



1640-1660 Carling Avenue

Transportation Impact Assessment (TIA) Report

FINAL

October 2023

1640-1660 Carling Avenue

Transportation Impact Assessment (TIA) Report

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October 26, 2023

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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.

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1. 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;
2. 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;
3. 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
4. I am either a licensed¹ or registered² professional in good standing, whose field of expertise [check appropriate field(s)] 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.

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TIA REPORT

Parsons has been retained by Hobin Architecture Inc. to prepare a Transportation Impact Assessment (TIA) in support of a Zoning By-Law Amendment (ZBLA) and Plan of Subdivision Application for the 1640-1660 Carling Avenue site, located south of Carling Avenue and east of Clyde Avenue. This document follows the TIA process, presenting a Step 5 TIA Report, as outlined in the City Transportation Impact Assessment (TIA) Guidelines, 2017.

1.0 SCREENING FORM

The Screening Form confirmed the need for a TIA Report based on the Trip Generation trigger since the proposed development consists of approximately 1,700 residential apartment units; the Location trigger since the development is located within 600 meters from the Carling Avenue Transit Priority and the Carling Arterial Mainstreet Design Priority Area; and the Safety trigger since the development proposes a new/reconfigured driveway to Clyde Avenue. The Screening Form has been provided in **Appendix A**.

2.0 SCOPING REPORT

2.1. Existing and Planned Conditions

2.1.1. Proposed Development

The proposed development is located at the municipal address of 1640-1660 Carling Avenue, on the southeast corner of the Carling Avenue/Clyde Avenue intersection. The site is currently occupied by a Canadian Tire retail store, which has already ceased operations, and a Boston Pizza restaurant, which will be replaced at full buildout of the development.

The plan of subdivision proposes up to 6 new residential buildings of various heights ranging from 18 to 40-storeys, which will cater to condo, retail and senior apartment dwelling units. Approximately 1,754 total residential units are proposed in a multi-phase development, along with two public parks and a plaza. For the purposes of this TIA, the development is anticipated to proceed in two phases, where Phase 1 (consisting of 388 units, buildings 3 and 4) is assumed to be constructed by 2026 and Phase 2 (consisting of 1366 units, buildings 1, 2, 5 and 6) by 2036. Prior to Phase 1 and until full-buildout, the existing Canadian Tire Store building will be used as a fitness centre (Altea Active). Meanwhile, the Boston Pizza restaurant in the northeast quadrant of the site will remain in place until full-buildout. At full-buildout, the fitness centre will be replaced with buildings 5 and 6, along with a public park and a plaza, while the Boston Pizza restaurant will be replaced with buildings 1 and 2.

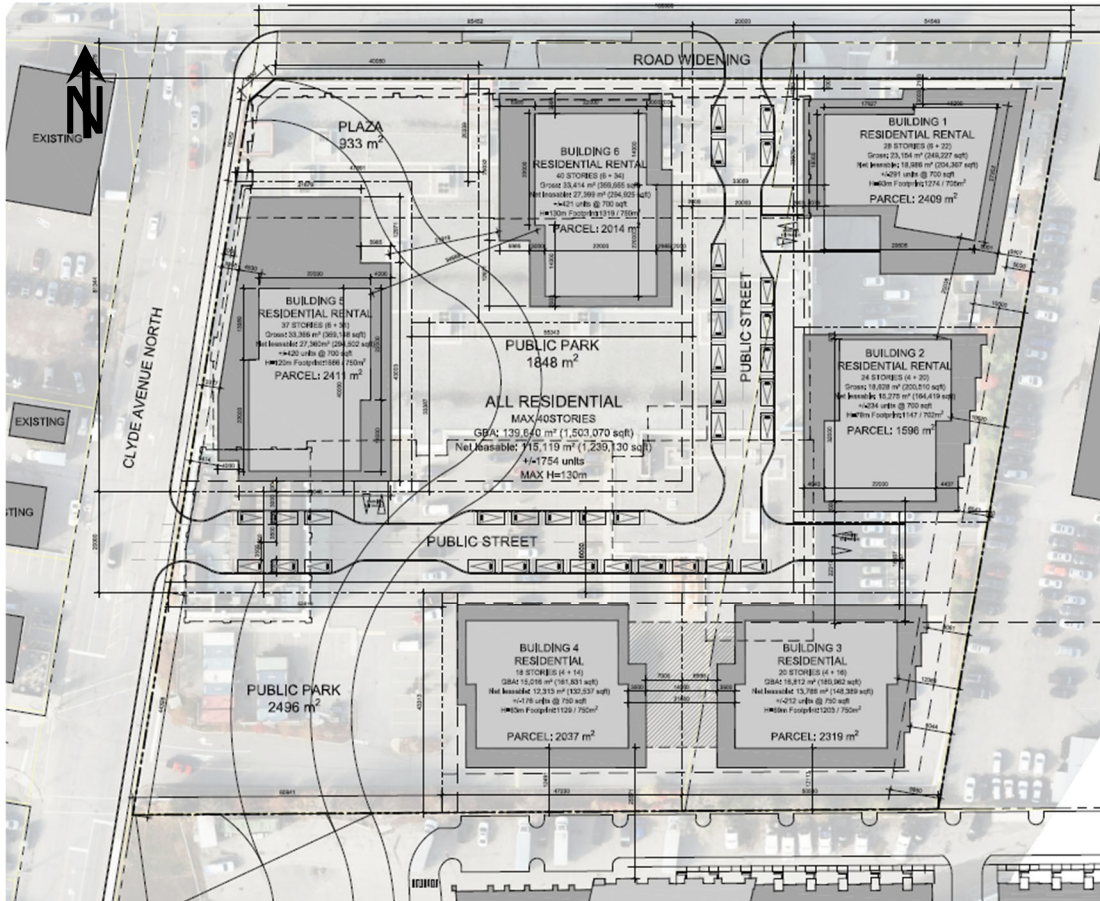
Figure 1 provides the local transportation context, which includes Carling Avenue as the primary east-west arterial and future rapid transit corridor, and Clyde Avenue North, a north-south local roadway. More details regarding the existing study area elements can be found in **Section 2.1.2**.

A concept plan of the subdivision at full-buildout, its building layout, and its proposed access strategy to Clyde Avenue and Carling Avenue is illustrated in **Figure 2**. A PDF copy of the latest subdivision plan is included within **Appendix A**. The internal site street will be a public local street. The development will incorporate Transit Oriented Design (TOD) to promote multi-modal mode share uses and design the local street to a 30 km/h design speed, per City of Ottawa guidelines. The internal street is assumed to be constructed at Phase 1. In the interim phase, access to the Boston Pizza restaurant will be provided along the north-south road section of the proposed internal public street.

Figure 1: Local Context and Proposed Study Area



Figure 2: Proposed Full-Buildout Conceptual Site Plan (October 2023) – 1640-1660 Carling Ave



2.1.2. Existing Conditions

Area Road Network

The following roads are included in the TIA. Description for each road within the study area has been provided below.

Carling Ave is an east-west municipal arterial roadway within the City of Ottawa that runs from Bronson Ave in the east to March Rd in the west. Within the study area, Carling Ave has a six-lane divided cross-section, with a posted speed limit of 60km/h and auxiliary turn lanes at major intersections.

Churchill Ave N is a north-south municipal roadway within the City of Ottawa, classified as a local roadway south of Carling Ave and as a major collector roadway north of Carling Ave. Churchill Ave N has a two-lane cross-section, with a posted speed limit of 50km/h and auxiliary turn-lanes at major intersections.

Clyde Ave is a north-south municipal local roadway within the City of Ottawa that extends from Carling Ave in the north and terminates at 951 Clyde Ave. The roadway then continues at Castle Hill Crescent intersection down to Merivale Rd/Lotta Ave. Within the study area, Clyde Ave has a two-lane cross-section an assumed speed limit of 50km/h and auxiliary turn lanes at major intersections.

Broadview Ave is a north-south municipal road within the City of Ottawa, classified as a local roadway south of Carling Ave and as a collector roadway north of Carling Ave. Broadview Ave extends from Richmond Rd in the north to Ernest Ave in the south. The posted speed limit is 30km/h north of Carling Ave and assumed to be 50km/h south of thereof. Broadview Ave provides a two-lane cross-section and auxiliary turn lanes at Carling Ave intersection.

Doheny St is an east-west local municipal roadway within the City of Ottawa that extends from Clyde Ave in the east to Boyd Ave, where it continues west as Kerr Ave to Rex Ave. This roadway currently opposes the existing site access at the Clyde Ave intersection. Doheny St provides a two-lane cross-section and an assumed speed limit of 50km/h.

Woodward Dr is an east-west major collector municipal roadway extending from Clyde Ave in the east to Maitland Ave in the west. The roadway provides a two-lane cross-section and an assumed speed limit of 50km/h.

Laperriere Ave is an east-west major collector municipal roadway extending from Clyde Ave in the west to Merivale Rd in the east. The roadway provides a two-lane cross-section and a posted speed limit of 50km/h.

Saigon Ct is a short 130m north-south local municipal road providing access to office buildings and intersecting Carling Ave at both the WB and EB lanes. A two-lane cross-section is provided and a speed limit of 40km/h is assumed given the short length.

Existing Study Area Intersections

Carling/Churchill

The Carling/Churchill intersection is a four-legged signalized intersection. The east and west legs consist of two through lanes, 1 shared through/right-turn lane and one auxiliary left-turn lane. While the north and south legs consist of one shared through/right-turn lane and one auxiliary left-turn lane, with a curbside bike lane and bike crossing provided for the south leg and a cycle track available for the north leg. There are no restricted movements at this intersection. Zebra stripe crosswalks are provided on all legs of the intersection. Advance pedestrian walk phases are provided for the east and west crosswalks.



Carling/Clyde/Cole

The Carling/Clyde/Cole intersection is a four-legged signalized intersection. The east and west legs consist of two through lanes, 1 shared through/right-turn lane and one auxiliary left-turn lane. The north leg consists of one shared through/right-turn lane and one auxiliary left-turn lane. The south leg consists of one through lane, one auxiliary left-turn lane and one auxiliary right-turn lane. There are no restricted movements at this intersection. However, trucks are not permitted to enter the north leg of the intersection. Crosswalks are provided on all legs of the intersection.



Clyde/Doheny

The Clyde/Doheny intersection is a four-legged signalized intersection. The east leg is an existing site access to the Canadian Tire store and provides a shared through/left-turn lane and an auxiliary right-turn lane. The west leg consists of a shared all movement lane. The north and south legs of the intersection consist of one shared through/right-turn lane and one auxiliary left-turn lane. There are no restricted movements at this intersection. Crosswalks are provided on all legs of the intersection.



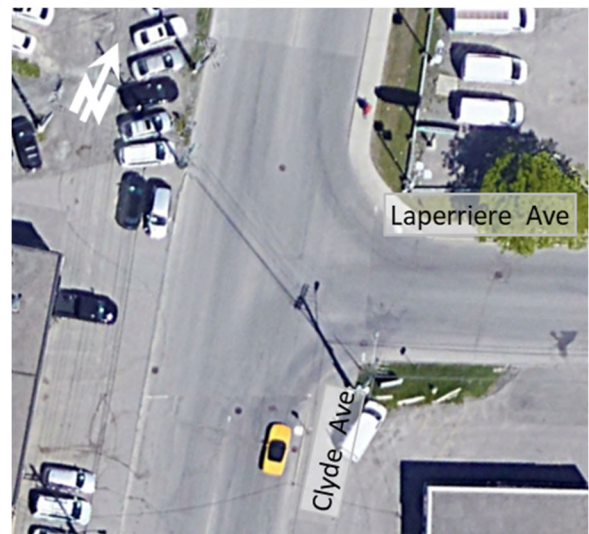
Carling/Broadview

The Carling/Broadview intersection is a four-legged signalized intersection. The east and west legs consist of two through lanes, 1 shared through/right-turn lane and one auxiliary left-turn lane. The north and south legs consist of one shared through/right-turn lane and one auxiliary left-turn lane. There are no restricted movements at this intersection. However, trucks are not permitted to enter the north leg of the intersection. Crosswalks are provided on all legs of the intersection, with median refuge and zebra stripe crossing on the east and west legs. Advance pedestrian walk phases are provided for the east and west crosswalks.



Clyde/Laperriere

The Clyde/Laperriere intersection is a three-legged unsignalized intersection with all-way stop control. All legs of the intersection consist of a single all movement lane. There are no restricted movements at this intersection. However, trucks are not permitted to enter the east leg of the intersection. Crosswalks are provided on all legs of the intersection.



Clyde/Woodward

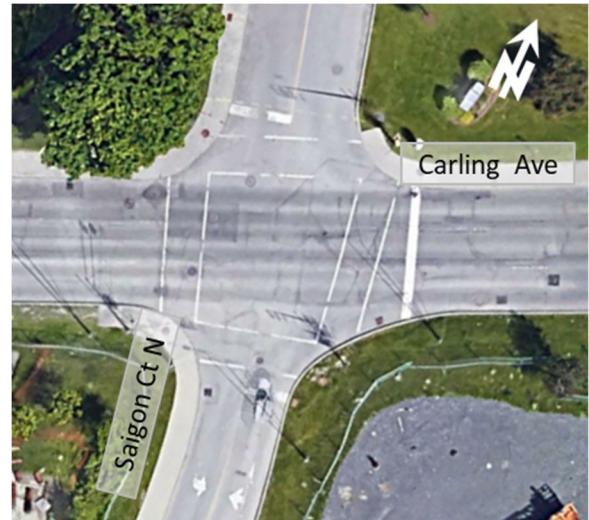
The Clyde/Laperriere intersection is a three-legged unsignalized intersection with stop control on the north/south approaches along Clyde Ave and yield control on the southbound and eastbound right-turns. The north leg consists of a through lane and a channelized auxiliary right-turn lane. The south leg consists of a shared all movement lane. The west leg consists of a left-turn lane and a channelized auxiliary right-turn lane. There are no restricted movements at this intersection. A crosswalk is provided on the north leg of the intersection.



Carling/Saigon N

The Carling/Saigon N intersection is a four-legged signalized intersection, where Saigon intersects the westbound lanes along Carling Ave. The east leg consists of a through lane, a shared through/right-turn lane, two through lanes and an auxiliary left-turn lane. The north and south legs consist of a single all movement lane. Eastbound movements are not permitted at the intersection. Crosswalks are provided on all legs of the intersection.

Note the aerial image on the right is outdated as the intersection has been reconfigured to the above mentioned configuration as of 2022.



Carling/Saigon S

The Carling/Saigon S intersection is a three-legged signalized intersection, where Saigon intersects the eastbound lanes along Carling Ave. The north leg consists of a double left-turn lane. The west leg consists of two through lane and one shared through/left-turn lane. Westbound movements are not permitted at the intersection. A crosswalk is provided on the west leg of the intersection.

Note the aerial image on the right is outdated as the intersection has been signalized as of 2022 and no recent aerial view is available.



Existing Driveways to Adjacent Developments

There are multiple existing driveways to adjacent developments within 200m of the proposed site accesses at Carling Ave and Clyde Ave. It should be noted that the proposed site already provides access to both Carling Ave via a right-in right-out and Clyde Ave via a right-in right-out and a full movement traffic signal. The Clyde accesses are expected to be combined into a mid-block access location for the proposed 1640-1660 Carling subdivision development. The existing driveways as shown in **Figure 3** include:

- Along Carling Avenue, there are five adjacent driveways on the south side, two located east of Clyde Ave and three located west of Clyde Ave:
 - East of Clyde Ave, the two driveways provide access to car dealerships.
 - West of Clyde Ave, the three adjacent driveways provide access to an auto shop, a restaurant and a dental office.
- Along Clyde Ave, there are eleven adjacent driveways south of Carling Ave, two on the east side and nine on the west side:
 - On the east die, the two driveways provide access to a one-storey building that has not been in use since 2018. The site is in the process of undergoing a development proposal for future residential buildings.

- On the west side, the nine driveways provide access to a mix of minor land uses, including small office buildings, retail stores, restaurants and an auto shop.

Figure 3: Existing Driveways Adjacent to Development



Existing Area Traffic Management Measures

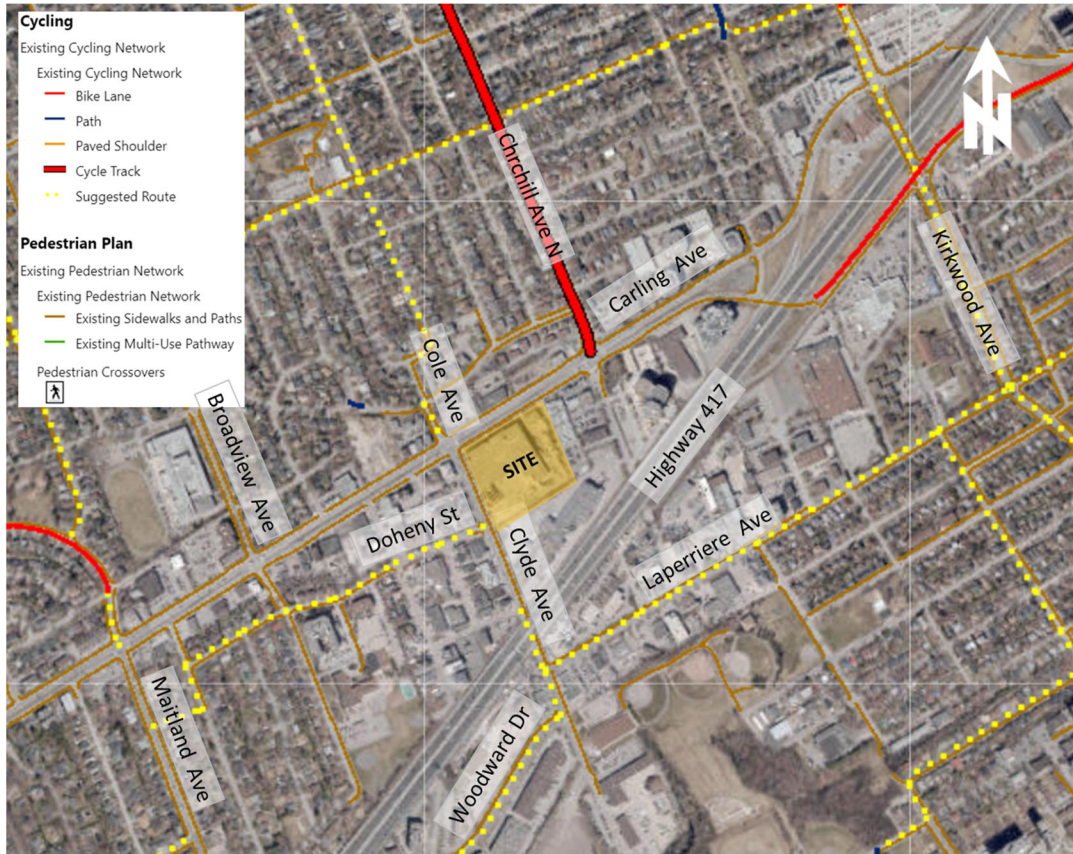
Below are the known existing area traffic management measures within the study area:

- Sidewalk facilities with some crosswalks including high-visibility zebra stripes at the intersections of Carling/Broadview and Carling/Churchill.
- A reduced speed limit of 30km/h along Broadview Ave north of Carling Ave.
- Advance pedestrians walk phases on the east and west legs at the Carling/Churchill and Carling/Broadview intersections.
- Right-turn channel islands at the Clyde/Woodward intersection.
- Flex stakes are provided down the centreline of Broadview Ave.

Pedestrian/Cycling Network

The existing active transportation (walking/cycling) facilities are illustrated in **Figure 4**. Pedestrian sidewalk facilities are provided throughout the study area, including both sides of Carling Ave and the east side of Clyde Ave. With regards to cycling facilities, unidirectional cycle tracks are provided on both sides of Churchill Ave N, between Carling Ave and Byron Ave. There are no dedicated cycling facilities on Carling Ave within the study area, although it is identified as a spine route in the TMP. Cole Ave, Doheny St, Laperriere Ave and Woodward Dr are all suggested cycling routes.

Figure 4: Existing Pedestrian and Cycling Networks



Transit Network

The following OC Transpo routes currently operate at the frontage of the site:

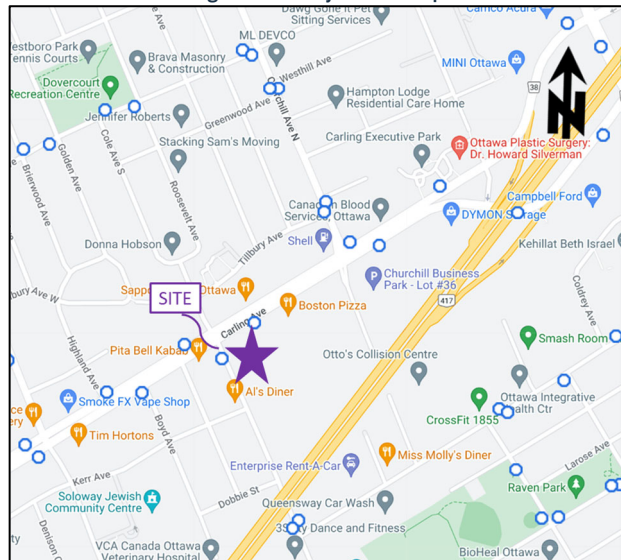
- **Route #50 (Tunney's Pasture <-> Lincoln Fields):** identified by OC Transpo as a "Local Route", this route operates on customized routing and schedules, to serve local destinations. Route #50 operates at an average rate of once every 30 minutes during weekdays. The nearest bus stops to the site are near the Carling/Clyde intersection for both Tunney's Pasture and Lincoln Fields destinations.
- **Route #85 (Gatineau <-> Bayshore):** identified by OC Transpo as a "Frequent Route", this route operates at a high frequency along Carling Ave. Route #85 operates 7 days a week, at an average rate of every 15 minutes or less during weekday peak hours. The nearest bus stops to the site are the Carling/Cole stop for the Bayshore destination and the Carling/Clyde North stop, for the Gatineau destination.

OC Transpo route maps for routes #50 and #85 have been provided in **Appendix B. Figure 5** below illustrates the area transit network surrounding the subject site, while **Figure 6** provides the nearest bus stop locations to the development site in the form of blue dots.

Figure 5: Area Transit Network



Figure 6: Nearby Transit Stops



Peak Hour Travel Demands

Most study area intersection counts listed below have been obtained from the City of Ottawa, where they have been conducted between 2016 and 2019 (pre-COVID-19 conditions). Raw traffic count data has been provided in **Appendix C**.

- Carling/Churchill (City of Ottawa, conducted April 25, 2017).
- Carling/Clyde/Cole (City of Ottawa, conducted January 27, 2016). Note that:
 - A February 23, 2022, count was also obtained from the City. However, it was not used as the through volumes were significantly lower than the 2016 count due to ongoing construction along Carling Ave.
 - The EBR volume in the 2016 count was oddly low, therefore, it was replaced with the EBR volume in the 2022 count.
- Carling/Broadview (City of Ottawa, conducted April 20, 2017).
- Carling/Saigon N (City of Ottawa, conducted April 05, 2018).
- Carling/Saigon S (City of Ottawa, conducted April 05, 2018).
- Clyde/Doheny (City of Ottawa, conducted February 27, 2019).
- Clyde/Laperriere (City of Ottawa, conducted February 27, 2019).
- Clyde/Woodward (reference from the Novatech 2021 TIA Report for the adjacent future residential buildings development at 861 Clyde Ave).

After reviewing the existing traffic volumes, the east-west through volumes on Carling Ave were balanced conservatively to the higher adjacent intersection volume. The existing peak hour vehicle traffic and active travel volumes within the study area are illustrated in **Figure 7** and **Figure 8**, respectively.

It is important to note that all counts obtained were conducted in the months of January-April, in which pedestrian and cyclist volumes may be somewhat lower due to the colder weather.

Figure 7: Existing Peak Hour Traffic Volumes (2022)

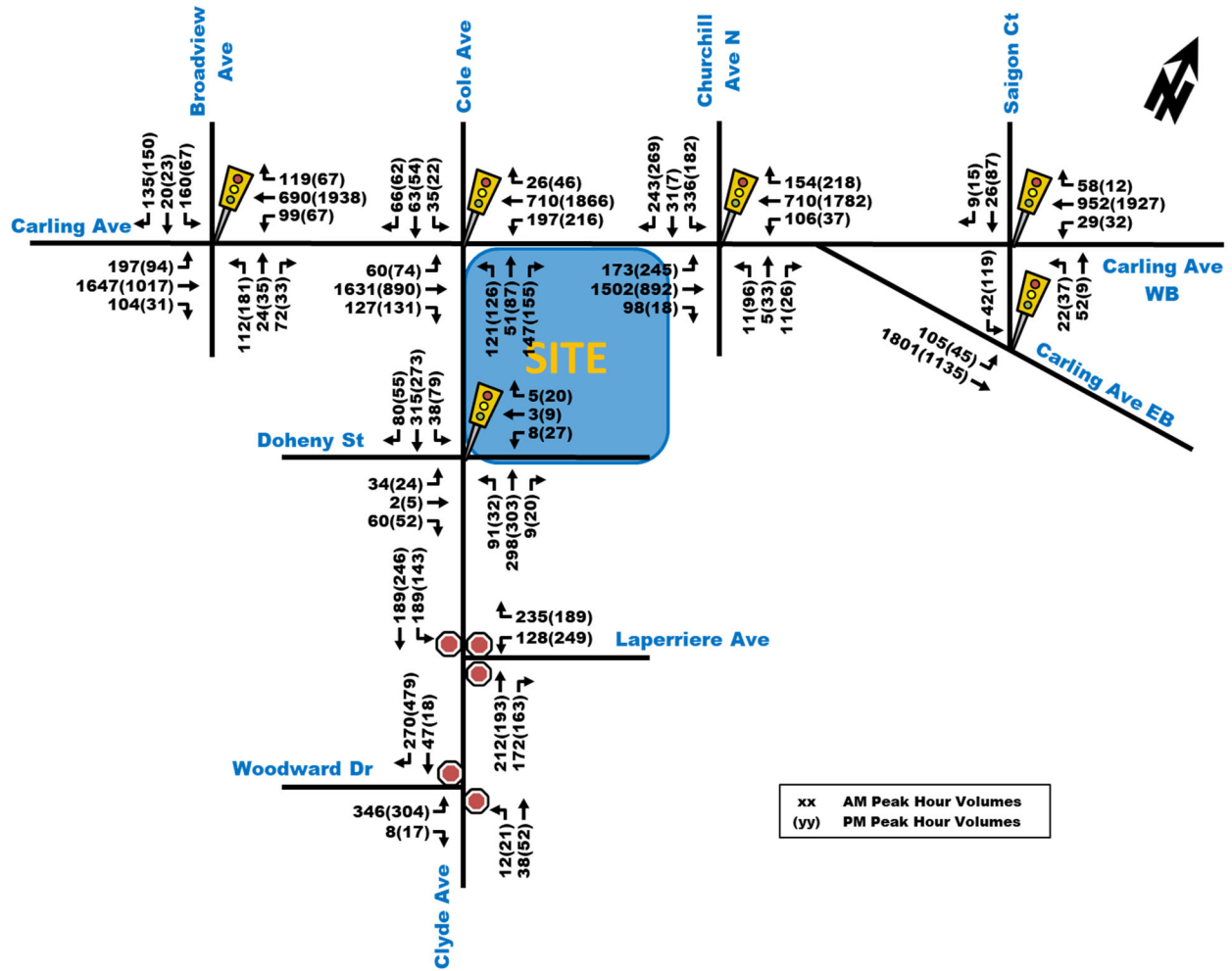
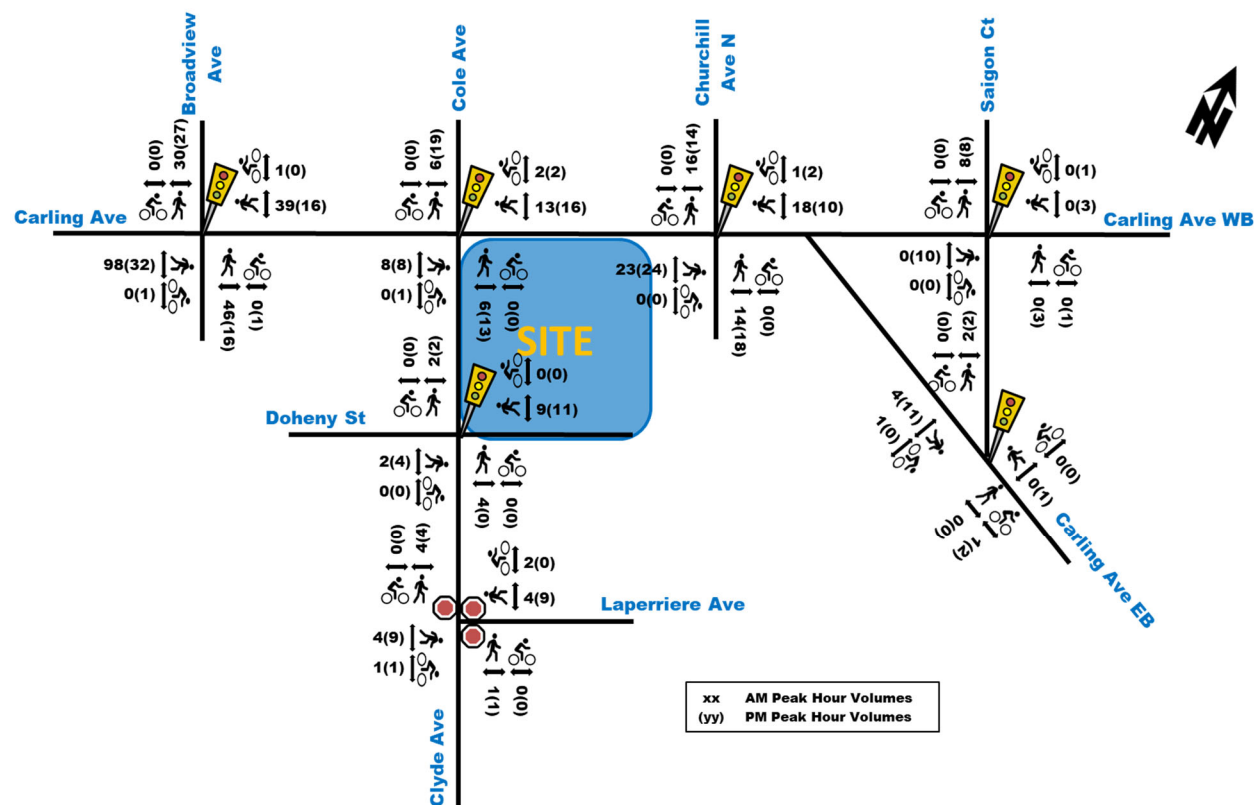


Figure 8: Existing Peak Hour Pedestrian/Cycling Volumes



Existing Road Safety Conditions

A five-year collision history data (2016-2020, inclusive) was requested and obtained from the City of Ottawa for intersections and road segments bordering/near the proposed development site. Collision data is provided in **Appendix D** with analysis conducted by Parsons. Upon analyzing the collision data, the total number of collisions observed within the study area was determined to be 99 collisions within the past five-years. The majority of the collisions (70 collisions, 83%) resulted in property damage only, while the remaining collisions resulted in a non-fatal injury. Furthermore, the type of impacts that resulted in 84 collisions were broken down into the following: 30 rear ends, 29 turning movements, 25 sideswipes, 7 angled, 7 single vehicle (other) and 1 “other”.

A standard unit of measure for assessing collisions at an intersection is based on the number of collisions per million entering vehicles (MEV), where a ratio of 1.0 or greater is considered critical. Additionally, the City of Ottawa TIA Guidelines identifies 7 or more collisions of the same impact type for a particular movement to be a collision pattern. At signalized intersections bordering the proposed development site, reported collisions have historically taken place at a rate of:

- 0.43 Collisions/MEV at the intersection of Carling/Churchill. A total of 30 collisions took place at this intersection within the five-year period. Although the Collisions/MEV is not in critical condition, a breakdown of collision data shows that 8 rear end collisions have occurred for the eastbound movement of the intersection. Most of those eastbound rear ends occurred from a vehicle “following too close” to another vehicle, which does not indicate a safety concern due to the intersection design.
- 0.82 Collisions/MEV at the intersection of Carling/Clyde/Cole. A total of 53 collisions took place at this intersection within the five-year period. Of these, 21 collisions occurred as a result of turning movements between the WB/EB left-turns and the opposing EB/WB through movements, respectively. The City of Ottawa Traffic Signal Operations Unit have indicated that these left turns are planned to be modified to be fully protected in 2022, as part of planned safety improvements. Therefore, it is expected that

potential conflicts as a result of the existing protected/permmissive turn-type will be significantly reduced for these movements in the future.

- Additionally, three collisions involved non-fatal injuries for pedestrians at this intersection, where 1 collision occurred due to a northbound right-turn and 2 due to a northbound left-turn where vehicles failed to yield.
- One collision involved non-fatal injury to cyclist travelling westbound and a westbound right-turn vehicle failing to yield.
- Three collisions have occurred at the intersection of Clyde/Doheny.

Lastly, 13 collisions were observed along road segments at the frontage of the proposed development site, with 1 and 8 collisions in the westbound and eastbound lanes, respectively, along Carling Ave, between Clyde/Cole and Churchill, and 4 collisions on Clyde Ave, between Carling and Doheny.

2.1.3. Planned Conditions

Planned Study Area Transportation Network Changes

Transit Network

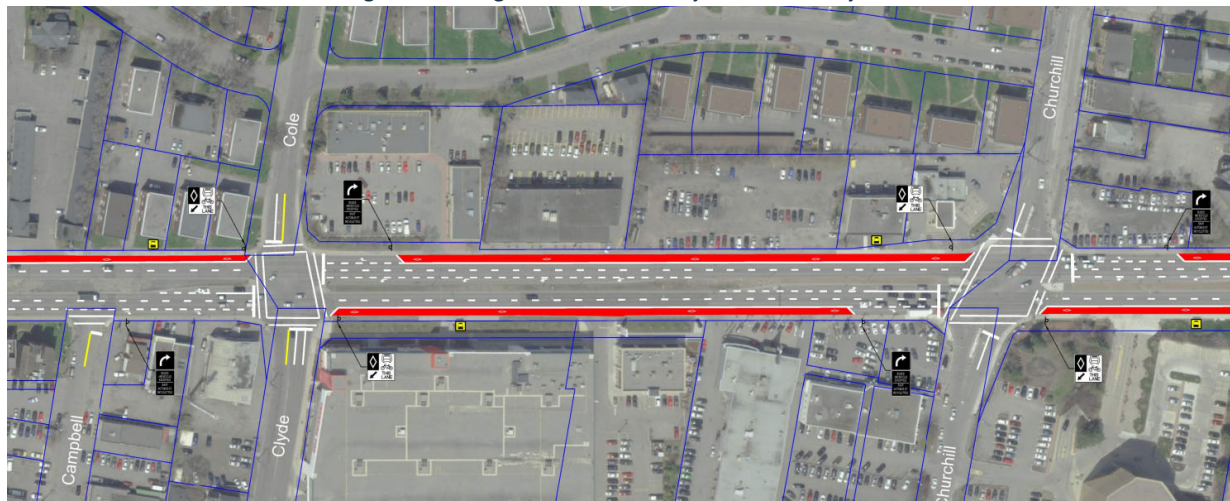
Based on the City of Ottawa's TMP, the 2031 Affordable Network for Rapid Transit and Transit Priority illustrates Carling Ave as a Transit Priority Corridor (Continuous Measures) at the frontage of the site, as shown by the solid blue line in **Figure 9**.

Figure 9: TMP Transit Affordable Network (Map 5)



The Carling Avenue Transit Priority project is currently underway to provide bus lanes along Carling Ave. The current plan within the vicinity of the site is shown as **Figure 10**, where bus lanes are illustrated in red. The plan is to convert a general traffic lane to a transit lane in both travel directions of Carling Ave, along different sections between Lincoln Fields and Bronson Ave. The timing of the planned modifications along Carling Ave are expected to take place in 2023 or soon after between Sherwood Dr and Fairlawn Ave, as confirmed by the City of Ottawa project manager, Stacey Rathwell.

Figure 10: Carling Avenue Transit Priority Plan within Study Area



Road Network

As part of the Churchill, Carling and Kirkwood integrated road, water and sewer City project expected to take place in the study area over the next 2-3 years, it is anticipated that the intersection of Carling/Churchill will be designed as a protected intersection. The integrated renewal project is expected to be completed by fall/winter of 2026.

Additionally, City staff have also specified that the eastbound and westbound left-turns at the intersection of Carling/Clyde/Cole will be modified to fully protected left-turn movements as part of planned safety improvements. The eastbound left-turn lane's storage length will be increased from 20m to 70m. Similarly, at the intersection of Carling/Broadview, the eastbound left-turn storage will be modified very slightly, while the westbound left-turn storage length will be increased from 50m to 75m.

The re-allocation of Carling Avenue ROW to a transit-focused environment is anticipated to result in a net reduction of east-west auto capacity, and therefore, auto volumes. This is discussed in more detail in **Section 3.3, Demand Rationalization**.

Cycling Network

The draft 2024 TMP Active Transportation Projects list identifies an infrastructure project which proposes "separated cycling facilities and/or bike lanes on Clyde Avenue from Carling Avenue to Laperriere Avenue". However, this project has not been initiated yet by City staff and no information is available on the addition of bike facilities along Clyde Ave. Should more information become available at the time of future updates to this TIA Report, the information will be incorporated into the report.

Cycling facilities will be added to the protected intersection of Carling/Churchill as part of the integrated renewal project that is expected to be completed by fall/winter of 2026. Cycle tracks may also be added to the south side of Carling Ave, between Churchill Ave and Saigon Ct as part of this project. Additionally, the proposed adjacent future development at the municipal address of 1619-1655 Carling Ave includes a westbound cycle track along its frontage, which will tie into the new protected intersection at Churchill Ave.

The future adjacent development at the municipal address of 861 Clyde Ave is proposing an east-west MUP on its south side along Highway 417, to connect the southern end of Churchill Ave to Clyde Ave.

Pedestrian Network

Based on the 2013 Pedestrian Plan, a sidewalk is proposed on the west side of Clyde Ave, between Carling Ave and Woodward Dr as part of Phase 2 (2020-2025) projects. The draft 2024 TMP Active Transportation Projects list identifies an infrastructure project for sidewalks along Doheny St, between Boyd Ave and Clyde Ave.

Other Area Developments

The following section outlines adjacent developments in the general area that were considered in the TIA. The criteria for inclusion of other area developments are the proximity to the proposed development site and the potential impact to study area intersections. Developments that are either approved or have an active planning application in the City are included below.

861 Clyde Avenue North

A TIA was submitted by Novatech in May 2021 in support of an OPA and ZBLA application for a 3-phase residential development consisting of 23 townhouses and 1,712 apartment dwelling units. As indicated previously, a MUP is proposed on the south side of the development. Full build-out of the development is forecast to generate 1,139 AM peak hour person trips and 1,188 PM peak hour person trips. The TIA has noted a significant impact to the Carling/Churchill intersection.

1619-1655 Carling Ave

A TIA was submitted by Parsons in May 2022 for a 16 and 18-storey two-tower building consisting of 418 residential units and 8,300ft² commercial space. Westbound cycle tracks will be added to the development frontage along Carling Ave. The proposed development is expected to result in up to 116 'new' veh/h during peak hours. As such, traffic volumes generated by this development will be included in the future background volumes in this TIA report.

1705 Carling Ave

A TIA was submitted by Novatech in April 2020 for a 9-storey retirement home facility with 158 units and a 22-storey residential high-rise building with 194 units located at 1705 Carling Ave. As the site is currently occupied by an 80-unit motel and a 3500 ft² restaurant, the number of trips forecasted for the future development are expected to be less 25 veh/h during peak hours. Thus, trips for this development are minimal and will be accounted for in the future background traffic growth rate in this TIA report.

Additional Other Area Developments

Noted below are future developments located outside the study area, at distances of approximately 1.1 to 1.5km from the proposed development site. These developments will largely have a nominal impact on background traffic and is considered to be captured by background traffic growth rates in **Section 3.2.2**.

- **1995 Carling Ave:** 27-storey residential building with 210 units (2024 buildout).
- **1354-1376 Carling Ave:** Five high-rise buildings with 1,018 residential units (2023 buildout).
- **1330 Carling Ave and 815 Archibald St:** 24-storey residential building with 175 units (2023 buildout).

2.2. Study Area and Time Periods

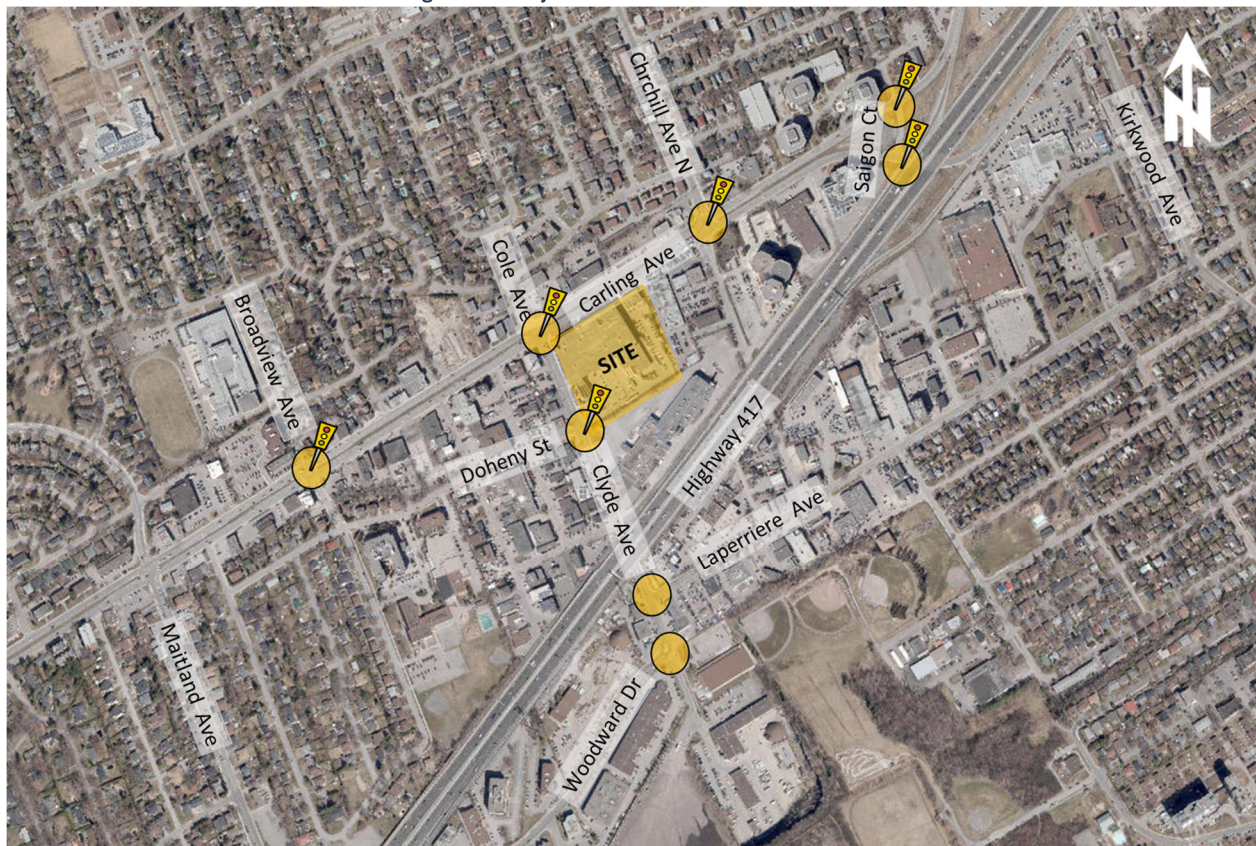
Proposed study area intersections and boundary roads are outlined below and highlighted in **Figure 11**. The study area reflects the urban nature of the development and its impact to Carling Avenue and Clyde Avenue. It is worthwhile to note that the first phase of the development is anticipated to have limited transportation implications beyond its boundary streets as the net change between the existing Canadian Tire Use and the residential use is expected to be minimal at a regional traffic level.

The proposed development is anticipated to proceed in multiple phases. For the purpose of this TIA, two phases are assumed, where Phase 1 is assumed to be constructed by 2026 and Phase 2 (full-buildout) by 2036. The TIA Guidelines typically require analysis of another horizon year at five-years after full buildout (i.e. 2041). However, the Phase 3 2036 horizon year is already five years beyond the 2031 limit of anticipated plans that the City of Ottawa TMP and affordable networks indicate for future City infrastructure. Furthermore, based on a review of the 861 Clyde Transportation Impact Assessment and of the Carling BRT forecast volumes, minimal growth is expected on Carling Avenue and Clyde Avenue beyond 2031. Therefore, additional analysis beyond 2036 is considered redundant at this time and was not assessed in this TIA report. Considering the applicant is applying for a Site Plan Application in the future, there will be subsequent opportunities to assess the long-term transportation implications of this development, at which time there may be more clarity on the long-term plans for the City's transportation network beyond the 2036 horizon.

As such, the 2026 and 2036 horizon years will be analyzed using the weekday morning and afternoon peak hour time periods.

- Carling/Broadview (signalized)
- Carling/Clyde (signalized)
- Carling/Churchill (signalized)
- Carling/Saigon N (signalized)
- Carling/Saigon S (signalized)
- Clyde/Doheny (signalized)
- Clyde/Lapierre (unsignalized)
- Clyde/Woodward (unsignalized)
- Carling Ave, between Churchill Ave and Cole Ave/Clyde Ave
- Clyde Ave, between Carling Ave and Doheny St

Figure 11: Study Area Boundaries and Intersections



2.3. Exemption Review

The modules/elements of the TIA process provided in **Table 1** are recommended to be exempt in the subsequent steps of the TIA process, based on the City's TIA guidelines and the application type.

Table 1: Exemptions Review Summary

Module	Element	Exemption Consideration
4.1 – 4.4 Design Review Component	All elements	Not required for applications involving ZBLA or OPA. However, a brief description will be provided.

3.0 FORECASTING REPORT

3.1. Development Generated Travel Demand

3.1.1. Trip Generation and mode shares

Existing Trip Generation

The site currently consists of a Canadian Tire store and a Boston Pizza restaurant, where both buildings are expected to be replaced at Phase 2 (full-buildout). Note that the Canadian Tire store has already been closed as of September 2022, with a new location opened at Carlingwood Mall (approximately 2km to the west). Since the traffic counts in this TIA report were all conducted prior to the closure of the Canadian Tire, trips previously generated by the Canadian Tire store will be accounted for and reduced in the study area accordingly. It is also noted that the Canadian Tire store building will be utilized by a fitness centre (Altea Active), which is expected to open in 2024 and will utilize approximately 129,000 ft² of the building area. Vehicle trips generated by the Boston Pizza restaurant will also be accounted for and included at the site accesses in Phase 1, during the afternoon peak hour only, given that it is closed during the morning peak hour.

