: Arthur Gordon <agordon@castleglenn.ca>; Jemmy Taing <jemmy@gsiproperties.ca>
Subject: RE: 424 Churchill Avenue North TIA Screening and Scoping Report

Hi Andrey,
Thank you for the submission, here are my comments:

- Section 2.1.2.2: Include the pedestrian and cycling crossing treatments, as applicable.
- Section 2.1.2.6: Consider including the locations of the stops for the identified routes on Exhibit 2-13 or another figure.
- Section 2.1.3.1: Include the changes to Byron Avenue as part of the integrated road works project, see Ottawa.ca

Thank you and please proceed to the forecasting report.

Best regards,

Patrick McMahon
Project Manager, Infrastructure Approvals | GPRJ Approbation des demandes d'infrastructure
Development Review Branch | Dir Examen des projets d'aménagement
Planning, Real Estate and Economic Development Department | Direction générale de la planification, des biens immobiliers et du développement économique
City of Ottawa | Ville d'Ottawa
Tel |Tél. : 613-580- 2424 ext. | poste 23298
web | Site Web : www.ottawa.ca

Response to Sept. 12 comments:

The following changes were made to the screening and scoping portion of this document:

- Section 2.1.2.2: Include the pedestrian and cycling crossing treatments, as applicable.
  Response: Section 2.1.2.2 now includes a discussion on pedestrian and cycling treatments at each intersection, or a lack thereof.
- Section 2.1.2.6: Consider including the locations of the stops for the identified routes on Exhibit 2-13 or another figure.
  Response: A new Exhibit 2-12 now includes locations of the 7 nearest bus stops and their corresponding bus routes.
- Section 2.1.3.1: Include the changes to Byron Avenue as part of the integrated road works project, see Ottawa.ca
  Response: Section 2.1.3.1 now includes a discussion on changes to pedestrian and cycling infrastructure along Byron Avenue. The changes will be considered in the MMLOS segment analysis.