The appropriate trip generation rates for the Canadian Tire store and Boston Pizza restaurant were obtained from the ITE Trip Generation Manual (11th edition) assuming the “Home Improvement Store” (ITE 875) and “High-Turnover (Site-Down) Restaurant” (ITE 932) land uses, respectively. The trip rates are provided in **Table 2**.

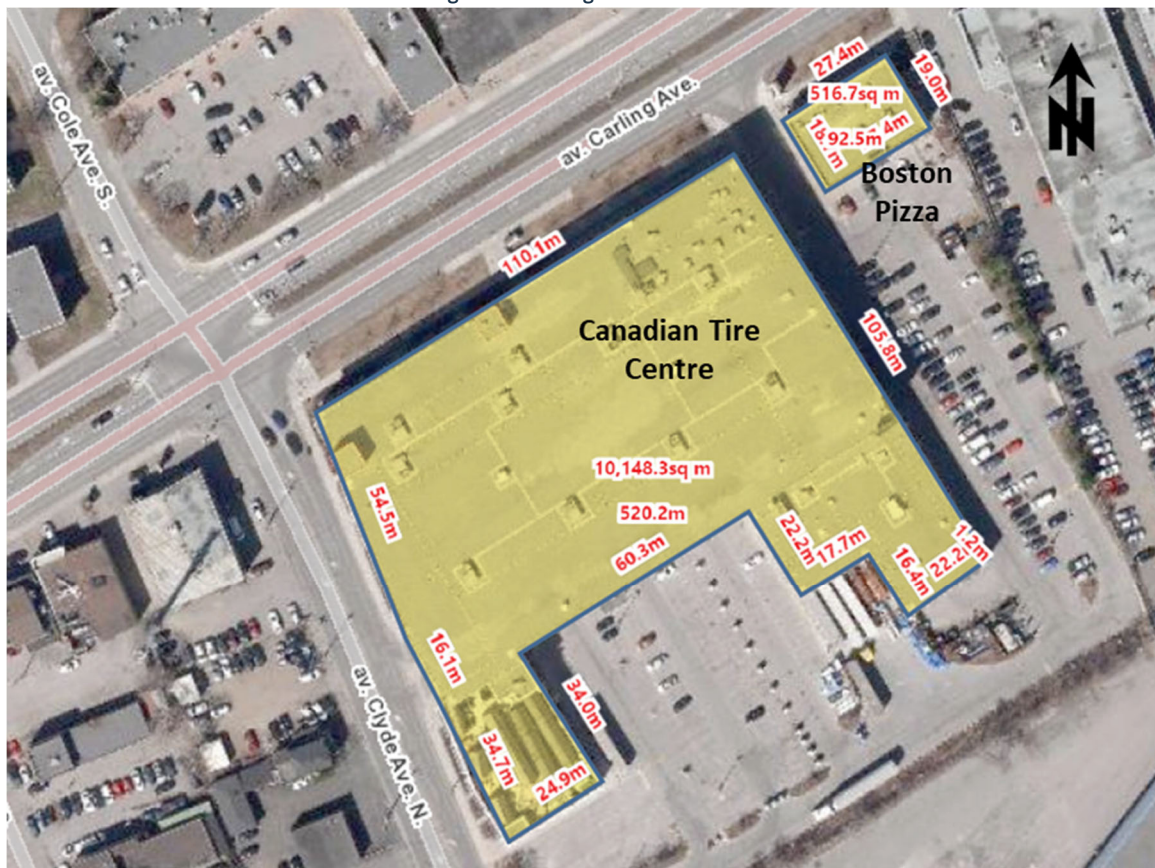
Table 2: Trip Rates for Existing Land Uses

Land Use	Data Source	Trip Rates	
		AM Peak Hour	PM Peak Hour
Home Improvement Store	ITE 875	$T = 1.51(x);$	$T = 2.29(x);$
High-Turnover (Sit-Down) Restaurant	ITE 932	-	$T = 9.05(x)$

Notes: T = Average Vehicle Trip Ends
 x = Gross Floor Area (GFA) (1000 ft²)

The gross floor areas for the two buildings were determined using the GeoOttawa measuring tool, as shown in **Figure 12**. The Boston Pizza restaurant has an area of approximately 520m² (5,600ft²), while the Canadian Tire store has a total area of 18,200m² (195,900ft²) after factoring in the second floor's area.

Figure 12: Existing Land Uses Areas



Using the trip rates for the two existing land uses and the total gross floor areas, the person trips generated by the Canadian Tire Centre and Boston Pizza restaurant can be calculated. As per TIA standards, trip rates are multiplied by a factor of 1.28 to account for typical North American auto occupancy values of approximately 1.15 and combined transit and non-motorized modal shares of less than 10%. The resulting total person trips/hour for the two existing land uses are provided in **Table 3**, with inbound/outbound percentages obtained from the ITE Manual.

Table 3: Existing Land Uses Peak Hour Person Trips

Land Use	Area (ft ²)	AM Peak (Person Trips/h)			PM Peak (Person Trips/h)		
		In	Out	Total	In	Out	Total
Home Improvement Store	195,900	216	163	379	281	293	574
High-Turnover (Sit-Down) Restaurant	5,600	-			39	26	65
Total	201,500	216	163	379	320	319	639

As shown in **Table 3**, the Canadian Tire store is expected to have generated a total of 379 and 574 person trips, during the morning and afternoon peak hours, respectively, while the Boston Pizza restaurant generates 65 person trips during the afternoon peak hour. It can be recognized that the Home Improvement Store land use from ITE does not consider that drive-in basic auto services are also offered by the existing Canadian Tire site, which could lead to additional auto demands than the ITE forecast.

Mode shares for different travel modes were obtained from the 2020 TRANS Trip Generation Manual for Commercial Generators in the Ottawa West district. As such, a breakdown of the trips generated by the different travel modes is provided in **Table 4** for the Canadian Tire store and **Table 5** for the Boston Pizza restaurant. As per the ITE Trip Generation Manual, pass-by trip percentages of 42% and 43% (during PM only) were also

considered for the Canadian Tire Centre and Boston Pizza Restaurant, respectively. Pass-by trips are intermediate trips along the original route between the primary origin and destination, such as a trip to the retail use between home and another destination. These are not considered ‘new’ trips, but existing trips already on the network.

Table 4: Existing Canadian Tire Peak Hour Travel Modes

Travel Mode	Mode Shares	AM Peak (Person Trips/h)			Mode Shares	PM Peak (Person Trips/h)		
		In (57%)	Out (43%)	Total		In (49%)	Out (51%)	Total
Auto Driver	55%	119	90	209	50%	142	148	290
Passenger	11%	23	18	41	16%	45	47	92
Transit	11%	23	18	41	10%	30	31	60
Bike	0%	0	0	0	5%	13	13	26
Walk	23%	50	38	88	18%	52	54	106
Total Person Trips	100%	216	163	379	100%	281	293	574
Pass-By		-			42%	-60	-62	-122
'New' auto Trips		119	90	209		82	86	168

Table 5: Existing Boston Pizza Peak Hour Travel Modes

Travel Mode	Mode Shares	PM Peak (Person Trips/h)		
		In (61%)	Out (39%)	Total
Auto Driver	50%	20	13	33
Passenger	16%	6	4	10
Transit	10%	4	3	7
Bike	5%	2	1	3
Walk	18%	7	5	12
Total Person Trips	100%	40	25	65
Pass-By	43%	-9	-6	-14
'New' Auto Trips		11	7	19

Based on the tables above, the Canadian Tire store generates 168 to 209 ‘new’ vehicle trips, 41 to 92 passenger trips, 41 to 60 transit trips, up to 26 cyclist trips and 88 to 106 pedestrian trips during the morning and afternoon peak hours. The Boston Pizza restaurant generates up to 19 ‘new’ vehicle trips, 10 passenger trips, 7 transit trips, 3 cyclist trips and 12 pedestrian trips during the afternoon peak hour.

While it could be reasonable to assume that the Boston Pizza mode shares would trend to a great share of walking trips internal to the subdivision, the existing mode shares were maintained for the future analysis, to remain conservative.

Proposed Development Trip Generation

The proposed development will replace the previous Canadian Tire store with six high-rise buildings ranging from 18 to 40-storeys high and providing approximately 1,754 residential units at full buildout (2036). Phase 1 is assumed to be constructed by 2026 and is expected to consist of approximately 388 residential units located in the southeast quadrant of the site, while Phase 2 (full-buildout) is assumed to be constructed by 2036 and is expected to consist of approximately 1366 residential units in the north and northeast quadrants. For the purposes of this report, the fitness centre utilizing the existing Canadian Tire Centre building will also be included as part of the Phase 1 analysis and will be replaced at Phase 2 (full-buildout) with the proposed residential buildings trip generation.

Plans to provide first floor commercial space are not confirmed at this time. However, the site is anticipated to accommodate ancillary uses for the high-density residential units and are expected to be intended for local residents, community and potentially some pass-by traffic. As such, it is not expected to be a regional attraction and is not anticipated to generate new site trips over and above that of the residential.

The appropriate trip generation rates for high-rise residential units' land uses were obtained from the 2020 TRANS Trip Generation Manual. The Manual provides person-trip rates during the peak AM and PM periods (7am-9:30am and 3:30PM-6PM). The peak hour trip generation rates for the fitness centre utilizing the existing building were obtained from the ITE Trip Generation Manual (11th edition), assuming the "Health/Fitness Centre" land use. The trip rates are summarized in **Table 6** below.

Table 6: Proposed Development Trip Rates

Land Use	Data Source	Trip Rates	
		AM Peak	PM Peak
High-Rise Residential Units	TRANS 2020	$T = 0.8(\text{du});$	$T = 0.9(\text{du});$
Health/Fitness Centre	ITE 492	$T = 1.31(\text{x});$	$T = 3.45(\text{x});$ $\text{Ln}(T) = 0.67\text{Ln}(\text{x}) + 2.44$
Notes: T = Average Vehicle Trip Ends du = Dwelling unit x = Gross Floor Area (1,000 ft ²)			

Fitness Centre Trip Generation

The fitness centre will be included as part of the Phase 1 trip generation analysis, but will be replaced at full-buildout with the proposed future Phase 2 residential buildings. Using the trip rates provided in **Table 6**, the total number of person trips per hour generated by the proposed retail units are multiplied by a factor of 1.28, as per TIA standards, to account for typical North American auto occupancy values of approximately 1.15 and combined transit and non-motorized modal shares of less than 10%. The resulting total person trips per hour are summarized in **Table 7**.

Table 7: Fitness Centre (Phase 1) Peak Hour Person Trips

Land Use	GFA (ft ²)	AM Peak (Person Trips/h)			PM Peak (Person Trips/h)		
		In (51%)	Out (49%)	Total	In (57%)	Out (43%)	Total
Health/Fitness Centre	129,000	110	106	216	217	164	381

As shown in **Table 6**, the fitness centre is expected to generate 216 to 381 total person trips during peak hours. Mode shares for the different travel modes were obtained from the 2020 TRANS Trip Generation Manual for Commercial Generators in the Ottawa West district. As such, a breakdown of the trips generated by the different travel modes is provided in **Table 8**.

Table 8: Fitness Centre (Phase 1) Peak Hour Travel Modes

Travel Mode	Mode Shares	AM Peak (Person Trips/h)			Mode Shares	PM Peak (Person Trips/h)		
		In (51%)	Out (49%)	Total		In (57%)	Out (43%)	Total
Auto Driver	55%	61	58	119	50%	110	83	192
Passenger	11%	12	11	23	16%	35	26	61
Transit	11%	12	11	23	10%	23	17	40
Bike	0%	0	0	0	5%	10	7	17
Walk	23%	26	25	50	18%	40	30	70
Total Person Trips	100%	110	106	216	100%	217	164	381

Based on the above, the fitness centre is expected to generate 119 to 192 vehicle trips, 23 to 61 passenger trips, 23 to 40 transit trips, up to 17 cyclist trips and 50 to 70 pedestrian trips during the morning and afternoon peak hours.

Residential Trip Generation

The residential buildings will be constructed in multiple phases, where Phase 1 will include two new high-rise buildings with 388 total units and the fitness centre, while Phase 2 will replace the fitness centre and the Boston Pizza restaurant with four more high-rise residential buildings. Using the trip rates provided in **Table 6**, the total number of person trips expected to be generated by the residential buildings during the morning and afternoon peak periods can be found in **Table 9**.

Table 9: Apartment Units Peak Period Person Trip Generation

Land Use	Phase	Total Dwelling Units	AM Peak Period Person Trips	PM Peak Period Person Trips
High-Rise Apartments	Phase 1 (2026)	388	310	349
	Full Buildout (2036)	1,754	1,403	1,579

The proposed development is anticipated to generate 310 and 349 person trips at Phase 1 and 1,403 and 1,579 at full buildout, during the morning and afternoon peak periods respectively. The total peak period person trips in **Table 9** are then divided into different travel modes using mode share percentages obtained from the 2020 TRANS Manual for the “Ottawa West” district. **Table 10** and **Table 11** provide the travel mode breakdown for the proposed buildings in all phases.

The “Ottawa West” mode shares specific to high rise developments were adopted **without adjusting for the future Carling BRT corridor** which could influence additional transit demand in favour of auto demand. Therefore, the mode shares presented are conservative in favour of the auto vehicle impact to adjacent roadway infrastructure.

Table 10: Phase 1 Residential Peak Period Trips Mode Share Breakdown

Travel Mode	Mode Share	AM Peak Period Person Trip	Mode Share	PM Peak Period Person Trips
Auto Driver	28%	88	33%	115
Auto Passenger	11%	36	11%	40
Transit	41%	128	26%	89
Cycling	3%	10	7%	24
Walking	16%	49	23%	81
Total Person Trips	100%	310	100%	349

Table 11: Full Buildout Residential Peak Period Trips Mode Shares Breakdown

Travel Mode	Mode Share	AM Peak Period Person Trip	Mode Share	PM Peak Period Person Trips
Auto Driver	28%	400	33%	519
Auto Passenger	11%	161	11%	181
Transit	41%	577	26%	404
Cycling	3%	46	7%	108
Walking	16%	220	23%	367
Total Person Trips	100%	1,403	100%	1,579

Standard traffic analysis is usually conducted using the morning and afternoon peak hour trips as they represent a worst-case scenario. In the 2020 TRANS Manual, conversion rates from peak period to peak hours for different mode shares are provided as shown in **Table 12** below.

Table 12: Peak Period to Peak Hour Conversion Factors (2020 TRANS Manual)

Travel Mode	Peak Period to Peak Hour Conversion Factors	
	AM	PM
Auto Driver and Passenger	0.48	0.44
Transit	0.55	0.47
Bike	0.58	0.48
Walk	0.58	0.52

Using the conversion rates in **Table 12** and the peak period person trips for different travel modes in **Table 10** and **Table 11**, the peak hour trips for different travel modes can be calculated as shown in **Table 13** and **Table 14**.

Table 13: Phase 1 Residential Peak Hour Trips Mode Share Breakdown

Travel Mode	AM Peak Hour Trips	PM Peak Hour Trips
Auto Driver	42	51
Auto Passenger	17	18
Transit	70	42
Cycling	6	11
Walking	28	42
Total Person Trips	164	164

Table 14: Full Buildout Residential Peak Hour Trips Mode Share Breakdown

Travel Mode	AM Peak Hour Trips	PM Peak Hour Trips
Auto Driver	192	229
Auto Passenger	77	79
Transit	317	190
Cycling	27	52
Walking	127	191
Total Person Trips	741	740

As shown in **Table 13** and **Table 14**, the proposed development is anticipated to generate a total of 164 person trips at Phase 1 and 740 person trips at full buildout, during the morning and afternoon peak hours. Inbound and outbound percentages were obtained from the 2020 TRANS Manual and applied to each travel mode as shown in **Table 15** and **Table 16**.

Table 15: Phase 1 Residential Land Use Trip Generation

Travel Mode	AM Peak (Person Trips/h)			PM Peak (Person Trips/h)		
	In (31%)	Out (69%)	Total	In (58%)	Out (42%)	Total
Auto Driver	13	29	42	29	21	51
Passenger	5	12	17	10	7	18
Transit	22	48	70	24	18	42
Cycling	2	4	6	7	5	11
Walk	9	19	28	24	18	42
Total Person Trips	51	113	164	95	69	164

Table 16: Full Buildout Residential Land Use Trip Generation

Travel Mode	AM Peak (Person Trips/h)			PM Peak (Person Trips/h)		
	In (31%)	Out (69%)	Total	In (58%)	Out (42%)	Total
Auto Driver	59	132	192	133	96	229
Passenger	24	53	77	46	33	79
Transit	98	219	317	110	80	190
Cycling	8	18	27	30	22	52
Walk	40	88	127	111	80	191
Total Person Trips	230	511	741	429	311	740

As shown in **Table 15**, after occupancy of the Phase 1 residential buildings, the proposed development is anticipated to generate up to 51 vehicle trips, 70 transit trips and 53 Active Transport (walking and cycling) trips, during the morning and afternoon peak hours. As shown in **Table 16**, at full buildout the proposed development is anticipated to generate up to 229 vehicle trips, 317 transit trips and 243 Active Transport (walking and cycling) trips, during the morning and afternoon peak hours.

Phase 1 Total Trips

Table 16 represents the total trips anticipated to be generated by the proposed residential development at full-buildout. However, as previously indicated, Phase 1 trips generated will consist of both the residential and fitness centre in **Table 15**. The total trips anticipated to be generated at Phase 1 are provided in **Table 17**.

Table 17: Phase 1 Total Trip Generation - Residential Plus Fitness Centre

Travel Mode	AM Peak (Person Trips/h)			PM Peak (Person Trips/h)		
	In	Out	Total	In	Out	Total
Auto Driver	74	87	161	139	104	243
Passenger	17	23	40	45	33	79
Transit	34	59	93	47	35	82
Cycling	2	4	6	17	12	28
Walk	35	44	78	64	48	112
Total Person Trips	161	219	380	312	233	545

Net Total Trips Generated

To determine the number of net 'new' trips anticipated to be generated by the development site within the surrounding transportation network, trips previously generated by the existing Canadian Tire store (Table 4) will be considered a reduction in all phases, while trips generated by the existing Boston Pizza restaurant (Table 5) are added to the trips anticipated to be generated by the proposed future developments in Phase 1 (Table 17) and removed at full buildout (Table 16). This results in the net 'new' site generated trips of the proposed development presented in Table 18 for Phase 1 (2026) and Table 19 for full buildout (2036).

Table 18: Phase 1 (2026) Net Total Trip Generation - With Boston Pizza & Fitness Centre / Without Canadian Tire

Travel Mode	AM Peak (Person Trips/h)			PM Peak (Person Trips/h)		
	In	Out	Total	In	Out	Total
Auto Driver	-45	-3	-48	17	-31	-14
Passenger	-6	5	-1	6	-10	-3
Transit	11	41	52	21	7	29
Cycling	2	4	6	6	0	5
Walk	-15	6	-10	19	-1	18
Total Person Trips	-55	56	1	71	-35	36
Pass-By	0	0	0	51	56	108
'New' Auto Trips	-45	-3	-48	68	25	94

Table 19: Full Buildout (2036) Net Total Trip Generation - Without Boston Pizza, Fitness Centre & Canadian Tire

Travel Mode	AM Peak (Person Trips/h)			PM Peak (Person Trips/h)		
	In	Out	Total	In	Out	Total
Auto Driver	-60	42	-17	-29	-65	-94
Passenger	1	35	36	-5	-18	-23
Transit	75	201	276	76	46	123
Cycling	8	18	27	15	8	23
Walk	-10	50	39	52	21	73
Total Person Trips	14	348	362	108	-7	101
Pass-By	0	0	0	69	68	136
'New' Auto Trips	-60	42	-17	40	3	42

As shown in the tables above, the existing developments result in reductions to the overall trips generated by the proposed development within the surrounding road network, which are identified as negative numbers. At Phase 1, the 'new' auto trips are expected to be reduced by 48 trips in the morning peak hour and increase by 94 trips in the afternoon peak hour. At Phase 2, the 'new' auto trips are expected to be reduced by 17 trips in the morning peak hour and increase by 42 trips in the afternoon peak hour. Up to 276 new transit trips and 96 new active transport trips are expected by full-buildout.

3.1.2. Trip Distribution and Assignment

Based on the 2011 OD Survey (Ottawa West district), the site-generated commuter traffic (i.e. vehicles travelling to work in the AM peak hour and back from work in the PM peak hour) was estimated to have the following distribution:

- 10% to/from the north using Churchill Ave or Broadview Ave;
- 30% to/from the south using Woodward Ave and Highway 417;
- 35% to/from the east using Carling Ave or Highway 417; and,

- 25% to/from the west using Carling Ave or Highway 417.

The anticipated site-generated auto trips for the proposed building from **Table 17** and **Table 16** were then assigned to the road networks as shown in **Figure 13** (Phase 1) and **Figure 14** (full buildout). The net site-generated auto trips from **Table 18** and **Table 19** were also assigned to the road networks as shown in **Figure 15** (Phase 1) and **Figure 16** (full buildout).

Note that prior to being replaced at full buildout, the Boston Pizza restaurant is expected to be accessed using the proposed north-south internal public street of the proposed development.

Figure 13: Phase 1 Proposed Development Site-Generated Traffic

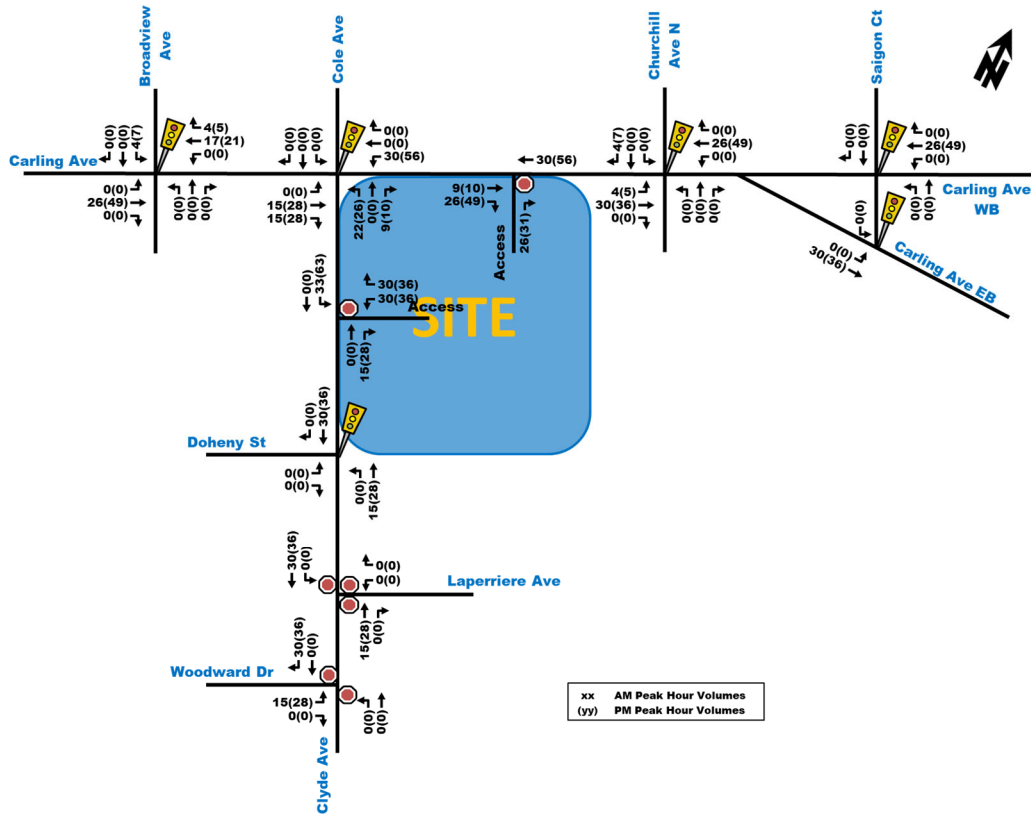


Figure 14: Full Buildout Proposed Development Site-Generated Traffic

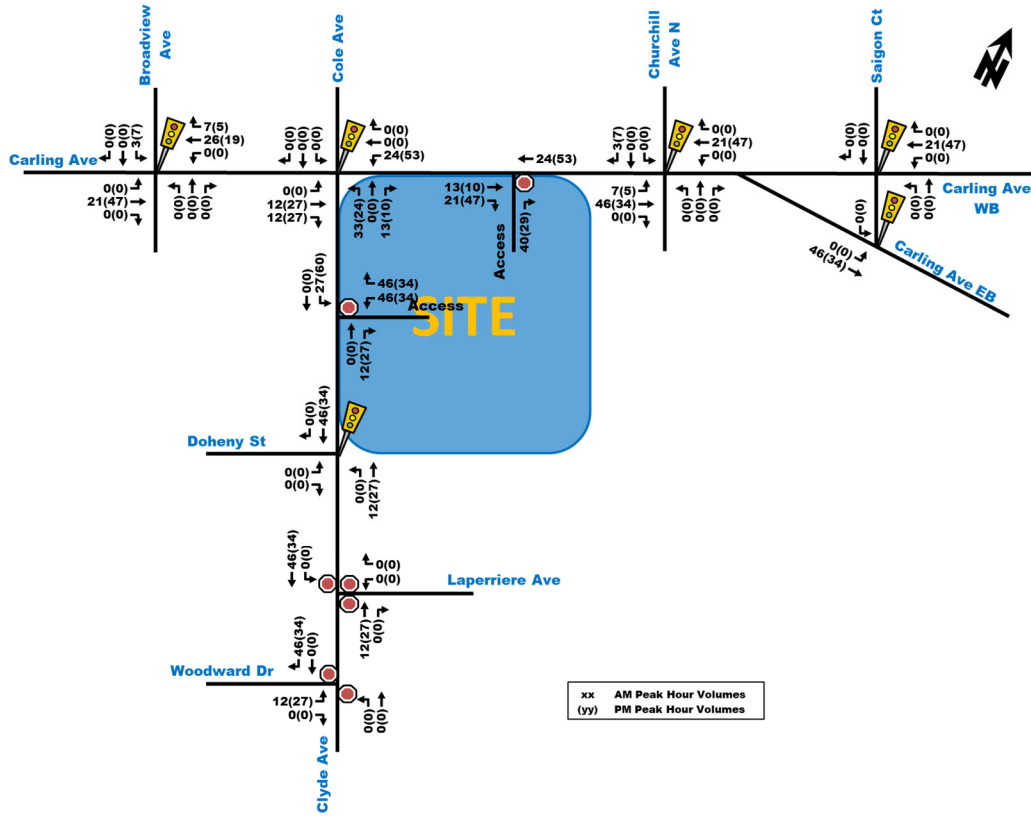


Figure 15: Phase 1 Net Site-Generated Traffic

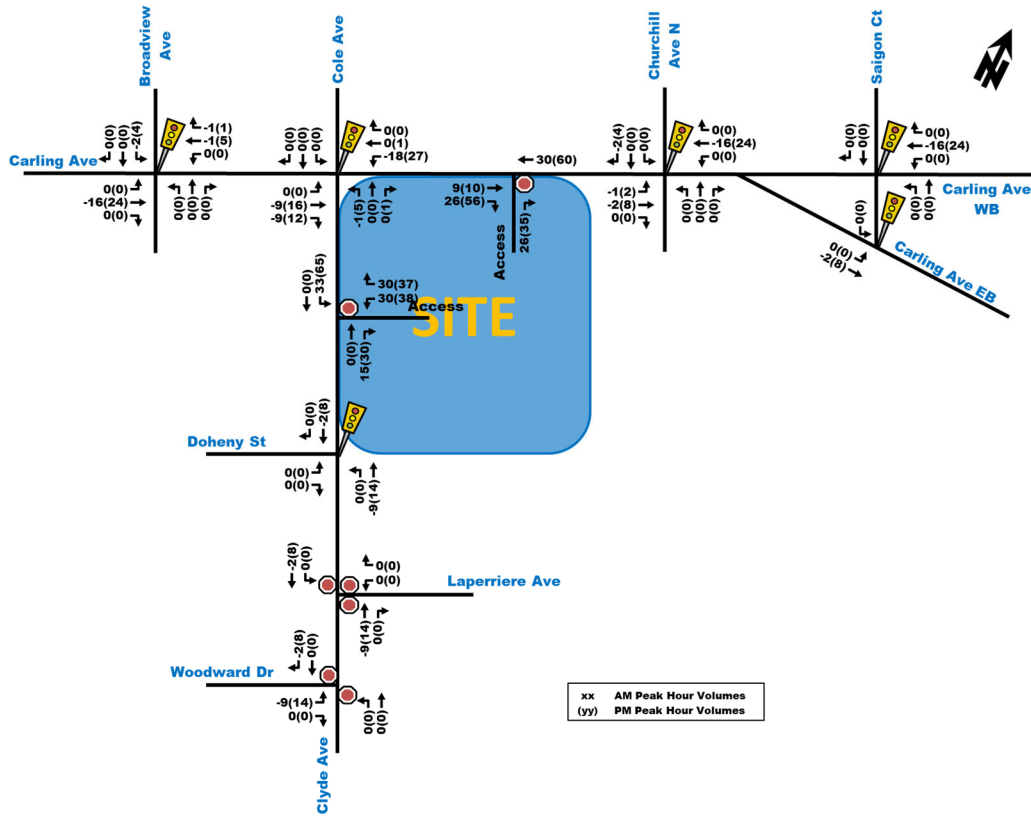
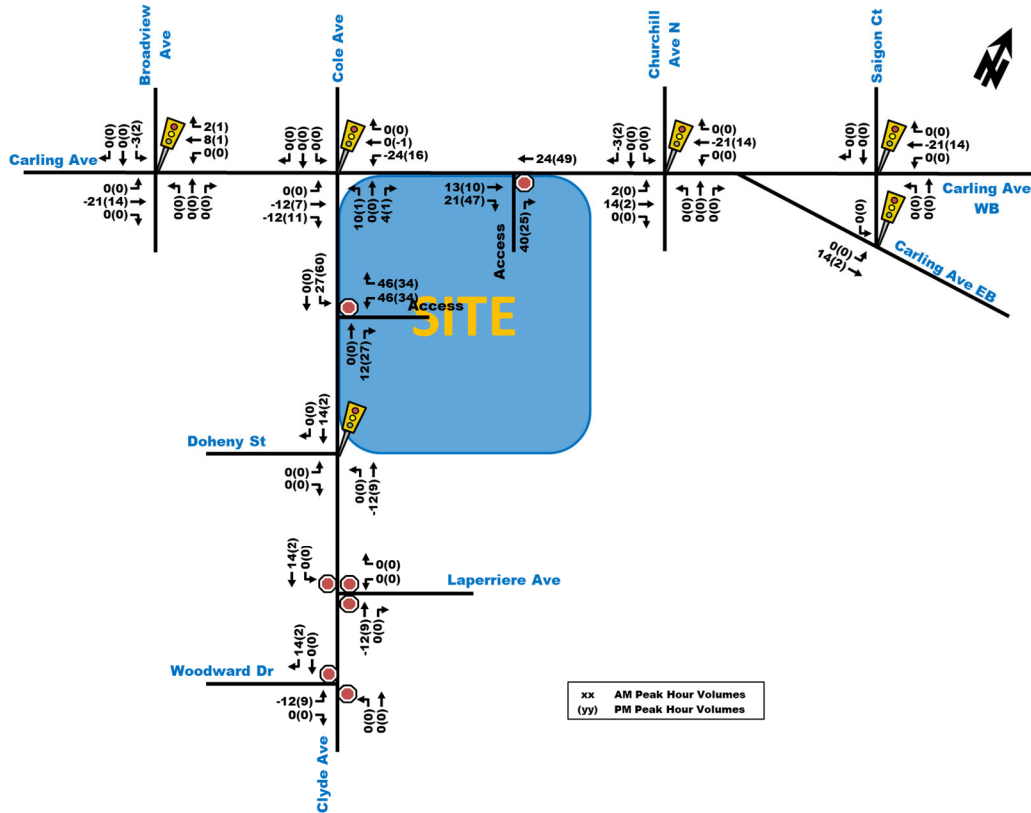


Figure 16: Full Buildout Net Site-Generated Traffic



3.2. Background Network Traffic

3.2.1. Transportation network plans

Refer to **Section 2.1.3: Planned Study Area Transportation Network Changes** for a summary of all future modifications anticipated within the study area. The following modifications are expected prior to construction of proposed development:

- Carling Transit Priority project, where a vehicle lane in both directions will be converted to a dedicated bus lane.
- The intersection of Carling/Churchill will be designed as a protected intersection.
- The eastbound and westbound left-turns at the intersection of Carling/Clyde/Cole will be modified to fully protected left-turn movements. The eastbound left-turn storage length will be increased from 20m to 70m.
- The westbound left-turn storage length at Carling/Broadview will be increased from 50m to 75m.

3.2.2. Background Growth

Historic traffic data as shown in **Figure 17** indicates that study area intersections have seen a traffic decline during the morning peak period. It is possible that such a trend in traffic will continue in the future given that transit will be improved along Carling Ave through the implementation of dedicated bus lanes, which may result in increased transit usage and decreased general traffic volumes. Furthermore, the reduced lane capacity from three to two lanes along Carling Ave may naturally deter some traffic to use adjacent alternate routes such as the Highway 417. Therefore, future east-west peak hour auto demand will likely be lower as a result.

However, there exists worst-case scenario where future developments are expected to be constructed outside of and within the study area along Carling Ave in the coming years, and no shift in traffic occurs. This could result in a conservative assumption of a 1% per year background growth rate between years 2026 and 2031 (no growth applied beyond 2031), for the through movements along Carling Ave to account for the influence of those developments and the lack of inherent demand rationalization. These worst-case future background 2026 and 2036 traffic volumes are illustrated in **Figure 18** and **Figure 19**. As mentioned, this growth rate is not expected to occur in the case where sufficient demand shifts from the corridor.

Figure 17: Traffic Growth Rates at City of Ottawa Intersections

INTERSECTION TRAFFIC GROWTH RATES, AM PEAK PERIOD (0700 to 0900)

Total Vehicular Volume Entering the Intersection, 1995 to 2013, Scenario F AM 2

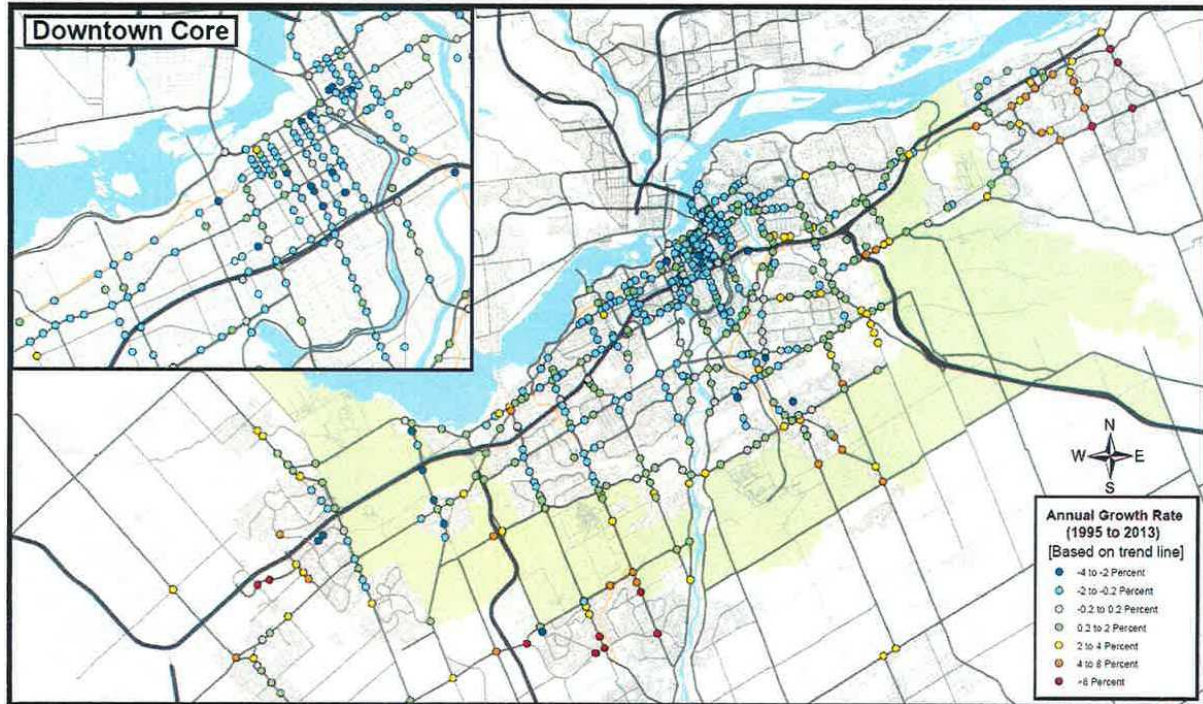


Figure 18: Future Background 2026 Traffic Volumes – Without Demand Rationalization

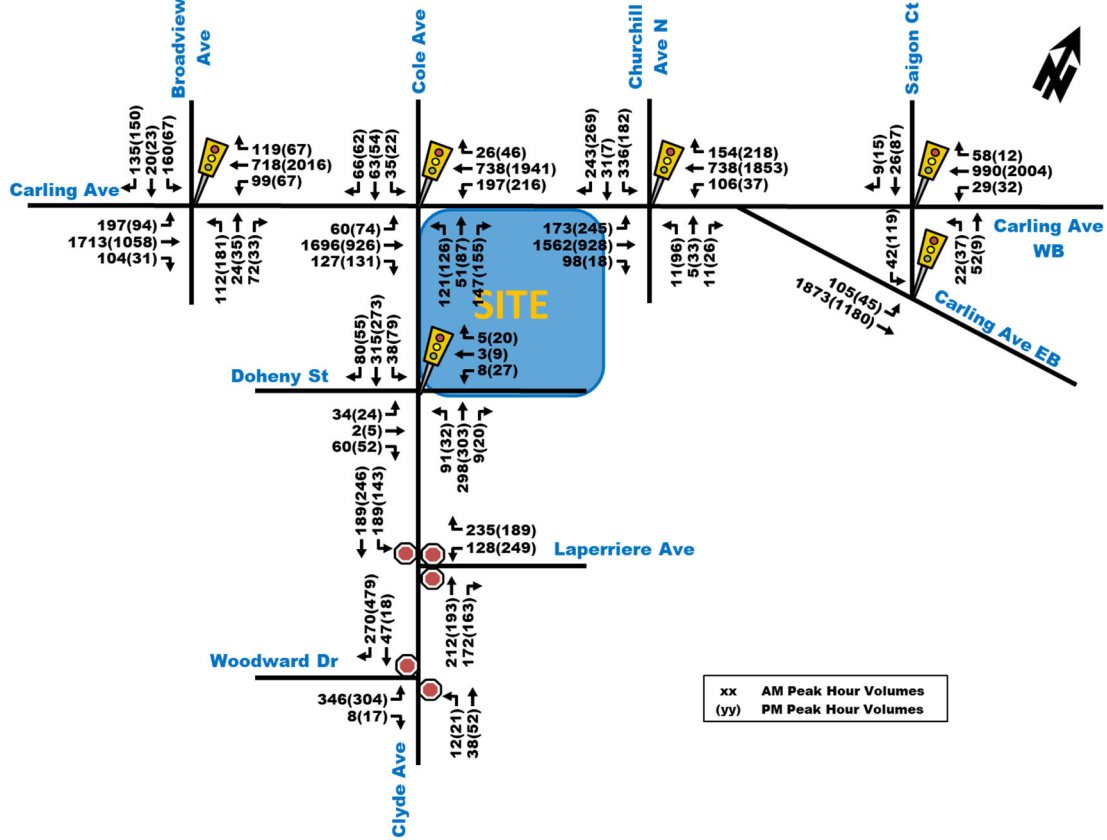
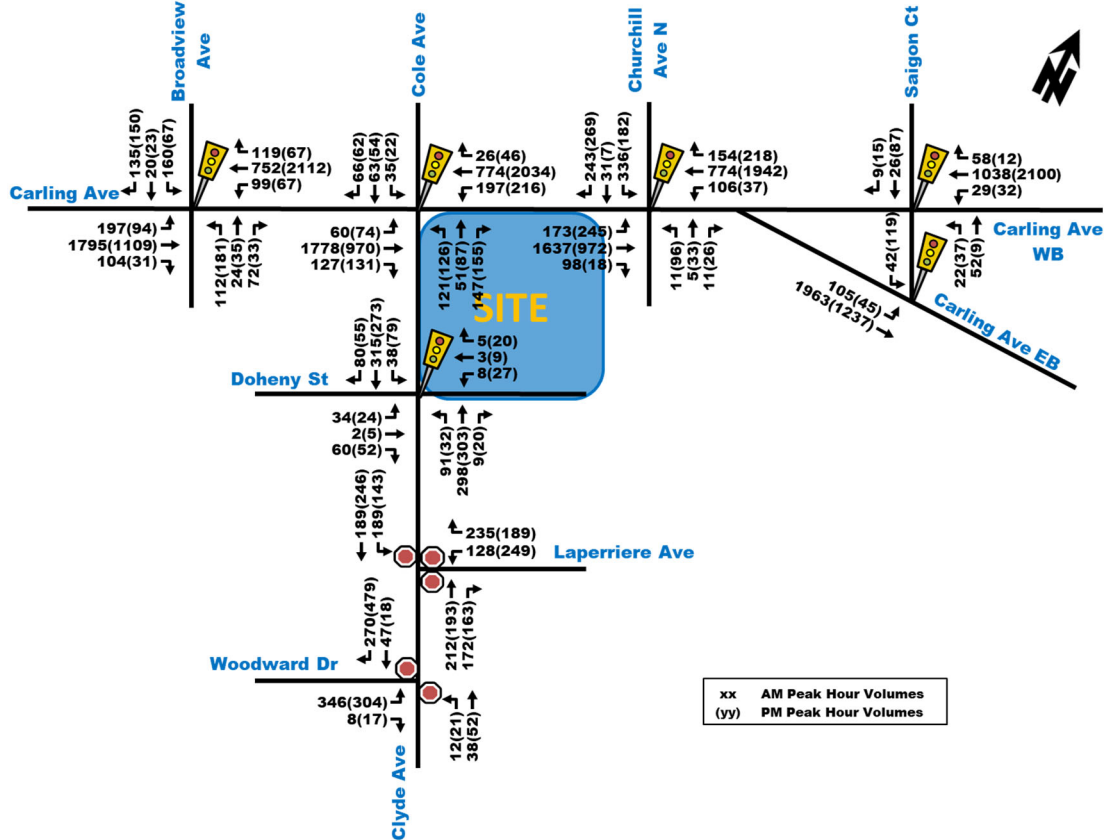


Figure 19: Future Background 2036 Traffic Volumes – Without Demand Rationalization



3.2.3. Other Developments

Description of other area developments taking place within the study area was provided in **Section 2.1.3: Other Area Developments**. Traffic volumes anticipated to be generated by the two future adjacent developments at 861 Clyde Ave and 1619-1655 Carling Ave are being included in study area volumes as shown in **Figure 20** for Phase 1 of the 861 Clyde Ave development (access along Churchill Ave only) and **Figure 21** for full buildout of the 861 Clyde Ave development (access along both Churchill Ave and Clyde Ave). Site-generated volume figure excerpts from the respective TIAs have been provided in **Appendix E**. Note that WBL volumes at the intersection of Carling/Clyde are expected to consist of U-turns mainly.

Total future background 2026 and 2036 volumes are illustrated in **Figure 22** and **Figure 23**, where the adjacent development volumes in **Figure 20** were added to the future background 2026 volumes in **Figure 18**, and the adjacent development volumes in **Figure 21** were added to the future background 2036 volumes also in **Figure 19**.

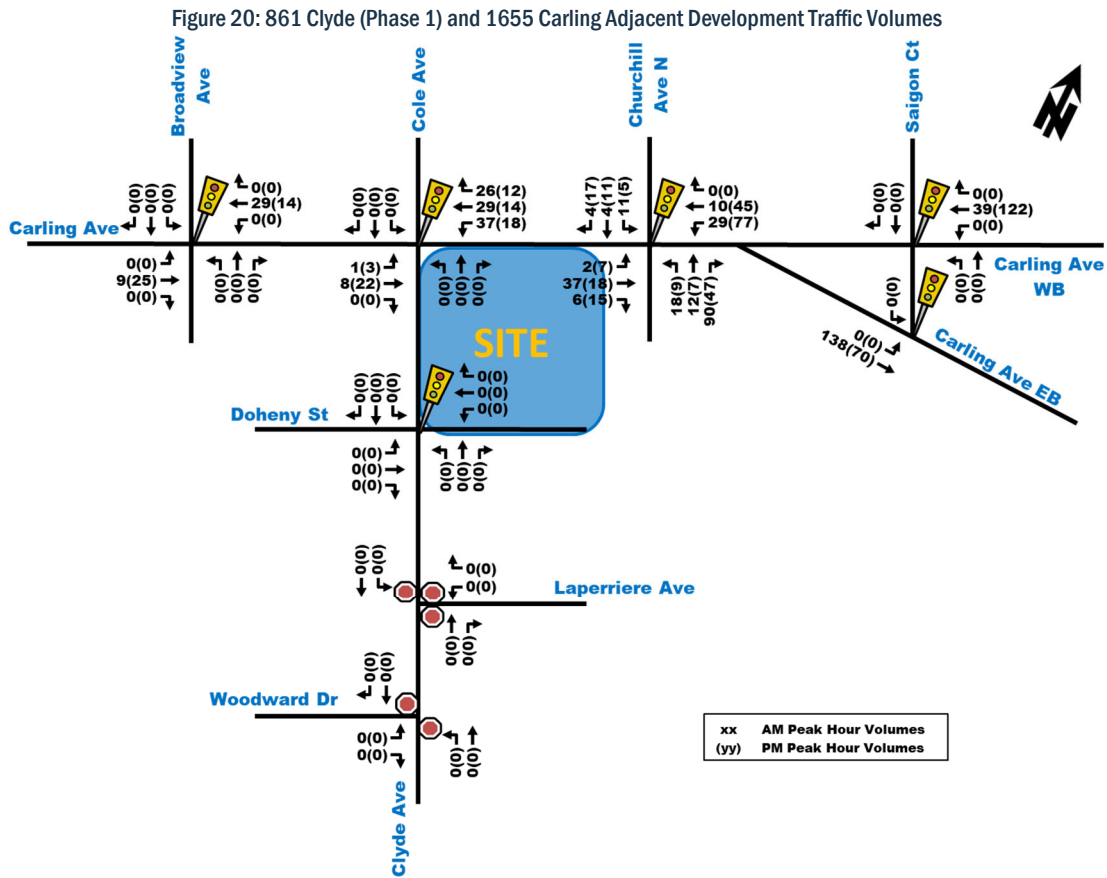


Figure 21: 861 Clyde (Full Buildout) and 1655 Carling Adjacent Development Traffic Volumes

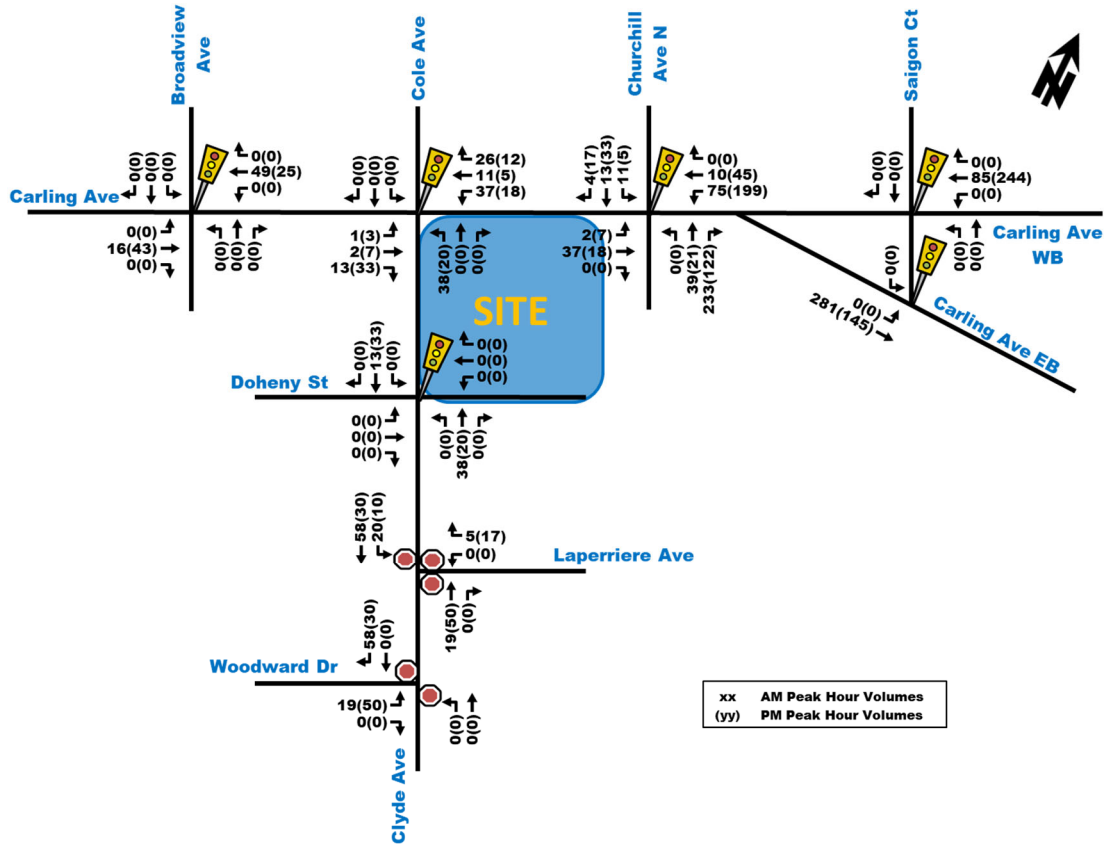


Figure 22: Total Future Background 2026 Traffic Volumes

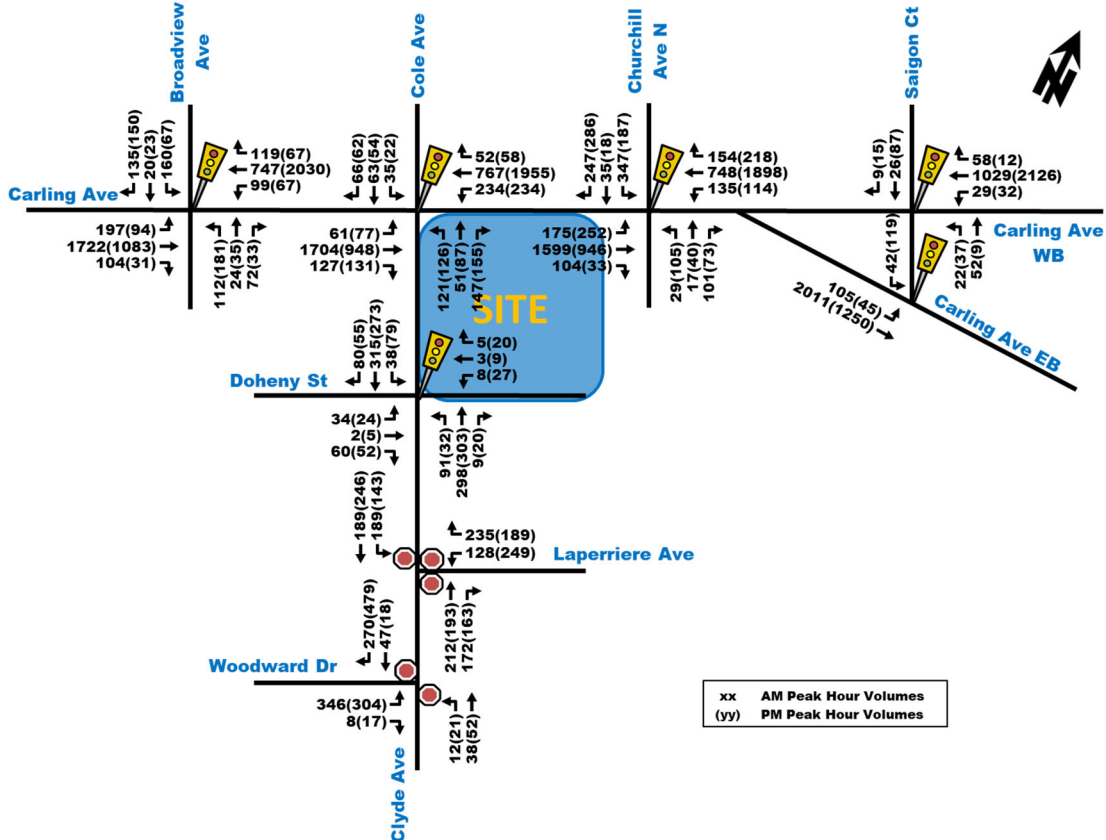
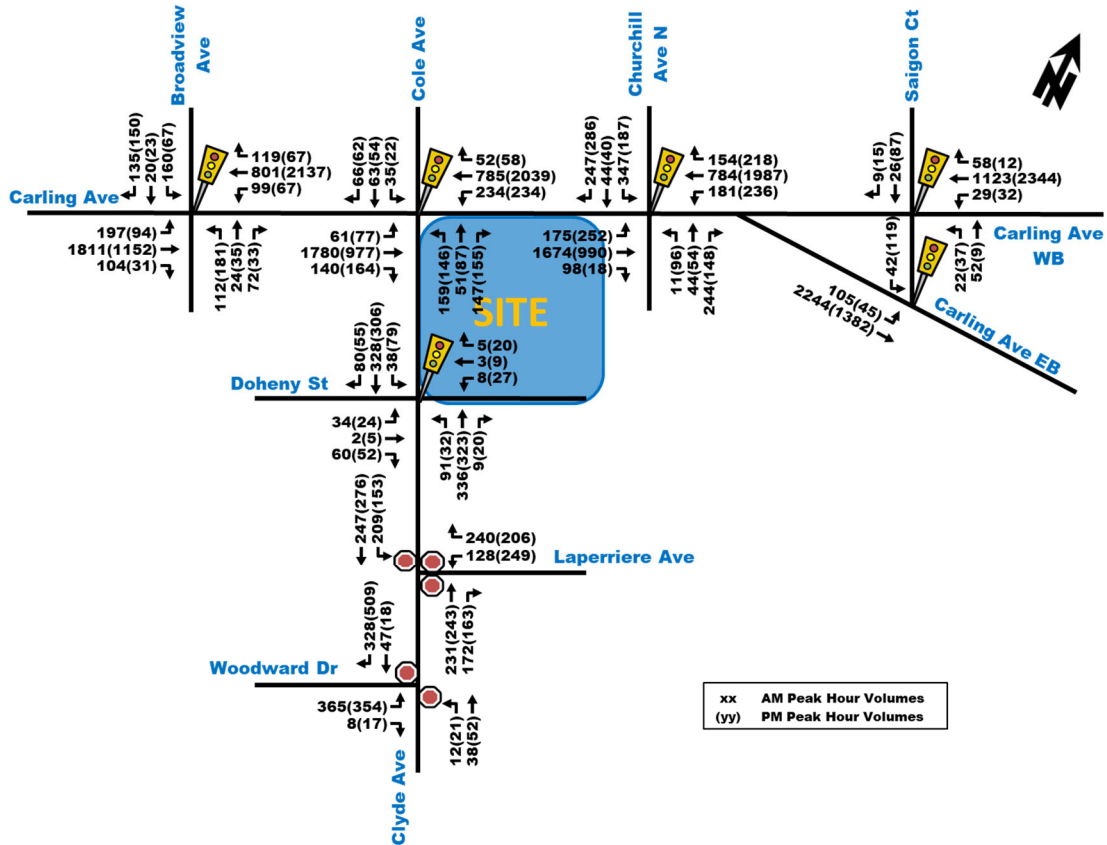


Figure 23: Total Future Background 2036 Traffic Volumes



3.3. Demand Rationalization

The total projected future traffic volumes can be determined by superimposing the net site-generated traffic volumes in each of Figure 15 and Figure 16, onto their respective total future background 2026 and 2036 traffic volumes in Figure 22 and Figure 23. The resulting total projected 2026 and 2036 traffic volumes are illustrated in Figure 24 and Figure 25. Note that analysis of study area intersections is provided in Section 4.9.

Figure 24: Total Projected 2026 Traffic Volumes – with Phase 1 Development

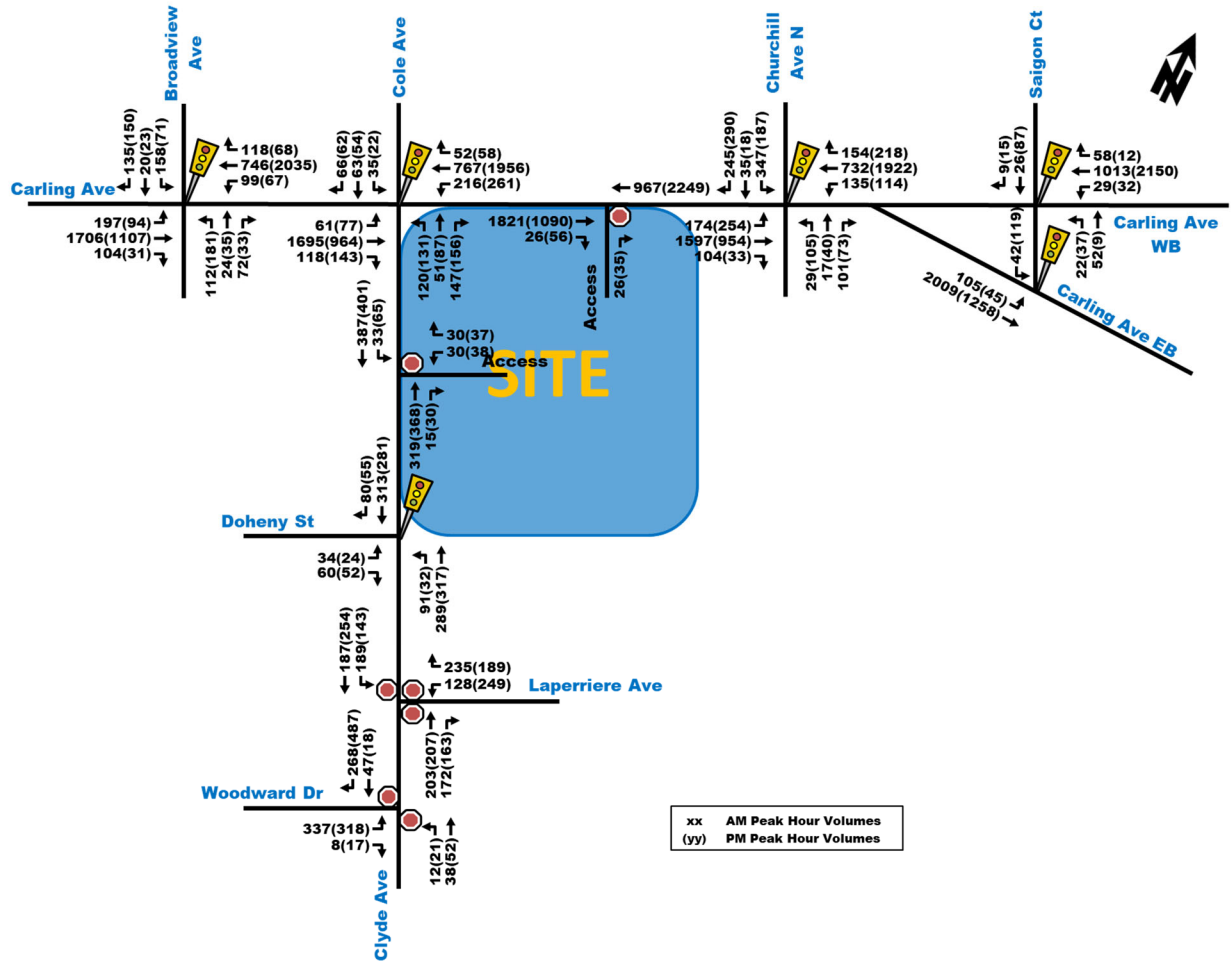
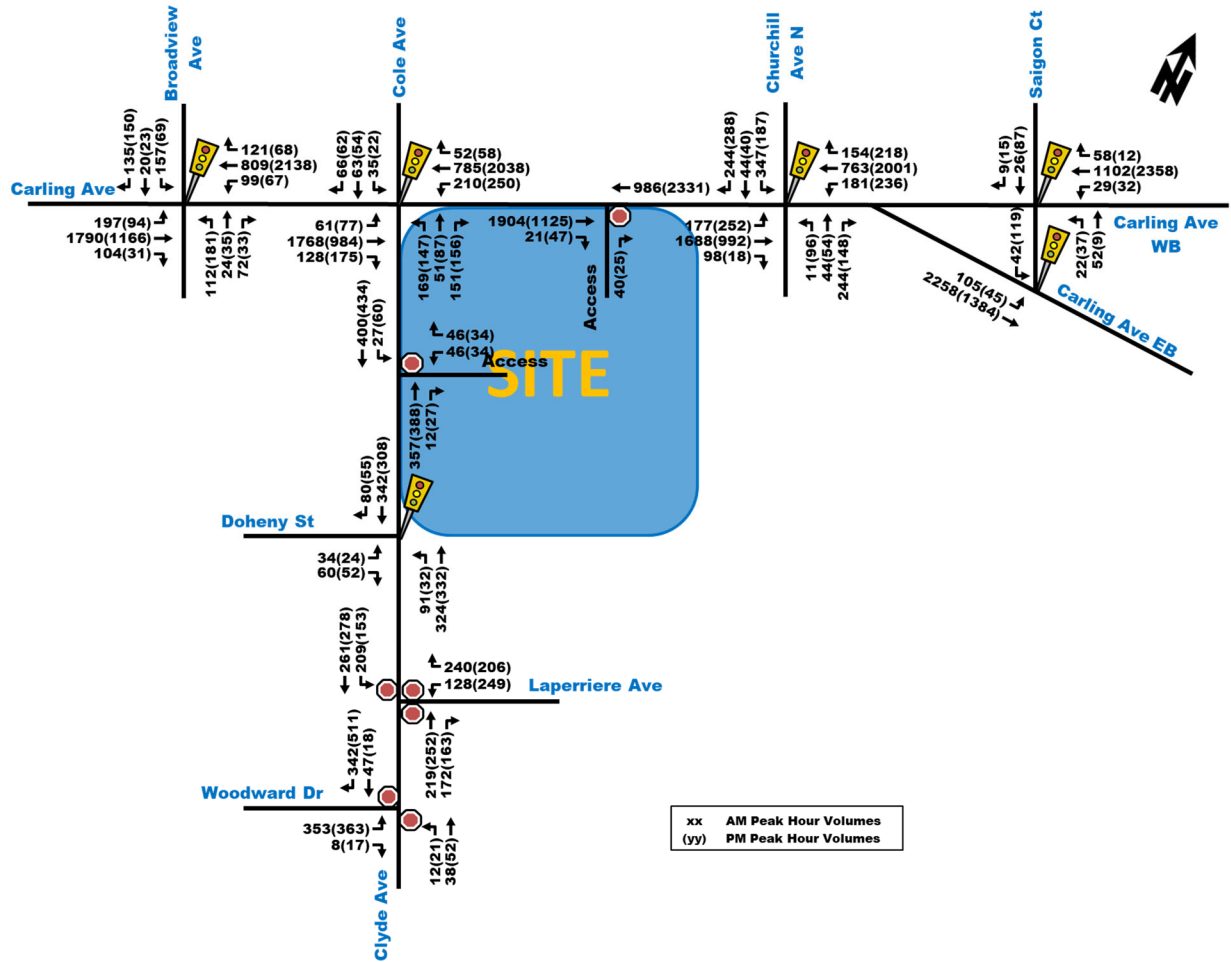


Figure 25: Total Projected 2036 Traffic Volumes – with Full Buildout of Development



Forecast Traffic Volumes

Along Clyde Ave, two-way traffic volumes are observed to reach up to approximately 900 veh/h during peak hours, in both existing and future conditions. These volumes are considered more appropriate for a major collector or similar roadway facility, rather than the existing local roadway classification. The forecast traffic volume is likely due to vehicles from both Woodward Dr and Laperriere Ave (which are major collector roads) using Clyde Ave to access major roads such as Maitland Ave or Carling Ave, or to access local communities from the mentioned major roads. It should be noted that, while Clyde Ave N is classified as a local road, it does not provide direct frontage to residential land uses as a typical local street may. Reclassifying Clyde Ave N to a collector (300 veh/h threshold) or major collector (600 veh/h threshold) may need to be taken into consideration.

Traffic volumes along Carling Ave may increase to approximately 2,400 veh/h in the peak direction and 1,200 veh/h in the off-peak direction. While these volumes may be able to be accommodated in the existing six-lane cross-section, the future lane reductions due to the introduction of bus lanes will reduce the capacity of the road significantly. This will be addressed in more detail in the following subsections.

Proposed Development Site-Generated Traffic

As detailed by the trip generation conducted in **Section 3.1.1**, given the existing site land uses, the proposed development site is anticipated to generate a negative net total traffic volume during the morning peak hour at

both Phase 1 (2026) and full-buildout (2036), which is not expected to result in any notable impact to the study area intersections. During the afternoon peak hour, a net total traffic volume of up to 94 vehicles is expected to be generated at Phase 1 and up to 42 net total vehicles at full-buildout (2036). Therefore, no additional reductions or adjustments to site generated traffic was assumed.

Transportation Master Plan (TMP)

The City of Ottawa TMP's Road Network maps do not indicate any plans to modify study area roads by 2031. However, the Rapid Transit and Transit Priority 2031 Affordable Network illustrates Carling Ave as a Transit Priority Corridor (Continuous Measures) at the frontage of the site, as detailed in **Section 2.1.3**. Furthermore, the Ultimate Network Concept illustrates plans to provide at-grade Light Rail Transit (LRT) along Carling Ave in the future, connecting the Trillium Line and the Confederation Line crossings at Carling Ave. While these plans may take place in the long term, the City's ongoing improvements to transit measures and persistent implementation of improvements to both cyclist and pedestrian facilities throughout the City are expected to play a significant role in reducing reliance on auto vehicles in the future.

Demand Rationalization to the Background Traffic Volume Adjustments (Carling Ave Transit Priority)

Based on the Carling Avenue Transit Priority Measures Study, as transit usage increases it is expected that the implementation of the dedicated bus lanes along Carling Ave will result in a decrease of traffic volumes relative to existing. It is expected that, in addition to negligible auto traffic growth, up to 20% east-west background traffic volumes in the peak traffic direction and 15% traffic volumes in the off-peak traffic direction by 2031 will no longer impact the peak hour travel along Carling Avenue.

For the purpose of this TIA Report, the following east-west reductions will be applied to existing traffic, in addition to no assumed background growth (**Section 3.2.2**):

- 10% in both the peak and off-peak traffic directions in the Phase 1 2026 horizon year which recognizes that the BRT lanes have been recently installed and the full reduction remains to be realized through long term adoption; and
- 20% in the peak traffic direction and 15% in the off-peak traffic direction in the 2036 horizon which considers complete adoption of the BRT lanes, including relevant modal shifts and changes in traffic patterns.

These percent reductions will result in a decrease for background traffic volumes of approximately 200veh/h in the peak direction and 100veh/h in the off-peak direction at horizon year 2026, as well as a decrease of 400veh/h in the peak direction and 150veh/h in the off-peak direction at horizon year 2036. The adjusted total projected 2026 and 2036 traffic volumes are illustrated in **Figure 26** and **Figure 27**, respectively.

Figure 26: Total Projected 2026 Traffic Volumes, with Traffic Volumes Reductions

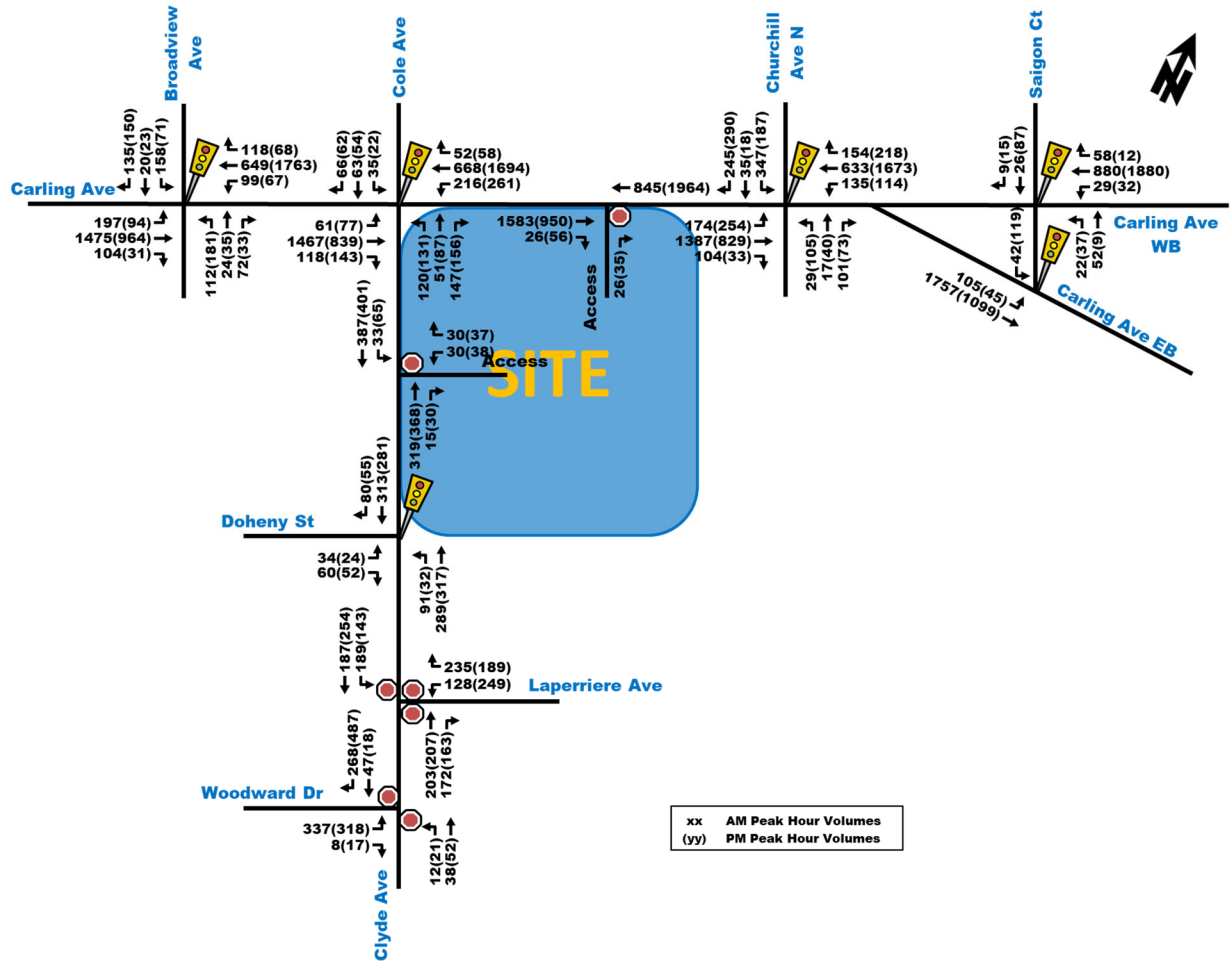
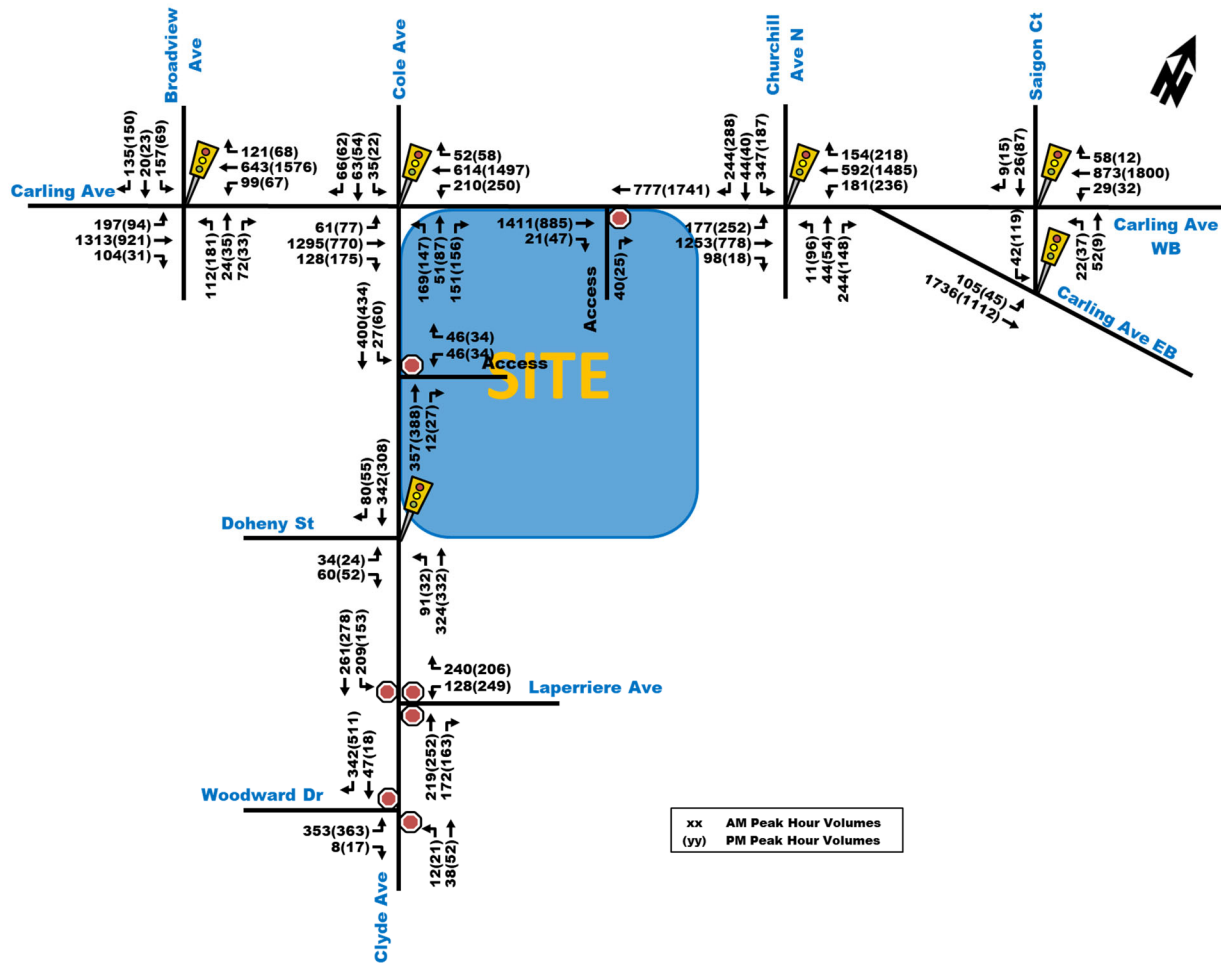


Figure 27: Total Projected 2036 Traffic Volumes, with Traffic Volumes Reductions



4.0 ANALYSIS

4.1. Development Design

As this is a Plan of Subdivision, design related elements will be provided in more detail in the future Site Plan Application (SPA) submissions of the proposed development.

4.1.1. Design for Sustainable Modes

The City of Ottawa’s TDM-supportive Development Design and Infrastructure checklist has been provided in Appendix F and discussed in more detail in Section 4.5.

Auto and Bicycle Parking

Vehicle and bicycle parking are proposed to be provided in underground parking garages for each of the proposed respective buildings. Buildings are anticipated to have two to three levels of underground parking which can all be accessed via the proposed internal public street of the development.

Pedestrian and Cyclist Facilities

Pedestrian sidewalks will continue to be provided at the frontages of the proposed development, along Carling Ave and Clyde Ave. Within the subdivision, sidewalks will be provided along either side of the primary local roadway and as needed to facilitate access to building entrances. Pedestrian crossings may also be provided along the internal future public street of the development. An active transport (walking and cycling) connection

is expected to be established with the adjacent future development to the south (at 861 Clyde) through a pathway that passes through the proposed plaza and two parks of the site. The design of the future internal public street will also accommodate both pedestrians and cyclists.

Transit Amenities

The future transit network on Carling Ave and Clyde Ave is assumed to continue to operate in the future similar to existing conditions, indicated in **Section 2.1.2: Transit Network**. The bus pad on the south side of Carling Ave, at the frontage of the development, is not expected to be impacted or need realignment with the current proposed development plan. This will be confirmed at Site Plan Application.

4.1.2. New Street Networks

Given that the new internal roadway will be public, it will be classified as a local roadway and designed using the City of Ottawa ROW cross-sections for local roads. As a new requirement for local roads by the City of Ottawa, the 30km/h design toolbox must be taken into account. As was shown in the development's concept plan, several measures are already being included, such as:

- **Curb extensions** at both the Carling Ave and Clyde Ave accesses, which narrows the internal roadway, resulting in reduced turning speeds and shortening crossing distances for pedestrians.
- **Internal curb extensions** at various locations along the roadway, which narrows the roadway and allows on-street parking to be organized into bays.
- **On-street parking** which can increase visual friction of travel lanes and provide short-term parking for visitors/pick-up/drop-offs.

In addition to the above, a posted speed limit of 30km/h would be required along the internal roadway. Other measures that may be considered include:

- Providing pedestrian crossings at different locations along the internal roadway, which can be included at the internal curb extensions.
- Providing short road segments to discourage vehicle speeds between access locations.
- Providing internal speed tables at different locations along the internal roadway to ensure the 30km/h speed is achieved. However, such permanent vertical measures can result in potential implications for drainage, municipal vehicle accessibility and snow clearing measures, which would need to undergo a design review. The internal speed tables can potentially be combined with the pedestrian crossings, resulting in internal raised pedestrian crossings.
- The opportunity to provide a 2.0m space for street parking to narrow the pavement width requirement.

The above can be explored in more detailed through future design and approval processes. Staging will need to be required around the site development plan.

4.2. Parking

The minimum number of auto and bicycle parking spaces will be provided as per the City of Ottawa Parking Provisions. The proposed development is located in "Area Y", which consists of the following parking requirements:

- 0.5 vehicle parking space per dwelling unit for the residential land use (i.e. 877 spaces minimum),
- 0.1 vehicle parking space per dwelling unit for the visitors parking of the residential land use, with no more than 30 spaces required per building (i.e. 180 spaces maximum), and
- 0.5 bicycle parking space per dwelling unit for the residential land use (i.e. 877 spaces minimum).

For the 1,754 proposed total units, the development is expected to provide 877 vehicle parking spaces for tenants, 176 vehicle parking spaces for visitors and 877 total bicycle parking spaces. Note that most parking spaces will be provided in underground parking garages for each respective building, with some layby parking areas provided along the future internal public street of the development.

4.3. Boundary Street Design

The detailed Multi-Modal Level of Service (MMLoS) analysis for boundary streets and signalized intersections will be provided in the future Site Plan Application.

4.4. Access Intersection Design

The existing site provides the following accesses which will ultimately be closed or replaced:

- A right-in right-out to Carling Avenue nearest the Boston Pizza. This access will remain at its current location at Phase 1 until full-buildout, where it will be shifted approximately 30m to the west of its existing location.
- A right-in right-out along Clyde Avenue to the existing parking facilities. This access will be closed.
- A traffic signal controlled east leg of the Clyde/Doheny intersection. The east leg will be closed.

Access to the proposed development will be provided via a new internal public street that connects Carling Ave to Clyde Ave, with stop control at the minor legs of each access. The internal public street will connect to underground parking garage ramps and provide layby parking areas. The internal public street will be designed as a local road with traffic calming measures included, as previously indicated in **Section 4.1**. Furthermore, in Phase 1, the Boston Pizza restaurant access is assumed to be through the internal public street.

Carling Ave Access

The existing access along Carling Ave will remain in place at Phase 1 given that the Canadian Tire building will be repurposed as a fitness centre. Once the fitness centre building is removed at full-buildout, the access will be shifted approximately 30m to the west of its existing location. The access will only permit right-in/right-out movements from Carling Ave.

Clyde Ave Access

A full movement site access will be provided along Clyde Ave, approximately 30m north of the existing Clyde/Doheny intersection. The existing SB-LT lane at the intersection of Clyde/Doheny will no longer be used as the east leg of the intersection will be removed and the SB-LT lane can instead be utilized by the Clyde Ave access to facilitate access into the site.

The Clyde Ave access is proposed as a full-movement access, permitting both right and left turns into and out of the site. The access is being relocated from its current location at the east leg of the Clyde/Doheny intersection to accommodate the location of a new public park as part of the proposed development. The availability of the SB-LT lane on Clyde Ave will provide beneficial traffic operations at the access. While the access is in close proximity to the Clyde/Doheny intersection, it is not expected to have negative impact to its operations as the volume of anticipated WBL traffic exiting the site is in the low range of 30 to 45 vehicles during the peak hours. Traffic operations at both the site access and the Clyde/Doheny intersection will be confirmed in **Section 4.9**, where any queuing or safety concerns can be identified.

Truck Turns

The future public street is expected to be part of the fire truck route of the site. It is also expected to provide access for municipal vehicles, such as garbage trucks, and large moving vehicles. As such, truck turns for large HSU trucks have been reviewed as provided in **Appendix G**. The drawings confirm no anticipated issues for trucks accessing and travelling through the site.

4.5. Transportation Demand Management

4.5.1. Context for TDM

The proposed development is located in both a Design Priority Area (DPA), known as Carling Arterial Mainstreet, and along a Transit Priority (Continuous Measures) corridor, where a lane on each side of Carling Ave will be converted to a bus lane in the future.

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

The development site is owned by RioCan REIT, who will manage the property in the future. A breakdown of unit types is not available at this time.

4.5.2. Need and Opportunity

Transit usage is anticipated to increase significantly in the area as a result of the transit priority measures being implemented along Carling Ave in the near future. Therefore, the mode share percentages used for the purposes of trip generation in this report are considered reasonable.

The proposed development is expected to utilize Transportation Demand Management (TDM) measures to maintain sustainable transit and active mode shares, as described in more detail in **Section 4.5.3** below.

4.5.3. TDM Program

The TDM-Supportive Design and Infrastructure Checklist has been provided in **Appendix F**. The TDM Measures Checklist is typically provided as well. However, no measures have been confirmed at this early stage of the process. Future TIA submissions will identify TDM Measures once they are confirmed by the proponent. The proposed measures in the Infrastructure Checklist were identified using the Site Plan and are indicated below.

TDM-Supportive Development Design and Infrastructure Checklist:

- All ten (10) Required measures related to Walking and Cycling (facilities and bicycle parking) and Vehicle Parking have been satisfied
- Eight (8) out of fourteen (14) basic measures related to Walking and Cycling, Parking and Ridesharing have been satisfied, namely:
 - Locating building entrances to minimize walk distance to sidewalks and transit.
 - Locating building doors and windows to ensure visibility of pedestrians.
 - Providing safe, direct and attractive walking routes to transit.
 - Ensuring walking routes are secure, visible, and lighted.
 - Designing roads for cyclist circulation.
 - Providing lighting, landscaping and benches along walking and cycling routes.
 - Providing wayfinding signage for site access.
 - Providing parking for long-term and short-term users.

TDM Measures Checklist:

Measured to be identified once confirmed by proponent in future TIA site plan control submissions.

4.6. Neighbourhood Traffic Management

This module compares the maximum two-way traffic of a local or collector road during morning and afternoon peak hours, to the respective ideal thresholds suggested by the City of Ottawa TIA Guidelines.

Site-generated traffic of the proposed development are expected to use local road Clyde Ave, collector road Broadview Ave, and major collector roads Churchill Ave and Woodward Dr, as part of different access routes to/from the proposed development. The thresholds suggested in the TIA Guidelines indicate an ideal two-way traffic volume of 120 veh/h for local roads, 300 veh/h for collector road and 600 veh/h for major collector roads, during peak hours. Using the existing traffic volumes in **Figure 7** and the total projected 2036 traffic volumes in **Figure 25** for comparison, the existing and future traffic volumes are compared to their respective thresholds as shown in **Table 20**.

Table 20: Existing and Projected Traffic Volumes Comparison to Thresholds

Roadway	Classification	Daily Threshold (veh/day)	Peak Hour Threshold (veh/h)	Peak Hour Two-Way Volumes AM (PM)	
				Existing	2036 Projected
Clyde Ave	Local	1,000	120	825 (771)	929 (889)
Broadview Ave	Collector	2,500	300	655 (436)	654 (439)
Churchill Ave	Major Collector	5,000	600	942 (954)	1,010 (1,039)
Woodward Dr	Major Collector	5,000	600	636 (821)	715 (912)

As shown in **Table 20**, two-way peak hour traffic volumes exceed the respective ideal thresholds of all roadways in both existing and future conditions. Note the following:

- **Clyde Ave:** volumes are significantly above the ideal peak hour threshold for a local road. The high traffic volumes are the result of a significant volume travelling along Woodward Dr and Laperriere Ave and using Clyde Ave to access major arterial roads such as Maitland Ave and Carling Ave, as well as access Highway 417 ramps. Clyde Ave does provide a typical local road ROW of 20m, but it also provides auxiliary turn lanes at its signalized intersections and has no direct frontage to residential land uses, which is not typical of a local road. It is recommended that Clyde Ave be reclassified to a major collector road based on the volumes and its connectivity. If a significant reduction of traffic volumes is desired, vehicle access to/from both Woodward Dr and Laperriere Ave would need to be limited or restricted.
- **Broadview Ave:** in the morning peak hour, volumes are nearly double the ideal threshold of a collector road. Broadview Ave connects arterial roads such as Richmond Rd and Carling Ave to local roads and collector streets, which a characteristic typical of a major collector road. Therefore, the City may consider reclassifying the road to a major collector, however, it is not considered critical.
- **Churchill Ave:** volumes are nearly 60 to 70% higher than the ideal threshold during both peak hours. Churchill Ave provides a significant connection between arterial streets such as Carling Ave, Richmond Rd and Scott St, as well as local and collector roads which provide access to communities in between. Bulb outs and on-street parking are provided along the entire stretch of the road, which may help to reduce the traffic volumes through traffic calming. Given the ongoing west extension for LRT Stage 2 is expected to become operational in 2025, traffic volumes may see a reduction in the future as transit usage increases.
- **Woodward Dr:** volumes are nearly up to 50% higher compared to the ideal threshold. Woodward Dr provides access to office, retail and industrial land uses, along with a connection between Maitland Ave and Clyde Ave, all of which contribute to the traffic volumes. Reduction in traffic volumes would require restricting or limiting access to Woodward Dr from either Maitland Ave or Clyde Ave. However, it is not considered critical with regards to current traffic operations of the road.

Due to the location and context of the proposed development, the proximity of the site to the Highway 417 and the function of major surrounding roads, high traffic volumes are to be expected during peak hours. However,

with the future implementation of the transit priority lanes on Carling Ave and the continued improvement of the transit network in Ottawa, including the ongoing LRT Stage 2 extensions, a shift in volumes may gradually occur in the future and result in more transit usage and less vehicle volumes.

It is important to note that the thresholds provided in the TIA Guidelines are only ideal suggestions and not firm requirements for traffic volumes. However, the City may choose to reclassify roadways as needed, particularly in the case of Clyde Ave where volumes are significantly higher than the threshold. Other roadways are not considered critical at this time, but intersection operations will be confirmed in **Section 4.9**.

4.7. Transit

As shown in **Table 19**, the proposed development is anticipated to generate up to a total of 276 new transit trips at full buildout during both the morning and afternoon peak hours. These trips are expected to utilize transit routes along both Carling Ave and Clyde Ave.

Existing conditions (combination of both pre- and post-COVID) transit ridership data was obtained from OC Transpo for three bus stops near the proposed development site, as shown in **Figure 28**. The data, provided in **Table 21**, is a summary of average bus boarding, alighting and occupancy information for bus routes at each of the respective stop numbers, during morning and afternoon peak hours.

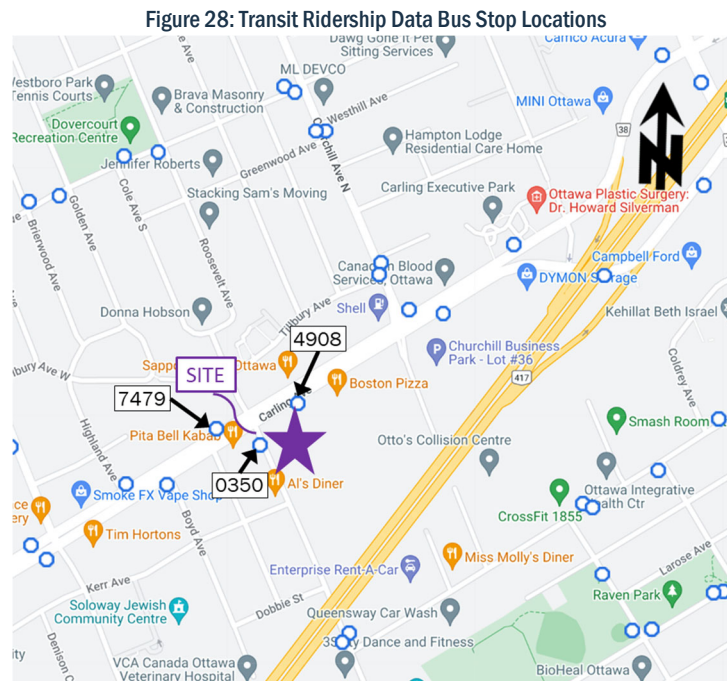


Table 21: Transit Ridership Data

Stop No.	Location	Route	Direction	AM			PM		
				Boarding	Alighting	Avg. Load at Depart.	Boarding	Alighting	Avg. Load at Depart.
0350	Clyde North / Carling	50	WB	1	7	10	3	10	11
4908	Carling / Clyde North	50	EB	7	10	12	9	7	11
		85	EB	17	8	24	23	18	24
7479	Carling / Cole South	85	WB	5	17	21	17	18	23

Bold number: Winter 2020 schedule period (Jan 5 - Mar 16, 2020) which represents the last period of “normal” ridership before the effects of the pandemic began.

Non-bold numbers: Fall 2022 schedule period (Sep 4 - Nov 17, 2022) and are provided where current ridership is higher than pre-pandemic.

As shown in **Table 21**, the average load of each bus route at its respective bus stop ranges from about 10 to 24 persons during the peak hours. It should be noted that these bus routes serve their respective stops several times during peak hours. Bus route #85 is a “frequent routes” that arrives every 15 minutes or less during peak hours. In the future, while bus route #50 is a “local route” that arrives every 30 minutes during peak hours. Once the dedicated bus lanes on Carling Ave become operational, OC Transpo may further increase the bus routes and/or the frequency of buses along Carling Ave.

Based on information obtained from the OC Transpo website, the person capacity of OC Transpo vehicles, which includes the number of seats on the bus plus the standing capacity, ranges from approximately 65 occupants in its smallest vehicles to approximately 110 occupants in its largest vehicles.

Therefore, based on the low current average bus loads, the available capacity and frequency of the existing bus routes, and the potential additional future bus services on Carling Ave, the proposed development generating up to approximately 276 transit trips during peak hours is anticipated to be accommodated by the future transit services.

4.8. Review of Network Concept

Based on a review of the TRANS Screenline System map, there are no adjacent or nearby screenlines to the proposed development site. Nonetheless, the discussion provided in **Section 4.6** included a review of the existing and projected traffic volumes and their respective ideal thresholds for most roads in the study area. The review indicated that, based on the desirable thresholds set by the City of Ottawa TIA Guidelines, traffic volumes along study area roads are fairly high in both existing and future conditions. The effect of the vehicle trips on the road network and study area intersections is provided in **Section 4.9**.

With regards to Carling Ave, total projected traffic volumes (without reductions) are expected to reach up to approximately 2,500 veh/h in the peak direction. As an arterial road, Carling Ave is assumed to have a capacity of 1,000 veh/h per lane, which would be equivalent to a total capacity of 2,000 veh/h in each direction of travel, assuming 2 general traffic lanes and 1 bus lane in each direction. Therefore, without a reduction in traffic volumes, the volumes on Carling Ave are expected to exceed capacity in the peak direction during peak hours. However, with a reduction in traffic as detailed in Demand Rationalization (**Section 3.3**), total projected traffic volumes are expected to fall below 2,000 veh/h in the peak direction.

Section 4.7 provided a discussion of existing transit volumes, site-generated transit volumes and the capacity of available transit services, which indicated that the transit network should be capable of accommodating projected transit volumes. With the implementation of the Carling Ave Transit Priority Measures and the completion of the future LRT system, traffic volumes are ultimately expected to decline as transit usage increases.

4.9. Intersection Design

4.9.1. Intersection Control

Stop control will be provided for vehicles exiting the site at each of the Carling Ave and Clyde Ave accesses. The Carling access will only permit right-in/right-out movements, while the Clyde access will permit all movements. All other off-site intersection controls in the study area will continue to operate the same as existing conditions.

4.9.2. Intersection Design

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

All future background and total projected scenarios assume the Carling Transit Priority Measures have been implemented and Carling Ave has undergone lane modifications and intersection adjustments. All signalized intersection phase times have been optimized for all future horizon years in the Synchro analysis, while cycle lengths were unchanged. The detailed Synchro reports for existing and future conditions have been provided in **Appendix H**.

Existing Conditions

Table 22 below summarizes the intersection performance of study area intersections, based on existing conditions traffic volumes illustrated in **Figure 7**.

Table 22: Existing Conditions Intersection Performance

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection 'As a Whole'		
	LOS	max. v/c or avg. delay (s)	Movement	Delay (s)	LOS	v/c
Churchill Ave/Carling Ave (S)	E(F)	0.91(1.39)	SBL(EBL)	29.9(75.1)	D(F)	0.88(1.09)
Clyde Ave/Cole Ave/Carling Ave (S)	C(B)	0.80(0.70)	WBL(WBT)	17.5(18.1)	C(B)	0.73(0.68)
Broadview Ave/Carling Ave (S)	E(F)	0.92(1.07)	EBT(WBT)	35.8(57.7)	D(E)	0.85(0.98)
Clyde Ave/Doheny St/Existing Site Access (S)	A(A)	0.42(0.41)	EBT(EBT)	8.7(9.1)	A(A)	0.32(0.29)
Saigon Ct/Carling Ave WB (S)	A(A)	0.52(0.57)	NBT(WBT)	7.7(9.1)	A(A)	0.31(0.57)
Carling Ave EB/Saigon Ct (S)	A(A)	0.50(0.47)	EBT(SBL)	2.5(4.8)	A(A)	0.49(0.34)
Clyde Ave/Laperriere Ave (U)	C(E)	23.4(35.3)	SB(WB)	21.8(29.6)	C(D)	-
Clyde Ave/Woodward Dr (U)	D(D)	26.8(28.9)	NB(NB)	10.7(11.6)	B(B)	-

Note: Analysis of signalized intersections assumes a PHF of 0.9 and a saturation flow rate of 1800 veh/h/lane.
(S) – Signalized intersection, movement with highest v/c ratio identified as critical movement.
(U) – Unsignalized intersection, movement with highest average delay identified as critical movement.

As shown in **Table 22**, the intersection of Churchill/Carling 'as a whole' operates at capacity during the afternoon peak hour, with the corresponding critical EBL movement also operating at capacity. The intersection of Broadview/Carling operates near capacity during the afternoon peak hour, with the corresponding critical WBT movement operating at capacity. The remaining signalized intersections 'as a whole' and their critical movements operate at LOS 'C' or better during peak hours.

The unsignalized intersections 'as a whole' operate at LOS 'D' or better, with critical movements operating at LOS 'E' or better during peak hours.

Total Future Background 2026

Table 23 below summarizes the Synchro traffic operations at study area intersections, based on total future background 2026 traffic volumes illustrated in **Figure 22**.

Table 23: Total Future Background 2026 Conditions Intersection Performance

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection 'As a Whole'		
	LOS	max. v/c or avg. delay (s)	Movement	Delay (s)	LOS	v/c
Churchill Ave/Carling Ave (S)	F(F)	1.06(1.38)	EBT(EBL)	52.6(110.5)	E(F)	0.99(1.23)
Clyde Ave/Cole Ave/Carling Ave (S)	F(E)	1.01(0.95)	EBT(WBT)	27.4(26.7)	E(D)	0.93(0.89)
Broadview Ave/Carling Ave (S)	F(F)	1.01(1.23)	EBT(WBT)	42.7(85.0)	E(F)	0.92(1.11)
Clyde Ave/Doheny St/Existing Site Access (S)	A(A)	0.37(0.35)	EBT(EBT)	8.6(8.9)	A(A)	0.29(0.26)
Saigon Ct/Carling Ave WB (S)	A(C)	0.48(0.79)	NBT(WBT)	7.1(13.0)	A(C)	0.38(0.77)
Carling Ave EB/Saigon Ct (S)	C(A)	0.71(0.46)	EBT(EBT)	4.5(4.7)	B(A)	0.70(0.46)
Clyde Ave/Laperriere Ave (U)	C(C)	17.7(22.7)	SB(WB)	16.7(20.1)	C(C)	-
Clyde Ave/Woodward Dr (U)	C(C)	22.3(23.1)	NB(NB)	10.1(10.7)	B(B)	-

Note: Analysis of signalized intersections assumes a PHF of 1.0 and a saturation flow rate of 1800 veh/h/lane.
(S) – Signalized intersection, movement with highest v/c ratio identified as critical movement.
(U) – Unsignalized intersection, movement with highest average delay identified as critical movement.

As shown in **Table 23**, traffic operations of signalized intersections along Carling Ave deteriorate significantly, with the Churchill Ave, Cole Ave/Clyde Ave and Broadview Ave intersections 'as a whole' operating at or near capacity during peak hours and the corresponding critical movements operating at capacity. The two Carling/Saigon intersections 'as a whole' operate acceptably with LOS 'C' or better during peak hours and critical movements also operating at LOS 'C' or better.

Operations of intersections not along Carling Ave, which includes Clyde/Doheny, Clyde/Laperriere and Clyde/Woodward improve compared to existing conditions as a result of adjusting PHF to 1.0.

Total Future Background 2036

Table 24 below summarizes the Synchro traffic operations at study area intersections, based on total future background 2036 traffic volumes illustrated in **Figure 23**.

Table 24: Total Future Background 2036 Conditions Traffic Volumes

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection 'As a Whole'		
	LOS	max. v/c or avg. delay (s)	Movement	Delay (s)	LOS	v/c
Churchill Ave/Carling Ave (S)	F(F)	1.45(1.50)	WBL(EBL)	103.6(120.5)	F(F)	1.16(1.26)
Clyde Ave/Cole Ave/Carling Ave (S)	F(F)	1.10(1.01)	EBT(WBT)	43.0(27.7)	F(E)	1.00(0.94)
Broadview Ave/Carling Ave (S)	F(F)	1.06(1.30)	EBT(WBT)	50.9(101.1)	E(F)	0.97(1.18)
Clyde Ave/Doheny St/Existing Site Access (S)	A(A)	0.38(0.35)	EBT(EBT)	8.7(8.9)	A(A)	0.30(0.27)
Saigon Ct/Carling Ave WB (S)	A(D)	0.48(0.87)	NBT(WBT)	7.2(16.1)	A(D)	0.40(0.85)
Carling Ave EB/Saigon Ct (S)	C(A)	0.79(0.51)	EBT(EBT)	9.2(4.7)	C(A)	0.78(0.51)
Clyde Ave/Laperriere Ave (U)	D(D)	25.3(28.8)	SB(WB)	21(26)	C(D)	-
Clyde Ave/Woodward Dr (U)	C(D)	24.5(29.1)	NB(NB)	10.4(11.3)	B(B)	-

Note: Analysis of signalized intersections assumes a PHF of 1.0 and a saturation flow rate of 1800 veh/h/lane.
(S) – Signalized intersection, movement with highest v/c ratio identified as critical movement.
(U) – Unsignalized intersection, movement with highest average delay identified as critical movement.

As shown in **Table 24**, traffic operations at the study area intersections are expected to deteriorate significantly compared to total future background 2026 due to increasing congestions and delays.

Total Projected 2026 (with Demand Rationalizations)

Table 25 below summarizes the Synchro traffic operations at study area intersections, based on total projected 2026 traffic volumes with demand rationalization, illustrated in **Figure 26**.

Table 25: Total Projected 2026 Conditions Traffic Volumes, with Demand Rationalization

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection 'As a Whole'		
	LOS	max. v/c or avg. delay (s)	Movement	Delay (s)	LOS	v/c
Churchill Ave/Carling Ave (S)	E(F)	0.95(1.30)	EBT(EBL)	41.8(81.1)	D(F)	0.90(1.11)
Clyde Ave/Cole Ave/Carling Ave (S)	D(D)	0.83(0.83)	EBT(WBL)	19.9(24.6)	C(A)	0.79(0.57)
Broadview Ave/Carling Ave (S)	D(F)	0.89(1.07)	EBT(WBT)	32.5(50.9)	D(E)	0.81(0.97)
Clyde Ave/Doheny St (S)	A(A)	0.34(0.35)	EBL(EBL)	6.1(5.0)	A(A)	0.28(0.24)
Saigon Ct/Carling Ave WB (S)	A(B)	0.48(0.70)	NBT(WBT)	7.1(11.1)	A(B)	0.33(0.68)
Carling Ave EB/Saigon Ct (S)	B(A)	0.63(0.45)	EBT(SBL)	2.8(5.0)	B(A)	0.62(0.41)
Clyde Ave/Laperriere Ave (U)	C(C)	17.4(21.0)	SB(WB)	16.4(23.4)	C(C)	-
Clyde Ave/Woodward Dr (U)	C(C)	21.6(24.6)	NB(NB)	10.1(10.9)	B(B)	-
Carling Ave/Site Access (U)	B(A)	10.5(9.2)	NB(NB)	0.1(0.1)	A(A)	-
Clyde Ave/Site Access (U)	B(B)	12.1(13.8)	WB(WB)	1.3(1.8)	A(A)	-

Note: Analysis of signalized intersections assumes a PHF of 1.0 and a saturation flow rate of 1800 veh/h/lane.
 (S) – Signalized intersection, movement with highest v/c ratio identified as critical movement.
 (U) – Unsignalized intersection, movement with highest average delay identified as critical movement.

With the applied traffic volume reductions along Carling Ave by horizon year 2026, traffic operations at study area intersections along Carling Ave are expected to improve significantly. However, the intersection of Churchill/Carling ‘as a whole’ is expected to continue operating at capacity during the afternoon peak hour, with the corresponding critical EBL movement also operating at capacity.

Critical movements at the unsignalized site accesses are expected to operate at LOS ‘B’ or better during both peak hours.

Total Projected 2036 (with Demand Rationalizations)

Table 26 below summarizes the Synchro traffic operations at study area intersections, based on total projected 2036 traffic volumes with demand rationalization, illustrated in Figure 27.

Table 26: Total Projected 2036 Conditions Traffic Volumes, with Demand Rationalization

Intersection	Weekday AM Peak (PM Peak)					
	Critical Movement			Intersection 'As a Whole'		
	LOS	max. v/c or avg. delay (s)	Movement	Delay (s)	LOS	v/c
Churchill Ave/Carling Ave (S)	F(F)	1.18(1.12)	WBL(EBL)	60.3(62.4)	E(E)	0.96(1.00)
Clyde Ave/Cole Ave/Carling Ave (S)	D(C)	0.82(0.80)	NBL(WBL)	22.0(22.3)	C(A)	0.74(0.55)
Broadview Ave/Carling Ave (S)	C(E)	0.80(0.96)	EBT(WBT)	29.6(35.9)	C(D)	0.72(0.88)
Clyde Ave/Doheny St (S)	A(A)	0.35(0.35)	EBL(EBL)	6.2(5.0)	A(A)	0.30(0.26)
Saigon Ct/Carling Ave WB (S)	A(B)	0.48(0.67)	NBT(WBT)	7.3(10.8)	A(B)	0.32(0.65)
Carling Ave EB/Saigon Ct (S)	B(A)	0.62(0.45)	EBT(SBL)	4.2(5.0)	B(A)	0.61(0.41)
Clyde Ave/Laperriere Ave (U)	D(D)	26.8(29.4)	SB(WB)	21.5(27.1)	C(D)	-
Clyde Ave/Woodward Dr (U)	C(D)	23.6(30.3)	NB(NB)	10.3(11.4)	B(B)	-
Carling Ave/Site Access (U)	B(A)	10.1(9.2)	NB(NB)	0.2(0.1)	A(A)	-
Clyde Ave/Site Access (U)	B(B)	12.9(13.9)	WB(WB)	1.6(1.6)	A(A)	-

Note: Analysis of signalized intersections assumes a PHF of 1.0 and a saturation flow rate of 1800 veh/h/lane.
 (S) – Signalized intersection, movement with highest v/c ratio identified as critical movement.
 (U) – Unsignalized intersection, movement with highest average delay identified as critical movement.

As shown in Table 26, with further traffic volume reductions applied at study area intersections along Carling Ave by horizon year 2036, traffic operations are expected to improve even more significantly. Due to a shift in the trip assignment of an adjacent development’s site-generated traffic volumes, the intersection of Churchill/Carling ‘as a whole’ now operates near capacity rather than over capacity during the afternoon peak hour. Critical movements at the intersection operate at capacity during both peak hours. Traffic operations of the remaining study area intersections are considered acceptable, with intersections ‘as a whole’ operating at LOS ‘D’ or better during peak hours and critical movements operating at LOS ‘E’ or better during peak hours.

Note that the 861 Clyde future adjacent development's TIA Report recommended the WBL storage lane at the intersection of Churchill/Carling be extended to accommodate ultimate development volumes. As such, the 95th percentile queue lengths for total projected conditions were reviewed and it was determined that a queue length of approximately 90m is expected at the WBL lane, which exceeds the available storage length of 65m. Therefore, the storage length is recommended to be increased. With regards to the EBL lane, the queue length was identified in the 1619-1655 Carling Ave future adjacent development's TIA Report to exceed the available storage length of 65m by approximately 55m. This queue length was found to be approximately similar in the analysis conducted in this report for total projected conditions. Therefore, the City should consider extending the EBL storage length or monitoring the movement once the transit priority measures are introduced along Carling Ave, to determine the extent and impact of the traffic queue.

No queueing issues were identified for the EBL and WBL lanes at the intersection of Carling/Clyde as a result of modifying the turn types to fully protected. The EBL storage length is being extended to 70m in the future, which can accommodate the traffic volumes and queue lengths.

5.0 FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

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

Proposed Development

- RioCan REIT is proposing a large-scale residential development consisting of six residential buildings (1,754 units in total), two public parks and a plaza to replace the previous Carling Ave Canadian Tire Centre building and an existing Boston Pizza restaurant at the southeast corner of the Carling/Clyde/Cole signalized intersection. The municipal address of the development is 1640-1660 Carling Ave.
- The development is anticipated to be constructed in at least two phases, with Phase 1 consisting of two high-rise buildings and 388 total residential units constructed by 2026 and Phase 2 consisting of four high-rise buildings and 1366 residential units constructed by 2036. The previous Canadian Tire building will be utilized as a fitness centre until full-buildout and will be replaced by 2 high-rise buildings, a park and a plaza. The Boston Pizza restaurant is expected to remain operational at its location until full-buildout and replaced by two high-rise residential buildings.
- The development is expected to meet the minimum City of Ottawa requirements by providing 877 vehicle parking spaces for tenants, 176 vehicle parking spaces for visitors and 877 bicycle parking spaces. Most parking spaces will be provided in an underground parking garage, with layby parking areas also available along the proposed internal public road.
- Access to the proposed development buildings' underground parking garages will be provided via a proposed internal public road that connects Carling Ave to Clyde Ave. The Carling Ave access, located approximately 90m east of the Carling/Clyde/Cole intersection, will permit right-in/right-out movements only, while the Clyde Ave access, located approximately 30m north of the Clyde/Doheny intersection, will permit all movements. The Boston Pizza restaurant is assumed to be accessed via the internal public road prior to being replaced. Both the Carling Ave and Clyde Ave accesses will be stop controlled at the site exit.
- The internal road will be designed as a local street with a 30km/h speed limit and traffic calming measures, as per City of Ottawa Guidelines. Proposed traffic calming measures include curb extensions at the accesses, internal curb extensions and on-street parking. Additional potential measures may include providing pedestrian crossings at various points, providing short road segments and providing internal speed tables while being mindful of the design related implications.

- The development is anticipated to generate approximately 740 total person trips during peak hours at full buildout, which consists of 192 to 229 vehicle trips, 77 to 79 passenger trips, 190 to 317 transit trips and 154 to 243 active transport (walking and cycling) trips. Taking into account the trips previously generated in existing conditions by the Canadian Tire store and the Boston Pizza restaurant, the net 'new' trips expected to be generated by the proposed development decrease significantly in the study area, even resulting in reduction of vehicle trips generated during the afternoon peak hours.
- Effective TDM Measures are expected to be implemented by the proponent as part of managing the travel demand of the development. The measures have not been identified as of yet but will be confirmed in the future Site Plan Application TIA submissions. TDM Measures will be important to manage personal auto mobile demand to and from the development in light of the future Carling Ave Transit Priority Measures.

Future Study Area Modifications

- Carling Avenue Transit Priority measures, which include converting a general traffic lane to a transit lane in both travel directions of Carling Ave, along different sections between Lincoln Fields and Bronson Ave, is expected to be implemented at the frontage of the development by 2023.
- The intersection of Carling/Churchill will be designed and constructed as a protected intersection.
- The eastbound and westbound left-turns at the intersection of Carling/Clyde/Cole will be modified to fully protected left-turn movements. The eastbound left-turn storage length will be increased from 20m to 70m.
- The westbound left-turn storage length at Carling/Broadview will be increased from 50m to 75m.
- Two adjacent developments are anticipated to generate notable traffic volumes in the study area and have been included in the total future background traffic volumes. This includes 1619-1655 Carling Ave located across Carling Ave from the proposed development site and 861 Clyde Ave, a large-scale residential development located directly south of the proposed development site.

Existing and Future Background Conditions

- In existing conditions, the intersection of Carling/Churchill 'as a whole' operates at capacity during the afternoon peak hour, with the corresponding critical EBL also operating at capacity. The intersection of Broadview/Carling operates near capacity during the afternoon peak hour, with the corresponding critical WBT movement operating at capacity. All other intersections provide acceptable traffic operations.
- The existing two-way traffic volumes along the nonarterial roads in the study area used to access the development, which includes Clyde Ave, Broadview Ave, Churchill Ave and Woodward Dr, were found to exceed the recommended ideal threshold identified in the TIA Guidelines. Refer to **Table 20** provided in the report for a comparison of the existing volumes to the TIA thresholds.
- A review of historical traffic volumes indicated that study area intersections have seen a traffic volume decline during the morning peak period. This trend is expected to continue in the future with the implementation of bus laned along Carling Ave. However, a conservative 1% per year background growth rate was applied between horizon years 2026 and 2031, for the through movements along Carling Ave to account for the influence of those developments of future developments.
- As a result of converting a traffic lane to a bus lane in the future, the total future background 2026 and 2036 conditions analysis indicate that overall study area intersections are anticipated to operate similar to or significantly worse compared to existing conditions, with higher delays and v/c ratios. This is shown particularly in the operations of the signalized intersections along Carling Ave, which are being affected by the lane changes.

- MMLoS analysis of boundary streets and signalized intersections for existing and future conditions will be provided at SPA.

Demand Rationalizations and Projected Conditions

- The future Carling Avenue Transit Priority Measures were expected to result in a decrease in traffic volumes relative to existing. For the purpose of this TIA Report, the following east-west reductions were applied to existing traffic volumes, in addition to no assumed background growth:
 - 10% in both the peak and off-peak traffic directions in the Phase 1 2026 horizon year which recognizes that the BRT lanes have been recently installed and the full reduction remains to be realized through long term adoption; and
 - 20% in the peak traffic direction and 15% in the off-peak traffic direction in the 2036 horizons which considers complete adoption of the BRT lanes, including relevant modal shifts and changes in traffic patterns.
- Similar to existing conditions, the total projected 2036 two-way traffic volumes along the nonarterial roads in the study area were found to exceed the recommended ideal threshold identified in the TIA Guidelines as follows:
 - Clyde Ave has traffic volumes up to approximately 930veh/h during peak hours, which is significantly higher than a local road threshold of 120veh/h. It is recommended that Clyde Ave be reclassified to a major collector road based on the volumes and the connectivity it provides between major roads. Alternatively, vehicle access to/from both Woodward Dr and Laperriere Ave would need to be limited or restricted if major reduction in volumes is desired.
 - Broadview Ave has traffic volumes up to approximately 660veh/h during peak hours, which is double a collector road threshold of 300veh/h. The City may consider reclassifying the road to a major collector, however, it is not considered critical.
 - Churchill Ave has traffic volumes up to approximately 1,040veh/h during peak hours, which is 70% higher than a major collector road threshold of 600veh/h. Given the ongoing west extension for LRT Stage 2 is expected to become operational in 2025, traffic volumes may see a reduction in the future as transit usage increases.
 - Woodward Dr has traffic volumes up to approximately 910veh/h during peak hours, which is higher than a major collector road threshold of 600veh/h. However, it is not considered critical with regards to current traffic operations of the road.
- Based on data obtained from OC Transpo, the existing average load of bus routes at their respective bus stops near the development ranges from about 10 to 24 persons during the peak hours. With bus capacities that range from approximately 65 occupants in the smallest OC Transpo vehicles to approximately 110 occupants in the largest vehicles, the proposed development transit trips are anticipated to be accommodated by the future transit services.
- As an arterial road, Carling Ave is assumed to have a capacity of 1,000 veh/h per lane, which would be equivalent to a total capacity of 2,000 veh/h in each direction of travel, assuming 2 general traffic lanes and 1 bus lane in each direction. As such, total projected traffic volumes which are expected to fall below 2,000 veh/h (with demand rationalization) in the peak direction are expected to be accommodated.
- With demand rationalization, intersection operations are expected to improve significantly in total projected 2026 and 2036 conditions, compared to existing conditions. By 2036, the intersection of Churchill/Carling 'as a whole' is expected to operate near capacity rather than over capacity during the afternoon peak hour. Critical movements at the intersection operate at capacity during both peak hours.

traffic operations of the remaining study area intersections are considered acceptable, with intersections ‘as a whole’ operating at LOS ‘D’ or better during peak hours and critical movements operating at LOS ‘E’ or better during peak hours.

- No future queueing issues were identified for the EBL and WBL movements at the intersection of Carling/Clyde. At the intersection of Carling/Churchill, the WBL movement is recommended to be increased from its current 65m storage length to accommodate the expected future storage length of 95m. The EBL storage length is also recommended to be extended from its current 65m storage length to accommodate the future traffic queues of up to approximately 120m. The EBL may be monitored once the transit priority measures are introduced along Carling Ave, to determine the extent and impact of the traffic queue.

The removal of the Canadian Tire store/future fitness centre and the Boston Pizza restaurant is anticipated to result in negligible net change in auto traffic as a result of the proposed development’s site-generated traffic. Additionally, the Carling Transit Priority Measures being implemented in the future will result in decrease in traffic volumes along Carling Ave, which will improve traffic operations at the study area intersections. Therefore, proposed development is recommended to proceed from a transportation perspective.

Prepared By:



Basel Ansari, P.Eng.
Transportation Engineer

Reviewed By:



Jake Berube, P.Eng.
Transportation Engineer

DRAFT

Appendix A:
Screening Form

City of Ottawa 2017 TIA Guidelines

Date

3-Nov-22

TIA Screening Form

Project

1640-1660 Carling Ave ZBLA

Project Number

478355-01000

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

Module 1.1 - Description of Proposed Development

Municipal Address	1640-1660 Carling Ave, Ottawa, Ontario
Description of location	Southeast corner of Carling/Clyde, replacing existing Canadian Tire and Boston Pizza
Land Use	Six high-rise residential buildings and park
Development Size	1,400 residential units
Number of Accesses and Locations	One internal road accessed via both Carling and Clyde
Development Phasing	Two phases assumed for TIA
Buildout Year	2029
Sketch Plan / Site Plan	See attached

Module 1.2 - Trip Generation Trigger

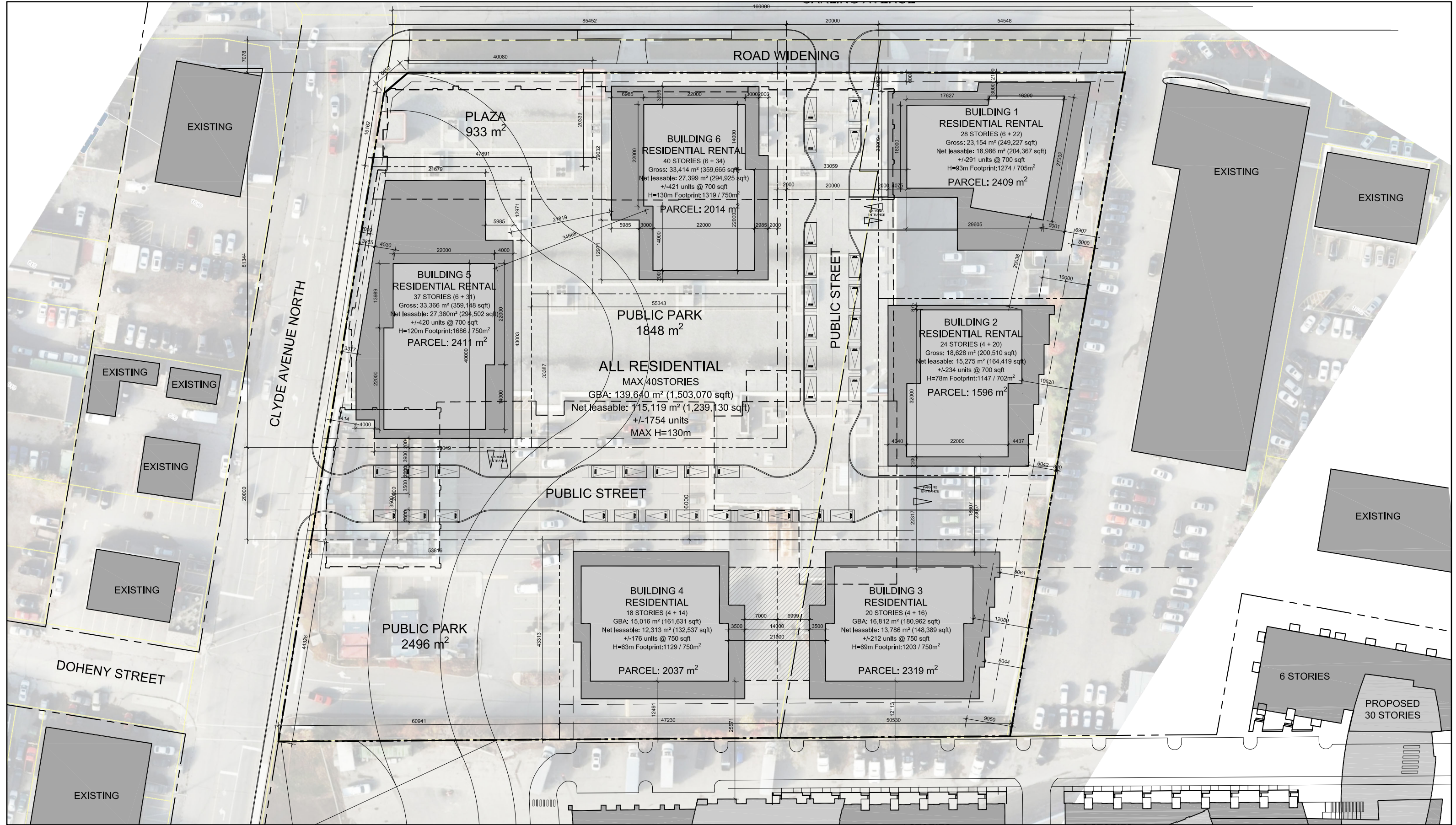
Land Use Type	Townhomes or Apartments
Development Size	1400 Units
Trip Generation Trigger Met?	Yes

Module 1.3 - Location Triggers

Development Proposes a new driveway to a boundary street that is designated as part of the City's Transit Priority, Rapid Transit, or Spine Bicycle Networks (See Sheet 3)	Yes
Development is in a Design Priority Area (DPA) or Transit-oriented Development (TOD) zone. (See Sheet 3)	Yes Carling Arterial Mainstreet DPA
Location Trigger Met?	Yes

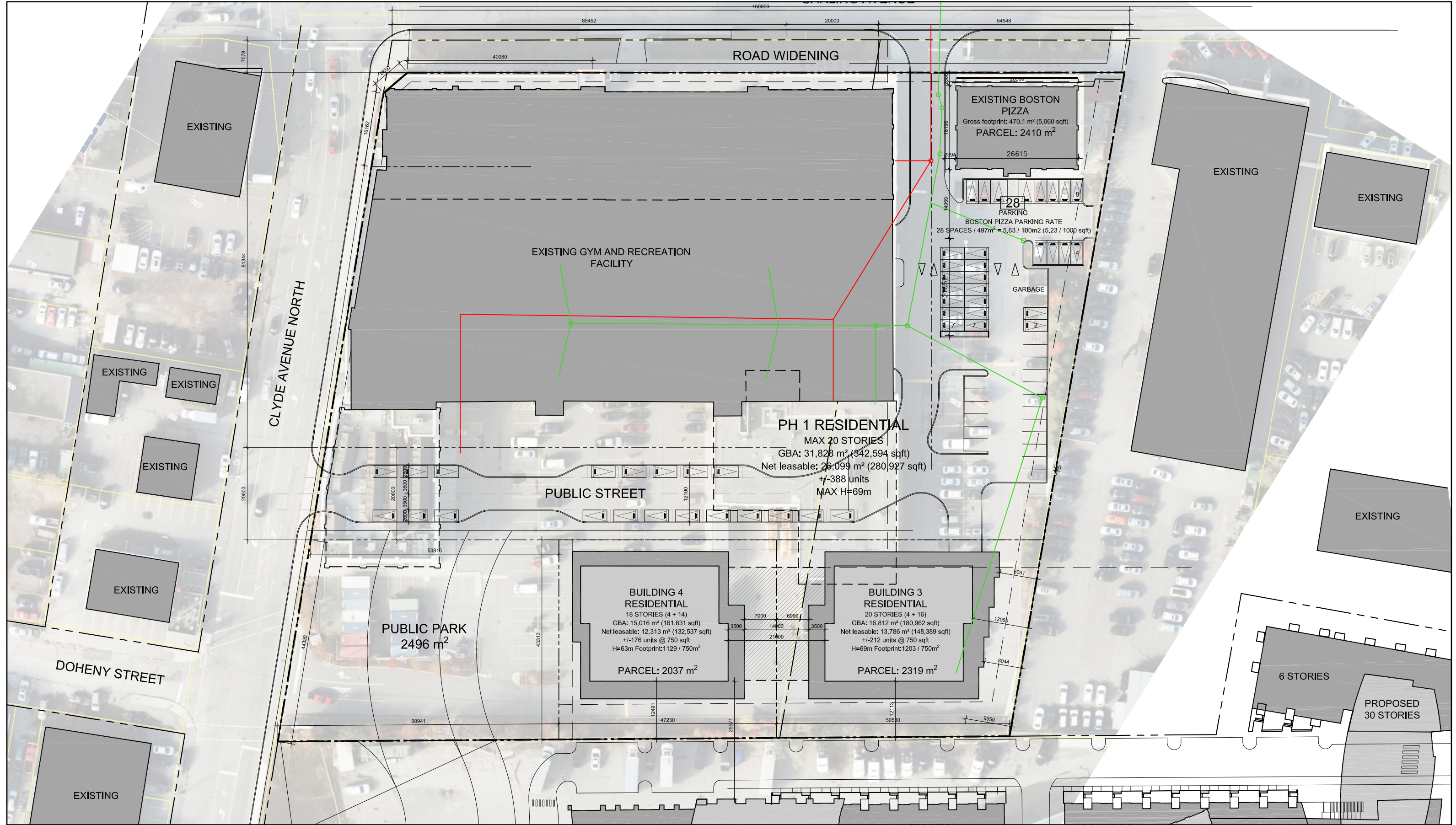
Module 1.4 - Safety Triggers

Posted Speed Limit on any boundary road	<80 km/h
Horizontal / Vertical Curvature on a boundary street limits sight lines at a proposed driveway	No
A proposed driveway is within the area of influence of an adjacent traffic signal or roundabout (i.e. within 300 m of intersection in rural conditions, or within 150 m of intersection in urban/ suburban conditions) or within auxiliary lanes of an intersection;	Yes
A proposed driveway makes use of an existing median break that serves an existing site	No
There is a documented history of traffic operations or safety concerns on the boundary streets within 500 m of the development	No
The development includes a drive-thru facility	No
Safety Trigger Met?	Yes



1640 - 1660 CARLING AVE
 Concept Plan - Full Build Out - South west corner park

SCALE: 1:750
 23.09.06



1640 - 1660 CARLING AVE
 Concept Plan - Phase 1 - South west corner park

SCALE: 1:750
 23.09.06

26 October 2023

City of Ottawa
Development Review Services
110 Laurier Avenue West
Ottawa, ON K1P 1J1

Attention: Mike Giampa

Dear Mike:

Re: 1640-1660 Carling Ave TIA

Step 4 – Response to City Comments - DRAFT

The following response has been prepared in response to City of Ottawa TIA Strategy Report comments received on October 10, 2023. City comments are presented in black with the corresponding responses from Parsons in **Green**.

Transportation Engineering Services

1. Section 2.1.3 Planned Conditions:

- The 2013 Pedestrian Plan included a future sidewalk (Phase 2 – 2020-2025) on the west side of Clyde Avenue from Carling Avenue to Woodward Drive.
- Per GeoOttawa, there is a Draft 2024 Transportation Master Plan active transportation project to add “separated cycling facilities and/or bike lanes on Clyde Avenue from Carling Avenue to Laperriere Avenue”. Please confirm with City staff in Active Transportation the status/timing of this project, and coordinate Clyde Avenue frontage modifications with City staff.
- The ‘Churchill, Carling and Kirkwood Integrated Rehabilitation’ project will include cycle facilities as part of the protected intersection at Carling Avenue and Churchill Avenue. The project may also include an eastbound cycle track on the south side of Carling Avenue between Churchill Avenue and Siagon Crescent. Confirm extent of cycling modifications with the project manager, Julie Lyons. Refer to the project website: <https://ottawa.ca/en/city-hall/public-engagement/projects/churchill-carling-and-kirkwood-integrated-rehabilitation#>.
- The 1619-1655 Carling Avenue development includes a westbound cycle track along its frontage, which will tie-in to the new protected intersection at Churchill Avenue.
- The 861 Clyde Avenue North development proposes an east-west multi-use pathway on its south side (along Highway 417) to connect the southern end of Churchill Avenue to Clyde Avenue.

TIA Section 2.1.3 has been updated to include new info identified. Status and timing of both the Clyde Avenue cycling facility and the Churchill, Carling and Kirkwood cycling facilities have been confirmed with the respective City staff.

2. Section 3.2.3 Other Area Developments: 1705 Carling Avenue is discussed as a nearby development in Section 2.1.3 but is not mentioned in Section 3.2.3. Clarify whether trips generated by 1705 Carling Avenue are included in Figure 20.

Th As noted in Section 2.1.3, the development is expected to generate minimal traffic and as such, is assumed to be accounted for in the background growth rate in Section 3.2.2.

3. Section 4.1.1 Design for Sustainable Modes: In the concept site plan (dated 2022-11-01), there is a potential north-south pedestrian axis that utilizes the east side of the “Plaza”, west side of the new “Public Park”, and west side of the “Outdoor Amenity”. This axis provides connectivity to Carling Avenue, within the site, and to the development to the south (861 Cycle). However, in the concept site plan the axis is blocked by the conceptual

location of a parking garage entrance. Please relocate this parking garage entrance to prioritize pedestrian connectivity and permeability.

The conceptual placement of the parking garage entrance between building 2 and building 3 also limits the potential for the public street to be extended eastward in the future. Explore other locations for this parking garage entrance to prioritize future extension of the street grid.

N The pedestrian pathway has been realigned to better improve site permeability as it passes through the plaza and the two new proposed public parks.

4. Section 4.1.2 New Streets Network: “Right-in/right-out channel island at the Carling Access, which would further reduce vehicle turning speeds through narrowing travel lane width and shortens crossing distance for pedestrians.”

Per previous Transportation Engineering Services comments on the forecasting submission, the right-in/right-out channel island at the Carling Avenue access is not supported. The rationale is as follows:

- the median already restricts traffic to right-in/right-out, so the “pork chop” island is unnecessary to enforce the turning restrictions
- the right-in/right-out channelization increases corner radii, which increases turning speeds.

Noted. Right-in/right-out channel has been removed.

5. The right-in/right-out channel should be removed from the concept site plan. The 12.2m total road width (2 x 3.5m through lanes + 2 x 2.6m parking bays) is very wide for a local road, which limits space for other elements required as part of a local road right of way and could also contribute to higher operating speeds.

Noted. Right-in/right-out channel has been removed.

6. Recommend reducing the parking bays to 2.0m, which meets the minimum requirement of the Local Residential Streets 30km/h Design Toolbox.

Local public street design to be confirmed as part of future Site Plan Application. Streets will be designed to a 30 km/h operating speed.

7. Recommend reducing through lane width to 3.25m This would result in a total road width of 10.5m at the parking bays. Note that the Local Residential Streets 30km/h Design Toolbox recommends a target roadway width of 6.0m at mid-block narrowings. Given the high-density context of the proposed new local road, a slightly higher target roadway width of 6.5m (2 x 3.25m) may be appropriate.

Local public street design to be confirmed as part of future Site Plan Application. Streets will be designed to a 30 km/h operating speed.

8. Provide turning template analysis for a Fire Truck design vehicle to access Building 2 and Building 3 via the new public street.

Truck turns at both the site accesses and along the internal bend of the future public street have been reviewed and no issues were identified. Truck turn templates provided in Appendix G of TIA Report.

9. Section 4.3 Boundary Streets: In the concept site plan, please show all sidewalks, cycling facilities, boulevards, and road widths for boundary streets..

Proponent notified.

10. Please provide a larger corner triangle (10m x 10m) at the Clyde Avenue North and Carling Avenue intersection.

The development currently provides a 5m x 5m corner triangle at the Clyde/Carling intersection. This corner is proposed to provide a plaza, which typically consists of benches, artistic pieces and soft landscaping. Therefore, a 10m x 10m corner triangle is considered excessive and unnecessary.

11. I don't have any concerns with keeping the proposed intersection north of Doheny.

Noted.

12. 4.5.3 TDM Program: Please commit to some of the TDM measures recommended in the TDM Checklist at site plan. Transit fare incentives are particularly encouraged along the Carling Avenue corridor.

The TDM Measures have not been confirmed as of yet. Measures will be identified at SPA.

Traffic Signal Design

13. Traffic Signal Design does not support the proposed location of the entrance on Clyde Avenue, especially as a future City roadway. Maintain existing east leg of the Clyde Avenue & Doheny Street intersection.

The proposed Clyde Ave access was relocated north of the intersection to accommodate the proposed location of a new park at the southwest corner of the site. This new park location was based on direction that RioCan received as part of the Urban Design Review Panel (UDRP).

Traffic Engineering

14. The proposed full access movement on Clyde Avenue is too close to the existing traffic signal at Doheny Street. Either maintain the existing full-movement access at the Doheny traffic signal or convert the proposed new access into a right-in-right-out configuration.

Please see response to Comment 9.44 above. While the access is close to the traffic signal at Doheny, permitting left turns in/out of the Clyde Ave access is not expected to result in notable impacts at the Doheny intersection. This is due to both the existing dedicated SB-LT lane on Clyde Ave that can be utilized exclusively by the access, preventing queuing of through traffic along Clyde Ave, and the low anticipated left-turn in/out traffic volumes (30 to 45 vehicles) at the Clyde access during peak hours. Furthermore, Synchro analysis of the traffic operations at both the site access and the Doheny intersection indicate no operational concerns with LOS 'B' and 'A' for the respective critical movements of the intersections.

15. Submit Synchro Files Advance walk phase must be recalled.

Noted, dedicated pedestrian phases were provided for Advanced walk phases. Synchro files submitted.

DRAFT

Appendix B:
Transit Route Maps



50

LINCOLN FIELDS TUNNEY'S PASTURE

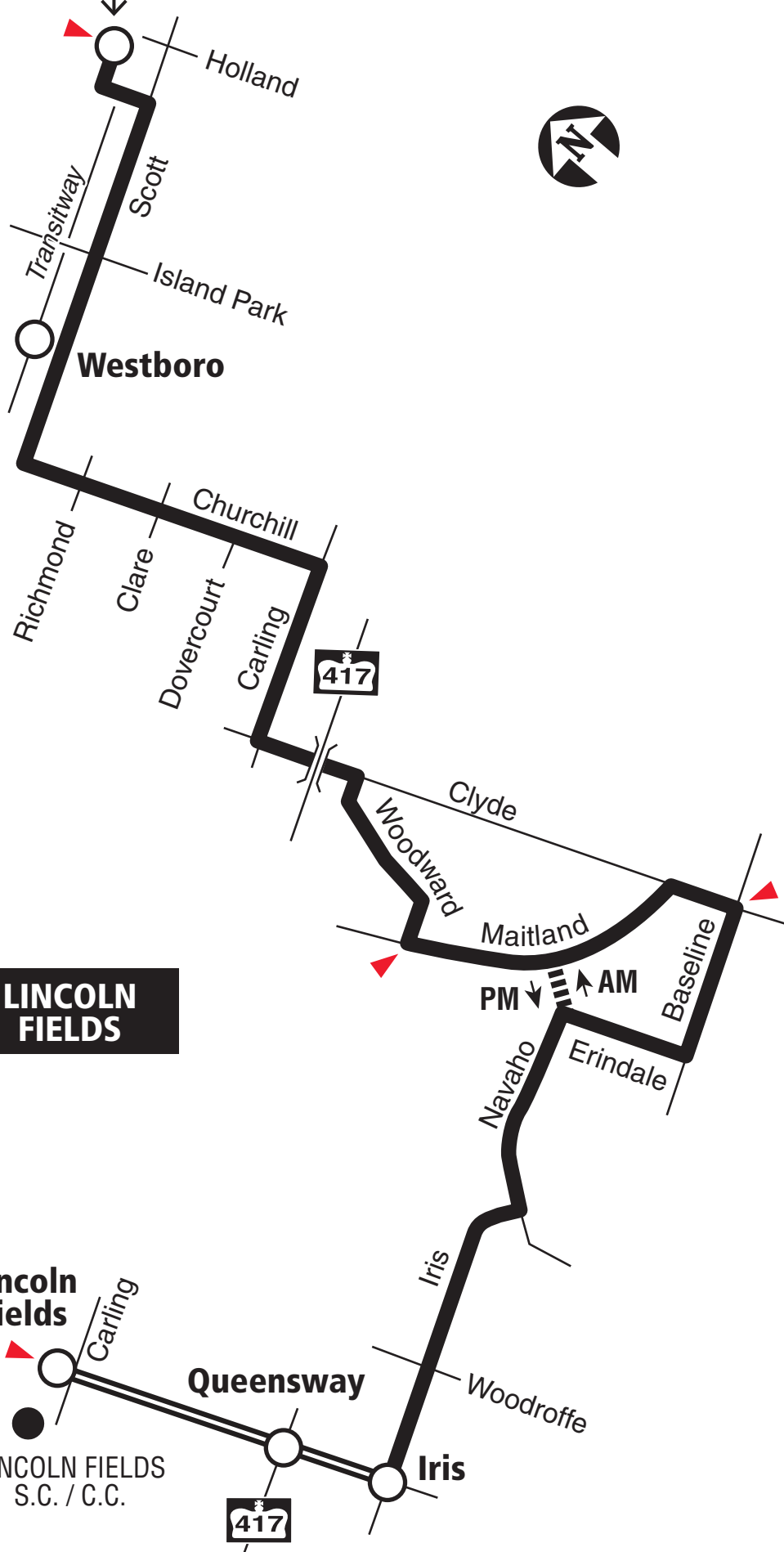
Local

Monday to Saturday / Lundi au samedi

No service Sat. eve. or all day Sunday / Aucun service le soir le sam. ou toute la journée dimanche

TUNNEY'S PASTURE

Tunney's Pasture



LINCOLN FIELDS

2022.06



Transitway & Station



Peak Periods only /
Périodes de pointe seulement



Timepoint / Heures de passage

2022.06



Schedule / Horaire 613-560-1000

Text / Texto* 560560

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

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

Customer Service

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

Lost and Found / Objets perdus **613-563-4011**

Security / Sécurité **613-741-2478**

Effective June 26, 2022

En vigueur 26 juin 2022



INFO 613-560-5000
octranspo.com



85

GATINEAU BAYSHORE

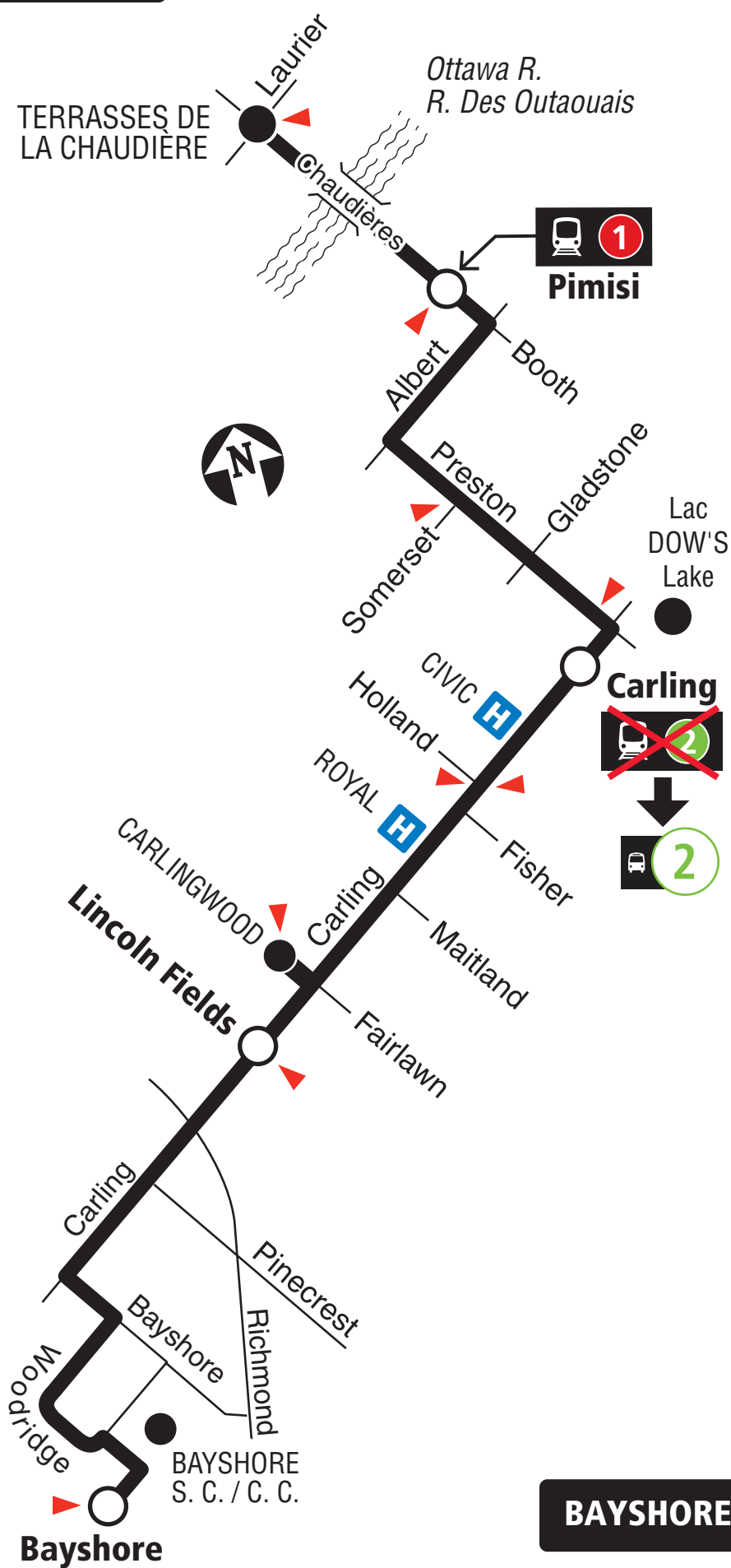
Fréquent

7 days a week / 7 jours par semaine

All day service

Service toute la journée

GATINEAU



BAYSHORE

- Station
- ▲ Timepoint / Heures de passage

2020.04



Schedule / Horaire..... 613-560-1000

Text / Texto 560560

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

Customer Service

Service à la clientèle **613-741-4390**

Lost and Found / Objets perdus..... **613-563-4011**

Security / Sécurité **613-741-2478**

Effective May 3, 2020

En vigueur 3 mai 2020



INFO 613-741-4390
octranspo.com

DRAFT

Appendix C:

Traffic Data

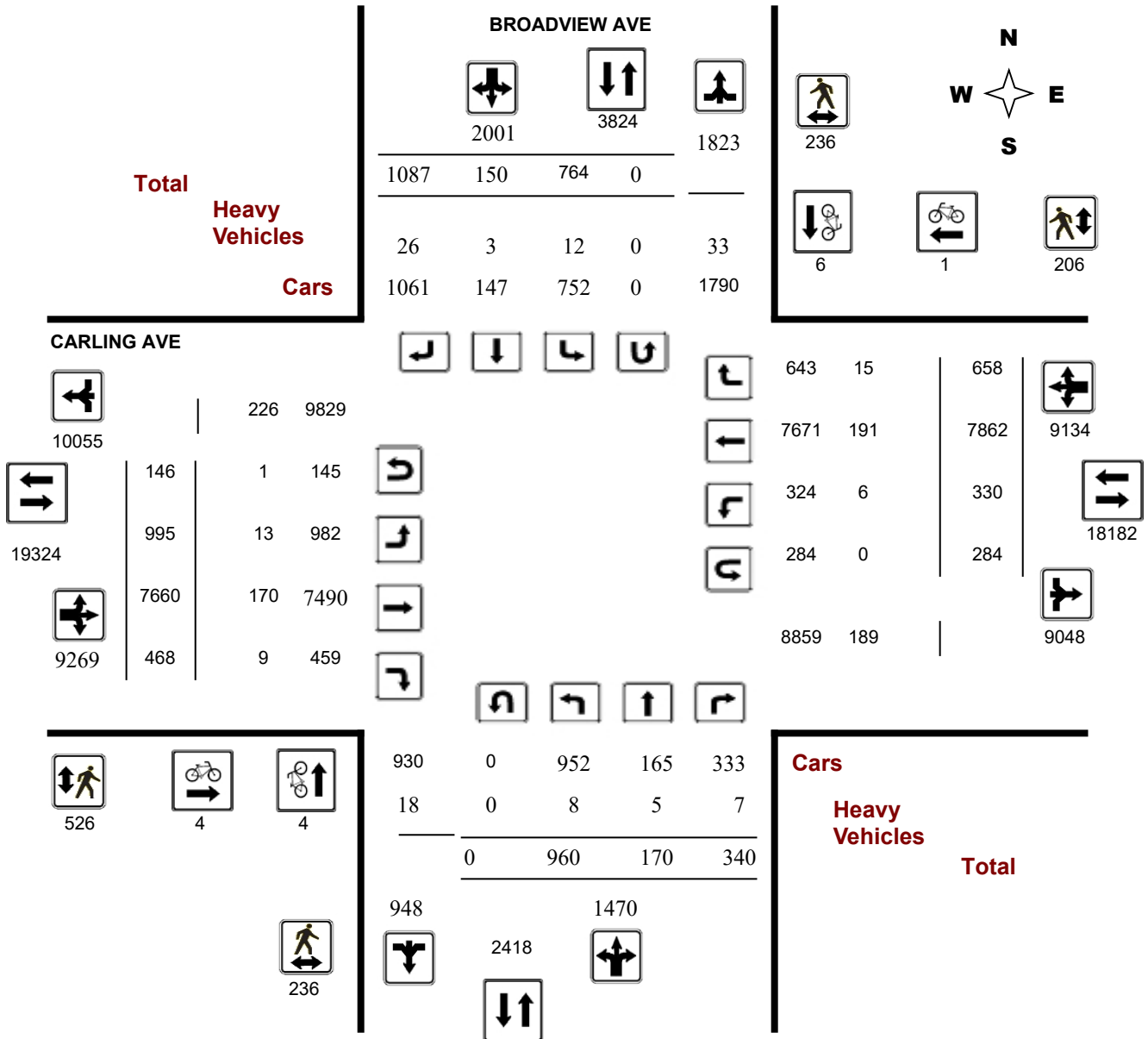
Survey Date: Thursday, April 20, 2017

WO No: 36953

Start Time: 07:00

Device: Miovision

Full Study Diagram



Turning Movement Count - Study Results

CARLING AVE @ BROADVIEW AVE

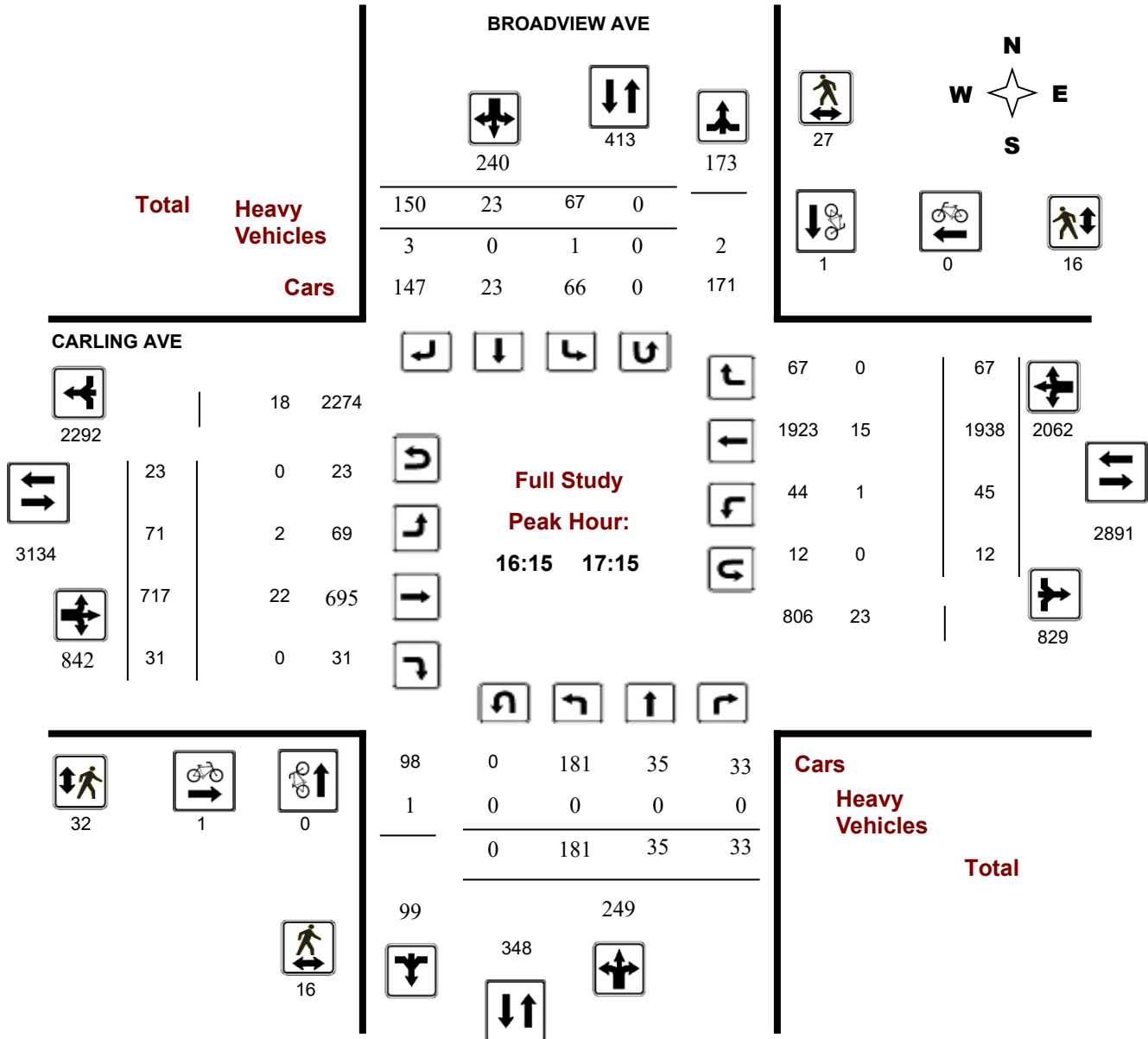
Survey Date: Thursday, April 20, 2017

WO No: 36953

Start Time: 07:00

Device: Miovision

Full Study Peak Hour Diagram



Turning Movement Count - Peak Hour Diagram

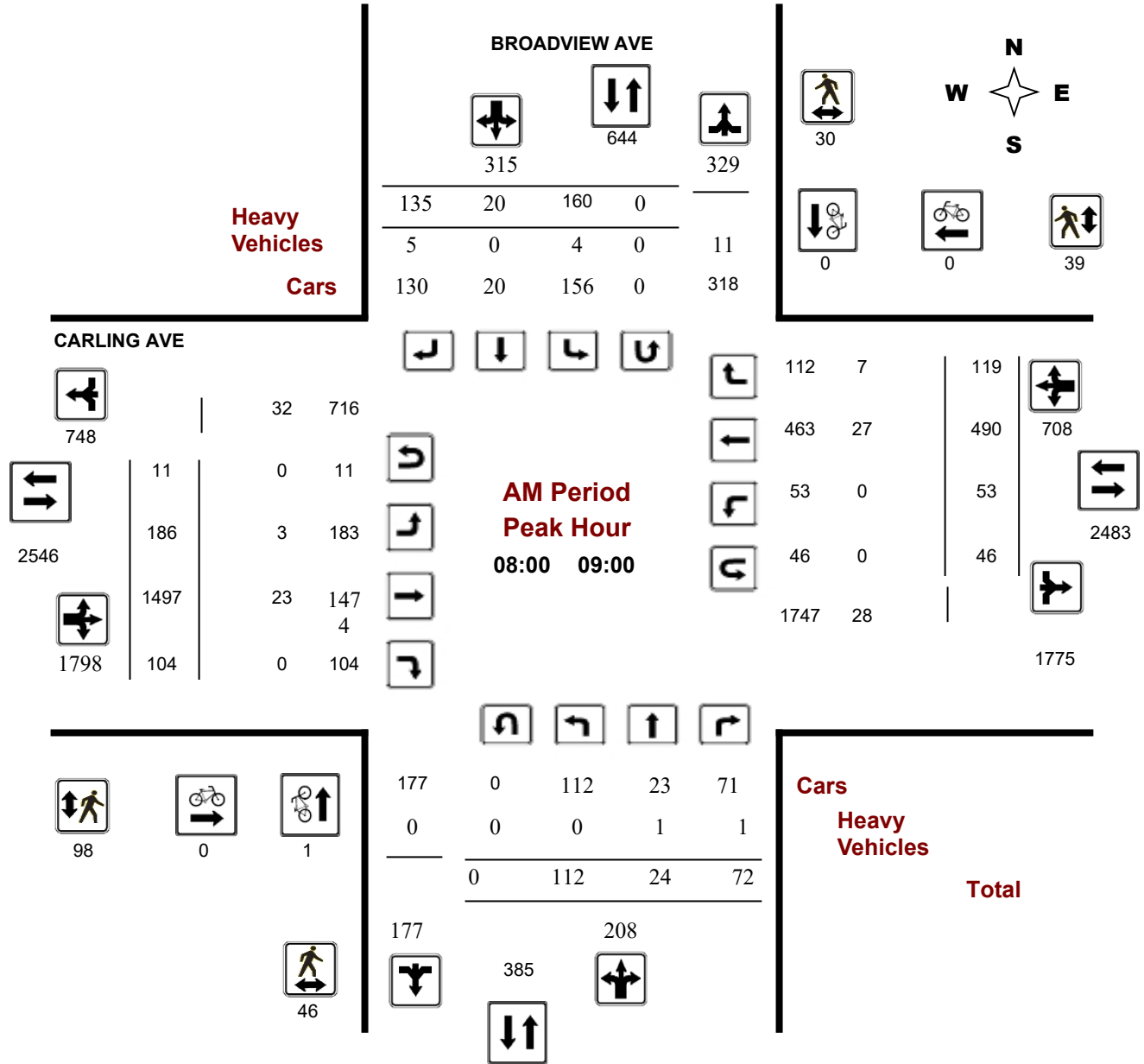
CARLING AVE @ BROADVIEW AVE

Survey Date: Thursday, April 20, 2017

Start Time: 07:00

WO No: 36953

Device: Miovision



Turning Movement Count - Peak Hour Diagram

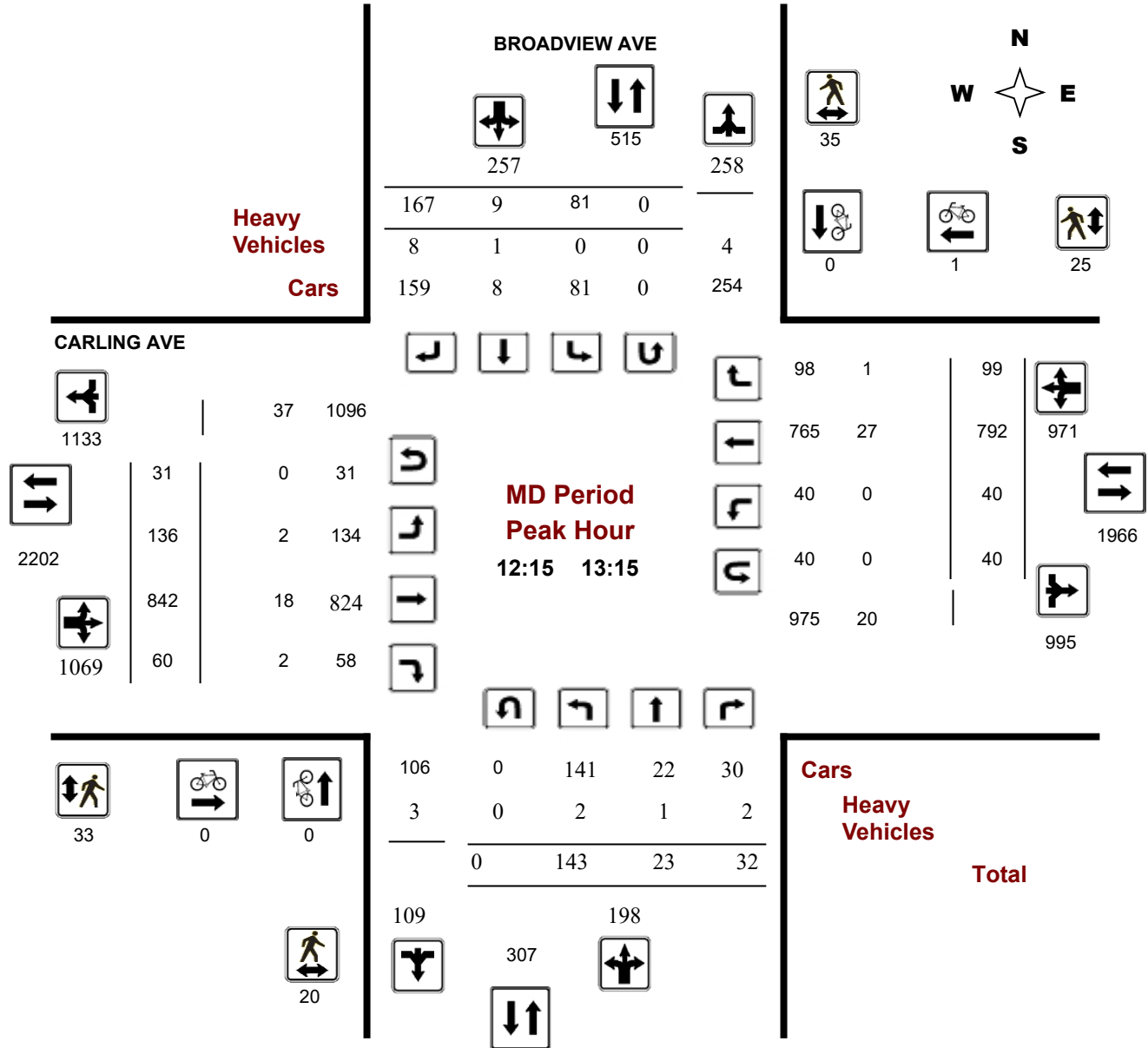
CARLING AVE @ BROADVIEW AVE

Survey Date: Thursday, April 20, 2017

Start Time: 07:00

WO No: 36953

Device: Miovision



Turning Movement Count - Peak Hour Diagram

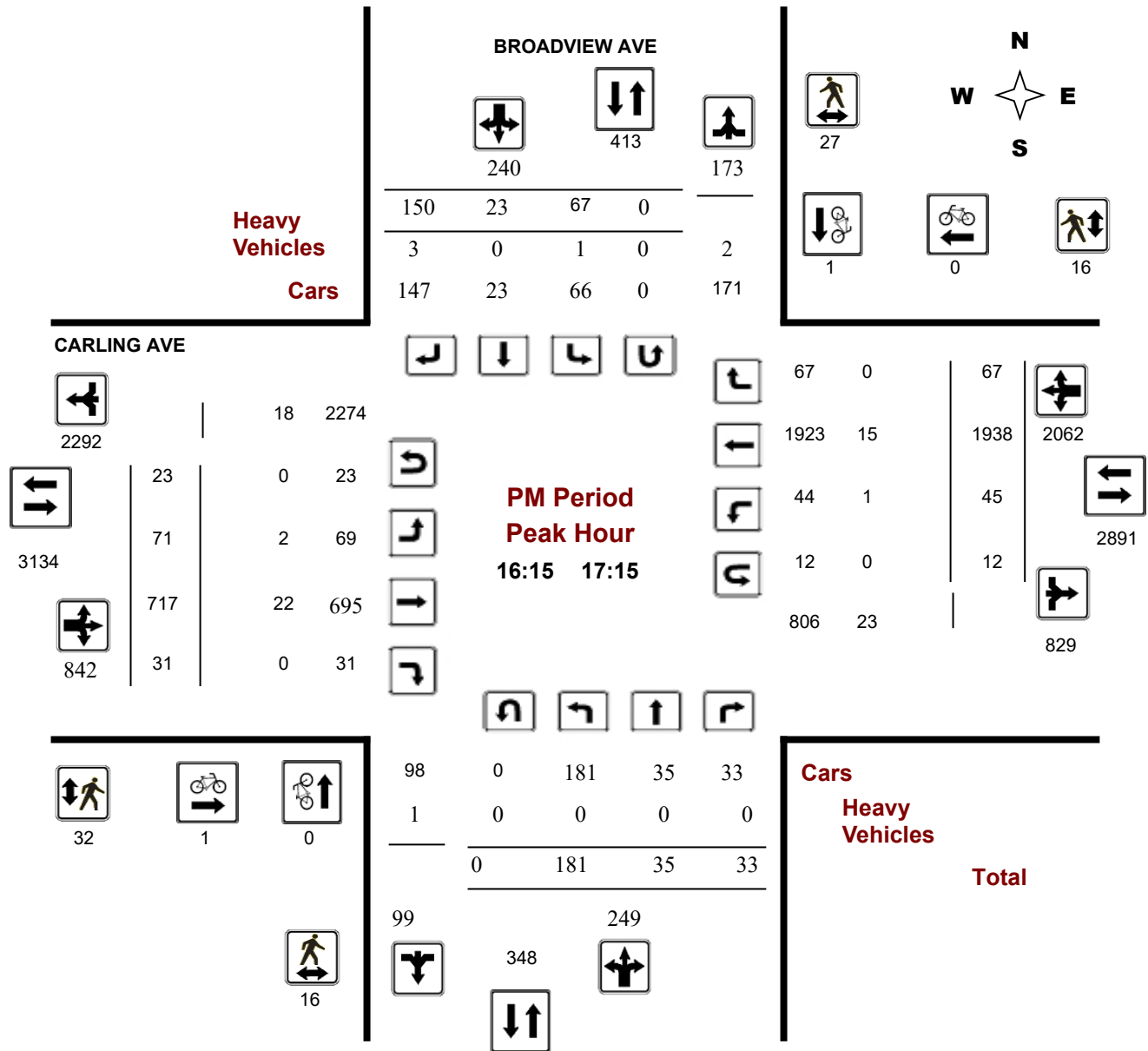
CARLING AVE @ BROADVIEW AVE

Survey Date: Thursday, April 20, 2017

Start Time: 07:00

WO No: 36953

Device: Miovision





Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARLING AVE @ BROADVIEW AVE

Survey Date: Thursday, April 20, 2017

WO No: 36953

Start Time: 07:00

Device: Miovision

Full Study Summary (8 HR Standard)

Survey Date: Thursday, April 20, 2017

Total Observed U-Turns

AADT Factor

Northbound: 0 Southbound: 0
 Eastbound: 146 Westbound: 284

.90

BROADVIEW AVE

CARLING AVE

Period	Northbound					Southbound					Eastbound					Westbound					Grand Total
	LT	ST	RT	NB TOT	STR TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	STR TOT	LT	ST	RT	WB TOT	STR TOT	
07:00 08:00	38	20	32	90	230	57	14	69	140	230	140	1460	46	1646	2107	17	378	66	461	2107	2337
08:00 09:00	112	24	72	208	523	160	20	135	315	523	186	1497	104	1787	2449	53	490	119	662	2449	2972
09:00 10:00	67	24	46	137	382	102	22	121	245	382	152	998	51	1201	1945	39	628	77	744	1945	2327
11:30 12:30	106	17	43	166	413	86	10	151	247	413	112	749	64	925	1761	32	720	84	836	1761	2174
12:30 13:30	135	19	32	186	429	84	10	149	243	429	135	832	56	1023	1923	35	778	87	900	1923	2352
15:00 16:00	158	15	38	211	536	128	31	166	325	536	114	686	69	869	2921	56	1377	83	1516	2385	2921
16:00 17:00	184	29	43	256	528	80	22	170	272	528	74	721	40	835	3306	31	1845	67	1943	2778	3306
17:00 18:00	160	22	34	216	430	67	21	126	214	430	82	717	38	837	3055	67	1646	75	1788	2625	3055
Sub Total	960	170	340	1470	3471	764	150	1087	2001	3471	995	7660	468	9123	17973	330	7862	658	8850	17973	21444
U Turns				0	0				0	0				146	430				284	430	430
Total	960	170	340	1470	3471	764	150	1087	2001	3471	995	7660	468	9269	18403	330	7862	658	9134	18403	21874

EQ 12Hr 1334 236 473 **2043** 1062 208 1511 **2781** **4825** 1383 10647 651 **12884** 459 10928 915 **12696** **25580** **30405**
 Note: These values are calculated by multiplying the totals by the appropriate expansion factor. **1.39**

AVG 12Hr 1201 212 426 **1839** 956 246 1781 **2503** **4342** 1245 9582 586 **11596** 413 9835 824 **11426** **23022** **27364**
 Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor. **.90**

AVG 24Hr 1573 278 558 **2409** 1252 322 2333 **3279** **5688** 1631 12552 768 **15191** 541 12884 1079 **14968** **30159** **35847**
 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

CARLING AVE @ BROADVIEW AVE

Survey Date: Thursday, April 20, 2017

WO No: 36953

Start Time: 07:00

Device: Miovision

Full Study 15 Minute Increments

BROADVIEW AVE

CARLING 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	5	0	8	13	9	3	11	23	36	18	303	6	328	2	71	9	98	426	462
07:15 07:30	5	2	6	13	10	2	14	26	39	28	320	11	360	3	80	10	103	463	502
07:30 07:45	13	5	9	27	13	3	17	33	60	38	442	14	494	5	107	15	140	634	694
07:45 08:00	15	13	9	37	25	6	27	58	95	56	395	15	469	7	120	32	166	635	730
08:00 08:15	14	6	10	30	36	4	29	69	99	29	452	20	501	10	122	31	174	675	774
08:15 08:30	25	7	24	56	38	5	29	72	128	44	347	24	420	12	107	30	159	579	707
08:30 08:45	45	7	20	72	43	5	42	90	162	58	384	25	472	14	118	38	180	652	814
08:45 09:00	28	4	18	50	43	6	35	84	134	55	314	35	405	17	143	20	195	600	734
09:00 09:15	22	9	18	49	27	6	27	60	109	37	314	19	372	6	133	23	169	541	650
09:15 09:30	12	2	11	25	26	8	34	68	93	46	239	10	300	9	140	17	178	478	571
09:30 09:45	19	5	8	32	23	4	26	53	85	35	229	11	276	16	187	13	223	499	584
09:45 10:00	14	8	9	31	26	4	34	64	95	34	216	11	266	8	168	24	216	482	577
11:30 11:45	19	4	10	33	23	2	37	62	95	24	178	11	217	8	170	20	207	424	519
11:45 12:00	31	3	16	50	21	2	35	58	108	28	190	18	237	5	170	14	197	434	542
12:00 12:15	27	4	9	40	24	3	36	63	103	35	193	20	254	11	188	17	228	482	585
12:15 12:30	29	6	8	43	18	3	43	64	107	25	188	15	235	8	192	33	243	478	585
12:30 12:45	44	5	9	58	24	4	44	72	130	38	218	11	272	7	208	23	248	520	650
12:45 13:00	32	4	5	41	23	1	26	50	91	41	202	17	271	17	208	23	258	529	620
13:00 13:15	38	8	10	56	16	1	54	71	127	32	234	17	291	8	184	20	222	513	640
13:15 13:30	21	2	8	31	21	4	25	50	81	24	178	11	224	3	178	21	208	432	513
15:00 15:15	29	4	11	44	45	8	38	91	135	25	164	13	206	5	305	24	343	549	684
15:15 15:30	41	3	9	53	38	8	41	87	140	19	168	24	216	16	314	20	357	573	713
15:30 15:45	56	5	8	69	25	6	48	79	148	36	189	11	241	21	384	19	434	675	823
15:45 16:00	32	3	10	45	20	9	39	68	113	34	165	21	226	14	374	20	412	638	751
16:00 16:15	57	5	17	79	30	4	49	83	162	24	189	17	235	4	417	17	451	686	848
16:15 16:30	40	7	5	52	16	7	50	73	125	17	190	7	217	8	463	18	493	710	835
16:30 16:45	42	7	11	60	17	4	40	61	121	17	170	7	199	9	489	18	519	718	839
16:45 17:00	45	10	10	65	17	7	31	55	120	16	172	9	207	10	476	14	503	710	830
17:00 17:15	54	11	7	72	17	5	29	51	123	21	185	8	219	18	510	17	547	766	889
17:15 17:30	43	5	9	57	13	4	30	47	104	19	185	9	220	18	435	21	477	697	801
17:30 17:45	33	3	14	50	17	7	36	60	110	26	168	8	207	17	371	19	416	623	733
17:45 18:00	30	3	4	37	20	5	31	56	93	16	179	13	212	14	330	18	370	582	675
Total:	960	170	340	1470	764	150	1087	2001	3471	995	7660	468	9269	330	7862	658	9134	18403	21,874

Note: U-Turns are included in Totals.



Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARLING AVE @ BROADVIEW AVE

Survey Date: Thursday, April 20, 2017

WO No: 36953

Start Time: 07:00

Device: Miovision

Full Study Cyclist Volume

BROADVIEW AVE

CARLING AVE

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



Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARLING AVE @ BROADVIEW AVE

Survey Date: Thursday, April 20, 2017

WO No: 36953

Start Time: 07:00

Device: Miovision

Full Study Pedestrian Volume

BROADVIEW AVE

CARLING 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	2	4	6	0	6	10
07:15 07:30	4	1	5	2	3	5	10
07:30 07:45	4	4	8	11	3	14	22
07:45 08:00	5	3	8	15	2	17	25
08:00 08:15	13	6	19	23	4	27	46
08:15 08:30	11	12	23	25	16	41	64
08:30 08:45	16	9	25	35	9	44	69
08:45 09:00	6	3	9	15	10	25	34
09:00 09:15	4	6	10	7	3	10	20
09:15 09:30	3	2	5	5	2	7	12
09:30 09:45	5	4	9	8	2	10	19
09:45 10:00	4	7	11	6	5	11	22
11:30 11:45	31	16	47	34	22	56	103
11:45 12:00	29	21	50	38	15	53	103
12:00 12:15	5	10	15	22	22	44	59
12:15 12:30	4	10	14	13	13	26	40
12:30 12:45	7	7	14	6	1	7	21
12:45 13:00	5	10	15	9	7	16	31
13:00 13:15	4	8	12	5	4	9	21
13:15 13:30	5	8	13	7	3	10	23
15:00 15:15	23	18	41	108	8	116	157
15:15 15:30	4	9	13	36	8	44	57
15:30 15:45	5	5	10	11	5	16	26
15:45 16:00	0	6	6	12	3	15	21
16:00 16:15	5	8	13	9	5	14	27
16:15 16:30	2	4	6	3	5	8	14
16:30 16:45	3	13	16	5	4	9	25
16:45 17:00	6	10	16	11	7	18	34
17:00 17:15	5	0	5	13	0	13	18
17:15 17:30	8	6	14	20	9	29	43
17:30 17:45	2	2	4	2	5	7	11
17:45 18:00	6	6	12	4	1	5	17
Total	236	236	472	526	206	732	1204



Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARLING AVE @ BROADVIEW AVE

Survey Date: Thursday, April 20, 2017

WO No: 36953

Start Time: 07:00

Device: Miovision

Full Study Heavy Vehicles

BROADVIEW AVE

CARLING AVE

Northbound

Southbound

Eastbound

Westbound

Time Period	Northbound			N TOT	Southbound			S TOT	STR TOT	Eastbound			E TOT	Westbound			W TOT	STR TOT	Grand Total
	LT	ST	RT		LT	ST	RT			LT	ST	RT		LT	ST	RT			
07:00 07:15	0	0	0	1	0	0	1	1	2	0	4	0	8	1	3	0	8	16	9
07:15 07:30	0	0	0	1	0	1	0	2	3	1	1	0	5	0	3	0	4	9	6
07:30 07:45	0	1	0	3	0	0	0	1	4	0	7	1	15	1	7	0	15	30	17
07:45 08:00	1	0	1	2	0	0	0	0	2	0	5	0	13	0	7	0	13	26	14
08:00 08:15	0	0	0	0	1	0	0	2	2	0	5	0	12	0	7	1	14	26	14
08:15 08:30	0	0	0	0	1	0	0	4	4	2	6	0	12	0	4	1	12	24	14
08:30 08:45	0	1	0	1	1	0	2	10	11	1	5	0	15	0	7	5	18	33	22
08:45 09:00	0	0	1	1	1	0	3	4	5	0	7	0	19	0	9	0	18	37	21
09:00 09:15	0	1	0	1	2	0	1	4	5	0	11	0	21	0	9	0	22	43	24
09:15 09:30	0	0	0	2	2	0	1	4	6	0	6	1	15	1	7	1	17	32	19
09:30 09:45	0	0	0	3	1	0	1	3	6	0	11	2	24	1	10	1	24	48	27
09:45 10:00	0	1	0	1	0	0	1	3	4	1	3	0	10	0	5	0	8	18	11
11:30 11:45	1	0	0	2	0	0	1	1	3	0	6	1	17	0	8	0	14	31	17
11:45 12:00	1	0	0	1	0	0	1	1	2	0	6	0	14	0	6	0	12	26	14
12:00 12:15	1	0	0	1	0	0	0	0	1	0	5	0	14	0	8	0	13	27	14
12:15 12:30	0	0	1	2	0	0	2	4	6	1	4	1	15	0	7	1	13	28	17
12:30 12:45	2	1	0	4	0	1	2	5	9	1	6	0	16	0	5	0	11	27	18
12:45 13:00	0	0	1	1	0	0	2	2	3	0	3	0	12	0	7	0	11	23	13
13:00 13:15	0	0	0	1	0	0	2	2	3	0	5	1	16	0	8	0	13	29	16
13:15 13:30	0	0	1	1	0	0	0	1	2	1	2	0	11	0	8	0	11	22	12
15:00 15:15	0	0	1	1	2	0	2	7	8	1	5	0	13	0	5	2	15	28	18
15:15 15:30	0	0	0	1	0	0	0	0	1	0	6	1	19	0	12	0	18	37	19
15:30 15:45	0	0	1	1	0	0	0	2	3	1	8	0	12	0	3	1	13	25	14
15:45 16:00	0	0	0	1	0	1	0	2	3	1	6	0	13	0	6	0	12	25	14
16:00 16:15	2	0	0	3	0	0	1	2	5	0	6	1	14	0	4	1	11	25	15
16:15 16:30	0	0	0	0	0	0	1	1	1	0	4	0	7	0	2	0	6	13	7
16:30 16:45	0	0	0	0	0	0	1	1	1	0	7	0	12	0	4	0	11	23	12
16:45 17:00	0	0	0	1	1	0	0	1	2	0	6	0	11	1	5	0	13	24	13
17:00 17:15	0	0	0	0	0	0	1	3	3	2	5	0	12	0	4	0	9	21	12
17:15 17:30	0	0	0	0	0	0	0	1	1	0	4	0	9	0	5	1	10	19	10
17:30 17:45	0	0	0	1	0	0	0	0	1	0	3	0	7	1	4	0	8	15	8
17:45 18:00	0	0	0	0	0	0	0	0	0	0	2	0	6	0	2	0	4	10	5
Total: None	8	5	7	38	12	3	26	74	112	13	170	9	419	6	191	15	401	820	466



Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARLING AVE @ BROADVIEW AVE

Survey Date: Thursday, April 20, 2017

WO No: 36953

Start Time: 07:00

Device: Miovision

Full Study 15 Minute U-Turn Total

BROADVIEW AVE

CARLING 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	1	16	17
07:15	07:30	0	0	1	10	11
07:30	07:45	0	0	0	13	13
07:45	08:00	0	0	3	7	10
08:00	08:15	0	0	0	11	11
08:15	08:30	0	0	5	10	15
08:30	08:45	0	0	5	10	15
08:45	09:00	0	0	1	15	16
09:00	09:15	0	0	2	7	9
09:15	09:30	0	0	5	12	17
09:30	09:45	0	0	1	7	8
09:45	10:00	0	0	5	16	21
11:30	11:45	0	0	4	9	13
11:45	12:00	0	0	1	8	9
12:00	12:15	0	0	6	12	18
12:15	12:30	0	0	7	10	17
12:30	12:45	0	0	5	10	15
12:45	13:00	0	0	11	10	21
13:00	13:15	0	0	8	10	18
13:15	13:30	0	0	11	6	17
15:00	15:15	0	0	4	9	13
15:15	15:30	0	0	5	7	12
15:30	15:45	0	0	5	10	15
15:45	16:00	0	0	6	4	10
16:00	16:15	0	0	5	13	18
16:15	16:30	0	0	3	4	7
16:30	16:45	0	0	5	3	8
16:45	17:00	0	0	10	3	13
17:00	17:15	0	0	5	2	7
17:15	17:30	0	0	7	3	10
17:30	17:45	0	0	5	9	14
17:45	18:00	0	0	4	8	12
Total		0	0	146	284	430

Turning Movement Count - Study Results

CARLING AVE @ CLYDE AVE/COLE AVE

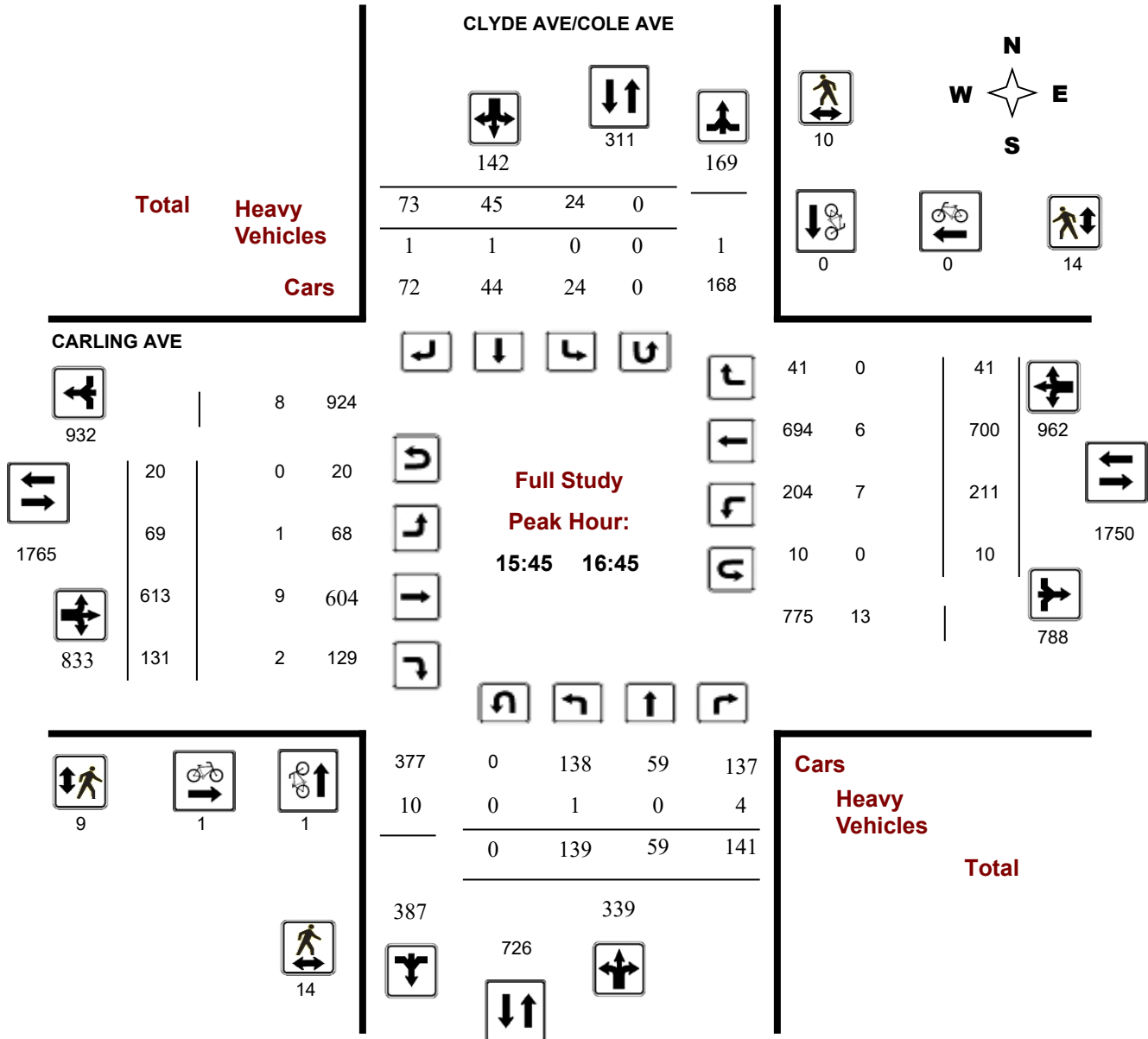
Survey Date: Wednesday, February 23, 2022

WO No: 40170

Start Time: 07:00

Device: Miovision

Full Study Peak Hour Diagram



Turning Movement Count - Peak Hour Diagram

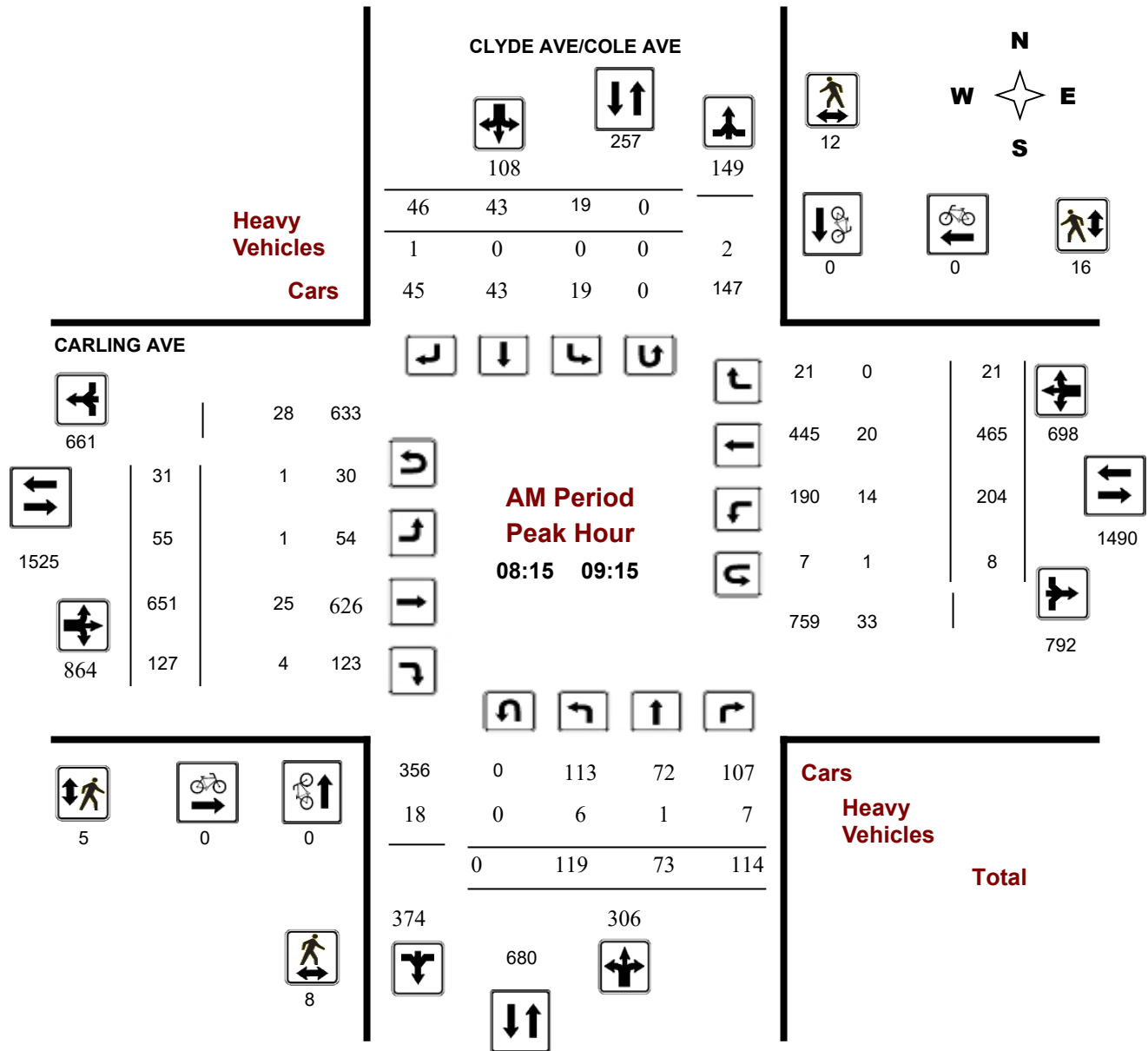
CARLING AVE @ CLYDE AVE/COLE AVE

Survey Date: Wednesday, February 23, 2022

Start Time: 07:00

WO No: 40170

Device: Miovision



Turning Movement Count - Peak Hour Diagram

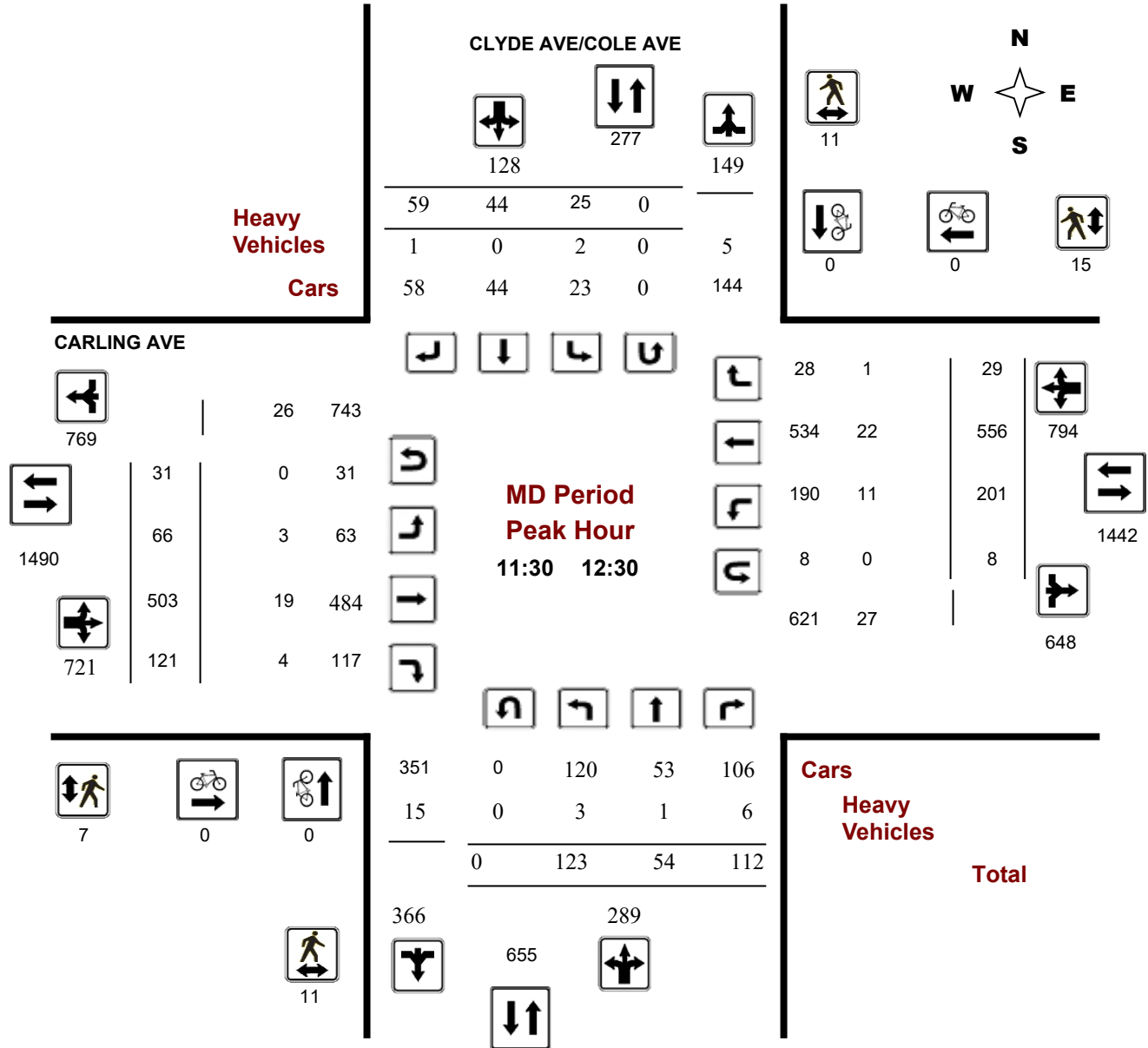
CARLING AVE @ CLYDE AVE/COLE AVE

Survey Date: Wednesday, February 23, 2022

Start Time: 07:00

WO No: 40170

Device: Miovision



Comments

Turning Movement Count - Peak Hour Diagram

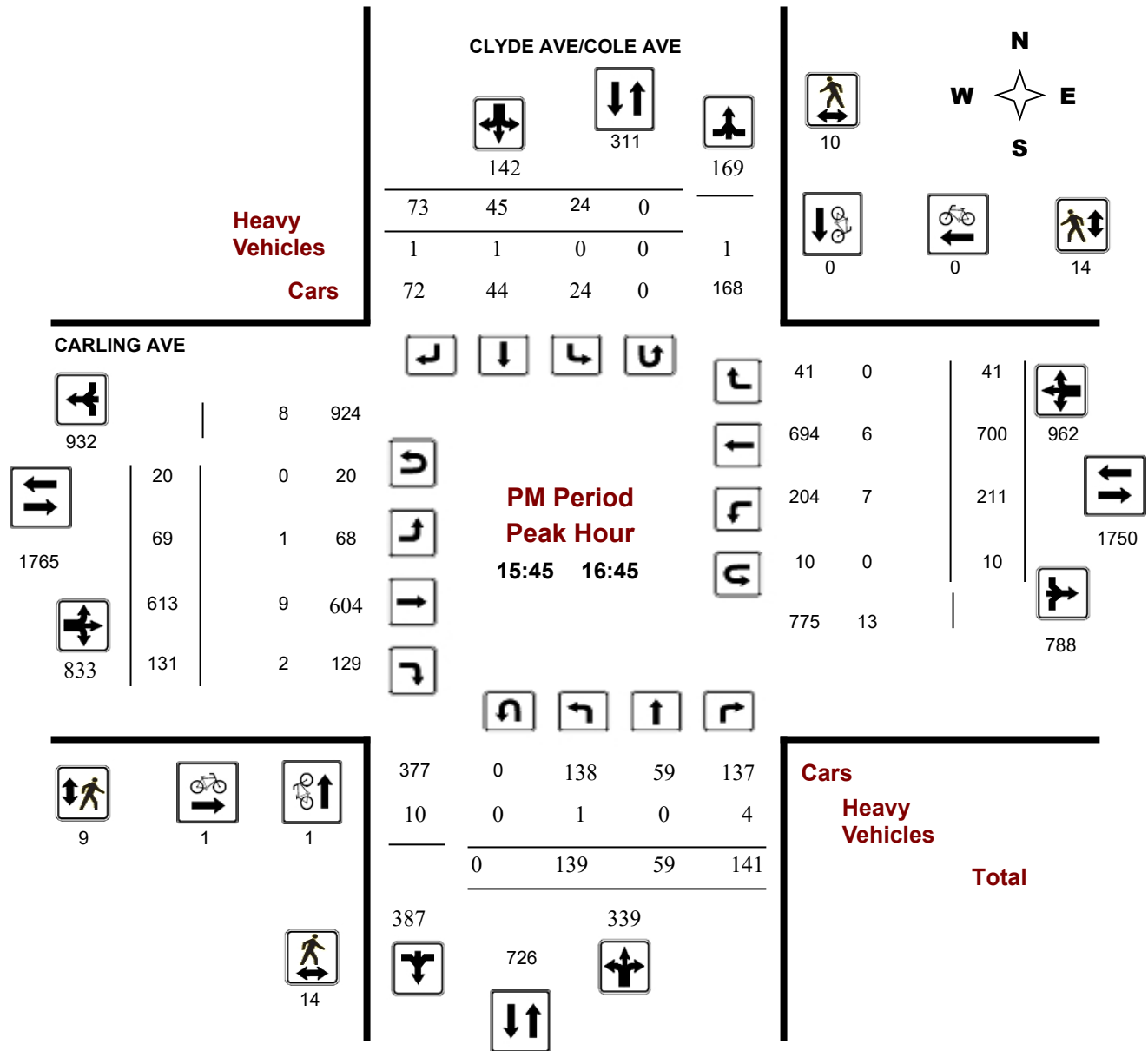
CARLING AVE @ CLYDE AVE/COLE AVE

Survey Date: Wednesday, February 23, 2022

Start Time: 07:00

WO No: 40170

Device: Miovision





Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARLING AVE @ CLYDE AVE/COLE AVE

Survey Date: Wednesday, February 23, 2022

WO No: 40170

Start Time: 07:00

Device: Miovision

Full Study Summary (8 HR Standard)

Survey Date: Wednesday, February 23, 2022

Total Observed U-Turns
 Northbound: 0 Southbound: 0
 Eastbound: 159 Westbound: 65

AADT Factor
 1.00

CLYDE AVE/COLE AVE										CARLING AVE										Grand Total
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		
07:00 08:00	49	22	52	123	11	18	25	54	177	35	522	67	624	142	300	8	450	1074	1251	
08:00 09:00	123	66	87	276	17	39	49	105	381	58	663	131	852	205	461	18	684	1536	1917	
09:00 10:00	80	30	122	232	12	27	38	77	309	61	529	95	685	183	410	24	617	1302	1611	
11:30 12:30	123	54	112	289	25	44	59	128	417	66	503	121	690	201	556	29	786	1476	1893	
12:30 13:30	124	48	130	302	25	44	43	112	414	68	503	114	685	187	551	19	757	1442	1856	
15:00 16:00	131	78	141	350	29	40	40	109	459	55	619	139	813	180	689	26	895	1708	2167	
16:00 17:00	142	59	132	333	22	47	74	143	476	70	573	122	765	195	700	42	937	1702	2178	
17:00 18:00	129	68	112	309	23	43	55	121	430	65	506	139	710	169	625	40	834	1544	1974	
Sub Total	901	425	888	2214	164	302	383	849	3063	478	4418	928	5824	1462	4292	206	5960	11784	14847	
U Turns				0				0	0				159				65	224	224	
Total	901	425	888	2214	164	302	383	849	3063	478	4418	928	5983	1462	4292	206	6025	12008	15071	
EQ 12Hr	1252	591	1234	3077	228	420	532	1180	4258	664	6141	1290	8316	2032	5966	286	8375	16691	20949	
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.													1.39							
AVG 12Hr	1252	591	1234	3077	228	550	697	1180	4258	664	6141	1290	8316	2032	5966	286	8375	16691	20949	
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.													1.00							
AVG 24Hr	1640	774	1617	4031	299	720	913	1546	5578	870	8045	1690	10894	2662	7815	375	10971	21865	27443	
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

CARLING AVE @ CLYDE AVE/COLE AVE

Survey Date: Wednesday, February 23, 2022

WO No: 40170

Start Time: 07:00

Device: Miovision

Full Study 15 Minute Increments

CLYDE AVE/COLE AVE

CARLING 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	8	6	20	34	0	6	2	8	42	5	105	15	128	28	67	3	100	228	270
07:15 07:30	14	3	4	21	4	2	7	13	34	9	123	22	158	34	63	5	102	260	294
07:30 07:45	9	5	17	31	2	4	6	12	43	9	147	15	172	34	82	0	118	290	333
07:45 08:00	18	8	11	37	5	6	10	21	58	12	147	15	180	46	88	0	134	314	372
08:00 08:15	27	9	10	46	2	5	11	18	64	15	145	29	191	53	106	2	161	352	416
08:15 08:30	31	11	18	60	3	10	11	24	84	18	175	34	237	52	112	3	171	408	492
08:30 08:45	33	24	31	88	8	11	17	36	124	12	180	34	233	38	111	6	157	390	514
08:45 09:00	32	22	28	82	4	13	10	27	109	13	163	34	216	62	132	7	202	418	527
09:00 09:15	23	16	37	76	4	9	8	21	97	12	133	25	178	52	110	5	168	346	443
09:15 09:30	23	4	28	55	1	6	15	22	77	21	150	25	198	52	97	7	157	355	432
09:30 09:45	21	2	25	48	4	9	7	20	68	18	133	23	177	35	102	5	143	320	388
09:45 10:00	13	8	32	53	3	3	8	14	67	10	113	22	150	44	101	7	153	303	370
11:30 11:45	25	14	25	64	6	8	12	26	90	20	126	28	180	66	130	5	203	383	473
11:45 12:00	26	20	33	79	3	11	23	37	116	14	136	26	185	48	150	6	205	390	506
12:00 12:15	31	10	31	72	14	11	12	37	109	18	123	36	183	43	153	13	210	393	502
12:15 12:30	41	10	23	74	2	14	12	28	102	14	118	31	173	44	123	5	176	349	451
12:30 12:45	35	9	31	75	5	10	16	31	106	24	110	26	162	45	151	4	202	364	470
12:45 13:00	32	16	25	73	7	12	7	26	99	18	161	32	216	56	127	7	193	409	508
13:00 13:15	30	17	38	85	9	14	13	36	121	14	95	28	141	40	141	5	188	329	450
13:15 13:30	27	6	36	69	4	8	7	19	88	12	137	28	182	46	132	3	185	367	455
15:00 15:15	35	22	31	88	11	7	4	22	110	11	117	23	154	46	164	9	220	374	484
15:15 15:30	41	16	50	107	5	20	12	37	144	9	179	49	240	41	167	5	215	455	599
15:30 15:45	25	28	28	81	4	3	12	19	100	18	154	28	202	42	179	4	225	427	527
15:45 16:00	30	12	32	74	9	10	12	31	105	17	169	39	226	51	179	8	240	466	571
16:00 16:15	40	20	46	106	7	9	24	40	146	16	140	30	192	51	180	5	238	430	576
16:15 16:30	32	7	32	71	4	15	20	39	110	21	159	35	219	55	173	11	243	462	572
16:30 16:45	37	20	31	88	4	11	17	32	120	15	145	27	196	54	168	17	241	437	557
16:45 17:00	33	12	23	68	7	12	13	32	100	18	129	30	182	35	179	9	224	406	506
17:00 17:15	38	26	33	97	3	10	13	26	123	16	150	42	210	45	156	10	219	429	552
17:15 17:30	38	8	25	71	6	13	18	37	108	23	127	31	193	49	178	11	238	431	539
17:30 17:45	26	22	33	81	11	8	17	36	117	15	126	34	180	36	163	10	214	394	511
17:45 18:00	27	12	21	60	3	12	7	22	82	11	103	32	149	39	128	9	180	329	411
Total:	901	425	888	2214	164	302	383	849	3063	478	4418	928	5983	1462	4292	206	6025	12008	15,071

Note: U-Turns are included in Totals.



Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARLING AVE @ CLYDE AVE/COLE AVE

Survey Date: Wednesday, February 23, 2022

WO No: 40170

Start Time: 07:00

Device: Miovision

Full Study Cyclist Volume

CLYDE AVE/COLE AVE

CARLING AVE

Time Period	Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	Grand Total
07:00 07:15	0	0	0	0	1	1	1
07:15 07:30	0	0	0	0	0	0	0
07:30 07:45	0	0	0	0	0	0	0
07:45 08:00	1	0	1	1	0	1	2
08:00 08:15	0	1	1	0	0	0	1
08:15 08:30	0	0	0	0	0	0	0
08:30 08:45	0	0	0	0	0	0	0
08:45 09:00	0	0	0	0	0	0	0
09:00 09:15	0	0	0	0	0	0	0
09:15 09:30	0	0	0	0	0	0	0
09:30 09:45	0	0	0	0	0	0	0
09:45 10:00	2	0	2	0	1	1	3
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	1	1	2	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	1	0	1	0	0	0	1
16:00 16:15	0	0	0	0	0	0	0
16:15 16:30	0	0	0	1	0	1	1
16:30 16:45	0	0	0	0	0	0	0
16:45 17:00	1	0	1	0	0	0	1
17:00 17:15	0	0	0	0	0	0	0
17:15 17:30	1	0	1	1	0	1	2
17:30 17:45	0	0	0	0	0	0	0
17:45 18:00	0	2	2	0	1	1	3
Total	6	3	9	4	4	8	17



Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARLING AVE @ CLYDE AVE/COLE AVE

Survey Date: Wednesday, February 23, 2022

WO No: 40170

Start Time: 07:00

Device: Miovision

Full Study Pedestrian Volume

CLYDE AVE/COLE AVE

CARLING 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	1	1	2	1	3	4	6
07:15 07:30	0	3	3	2	2	4	7
07:30 07:45	1	1	2	1	2	3	5
07:45 08:00	1	1	2	1	3	4	6
08:00 08:15	1	2	3	0	4	4	7
08:15 08:30	4	2	6	1	5	6	12
08:30 08:45	2	5	7	2	7	9	16
08:45 09:00	0	5	5	1	4	5	10
09:00 09:15	2	0	2	1	0	1	3
09:15 09:30	0	0	0	1	0	1	1
09:30 09:45	2	0	2	1	2	3	5
09:45 10:00	0	1	1	1	1	2	3
11:30 11:45	5	6	11	3	5	8	19
11:45 12:00	2	2	4	0	4	4	8
12:00 12:15	1	1	2	4	5	9	11
12:15 12:30	3	2	5	0	1	1	6
12:30 12:45	2	6	8	1	3	4	12
12:45 13:00	2	3	5	0	5	5	10
13:00 13:15	2	2	4	1	4	5	9
13:15 13:30	3	1	4	1	4	5	9
15:00 15:15	10	5	15	2	21	23	38
15:15 15:30	5	1	6	1	15	16	22
15:30 15:45	2	0	2	2	10	12	14
15:45 16:00	3	1	4	1	4	5	9
16:00 16:15	7	2	9	4	8	12	21
16:15 16:30	3	5	8	3	2	5	13
16:30 16:45	1	2	3	1	0	1	4
16:45 17:00	3	2	5	2	1	3	8
17:00 17:15	3	1	4	3	2	5	9
17:15 17:30	2	0	2	0	1	1	3
17:30 17:45	2	1	3	1	2	3	6
17:45 18:00	5	4	9	0	0	0	9
Total	80	68	148	43	130	173	321



Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARLING AVE @ CLYDE AVE/COLE AVE

Survey Date: Wednesday, February 23, 2022

WO No: 40170

Start Time: 07:00

Device: Miovision

Full Study Heavy Vehicles

CLYDE AVE/COLE AVE

CARLING AVE

Northbound

Southbound

Eastbound

Westbound

Time Period	Northbound				Southbound				Eastbound				Westbound				Grand Total		
	LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT		W TOT	STR TOT
07:00 07:15	0	0	1	4	0	0	0	0	4	0	2	0	5	3	3	0	9	14	9
07:15 07:30	3	1	2	9	0	0	0	1	10	0	7	1	13	2	2	0	13	26	18
07:30 07:45	0	2	2	8	0	0	1	3	11	0	6	1	15	3	7	0	18	33	22
07:45 08:00	1	1	1	7	0	0	0	1	8	0	4	0	8	4	3	0	12	20	14
08:00 08:15	2	0	1	6	0	0	0	1	7	1	6	0	11	3	2	0	12	23	15
08:15 08:30	1	0	3	10	0	0	0	0	10	0	7	1	13	5	4	0	21	34	22
08:30 08:45	2	1	3	8	0	0	0	2	10	1	3	0	10	2	4	0	12	22	16
08:45 09:00	3	0	1	8	0	0	1	1	9	0	6	1	17	3	6	0	16	33	21
09:00 09:15	0	0	0	6	0	0	0	0	6	0	9	2	19	4	6	0	19	38	22
09:15 09:30	1	0	7	13	0	0	1	1	14	0	3	1	10	4	4	0	18	28	21
09:30 09:45	3	0	3	13	0	0	0	2	15	0	6	2	17	5	6	2	22	39	27
09:45 10:00	0	0	3	5	0	0	1	2	7	0	3	0	8	2	4	1	13	21	14
11:30 11:45	1	0	1	7	0	0	0	1	8	1	3	3	12	2	4	0	10	22	15
11:45 12:00	0	1	0	2	0	0	0	2	4	1	8	1	15	0	5	0	13	28	16
12:00 12:15	2	0	3	8	1	0	0	3	11	1	2	0	9	3	4	1	14	23	17
12:15 12:30	0	0	2	8	1	0	1	2	10	0	6	0	16	6	9	0	24	40	25
12:30 12:45	3	0	3	10	0	0	0	0	10	0	4	2	20	2	11	0	20	40	25
12:45 13:00	0	0	1	5	0	0	0	0	5	0	1	0	7	4	6	0	12	19	12
13:00 13:15	1	0	1	5	0	0	0	1	6	0	4	0	10	3	5	1	14	24	15
13:15 13:30	0	0	1	4	1	0	0	1	5	0	4	1	9	2	4	0	12	21	13
15:00 15:15	1	0	2	6	0	0	0	0	6	0	2	0	6	3	3	0	10	16	11
15:15 15:30	0	0	0	2	0	0	0	0	2	0	3	0	7	2	4	0	9	16	9
15:30 15:45	0	0	3	5	0	0	0	0	5	0	3	0	6	2	3	0	11	17	11
15:45 16:00	0	0	0	4	0	1	0	2	6	1	3	1	6	2	1	0	6	12	9
16:00 16:15	0	0	2	5	0	0	1	1	6	0	2	1	5	2	1	0	7	12	9
16:15 16:30	1	0	1	4	0	0	0	0	4	0	2	0	6	2	3	0	8	14	9
16:30 16:45	0	0	1	2	0	0	0	0	2	0	2	0	3	1	1	0	5	8	5
16:45 17:00	0	1	1	3	0	1	0	2	5	0	1	0	5	0	4	0	8	13	9
17:00 17:15	0	0	0	3	0	0	0	0	3	0	3	1	6	2	2	0	7	13	8
17:15 17:30	0	0	0	0	0	0	0	0	0	0	3	0	4	0	1	0	4	8	4
17:30 17:45	0	0	1	4	1	0	0	1	5	0	2	0	2	3	0	0	7	9	7
17:45 18:00	0	0	0	1	1	1	0	2	3	0	2	0	5	0	3	0	6	11	7
Total: None	25	7	50	185	5	3	6	32	217	6	122	19	305	81	125	5	392	697	457



Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARLING AVE @ CLYDE AVE/COLE AVE

Survey Date: Wednesday, February 23, 2022

WO No: 40170

Start Time: 07:00

Device: Miovision

Full Study 15 Minute U-Turn Total

CLYDE AVE/COLE AVE

CARLING AVE

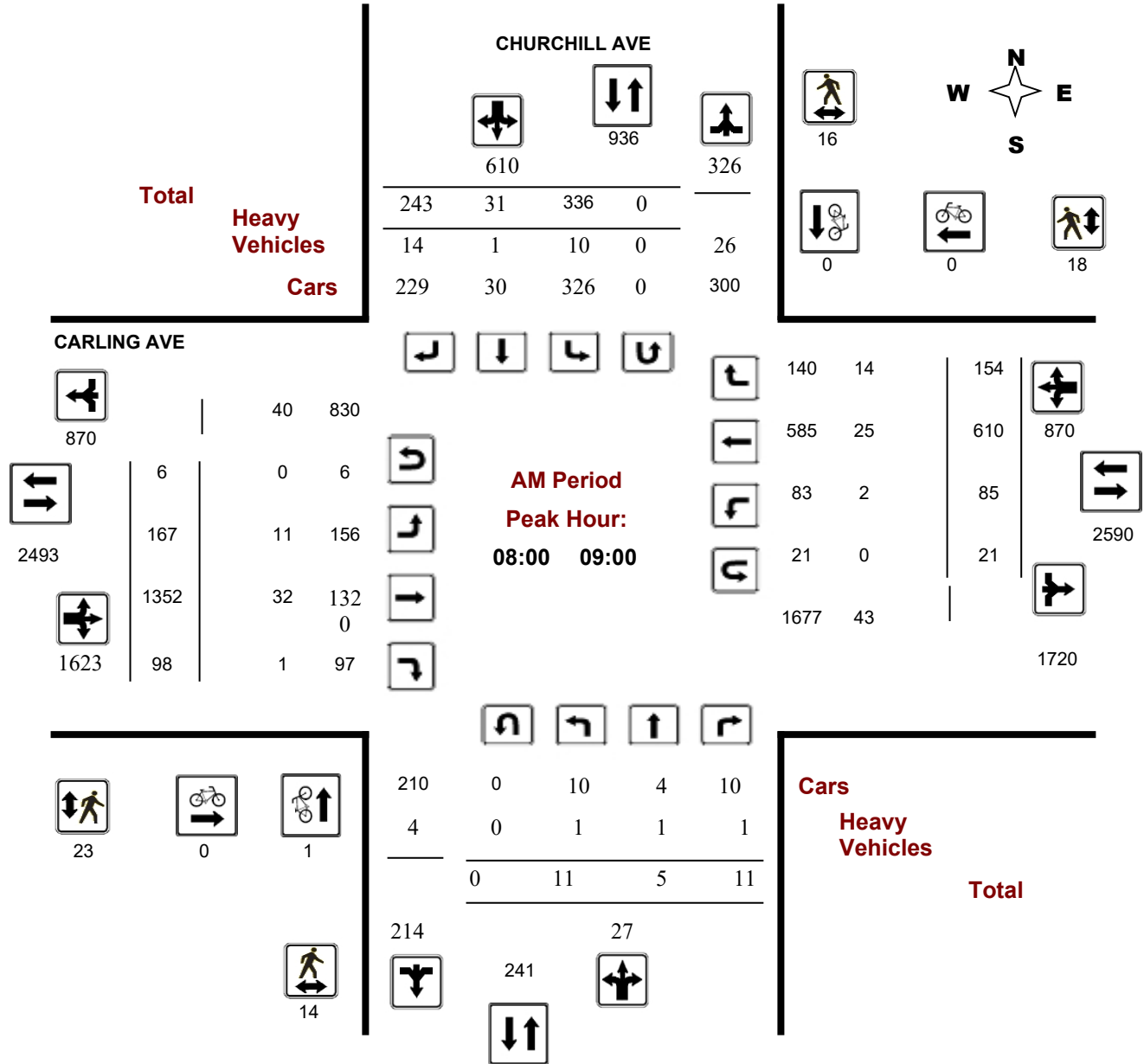
Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	3	2	5
07:15	07:30	0	0	4	0	4
07:30	07:45	0	0	1	2	3
07:45	08:00	0	0	6	0	6
08:00	08:15	0	0	2	0	2
08:15	08:30	0	0	10	4	14
08:30	08:45	0	0	7	2	9
08:45	09:00	0	0	6	1	7
09:00	09:15	0	0	8	1	9
09:15	09:30	0	0	2	1	3
09:30	09:45	0	0	3	1	4
09:45	10:00	0	0	5	1	6
11:30	11:45	0	0	6	2	8
11:45	12:00	0	0	9	1	10
12:00	12:15	0	0	6	1	7
12:15	12:30	0	0	10	4	14
12:30	12:45	0	0	2	2	4
12:45	13:00	0	0	5	3	8
13:00	13:15	0	0	4	2	6
13:15	13:30	0	0	5	4	9
15:00	15:15	0	0	3	1	4
15:15	15:30	0	0	3	2	5
15:30	15:45	0	0	2	0	2
15:45	16:00	0	0	1	2	3
16:00	16:15	0	0	6	2	8
16:15	16:30	0	0	4	4	8
16:30	16:45	0	0	9	2	11
16:45	17:00	0	0	5	1	6
17:00	17:15	0	0	2	8	10
17:15	17:30	0	0	12	0	12
17:30	17:45	0	0	5	5	10
17:45	18:00	0	0	3	4	7
Total		0	0	159	65	224

Survey Date: Tuesday, April 25, 2017

Start Time: 07:00

WO No: 36955

Device: Miovision

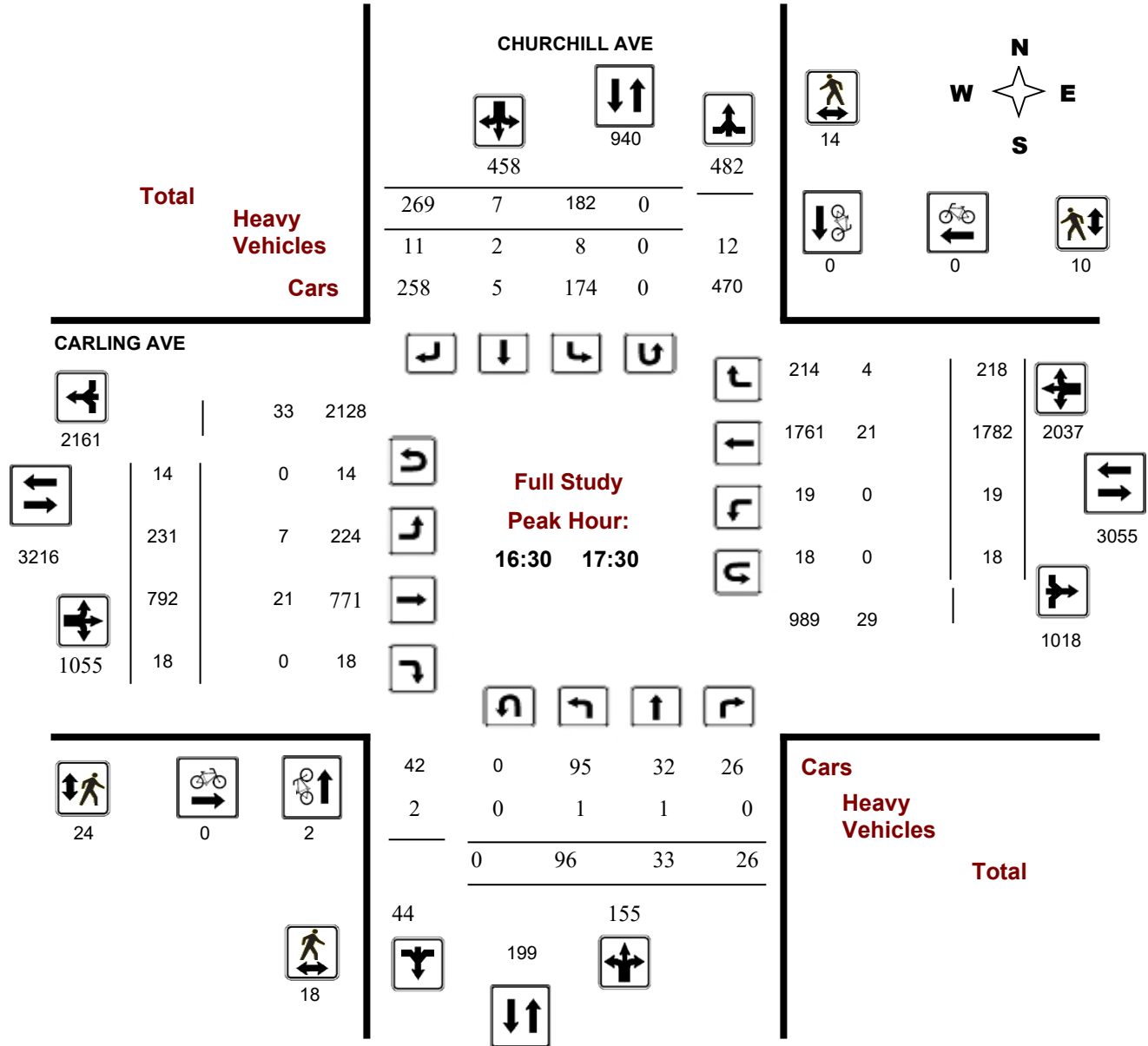


Survey Date: Tuesday, April 25, 2017

Start Time: 07:00

WO No: 36955

Device: Miovision





Transportation Services - Traffic Services

Turning Movement Count - Full Study Peak Hour Diagram

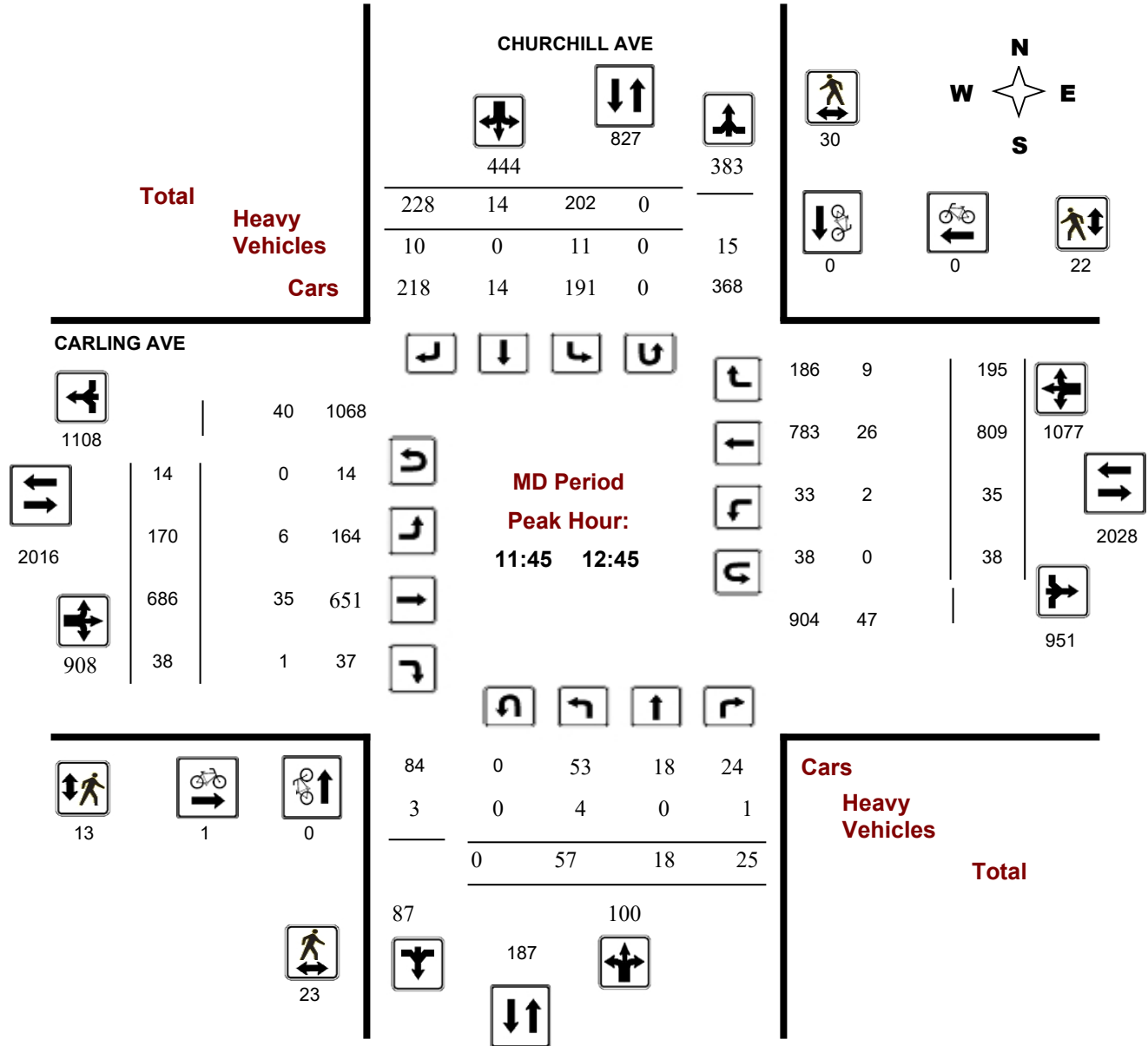
CARLING AVE @ CHURCHILL AVE

Survey Date: Tuesday, April 25, 2017

Start Time: 07:00

WO No: 36955

Device: Miovision

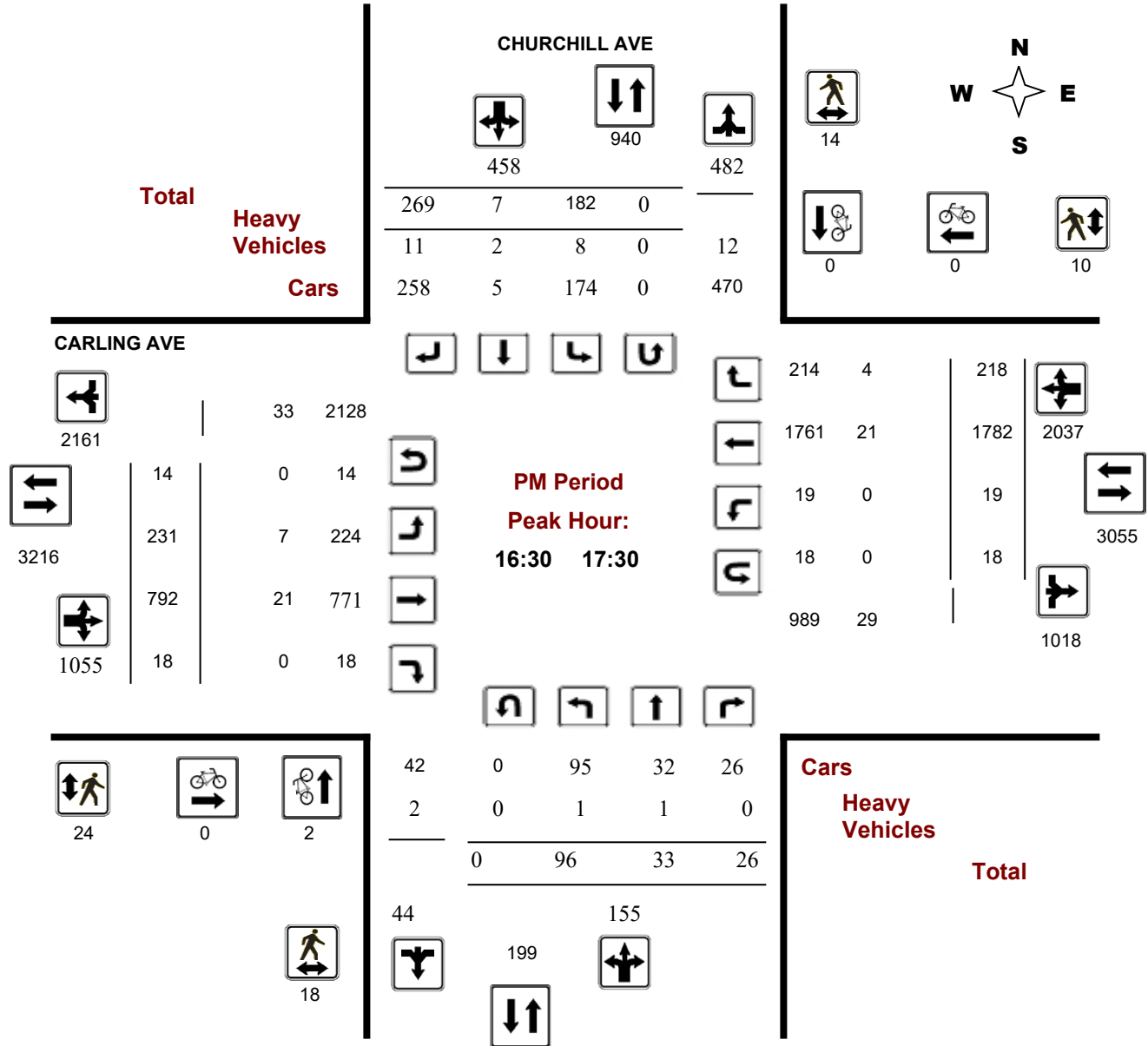


Survey Date: Tuesday, April 25, 2017

Start Time: 07:00

WO No: 36955

Device: Miovision



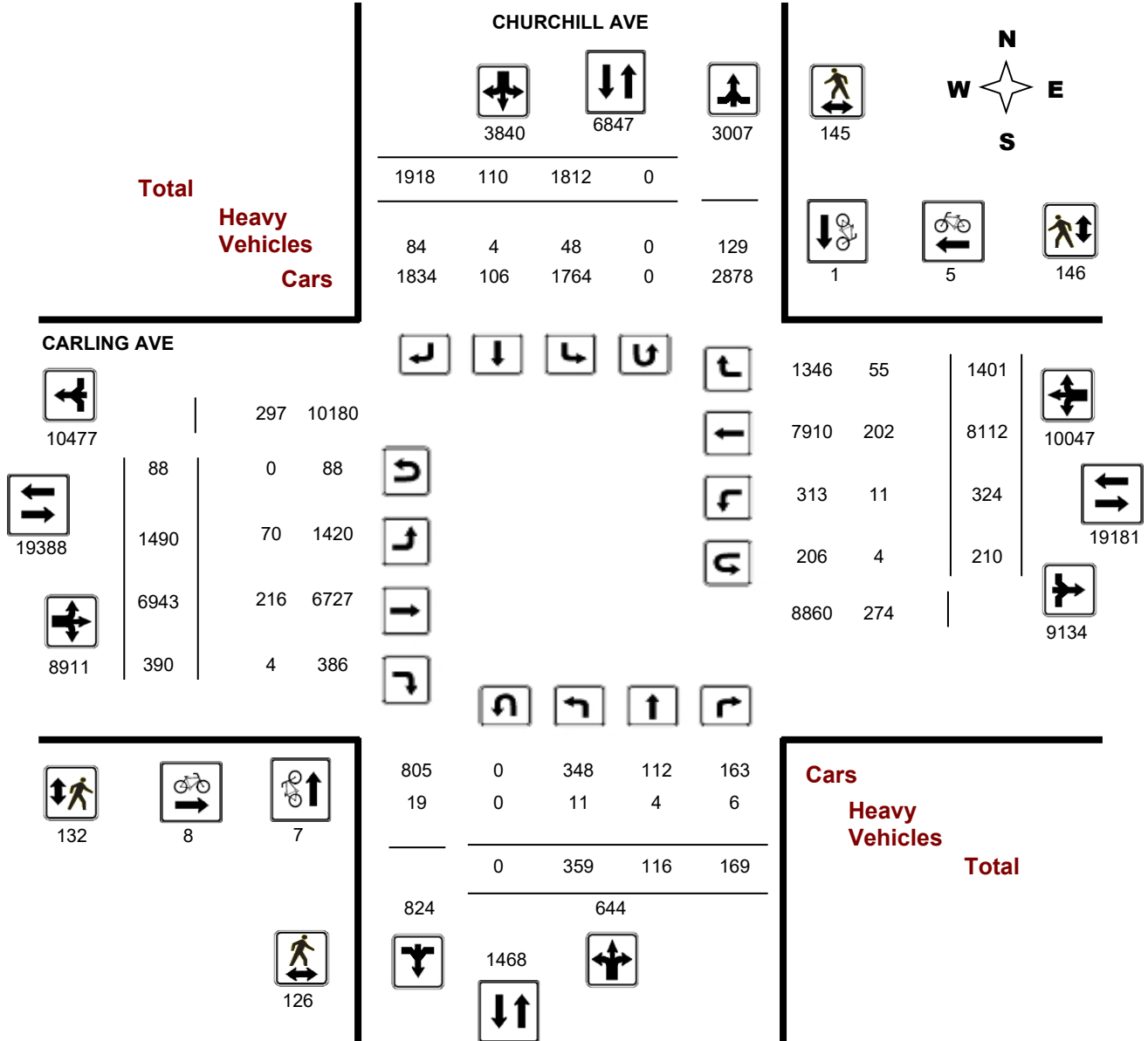
Transportation Services - Traffic Services

Turning Movement Count - Full Study Diagram

CARLING AVE @ CHURCHILL AVE

Survey Date: Tuesday, April 25, 2017

WO#: 36955
Device: Miovision



Comments

Turning Movement Count - Full Study Summary Report

CARLING AVE @ CHURCHILL AVE

Survey Date: Tuesday, April 25, 2017

Total Observed U-Turns

Northbound: 0 Southbound: 0
Eastbound: 88 Westbound: 210

AADT Factor

.90

Full Study

Period	CHURCHILL AVE								CARLING AVE								STR TOT	Grand Total	
	Northbound				Southbound				Eastbound				Westbound						
	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT			
07:00 08:00	14	6	9	29	252	11	180	443	472	144	1213	76	1433	55	416	118	589	2022	2494
08:00 09:00	11	5	11	27	336	31	243	610	637	167	1352	98	1617	85	610	154	849	2466	3103
09:00 10:00	24	5	25	54	224	19	212	455	509	171	790	77	1038	47	618	151	816	1854	2363
11:30 12:30	54	16	23	93	204	10	237	451	544	164	637	34	835	35	823	188	1046	1881	2425
12:30 13:30	46	11	30	87	188	13	241	442	529	192	749	51	992	45	713	185	943	1935	2464
15:00 16:00	38	18	21	77	220	12	259	491	568	203	709	22	934	24	1403	174	1601	2535	3103
16:00 17:00	87	24	31	142	175	11	276	462	604	239	740	17	996	22	1762	208	1992	2988	3592
17:00 18:00	85	31	19	135	213	3	270	486	621	210	753	15	978	11	1767	223	2001	2979	3600
Sub Total	359	116	169	644	1812	110	1918	3840	4484	1490	6943	390	8823	324	8112	1401	9837	18660	23144
U Turns				0				0	0				88				210	298	298
Total	359	116	169	644	1812	110	1918	3840	4484	1490	6943	390	8911	324	8112	1401	10047	18958	23442
EQ 12Hr	499	161	235	895	2519	153	2666	5338	6233	2071	9651	542	12386	450	11276	1947	13965	26351	32584
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.													1.39						
AVG 12Hr	449	145	211	806	2267	138	2399	4804	5610	1864	8686	488	11148	405	10148	1753	12569	23717	29327
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.													.90						
AVG 24Hr	588	190	277	1055	2970	180	3143	6293	7348	2442	11378	639	14603	531	13294	2296	16465	31068	38416
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.													1.31						

Comments:

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



Turning Movement Count - 15 Minute Summary Report

CARLING AVE @ CHURCHILL AVE

Survey Date: Tuesday, April 25, 2017

Total Observed U-Turns

Northbound: 0 Southbound: 0
Eastbound: 88 Westbound: 210

CHURCHILL AVE

CARLING AVE

Table with columns for Time Period, Northbound (LT, ST, RT, N TOT), Southbound (LT, ST, RT, S TOT, STR TOT), Eastbound (LT, ST, RT, E TOT), Westbound (LT, ST, RT, W TOT, STR TOT), and Grand Total. Rows represent 15-minute intervals from 07:00 to 18:00.

Note: U-Turns are included in Totals.

Comment:



Transportation Services - Traffic Services

Turning Movement Count - Cyclist Volume Report

Work Order
36955

CARLING AVE @ CHURCHILL AVE

Count Date: Tuesday, April 25, 2017

Start Time: 07:00

Time Period	CHURCHILL AVE			CARLING AVE			Grand Total
	Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	
07:00 08:00	0	0	0	2	1	3	3
08:00 09:00	1	0	1	0	0	0	1
09:00 10:00	2	1	3	2	0	2	5
11:30 12:30	0	0	0	0	1	1	1
12:30 13:30	0	0	0	3	1	4	4
15:00 16:00	2	0	2	1	1	2	4
16:00 17:00	0	0	0	0	1	1	1
17:00 18:00	2	0	2	0	0	0	2
Total	7	1	8	8	5	13	21

Comment:

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



Transportation Services - Traffic Services

W.O.
36955

Turning Movement Count - Heavy Vehicle Report

CARLING AVE @ CHURCHILL AVE

Survey Date: Tuesday, April 25, 2017

Time Period	CHURCHILL AVE									CARLING AVE									Grand Total
	Northbound			Southbound			S TOT	STR TOT	Eastbound			Westbound			W TOT	STR TOT			
	LT	ST	RT	N TOT	LT	ST			RT	LT	ST	RT	E TOT	LT			ST	RT	
07:00 08:00	0	0	0	0	6	0	8	14	14	16	22	0	38	1	22	9	33	71	85
08:00 09:00	1	1	1	3	10	1	14	25	28	11	32	1	44	2	25	14	41	85	113
09:00 10:00	2	1	3	6	7	0	9	16	22	9	34	2	45	6	25	5	38	83	105
11:30 12:30	5	0	0	5	10	0	10	20	25	10	29	1	40	2	34	13	49	89	114
12:30 13:30	1	0	1	2	2	0	13	15	17	6	35	0	41	0	31	3	35	76	93
15:00 16:00	0	1	1	2	4	0	11	15	17	7	24	0	31	0	26	5	31	62	79
16:00 17:00	1	0	0	1	2	3	9	14	15	7	23	0	30	0	23	3	26	56	71
17:00 18:00	1	1	0	2	7	0	10	17	19	4	17	0	21	0	16	3	19	40	59
Sub Total	11	4	6	21	48	4	84	136	157	70	216	4	290	11	202	55	272	562	719
U-Turns (Heavy Vehicles)				0				0	0				0				4	4	4
Total	11	4	6	0	48	4	84	136	157	70	216	4	290	11	202	55	276	566	723

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



Transportation Services - Traffic Services

Work Order

36955

Turning Movement Count - Pedestrian Volume Report

CARLING AVE @ CHURCHILL AVE

Count Date: Tuesday, April 25, 2017

Start Time: 07:00

Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00 07:15	3	3	6	1	4	5	11
07:15 07:30	3	5	8	6	7	13	21
07:30 07:45	4	2	6	2	5	7	13
07:45 08:00	1	2	3	5	5	10	13
07:00 08:00	11	12	23	14	21	35	58
08:00 08:15	1	2	3	5	3	8	11
08:15 08:30	5	3	8	6	4	10	18
08:30 08:45	4	3	7	8	4	12	19
08:45 09:00	4	8	12	4	7	11	23
08:00 09:00	14	16	30	23	18	41	71
09:00 09:15	3	4	7	7	2	9	16
09:15 09:30	1	5	6	2	7	9	15
09:30 09:45	5	5	10	3	7	10	20
09:45 10:00	1	3	4	0	3	3	7
09:00 10:00	10	17	27	12	19	31	58
11:30 11:45	4	5	9	5	6	11	20
11:45 12:00	2	9	11	1	5	6	17
12:00 12:15	4	7	11	2	6	8	19
12:15 12:30	9	9	18	5	2	7	25
11:30 12:30	19	30	49	13	19	32	81
12:30 12:45	8	5	13	5	9	14	27
12:45 13:00	8	6	14	6	9	15	29
13:00 13:15	9	3	12	6	6	12	24
13:15 13:30	3	4	7	2	6	8	15
12:30 13:30	28	18	46	19	30	49	95
15:00 15:15	2	5	7	2	4	6	13
15:15 15:30	5	6	11	8	4	12	23
15:30 15:45	10	2	12	3	4	7	19
15:45 16:00	1	3	4	3	2	5	9
15:00 16:00	18	16	34	16	14	30	64
16:00 16:15	2	4	6	3	3	6	12
16:15 16:30	5	6	11	3	6	9	20
16:30 16:45	1	7	8	5	3	8	16
16:45 17:00	3	1	4	3	1	4	8
16:00 17:00	11	18	29	14	13	27	56
17:00 17:15	6	4	10	9	4	13	23
17:15 17:30	8	2	10	7	2	9	19
17:30 17:45	1	7	8	4	4	8	16
17:45 18:00	0	5	5	1	2	3	8
17:00 18:00	15	18	33	21	12	33	66
Total	126	145	271	132	146	278	549

Comment:

Turning Movement Count - 15 Min U-Turn Total Report

CARLING AVE @ CHURCHILL AVE

Survey Date: Tuesday, April 25, 2017

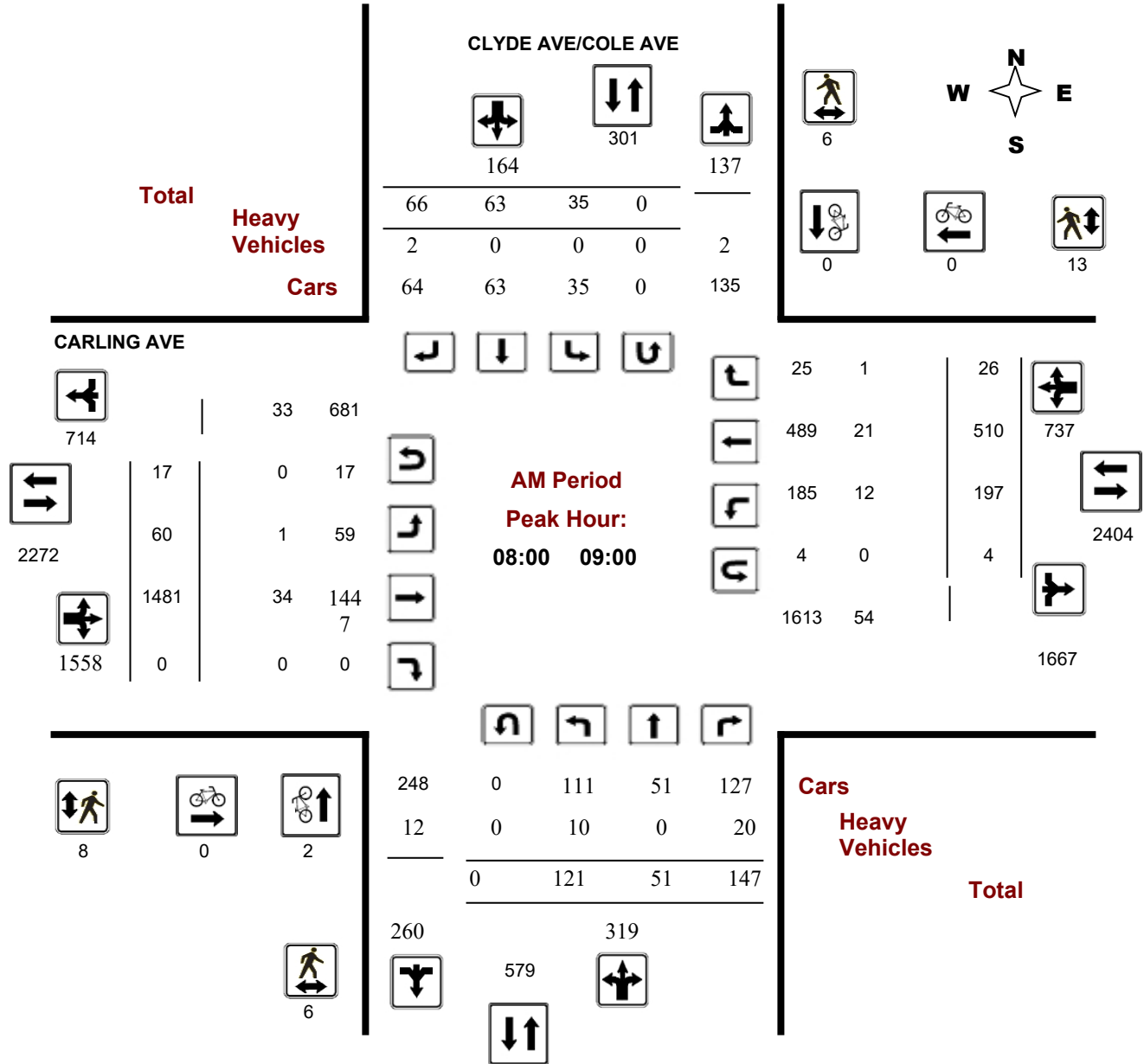
Time Period		Northbound U-Turn Total	Southbound U-Turn Total	Eastbound U-Turn Total	Westbound U-Turn Total	Total
07:00	07:15	0	0	1	3	4
07:15	07:30	0	0	2	2	4
07:30	07:45	0	0	1	9	10
07:45	08:00	0	0	1	5	6
08:00	08:15	0	0	1	4	5
08:15	08:30	0	0	2	7	9
08:30	08:45	0	0	2	7	9
08:45	09:00	0	0	1	3	4
09:00	09:15	0	0	2	9	11
09:15	09:30	0	0	2	6	8
09:30	09:45	0	0	4	7	11
09:45	10:00	0	0	3	10	13
11:30	11:45	0	0	1	13	14
11:45	12:00	0	0	5	15	20
12:00	12:15	0	0	4	7	11
12:15	12:30	0	0	4	9	13
12:30	12:45	0	0	1	7	8
12:45	13:00	0	0	4	7	11
13:00	13:15	0	0	2	9	11
13:15	13:30	0	0	3	14	17
15:00	15:15	0	0	4	7	11
15:15	15:30	0	0	5	7	12
15:30	15:45	0	0	4	7	11
15:45	16:00	0	0	3	3	6
16:00	16:15	0	0	3	3	6
16:15	16:30	0	0	1	3	4
16:30	16:45	0	0	7	8	15
16:45	17:00	0	0	2	4	6
17:00	17:15	0	0	2	3	5
17:15	17:30	0	0	3	3	6
17:30	17:45	0	0	6	2	8
17:45	18:00	0	0	2	7	9
Total		0	0	88	210	298

Survey Date: Wednesday, January 27, 2016

Start Time: 07:00

WO No: 35669

Device: Miovision

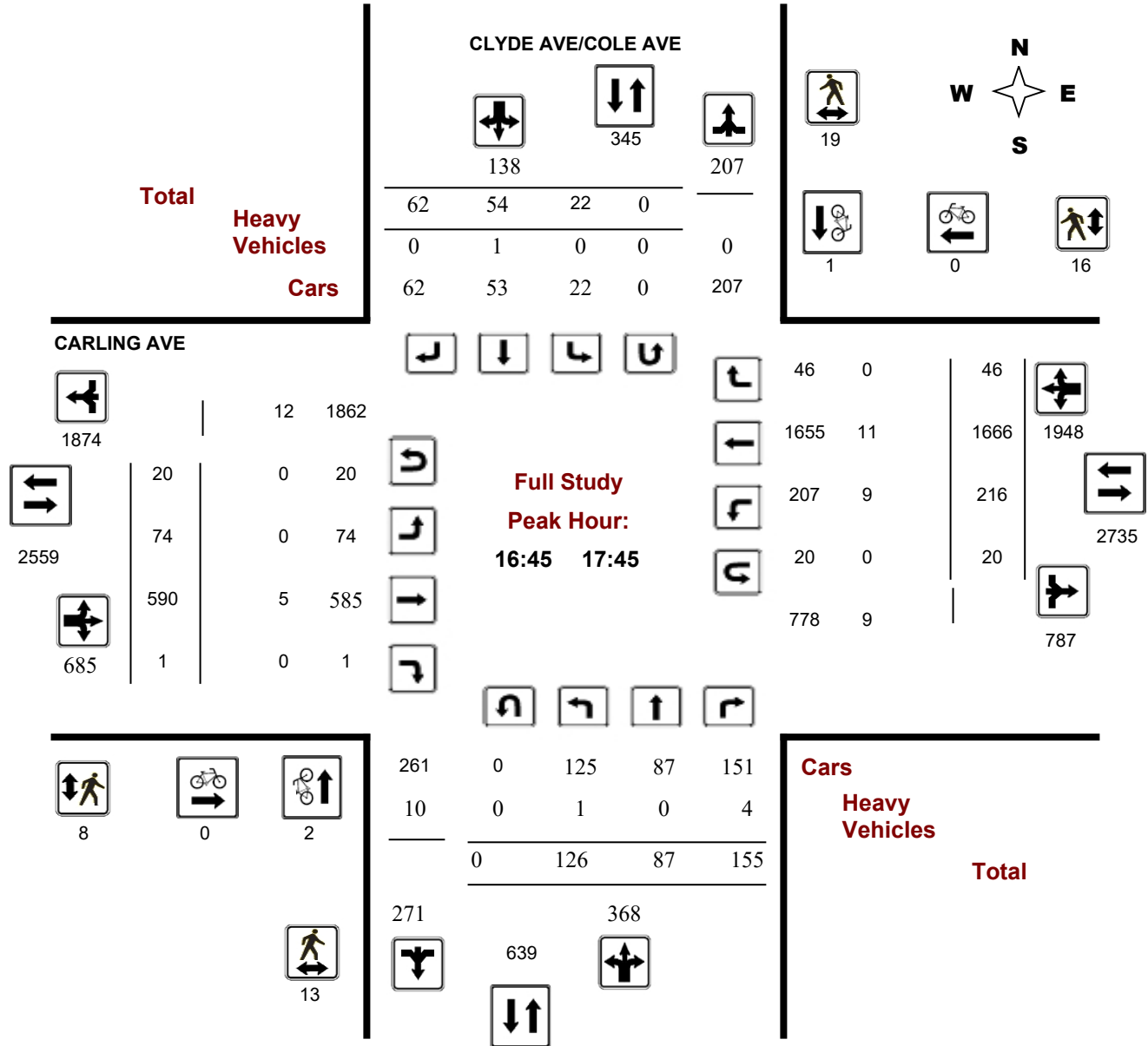


Survey Date: Wednesday, January 27, 2016

Start Time: 07:00

WO No: 35669

Device: Miovision

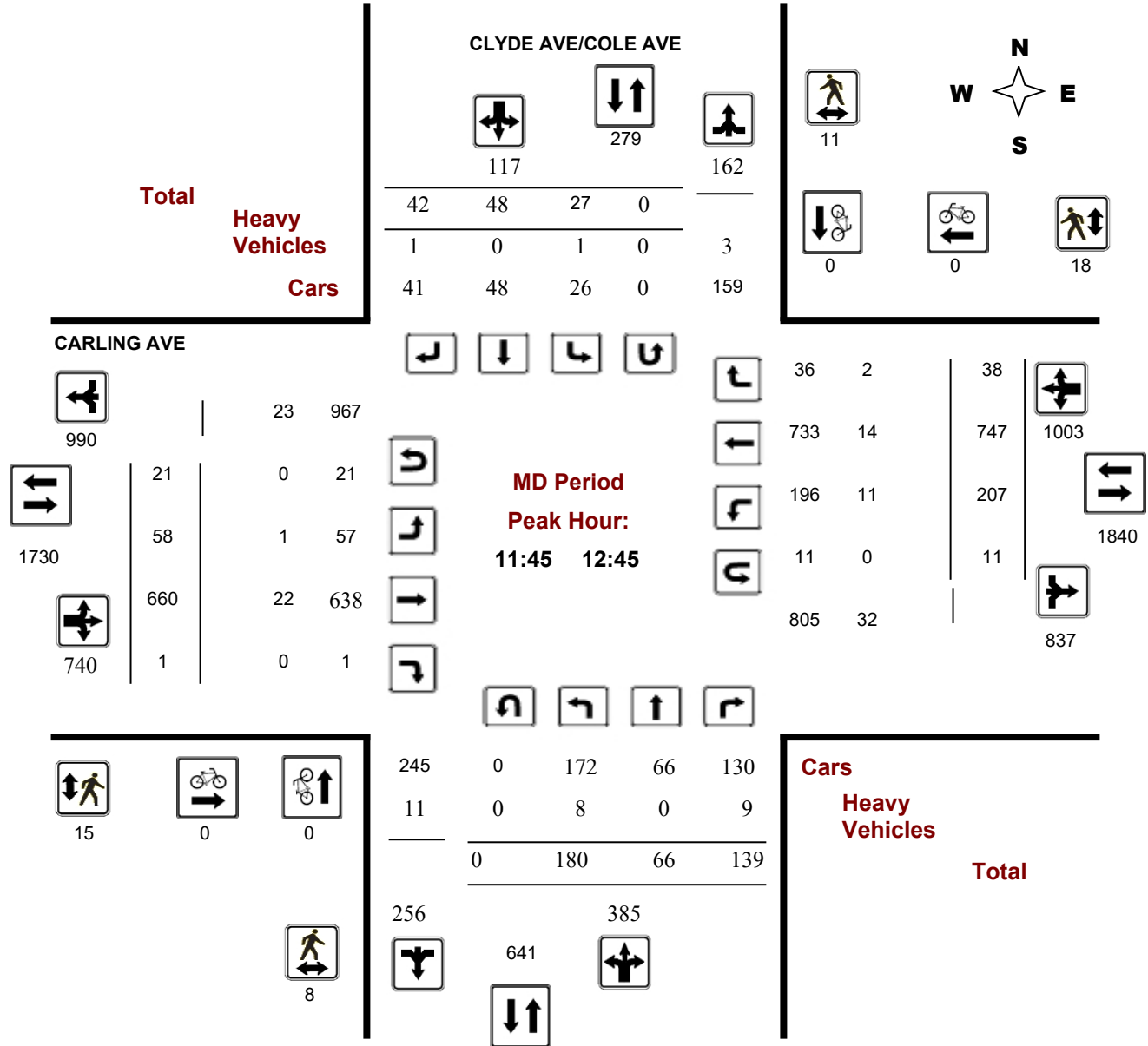


Survey Date: Wednesday, January 27, 2016

Start Time: 07:00

WO No: 35669

Device: Miovision

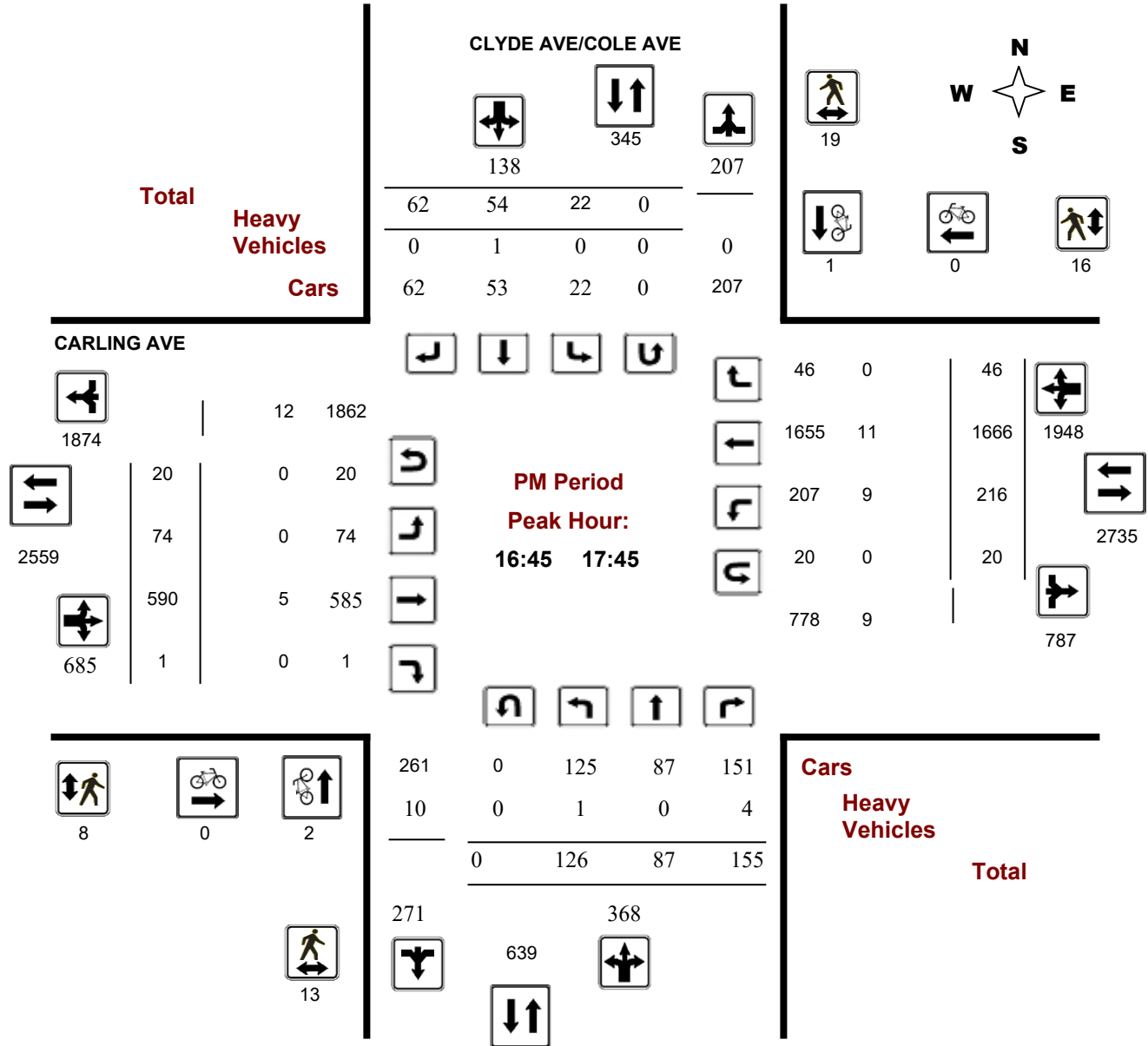


Survey Date: Wednesday, January 27, 2016

Start Time: 07:00

WO No: 35669

Device: Miovision



Turning Movement Count - Full Study Summary Report

CARLING AVE @ CLYDE AVE/COLE AVE

Survey Date: Wednesday, January 27, 201

Total Observed U-Turns

Northbound: 0 Southbound: 0
Eastbound: 131 Westbound: 99

AADT Factor

1.00

Full Study

Period	CLYDE AVE/COLE AVE									CARLING AVE									Grand Total	
	Northbound				Southbound					Eastbound			Westbound							
	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT	STR TOT		
07:00 08:00	47	19	80	146	23	27	31	81	227	38	1209	0	1247	180	319	13	512	1759	1986	
08:00 09:00	121	51	147	319	35	63	66	164	483	60	1481	0	1541	197	510	26	733	2274	2757	
09:00 10:00	108	31	97	236	16	40	39	95	331	61	784	0	845	191	540	12	743	1588	1919	
11:30 12:30	159	69	137	365	22	50	47	119	484	54	642	2	698	214	743	33	990	1688	2172	
12:30 13:30	129	52	133	314	29	47	50	126	440	77	689	0	766	187	672	27	886	1652	2092	
15:00 16:00	165	56	139	360	16	43	44	103	463	41	657	2	700	221	1117	34	1372	2072	2535	
16:00 17:00	120	68	147	335	20	73	41	134	469	75	540	0	615	228	1381	51	1660	2275	2744	
17:00 18:00	132	100	147	379	26	56	69	151	530	78	592	1	671	207	1545	44	1796	2467	2997	
Sub Total	981	446	1027	2454	187	399	387	973	3427	484	6594	5	7083	1625	6827	240	8692	15775	19202	
U Turns				0				0	0				131				99	230	230	
Total	981	446	1027	2454	187	399	387	973	3427	484	6594	5	7214	1625	6827	240	8791	16005	19432	
EQ 12Hr	1364	620	1428	3411	260	555	538	1352	4763	673	9166	7	10027	2259	9490	334	12219	22246	27009	
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.													1.39							
AVG 12Hr	1364	620	1428	3411	260	555	538	1352	4763	673	9166	7	10027	2259	9490	334	12219	22246	27009	
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.													1.00							
AVG 24Hr	1786	812	1870	4468	341	727	705	1772	6240	881	12007	9	13136	2959	12431	437	16008	29144	35384	
Note: These volumes are calculated by multiplying the Average Daily 12 hr. totals by 12 to 24 expansion factor.													1.31							

Comments:

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



Turning Movement Count - 15 Minute Summary Report

CARLING AVE @ CLYDE AVE/COLE AVE

Survey Date: Wednesday, January 27, 2016

Total Observed U-Turns

Northbound: 0 Southbound: 0
Eastbound: 131 Westbound: 99

Table with columns for Time Period, Northbound (LT, ST, RT, N TOT), Southbound (LT, ST, RT, S TOT, STR TOT), Eastbound (LT, ST, RT, E TOT), Westbound (LT, ST, RT, W TOT, STR TOT), and Grand Total. Rows represent 15-minute intervals from 07:00 to 18:00.

Note: U-Turns are included in Totals.

Comment:



Transportation Services - Traffic Services

Turning Movement Count - Cyclist Volume Report

Work Order
35669

CARLING AVE @ CLYDE AVE/COLE AVE

Count Date: Wednesday, January 27, 2016

Start Time: 07:00

Time Period	CLYDE AVE/COLE AVE			CARLING AVE			Grand Total
	Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	
07:00 08:00	0	1	1	0	0	0	1
08:00 09:00	2	0	2	0	0	0	2
09:00 10:00	0	0	0	0	0	0	0
11:30 12:30	0	0	0	0	0	0	0
12:30 13:30	0	0	0	1	1	2	2
15:00 16:00	0	0	0	0	0	0	0
16:00 17:00	1	0	1	0	0	0	1
17:00 18:00	1	1	2	0	0	0	2
Total	4	2	6	1	1	2	8

Comment:

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



Transportation Services - Traffic Services

W.O.
35669

Turning Movement Count - Heavy Vehicle Report

CARLING AVE @ CLYDE AVE/COLE AVE

Survey Date: Wednesday, January 27, 2016

Time Period	CLYDE AVE/COLE AVE									CARLING AVE									Grand Total
	Northbound			Southbound			S TOT	STR TOT	Eastbound			Westbound			W TOT	STR TOT			
	LT	ST	RT	N TOT	LT	ST			RT	LT	ST	RT	E TOT	LT			ST	RT	
07:00 08:00	6	1	13	20	0	0	4	4	24	3	12	0	15	6	14	0	20	35	59
08:00 09:00	10	0	20	30	0	0	2	2	32	1	34	0	35	12	21	1	34	69	101
09:00 10:00	6	1	14	21	1	0	1	2	23	1	27	0	28	12	26	0	38	66	89
11:30 12:30	6	0	10	16	1	0	0	1	17	1	25	0	26	15	18	2	35	61	78
12:30 13:30	5	3	9	17	0	1	2	3	20	0	16	0	16	12	15	0	28	44	64
15:00 16:00	5	2	6	13	0	0	3	3	16	1	13	2	16	7	21	1	29	45	61
16:00 17:00	4	0	2	6	1	1	0	2	8	2	8	0	10	8	17	0	25	35	43
17:00 18:00	0	0	5	5	0	0	0	0	5	0	6	0	6	10	13	0	23	29	34
Sub Total	42	7	79	128	3	2	12	17	145	9	141	2	152	82	145	4	232	384	529
U-Turns (Heavy Vehicles)				0				0	0				0				1	1	1
Total	42	7	79	0	3	2	12	17	145	9	141	2	152	82	145	4	233	385	530

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



Transportation Services - Traffic Services

Work Order

35669

Turning Movement Count - Pedestrian Volume Report

CARLING AVE @ CLYDE AVE/COLE AVE

Count Date: Wednesday, January 27, 2016

Start Time: 07:00

Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00 07:15	1	4	5	2	1	3	8
07:15 07:30	1	2	3	1	4	5	8
07:30 07:45	2	4	6	0	2	2	8
07:45 08:00	7	3	10	2	10	12	22
07:00 08:00	11	13	24	5	17	22	46
08:00 08:15	1	2	3	2	5	7	10
08:15 08:30	2	1	3	4	4	8	11
08:30 08:45	2	2	4	2	4	6	10
08:45 09:00	1	1	2	0	0	0	2
08:00 09:00	6	6	12	8	13	21	33
09:00 09:15	5	6	11	1	3	4	15
09:15 09:30	1	2	3	1	2	3	6
09:30 09:45	0	0	0	1	1	2	2
09:45 10:00	2	2	4	4	3	7	11
09:00 10:00	8	10	18	7	9	16	34
11:30 11:45	2	7	9	1	6	7	16
11:45 12:00	3	2	5	3	1	4	9
12:00 12:15	0	4	4	5	8	13	17
12:15 12:30	1	2	3	2	0	2	5
11:30 12:30	6	15	21	11	15	26	47
12:30 12:45	4	3	7	5	9	14	21
12:45 13:00	3	1	4	1	6	7	11
13:00 13:15	5	6	11	5	8	13	24
13:15 13:30	2	2	4	2	0	2	6
12:30 13:30	14	12	26	13	23	36	62
15:00 15:15	3	4	7	1	6	7	14
15:15 15:30	2	10	12	2	5	7	19
15:30 15:45	1	1	2	4	3	7	9
15:45 16:00	5	3	8	0	4	4	12
15:00 16:00	11	18	29	7	18	25	54
16:00 16:15	7	2	9	4	3	7	16
16:15 16:30	1	3	4	1	6	7	11
16:30 16:45	5	5	10	4	5	9	19
16:45 17:00	3	3	6	0	6	6	12
16:00 17:00	16	13	29	9	20	29	58
17:00 17:15	1	3	4	1	5	6	10
17:15 17:30	5	5	10	2	2	4	14
17:30 17:45	4	8	12	5	3	8	20
17:45 18:00	2	1	3	1	4	5	8
17:00 18:00	12	17	29	9	14	23	52
Total	84	104	188	69	129	198	386

Comment:

Turning Movement Count - 15 Min U-Turn Total Report

CARLING AVE @ CLYDE AVE/COLE AVE

Survey Date: Wednesday, January 27, 2016

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	2	2
07:15	07:30	0	0	3	2	5
07:30	07:45	0	0	4	4	8
07:45	08:00	0	0	4	1	5
08:00	08:15	0	0	1	1	2
08:15	08:30	0	0	3	0	3
08:30	08:45	0	0	6	2	8
08:45	09:00	0	0	7	1	8
09:00	09:15	0	0	4	1	5
09:15	09:30	0	0	2	2	4
09:30	09:45	0	0	6	1	7
09:45	10:00	0	0	4	2	6
11:30	11:45	0	0	7	3	10
11:45	12:00	0	0	7	2	9
12:00	12:15	0	0	7	4	11
12:15	12:30	0	0	2	2	4
12:30	12:45	0	0	5	3	8
12:45	13:00	0	0	6	6	12
13:00	13:15	0	0	2	4	6
13:15	13:30	0	0	5	2	7
15:00	15:15	0	0	4	3	7
15:15	15:30	0	0	5	4	9
15:30	15:45	0	0	3	5	8
15:45	16:00	0	0	5	4	9
16:00	16:15	0	0	3	5	8
16:15	16:30	0	0	1	4	5
16:30	16:45	0	0	3	3	6
16:45	17:00	0	0	3	0	3
17:00	17:15	0	0	11	5	16
17:15	17:30	0	0	1	4	5
17:30	17:45	0	0	5	11	16
17:45	18:00	0	0	2	6	8
Total		0	0	131	99	230

Turning Movement Count - Study Results

CARLING AVE EB @ SAIGON CRT

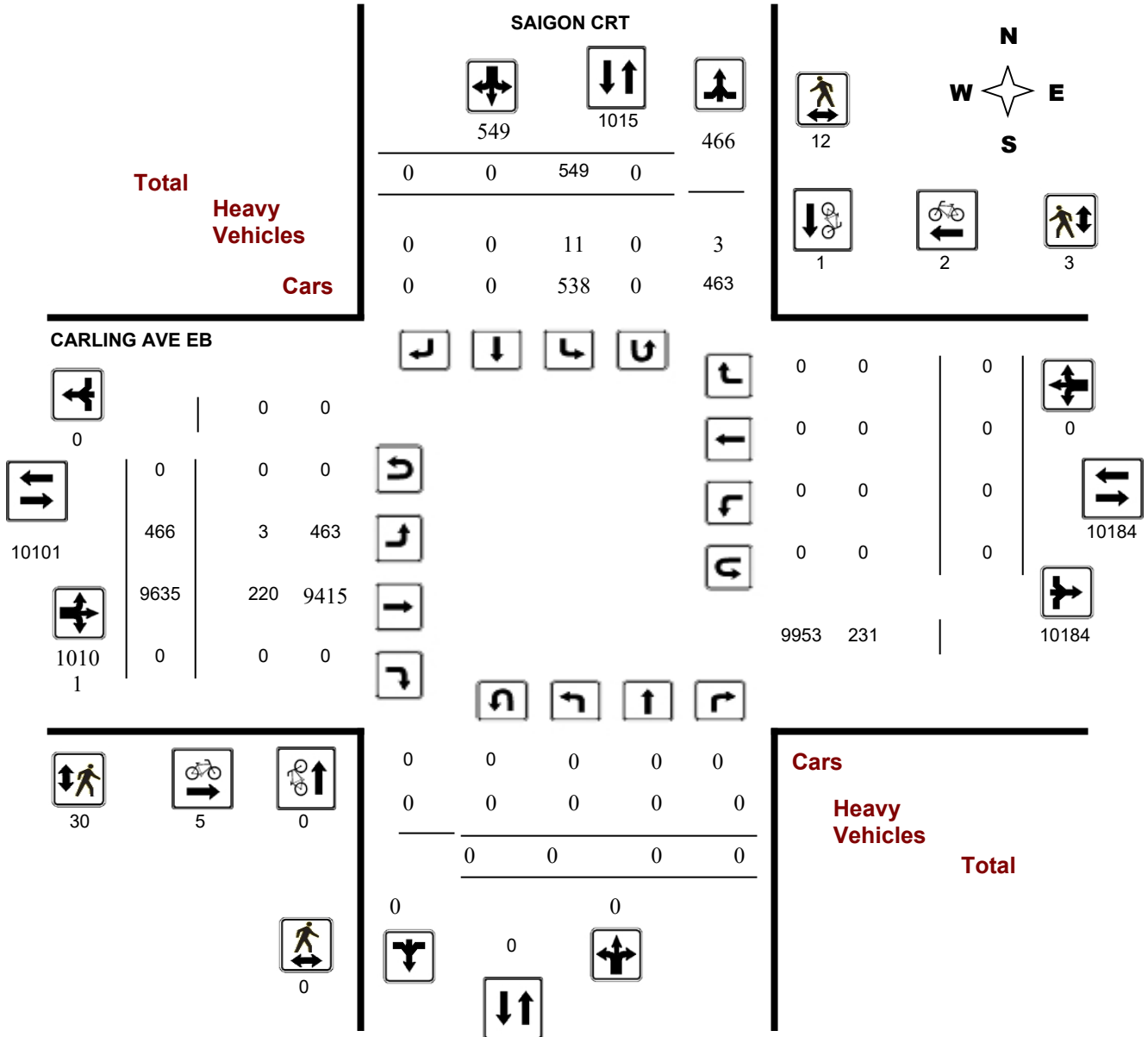
Survey Date: Thursday, April 05, 2018

WO No: 37688

Start Time: 07:00

Device: Miovision

Full Study Diagram



Turning Movement Count - Study Results

CARLING AVE EB @ SAIGON CRT

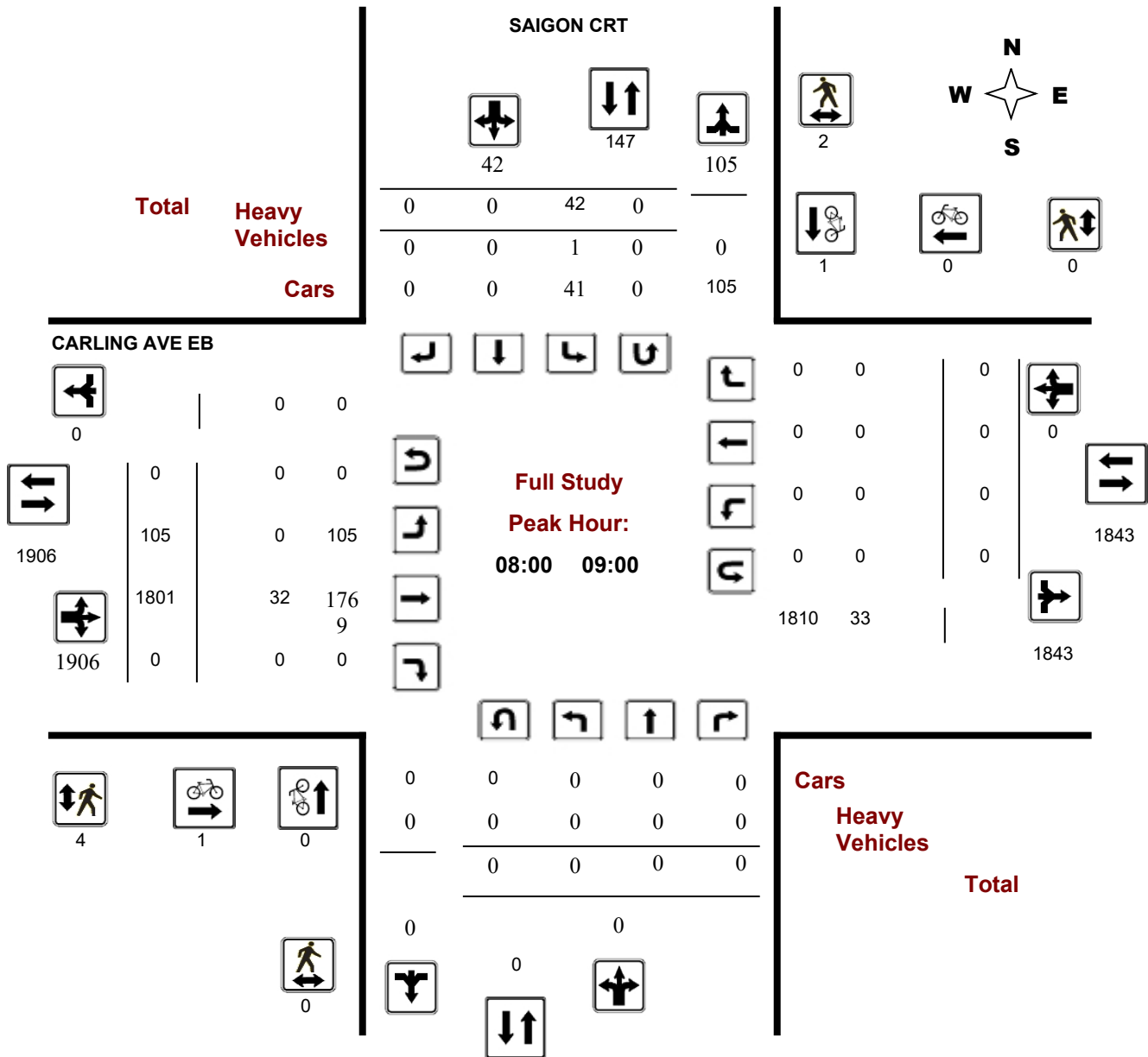
Survey Date: Thursday, April 05, 2018

WO No: 37688

Start Time: 07:00

Device: Miovision

Full Study Peak Hour Diagram



Turning Movement Count - Peak Hour Diagram

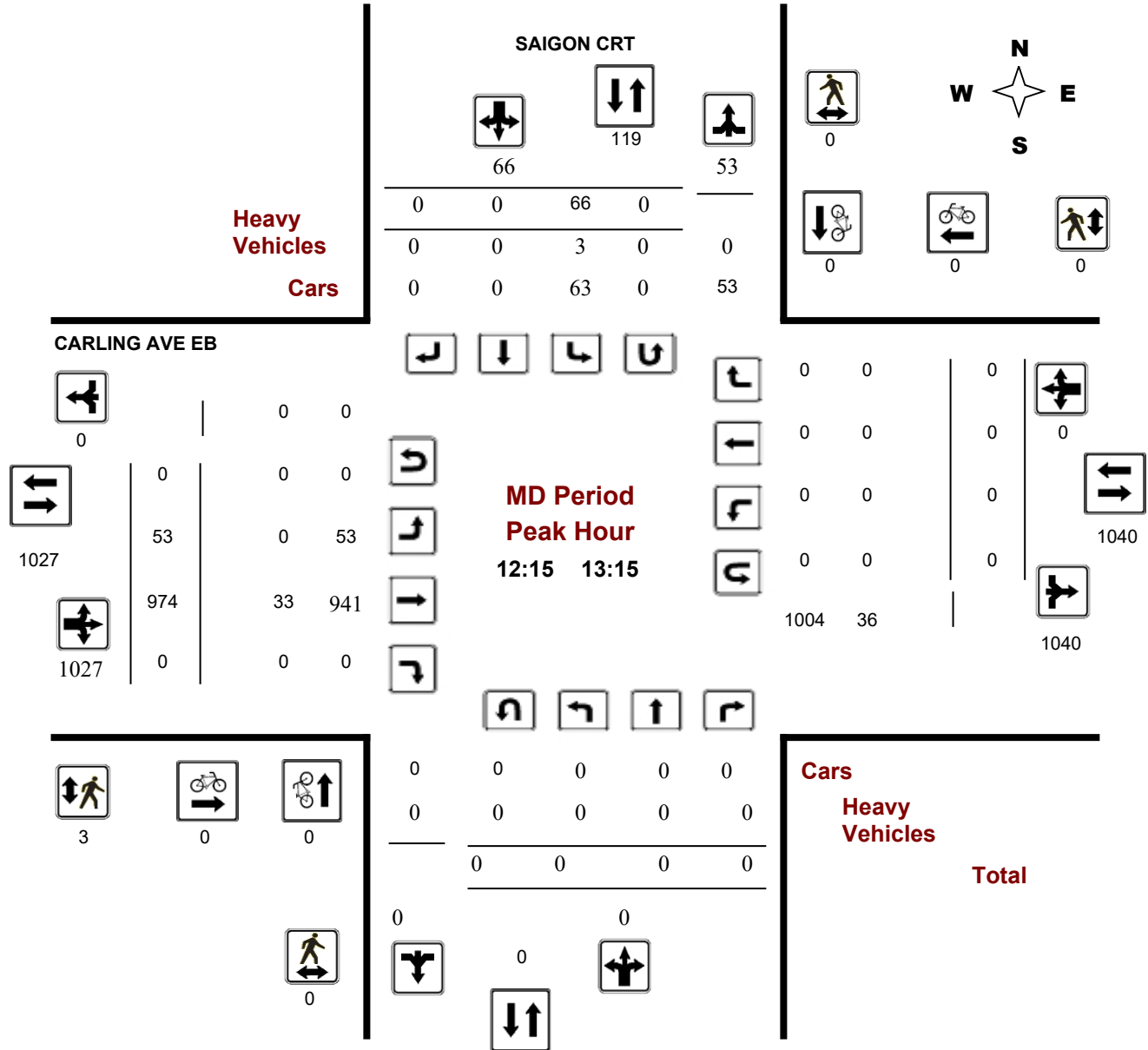
CARLING AVE EB @ SAIGON CRT

Survey Date: Thursday, April 05, 2018

Start Time: 07:00

WO No: 37688

Device: Miovision



Turning Movement Count - Peak Hour Diagram

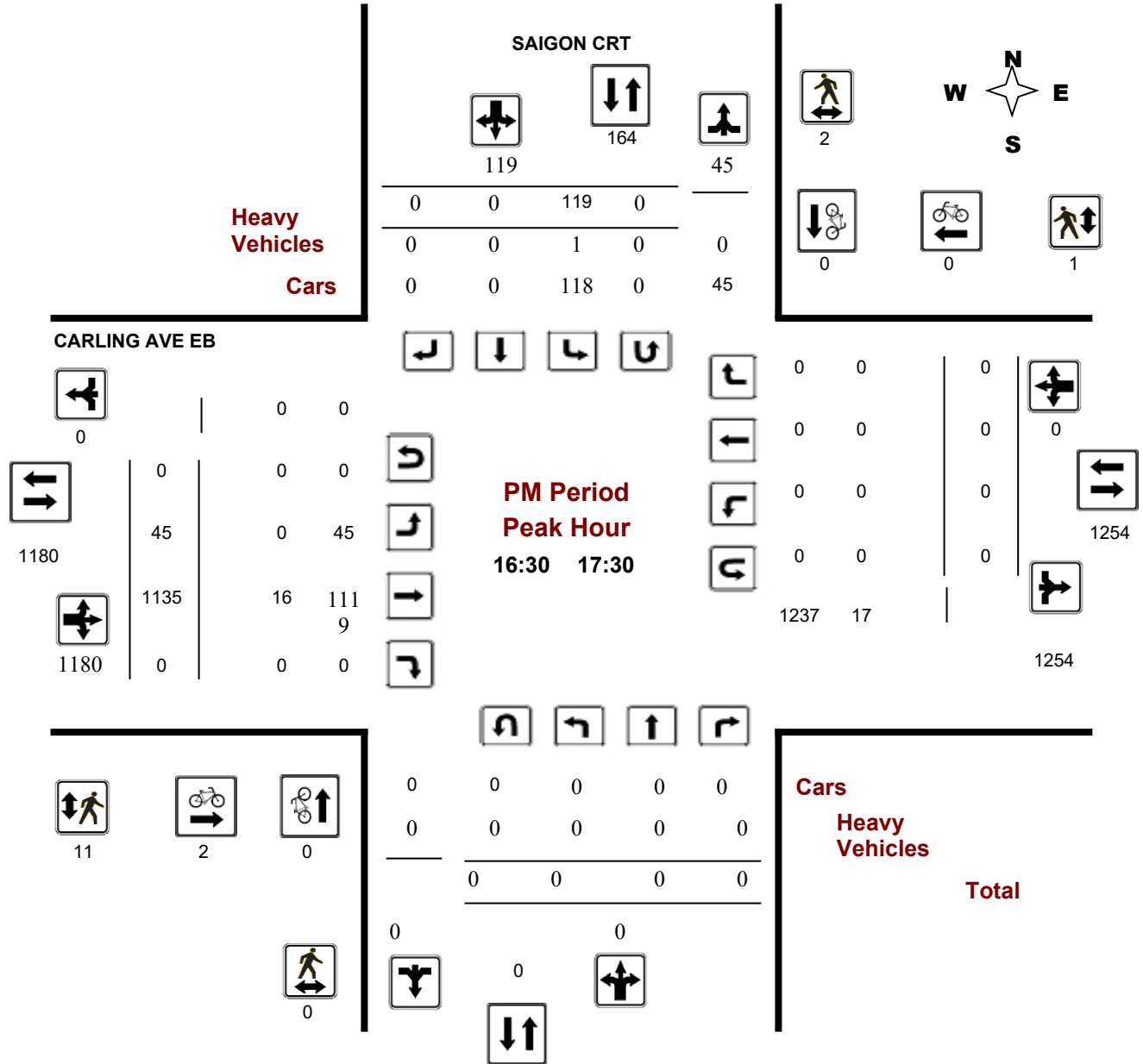
CARLING AVE EB @ SAIGON CRT

Survey Date: Thursday, April 05, 2018

Start Time: 07:00

WO No: 37688

Device: Miovision



Comments



Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARLING AVE EB @ SAIGON CRT

Survey Date: Thursday, April 05, 2018

WO No: 37688

Start Time: 07:00

Device: Miovision

Full Study Summary (8 HR Standard)

Survey Date: Thursday, April 05, 2018

Total Observed U-Turns

AADT Factor

Northbound: 0 Southbound: 0

.90

Eastbound: 0 Westbound: 0

SAIGON CRT

CARLING AVE EB

Period	SAIGON CRT Northbound					SAIGON CRT Southbound					CARLING AVE EB Eastbound					CARLING AVE EB Westbound			STR TOT	Grand Total
	LT	ST	RT	NB TOT	STR TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	STR TOT	WB TOT	STR TOT			
07:00 08:00	0	0	0	0	27	0	0	0	27	27	77	1421	0	1498	0	0	0	0	1498	1525
08:00 09:00	0	0	0	0	42	0	0	0	42	42	105	1801	0	1906	0	0	0	0	1906	1948
09:00 10:00	0	0	0	0	54	0	0	0	54	54	74	1378	0	1452	0	0	0	0	1452	1506
11:30 12:30	0	0	0	0	70	0	0	0	70	70	38	965	0	1003	0	0	0	0	1003	1073
12:30 13:30	0	0	0	0	65	0	0	0	65	65	65	942	0	1007	0	0	0	0	1007	1072
15:00 16:00	0	0	0	0	86	0	0	0	86	86	31	1032	0	1063	0	0	0	0	1063	1149
16:00 17:00	0	0	0	0	104	0	0	0	104	104	40	1073	0	1113	0	0	0	0	1113	1217
17:00 18:00	0	0	0	0	101	0	0	0	101	101	36	1023	0	1059	0	0	0	0	1059	1160
Sub Total	0	0	0	0	549	0	0	0	549	549	466	9635	0	10101	0	0	0	0	10101	10650
U Turns				0					0	0				0				0	0	0
Total	0	0	0	0	549	0	0	0	549	549	466	9635	0	10101	0	0	0	0	10101	10650
EQ 12Hr	0	0	0	0	763	0	0	0	763	763	648	13393	0	14040	0	0	0	0	14040	14803
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.																1.39				
AVG 12Hr	0	0	0	0	647	0	0	0	647	687	549	11360	0	11909	0	0	0	0	12636	13323
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.																0.9				
AVG 24Hr	0	0	0	0	848	0	0	0	848	848	720	14881	0	15601	0	0	0	0	15601	16449

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

CARLING AVE EB @ SAIGON CRT

Survey Date: Thursday, April 05, 2018

WO No: 37688

Start Time: 07:00

Device: Miovision

Full Study 15 Minute Increments

SAIGON CRT

CARLING AVE EB

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	4	0	0	4	11	7	285	0	292	0	0	0	0	11	296
07:15 07:30	0	0	0	0	10	0	0	10	31	21	318	0	339	0	0	0	0	31	349
07:30 07:45	0	0	0	0	3	0	0	3	26	23	412	0	435	0	0	0	0	26	438
07:45 08:00	0	0	0	0	10	0	0	10	36	26	406	0	432	0	0	0	0	36	442
08:00 08:15	0	0	0	0	6	0	0	6	24	18	497	0	515	0	0	0	0	24	521
08:15 08:30	0	0	0	0	12	0	0	12	39	27	431	0	458	0	0	0	0	39	470
08:30 08:45	0	0	0	0	12	0	0	12	41	29	470	0	499	0	0	0	0	41	511
08:45 09:00	0	0	0	0	12	0	0	12	43	31	403	0	434	0	0	0	0	43	446
09:00 09:15	0	0	0	0	11	0	0	11	37	26	420	0	446	0	0	0	0	37	457
09:15 09:30	0	0	0	0	18	0	0	18	38	20	360	0	380	0	0	0	0	38	398
09:30 09:45	0	0	0	0	12	0	0	12	30	18	309	0	327	0	0	0	0	30	339
09:45 10:00	0	0	0	0	13	0	0	13	23	10	289	0	299	0	0	0	0	23	312
11:30 11:45	0	0	0	0	20	0	0	20	29	9	225	0	234	0	0	0	0	29	254
11:45 12:00	0	0	0	0	10	0	0	10	19	9	272	0	281	0	0	0	0	19	291
12:00 12:15	0	0	0	0	19	0	0	19	28	9	221	0	230	0	0	0	0	28	249
12:15 12:30	0	0	0	0	21	0	0	21	32	11	247	0	258	0	0	0	0	32	279
12:30 12:45	0	0	0	0	21	0	0	21	35	14	237	0	251	0	0	0	0	35	272
12:45 13:00	0	0	0	0	12	0	0	12	27	15	244	0	259	0	0	0	0	27	271
13:00 13:15	0	0	0	0	12	0	0	12	25	13	246	0	259	0	0	0	0	25	271
13:15 13:30	0	0	0	0	20	0	0	20	43	23	215	0	238	0	0	0	0	43	258
15:00 15:15	0	0	0	0	25	0	0	25	31	6	236	0	242	0	0	0	0	31	267
15:15 15:30	0	0	0	0	20	0	0	20	25	5	251	0	256	0	0	0	0	25	276
15:30 15:45	0	0	0	0	16	0	0	16	25	9	283	0	292	0	0	0	0	25	308
15:45 16:00	0	0	0	0	25	0	0	25	36	11	262	0	273	0	0	0	0	36	298
16:00 16:15	0	0	0	0	29	0	0	29	33	4	267	0	271	0	0	0	0	33	300
16:15 16:30	0	0	0	0	17	0	0	17	27	10	263	0	273	0	0	0	0	27	290
16:30 16:45	0	0	0	0	26	0	0	26	41	15	297	0	312	0	0	0	0	41	338
16:45 17:00	0	0	0	0	32	0	0	32	43	11	246	0	257	0	0	0	0	43	289
17:00 17:15	0	0	0	0	35	0	0	35	43	8	336	0	344	0	0	0	0	43	379
17:15 17:30	0	0	0	0	26	0	0	26	37	11	256	0	267	0	0	0	0	37	293
17:30 17:45	0	0	0	0	25	0	0	25	34	9	227	0	236	0	0	0	0	34	261
17:45 18:00	0	0	0	0	15	0	0	15	23	8	204	0	212	0	0	0	0	23	227
Total:	0	0	0	0	549	0	0	549	1015	466	9635	0	10101	0	0	0	0	1015	10,650

Note: U-Turns are included in Totals.



Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARLING AVE EB @ SAIGON CRT

Survey Date: Thursday, April 05, 2018

WO No: 37688

Start Time: 07:00

Device: Miovision

Full Study Cyclist Volume

Time Period	SAIGON CRT			CARLING AVE EB			Grand Total
	Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	
07:00 07:15	0	0	0	0	0	0	0
07:15 07:30	0	0	0	0	0	0	0
07:30 07:45	0	0	0	0	0	0	0
07:45 08:00	0	0	0	1	0	1	1
08:00 08:15	0	0	0	0	0	0	0
08:15 08:30	0	0	0	1	0	1	1
08:30 08:45	0	1	1	0	0	0	1
08:45 09:00	0	0	0	0	0	0	0
09:00 09:15	0	0	0	0	0	0	0
09:15 09:30	0	0	0	0	0	0	0
09:30 09:45	0	0	0	0	0	0	0
09:45 10:00	0	0	0	0	0	0	0
11:30 11:45	0	0	0	0	0	0	0
11:45 12:00	0	0	0	0	0	0	0
12:00 12:15	0	0	0	0	0	0	0
12:15 12:30	0	0	0	0	0	0	0
12:30 12:45	0	0	0	0	0	0	0
12:45 13:00	0	0	0	0	0	0	0
13:00 13:15	0	0	0	0	0	0	0
13:15 13:30	0	0	0	0	0	0	0
15:00 15:15	0	0	0	0	0	0	0
15:15 15:30	0	0	0	0	0	0	0
15:30 15:45	0	0	0	0	0	0	0
15:45 16:00	0	0	0	0	1	1	1
16:00 16:15	0	0	0	1	0	1	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	1	0	1	1
17:00 17:15	0	0	0	0	0	0	0
17:15 17:30	0	0	0	1	0	1	1
17:30 17:45	0	0	0	0	1	1	1
17:45 18:00	0	0	0	0	0	0	0
Total	0	1	1	5	2	7	8



Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARLING AVE EB @ SAIGON CRT

Survey Date: Thursday, April 05, 2018

WO No: 37688

Start Time: 07:00

Device: Miovision

Full Study Pedestrian Volume

SAIGON CRT

CARLING AVE EB

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	1	1	0	0	0	1
07:15 07:30	0	0	0	0	0	0	0
07:30 07:45	0	0	0	1	0	1	1
07:45 08:00	0	0	0	2	0	2	2
08:00 08:15	0	0	0	0	0	0	0
08:15 08:30	0	1	1	2	0	2	3
08:30 08:45	0	1	1	1	0	1	2
08:45 09:00	0	0	0	1	0	1	1
09:00 09:15	0	0	0	0	0	0	0
09:15 09:30	0	0	0	0	0	0	0
09:30 09:45	0	0	0	0	0	0	0
09:45 10:00	0	0	0	0	0	0	0
11:30 11:45	0	0	0	0	0	0	0
11:45 12:00	0	0	0	1	0	1	1
12:00 12:15	0	0	0	0	0	0	0
12:15 12:30	0	0	0	1	0	1	1
12:30 12:45	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	1	0	1	1
13:15 13:30	0	0	0	3	0	3	3
15:00 15:15	0	1	1	1	0	1	2
15:15 15:30	0	0	0	0	0	0	0
15:30 15:45	0	0	0	1	0	1	1
15:45 16:00	0	1	1	0	1	1	2
16:00 16:15	0	0	0	1	0	1	1
16:15 16:30	0	1	1	1	0	1	2
16:30 16:45	0	0	0	3	0	3	3
16:45 17:00	0	0	0	0	0	0	0
17:00 17:15	0	0	0	6	0	6	6
17:15 17:30	0	2	2	2	1	3	5
17:30 17:45	0	0	0	1	0	1	1
17:45 18:00	0	4	4	0	1	1	5
Total	0	12	12	30	3	33	45



Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARLING AVE EB @ SAIGON CRT

Survey Date: Thursday, April 05, 2018

WO No: 37688

Start Time: 07:00

Device: Miovision

Full Study Heavy Vehicles

SAIGON CRT

CARLING AVE EB

Northbound

Southbound

Eastbound

Westbound

Time Period	Northbound			N TOT	Southbound			S TOT	STR TOT	Eastbound			E TOT	Westbound			W TOT	STR TOT	Grand Total
	LT	ST	RT		LT	ST	RT			LT	ST	RT		LT	ST	RT			
07:00 07:15	0	0	0	0	0	0	0	0	0	0	5	0	5	0	0	0	5	10	5
07:15 07:30	0	0	0	0	0	0	0	0	0	0	6	0	6	0	0	0	6	12	6
07:30 07:45	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	2	4	2
07:45 08:00	0	0	0	0	0	0	0	0	0	0	9	0	9	0	0	0	9	18	9
08:00 08:15	0	0	0	0	0	0	0	0	0	0	10	0	10	0	0	0	10	20	10
08:15 08:30	0	0	0	0	0	0	0	0	0	0	4	0	4	0	0	0	4	8	4
08:30 08:45	0	0	0	0	1	0	0	1	1	0	11	0	11	0	0	0	12	23	12
08:45 09:00	0	0	0	0	0	0	0	0	0	0	7	0	7	0	0	0	7	14	7
09:00 09:15	0	0	0	0	0	0	0	0	0	0	8	0	8	0	0	0	8	16	8
09:15 09:30	0	0	0	0	0	0	0	0	0	0	9	0	9	0	0	0	9	18	9
09:30 09:45	0	0	0	0	2	0	0	2	2	0	9	0	9	0	0	0	11	20	11
09:45 10:00	0	0	0	0	0	0	0	0	0	0	11	0	11	0	0	0	11	22	11
11:30 11:45	0	0	0	0	0	0	0	0	0	0	7	0	7	0	0	0	7	14	7
11:45 12:00	0	0	0	0	0	0	0	0	0	0	8	0	8	0	0	0	8	16	8
12:00 12:15	0	0	0	0	1	0	0	1	1	0	10	0	10	0	0	0	11	21	11
12:15 12:30	0	0	0	0	1	0	0	1	1	0	8	0	8	0	0	0	9	17	9
12:30 12:45	0	0	0	0	1	0	0	1	1	0	9	0	9	0	0	0	10	19	10
12:45 13:00	0	0	0	0	0	0	0	0	0	0	8	0	8	0	0	0	8	16	8
13:00 13:15	0	0	0	0	1	0	0	1	1	0	8	0	8	0	0	0	9	17	9
13:15 13:30	0	0	0	0	1	0	0	2	2	1	5	0	6	0	0	0	6	12	7
15:00 15:15	0	0	0	0	1	0	0	1	1	0	7	0	7	0	0	0	8	15	8
15:15 15:30	0	0	0	0	1	0	0	1	1	0	10	0	10	0	0	0	11	21	11
15:30 15:45	0	0	0	0	0	0	0	0	0	0	4	0	4	0	0	0	4	8	4
15:45 16:00	0	0	0	0	0	0	0	2	2	2	9	0	11	0	0	0	9	20	11
16:00 16:15	0	0	0	0	0	0	0	0	0	0	8	0	8	0	0	0	8	16	8
16:15 16:30	0	0	0	0	0	0	0	0	0	0	4	0	4	0	0	0	4	8	4
16:30 16:45	0	0	0	0	0	0	0	0	0	0	5	0	5	0	0	0	5	10	5
16:45 17:00	0	0	0	0	1	0	0	1	1	0	3	0	3	0	0	0	4	7	4
17:00 17:15	0	0	0	0	0	0	0	0	0	0	4	0	4	0	0	0	4	8	4
17:15 17:30	0	0	0	0	0	0	0	0	0	0	4	0	4	0	0	0	4	8	4
17:30 17:45	0	0	0	0	0	0	0	0	0	0	4	0	4	0	0	0	4	8	4
17:45 18:00	0	0	0	0	0	0	0	0	0	0	4	0	4	0	0	0	4	8	4
Total: None	0	0	0	0	11	0	0	14	14	3	220	0	223	0	0	0	231	454	234



Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARLING AVE EB @ SAIGON CRT

Survey Date: Thursday, April 05, 2018

WO No: 37688

Start Time: 07:00

Device: Miovision

Full Study 15 Minute U-Turn Total

SAIGON CRT

CARLING AVE EB

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

Turning Movement Count - Study Results

CARLING AVE WB @ SAIGON CRT

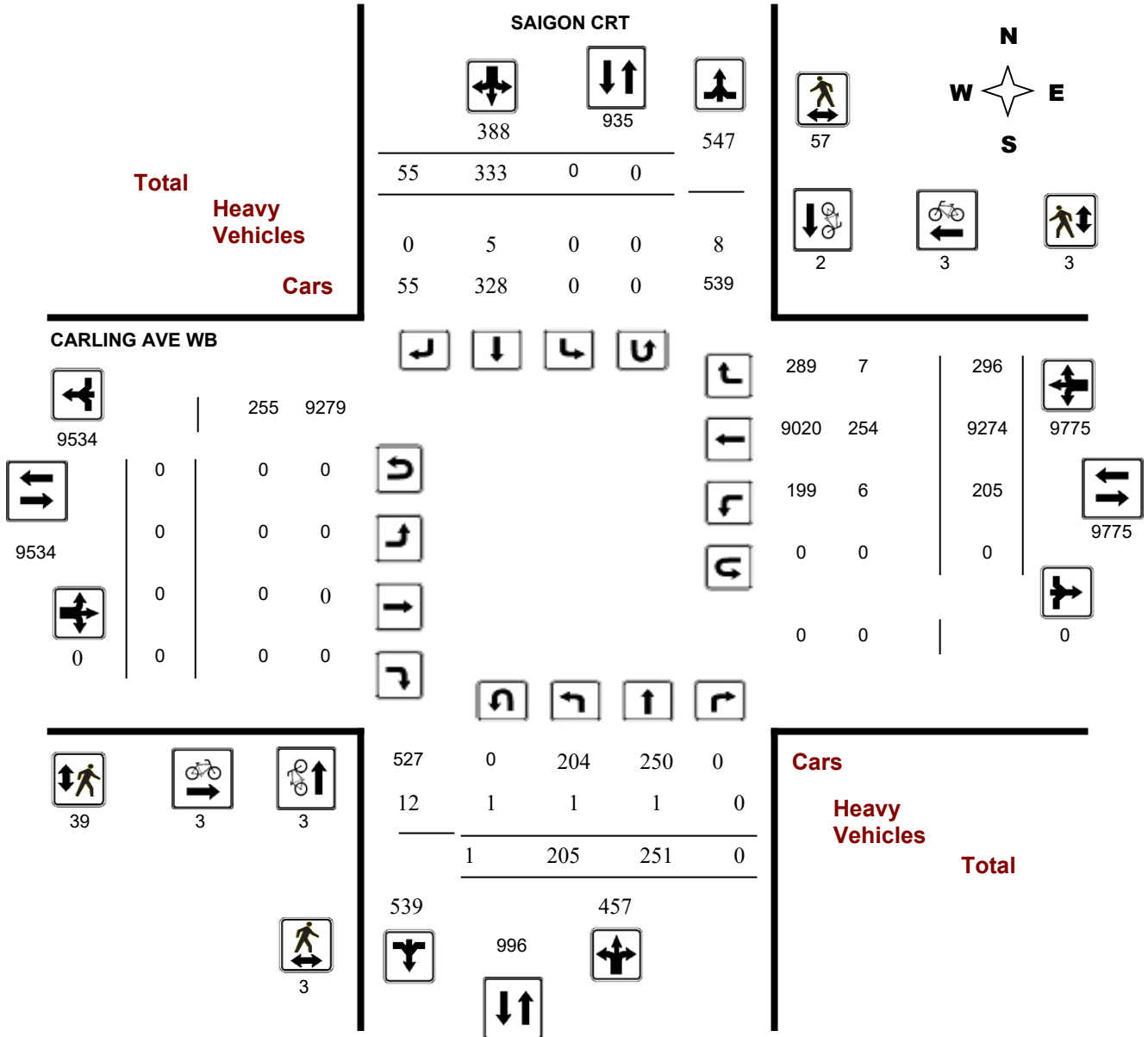
Survey Date: Thursday, April 05, 2018

WO No: 37689

Start Time: 07:00

Device: Miovision

Full Study Diagram



Turning Movement Count - Study Results

CARLING AVE WB @ SAIGON CRT

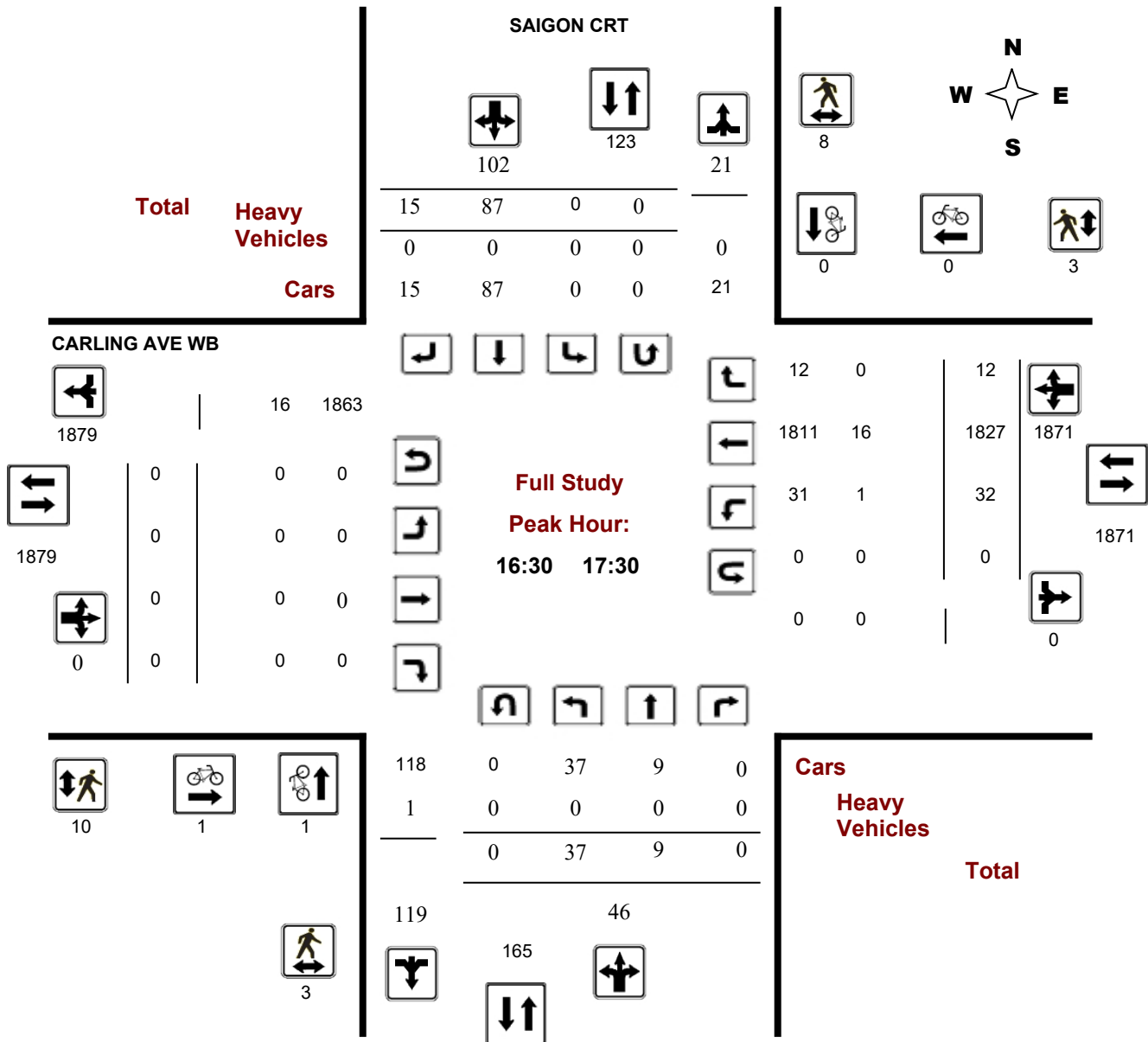
Survey Date: Thursday, April 05, 2018

WO No: 37689

Start Time: 07:00

Device: Miovision

Full Study Peak Hour Diagram



Turning Movement Count - Peak Hour Diagram

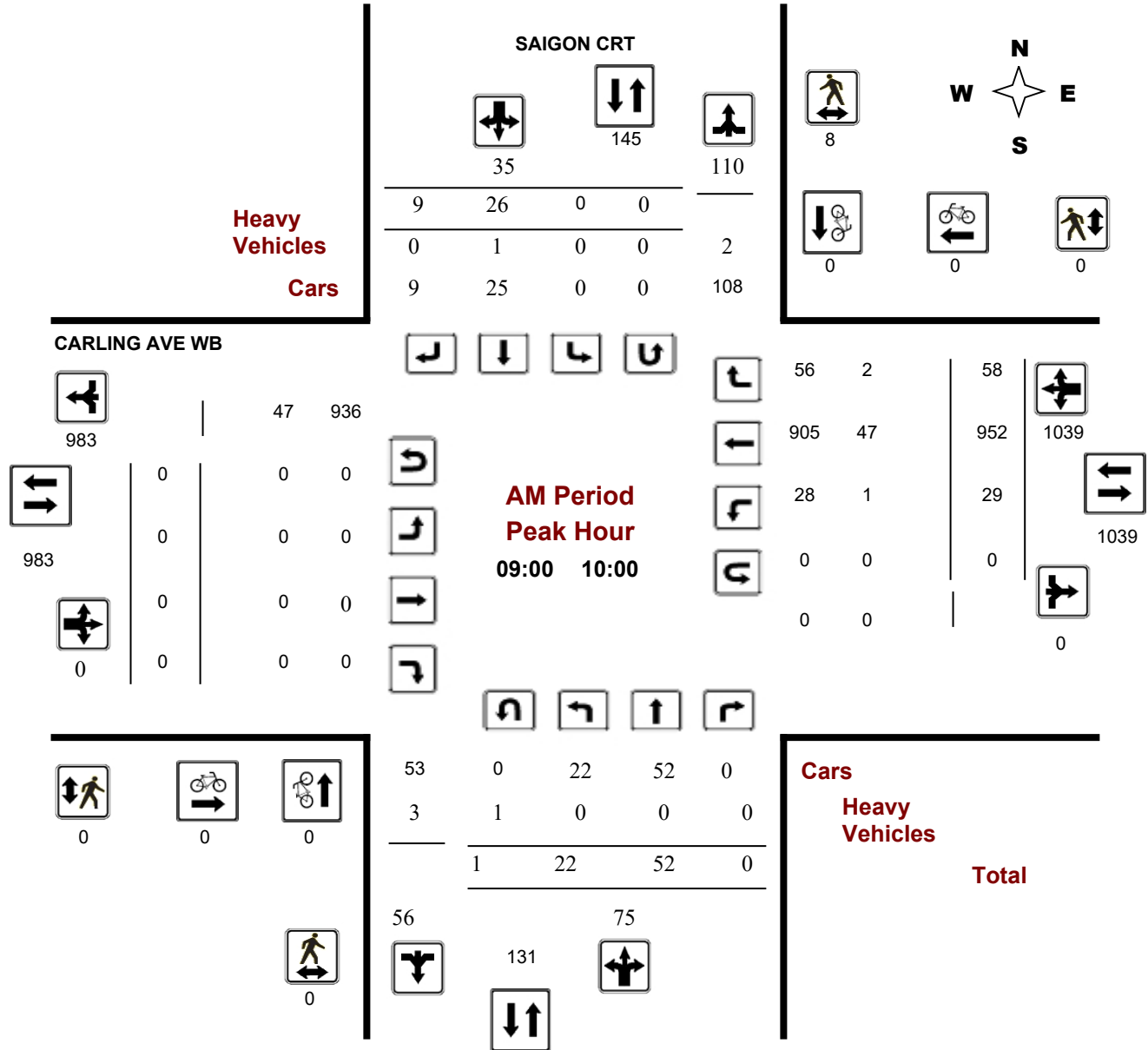
CARLING AVE WB @ SAIGON CRT

Survey Date: Thursday, April 05, 2018

Start Time: 07:00

WO No: 37689

Device: Miovision



Turning Movement Count - Peak Hour Diagram

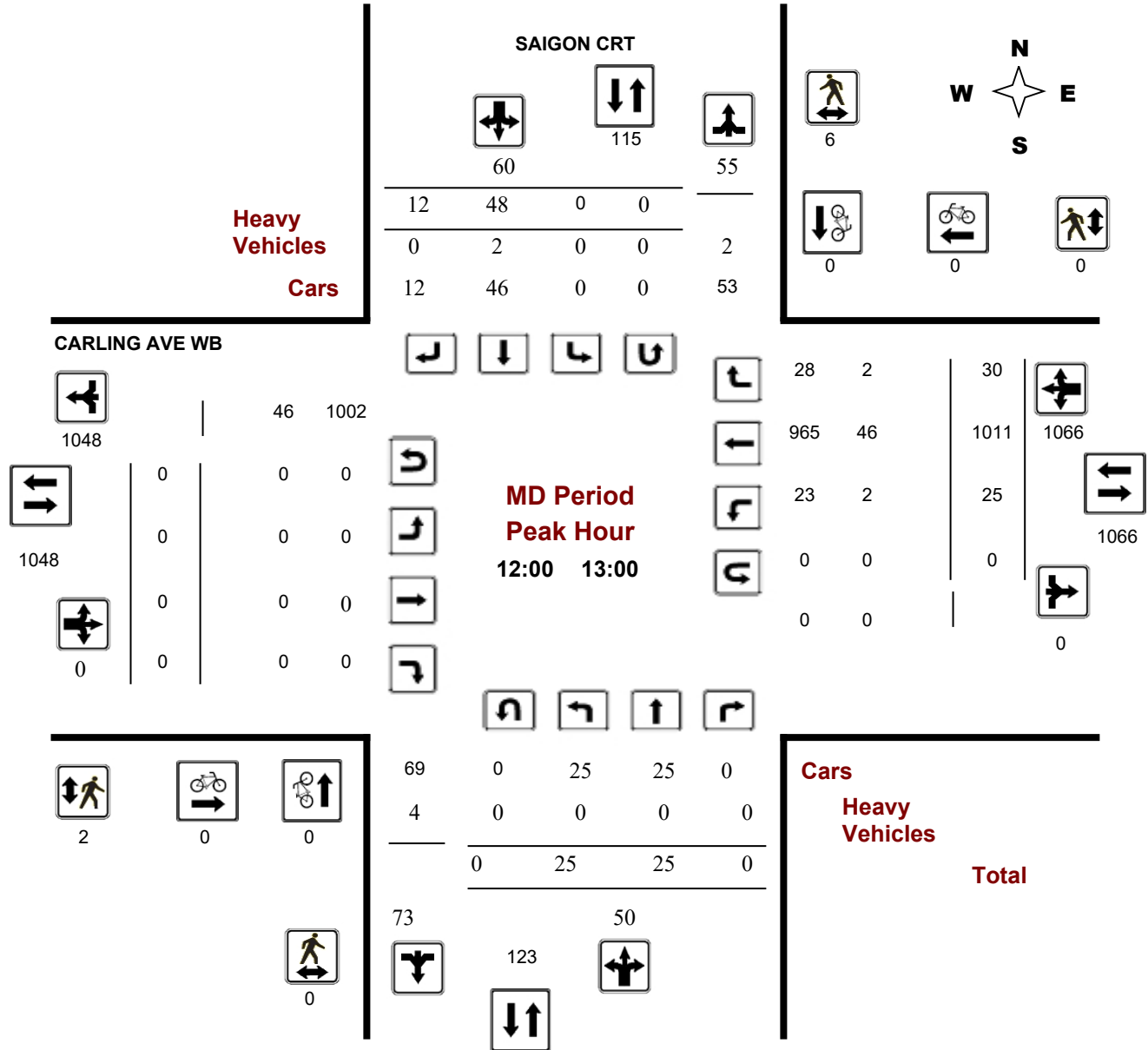
CARLING AVE WB @ SAIGON CRT

Survey Date: Thursday, April 05, 2018

Start Time: 07:00

WO No: 37689

Device: Miovision



Comments

Turning Movement Count - Peak Hour Diagram

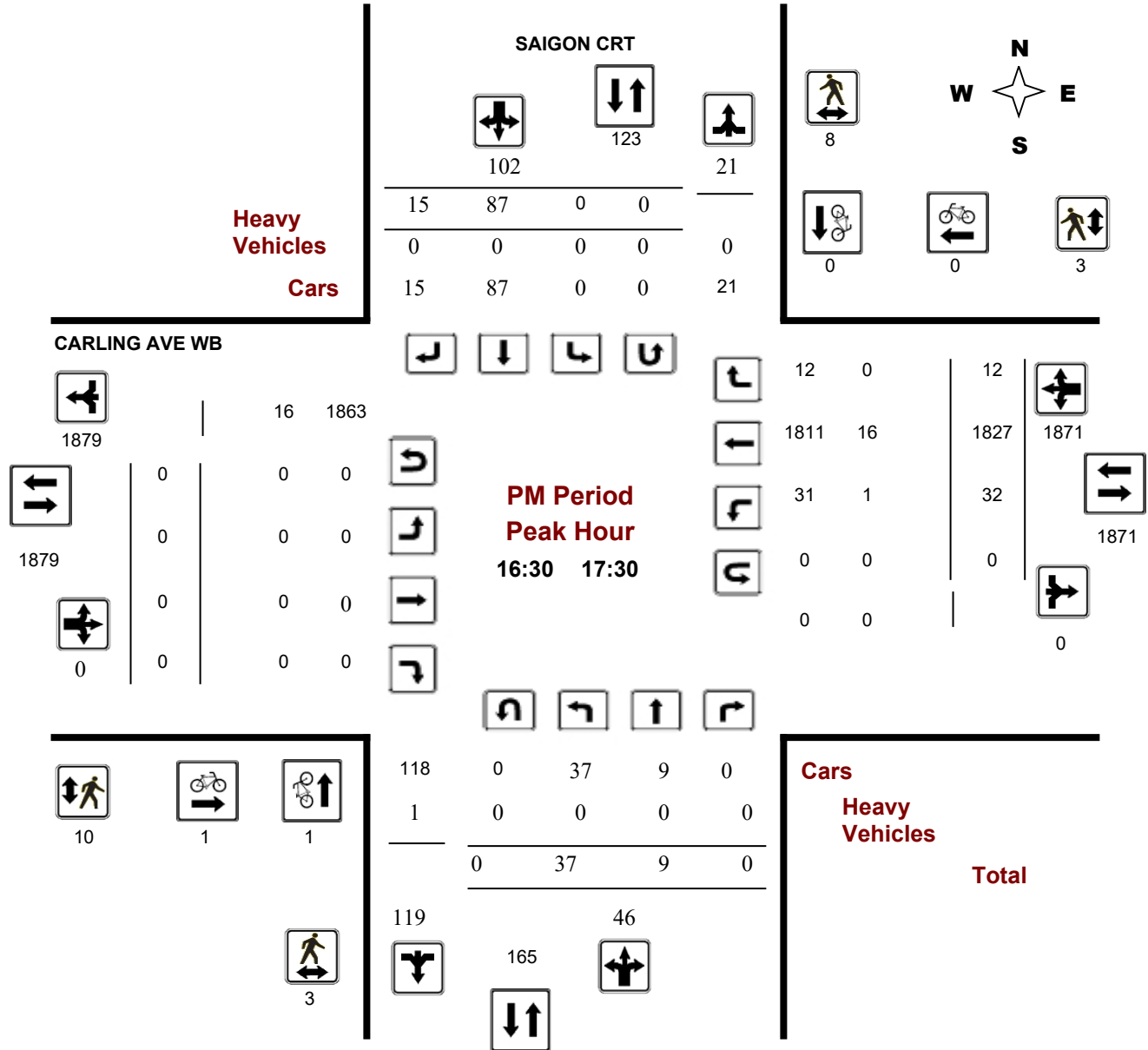
CARLING AVE WB @ SAIGON CRT

Survey Date: Thursday, April 05, 2018

Start Time: 07:00

WO No: 37689

Device: Miovision





Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARLING AVE WB @ SAIGON CRT

Survey Date: Thursday, April 05, 2018

WO No: 37689

Start Time: 07:00

Device: Miovision

Full Study Summary (8 HR Standard)

Survey Date: Thursday, April 05, 2018

Total Observed U-Turns

AADT Factor

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

.90

SAIGON CRT

CARLING AVE WB

Period	SAIGON CRT Northbound					SAIGON CRT Southbound					CARLING AVE WB Eastbound					CARLING AVE WB Westbound					Grand Total
	LT	ST	RT	NB TOT	STR TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	STR TOT	LT	ST	RT	WB TOT	STR TOT	
07:00 08:00	19	55	0	74	89	0	13	2	15	89	0	0	0	0	0	10	610	55	675	675	764
08:00 09:00	27	80	0	107	120	0	11	2	13	120	0	0	0	0	0	32	801	84	917	917	1037
09:00 10:00	22	52	0	74	109	0	26	9	35	109	0	0	0	0	0	29	952	58	1039	1039	1148
11:30 12:30	22	15	0	37	94	0	47	10	57	94	0	0	0	0	0	22	999	31	1052	1052	1146
12:30 13:30	32	28	0	60	101	0	34	7	41	101	0	0	0	0	0	30	998	32	1060	1060	1161
15:00 16:00	22	5	0	27	85	0	53	5	58	85	0	0	0	0	0	28	1420	17	1465	1465	1550
16:00 17:00	32	9	0	41	133	0	75	17	92	133	0	0	0	0	0	26	1784	14	1824	1824	1957
17:00 18:00	29	7	0	36	113	0	74	3	77	113	0	0	0	0	0	28	1710	5	1743	1743	1856
Sub Total	205	251	0	456	844	0	333	55	388	844	0	0	0	0	0	205	9274	296	9775	9775	10619
U Turns				1	1				0	1				0					0	0	1
Total	205	251	0	457	845	0	333	55	388	845	0	0	0	0	0	205	9274	296	9775	9775	10620
EQ 12Hr	285	349	0	635	1175	0	463	76	539	1175	0	0	0	0	0	285	12891	411	13587	13587	14762
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.														1.39							
AVG 12Hr	242	296	0	539	1058	0	393	65	457	1058	0	0	0	0	0	242	10934	349	11525	12228	13286
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.														0.9							
AVG 24Hr	317	388	0	706	1305	0	514	85	599	1305	0	0	0	0	0	317	14324	457	15097	15097	16402
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

CARLING AVE WB @ SAIGON CRT

Survey Date: Thursday, April 05, 2018

WO No: 37689

Start Time: 07:00

Device: Miovision

Full Study 15 Minute Increments

SAIGON CRT

CARLING AVE WB

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	6	0	8	0	3	0	3	35	0	0	0	0	1	117	14	132	35	143
07:15 07:30	4	16	0	20	0	6	1	7	66	0	0	0	0	4	125	13	142	66	169
07:30 07:45	5	16	0	21	0	1	1	2	52	0	0	0	0	2	161	10	173	52	196
07:45 08:00	8	17	0	25	0	3	0	3	69	0	0	0	0	3	207	18	228	69	256
08:00 08:15	5	13	0	18	0	3	0	3	54	0	0	0	0	4	199	13	216	54	237
08:15 08:30	7	22	0	29	0	3	1	4	93	0	0	0	0	11	200	24	235	93	268
08:30 08:45	8	21	0	29	0	1	1	2	93	0	0	0	0	9	171	31	211	93	242
08:45 09:00	7	24	0	31	0	4	0	4	87	0	0	0	0	8	231	16	255	87	290
09:00 09:15	6	16	0	22	0	5	2	7	76	0	0	0	0	8	222	18	248	76	277
09:15 09:30	7	18	0	25	0	7	2	9	84	0	0	0	0	10	222	15	247	84	281
09:30 09:45	5	12	0	18	0	8	2	10	63	0	0	0	0	3	253	11	267	63	295
09:45 10:00	4	6	0	10	0	6	3	9	53	0	0	0	0	8	255	14	277	53	296
11:30 11:45	5	4	0	9	0	13	2	15	54	0	0	0	0	6	241	7	254	54	278
11:45 12:00	5	2	0	7	0	5	0	5	35	0	0	0	0	6	258	10	274	35	286
12:00 12:15	8	1	0	9	0	13	1	14	51	0	0	0	0	6	270	8	284	51	307
12:15 12:30	4	8	0	12	0	16	7	23	69	0	0	0	0	4	230	6	240	69	275
12:30 12:45	6	9	0	15	0	13	2	15	68	0	0	0	0	9	254	7	270	68	300
12:45 13:00	7	7	0	14	0	6	2	8	50	0	0	0	0	6	257	9	272	50	294
13:00 13:15	6	5	0	11	0	4	1	5	38	0	0	0	0	4	249	9	262	38	278
13:15 13:30	13	7	0	20	0	11	2	13	69	0	0	0	0	11	238	7	256	69	289
15:00 15:15	3	1	0	4	0	14	1	15	46	0	0	0	0	7	324	5	336	46	355
15:15 15:30	5	1	0	6	0	9	0	9	37	0	0	0	0	10	336	2	348	37	363
15:30 15:45	6	0	0	6	0	11	2	13	39	0	0	0	0	5	402	4	411	39	430
15:45 16:00	8	3	0	11	0	19	2	21	66	0	0	0	0	6	358	6	370	66	402
16:00 16:15	4	2	0	6	0	24	1	25	66	0	0	0	0	4	407	5	416	66	447
16:15 16:30	9	1	0	10	0	13	3	16	46	0	0	0	0	4	438	2	444	46	470
16:30 16:45	8	5	0	13	0	19	7	26	74	0	0	0	0	6	481	5	492	74	531
16:45 17:00	11	1	0	12	0	19	6	25	71	0	0	0	0	12	458	2	472	71	509
17:00 17:15	7	2	0	9	0	29	1	30	79	0	0	0	0	7	426	2	435	79	474
17:15 17:30	11	1	0	12	0	20	1	21	64	0	0	0	0	7	462	3	472	64	505
17:30 17:45	5	4	0	9	0	18	0	18	56	0	0	0	0	7	460	0	467	56	494
17:45 18:00	6	0	0	6	0	7	1	8	28	0	0	0	0	7	362	0	369	28	383
Total:	205	251	0	457	0	333	55	388	1931	0	0	0	0	205	9274	296	9775	1931	10,620

Note: U-Turns are included in Totals.



Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARLING AVE WB @ SAIGON CRT

Survey Date: Thursday, April 05, 2018

WO No: 37689

Start Time: 07:00

Device: Miovision

Full Study Cyclist Volume

Time Period	SAIGON CRT			CARLING AVE WB			Grand Total
	Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	
07:00 07:15	0	0	0	0	0	0	0
07:15 07:30	0	0	0	0	0	0	0
07:30 07:45	0	0	0	0	0	0	0
07:45 08:00	0	1	1	0	1	1	2
08:00 08:15	0	0	0	0	0	0	0
08:15 08:30	0	0	0	0	0	0	0
08:30 08:45	0	1	1	0	0	0	1
08:45 09:00	0	0	0	0	0	0	0
09:00 09:15	0	0	0	0	0	0	0
09:15 09:30	0	0	0	0	0	0	0
09:30 09:45	0	0	0	0	0	0	0
09:45 10:00	0	0	0	0	0	0	0
11:30 11:45	0	0	0	0	1	1	1
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	1	0	1	1
13:15 13:30	0	0	0	1	0	1	1
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	1	0	1	0	0	0	1
16:00 16:15	0	0	0	0	0	0	0
16:15 16:30	0	0	0	0	0	0	0
16:30 16:45	0	0	0	0	0	0	0
16:45 17:00	0	0	0	0	0	0	0
17:00 17:15	0	0	0	1	0	1	1
17:15 17:30	1	0	1	0	0	0	1
17:30 17:45	1	0	1	0	0	0	1
17:45 18:00	0	0	0	0	1	1	1
Total	3	2	5	3	3	6	11



Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARLING AVE WB @ SAIGON CRT

Survey Date: Thursday, April 05, 2018

WO No: 37689

Start Time: 07:00

Device: Miovision

Full Study Pedestrian Volume

SAIGON CRT

CARLING AVE WB

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	1	1	2	0	2	3
07:15 07:30	0	0	0	0	0	0	0
07:30 07:45	0	1	1	1	0	1	2
07:45 08:00	0	2	2	1	0	1	3
08:00 08:15	0	2	2	1	0	1	3
08:15 08:30	0	0	0	4	0	4	4
08:30 08:45	0	1	1	2	0	2	3
08:45 09:00	0	6	6	1	0	1	7
09:00 09:15	0	1	1	0	0	0	1
09:15 09:30	0	3	3	0	0	0	3
09:30 09:45	0	3	3	0	0	0	3
09:45 10:00	0	1	1	0	0	0	1
11:30 11:45	0	1	1	0	0	0	1
11:45 12:00	0	2	2	1	0	1	3
12:00 12:15	0	2	2	0	0	0	2
12:15 12:30	0	1	1	1	0	1	2
12:30 12:45	0	2	2	1	0	1	3
12:45 13:00	0	1	1	0	0	0	1
13:00 13:15	0	3	3	1	0	1	4
13:15 13:30	0	1	1	2	0	2	3
15:00 15:15	0	2	2	1	0	1	3
15:15 15:30	0	0	0	0	0	0	0
15:30 15:45	0	2	2	1	0	1	3
15:45 16:00	0	1	1	1	0	1	2
16:00 16:15	0	3	3	0	0	0	3
16:15 16:30	0	0	0	2	0	2	2
16:30 16:45	0	3	3	2	0	2	5
16:45 17:00	0	3	3	1	0	1	4
17:00 17:15	2	2	4	4	2	6	10
17:15 17:30	1	0	1	3	1	4	5
17:30 17:45	0	5	5	2	0	2	7
17:45 18:00	0	2	2	4	0	4	6
Total	3	57	60	39	3	42	102



Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARLING AVE WB @ SAIGON CRT

Survey Date: Thursday, April 05, 2018

WO No: 37689

Start Time: 07:00

Device: Miovision

Full Study Heavy Vehicles

SAIGON CRT

CARLING AVE WB

Northbound

Southbound

Eastbound

Westbound

Time Period	Northbound			N TOT	Southbound			S TOT	STR TOT	Eastbound			E TOT	Westbound			W TOT	STR TOT	Grand Total
	LT	ST	RT		LT	ST	RT			LT	ST	RT		LT	ST	RT			
07:00 07:15	0	0	0	0	0	0	0	0	0	0	0	0	7	0	7	0	7	14	7
07:15 07:30	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0	3	6	3
07:30 07:45	0	0	0	0	0	0	0	0	0	0	0	0	6	0	6	0	6	12	6
07:45 08:00	0	0	0	0	0	0	0	1	1	0	0	0	11	0	11	1	12	23	12
08:00 08:15	0	0	0	0	0	0	0	0	0	0	0	0	15	0	15	0	15	30	15
08:15 08:30	0	0	0	0	0	0	0	0	0	0	0	0	13	0	13	0	13	26	13
08:30 08:45	0	0	0	1	0	1	0	1	2	0	0	0	5	0	5	0	5	10	6
08:45 09:00	0	0	0	0	0	0	0	1	1	0	0	0	8	0	8	1	9	17	9
09:00 09:15	0	0	0	0	0	0	0	0	0	0	0	0	8	0	8	0	8	16	8
09:15 09:30	0	0	0	0	0	0	0	0	0	0	0	0	10	0	10	0	10	20	10
09:30 09:45	0	0	0	3	0	1	0	3	6	0	0	0	16	0	16	2	18	34	20
09:45 10:00	0	0	0	1	0	0	0	0	1	0	0	0	13	1	13	0	14	27	14
11:30 11:45	0	0	0	0	0	0	0	0	0	0	0	0	9	0	9	0	9	18	9
11:45 12:00	0	0	0	0	0	0	0	0	0	0	0	0	9	0	9	0	9	18	9
12:00 12:15	0	0	0	1	0	1	0	3	4	0	0	0	11	0	11	2	13	24	14
12:15 12:30	0	0	0	1	0	0	0	0	1	0	0	0	16	1	16	0	17	33	17
12:30 12:45	0	0	0	1	0	1	0	1	2	0	0	0	11	0	11	0	11	22	12
12:45 13:00	0	0	0	1	0	0	0	0	1	0	0	0	8	1	8	0	9	17	9
13:00 13:15	0	0	0	0	0	0	0	1	1	0	0	0	11	0	11	1	12	23	12
13:15 13:30	0	0	0	1	0	1	0	1	2	0	0	0	6	0	6	0	6	12	7
15:00 15:15	0	0	0	1	0	0	0	0	1	0	0	0	5	1	5	0	6	11	6
15:15 15:30	0	0	0	1	0	0	0	0	1	0	0	0	8	1	8	0	9	17	9
15:30 15:45	0	0	0	0	0	0	0	0	0	0	0	0	6	0	6	0	6	12	6
15:45 16:00	1	1	0	2	0	0	0	1	3	0	0	0	7	0	6	0	6	13	8
16:00 16:15	0	0	0	0	0	0	0	0	0	0	0	0	4	0	4	0	4	8	4
16:15 16:30	0	0	0	0	0	0	0	0	0	0	0	0	5	0	5	0	5	10	5
16:30 16:45	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3	0	3	6	3
16:45 17:00	0	0	0	1	0	0	0	0	1	0	0	0	5	1	5	0	6	11	6
17:00 17:15	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	2	4	2
17:15 17:30	0	0	0	0	0	0	0	0	0	0	0	0	6	0	6	0	6	12	6
17:30 17:45	0	0	0	0	0	0	0	0	0	0	0	0	6	0	6	0	6	12	6
17:45 18:00	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	2	4	2
Total: None	1	1	0	15	0	5	0	13	28	0	0	0	255	6	254	7	267	522	275



Transportation Services - Traffic Services

Turning Movement Count - Study Results

CARLING AVE WB @ SAIGON CRT

Survey Date: Thursday, April 05, 2018

WO No: 37689

Start Time: 07:00

Device: Miovision

Full Study 15 Minute U-Turn Total

SAIGON CRT

CARLING AVE WB

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

Turning Movement Count - Study Results

CLYDE AVE @ DOHENY ST

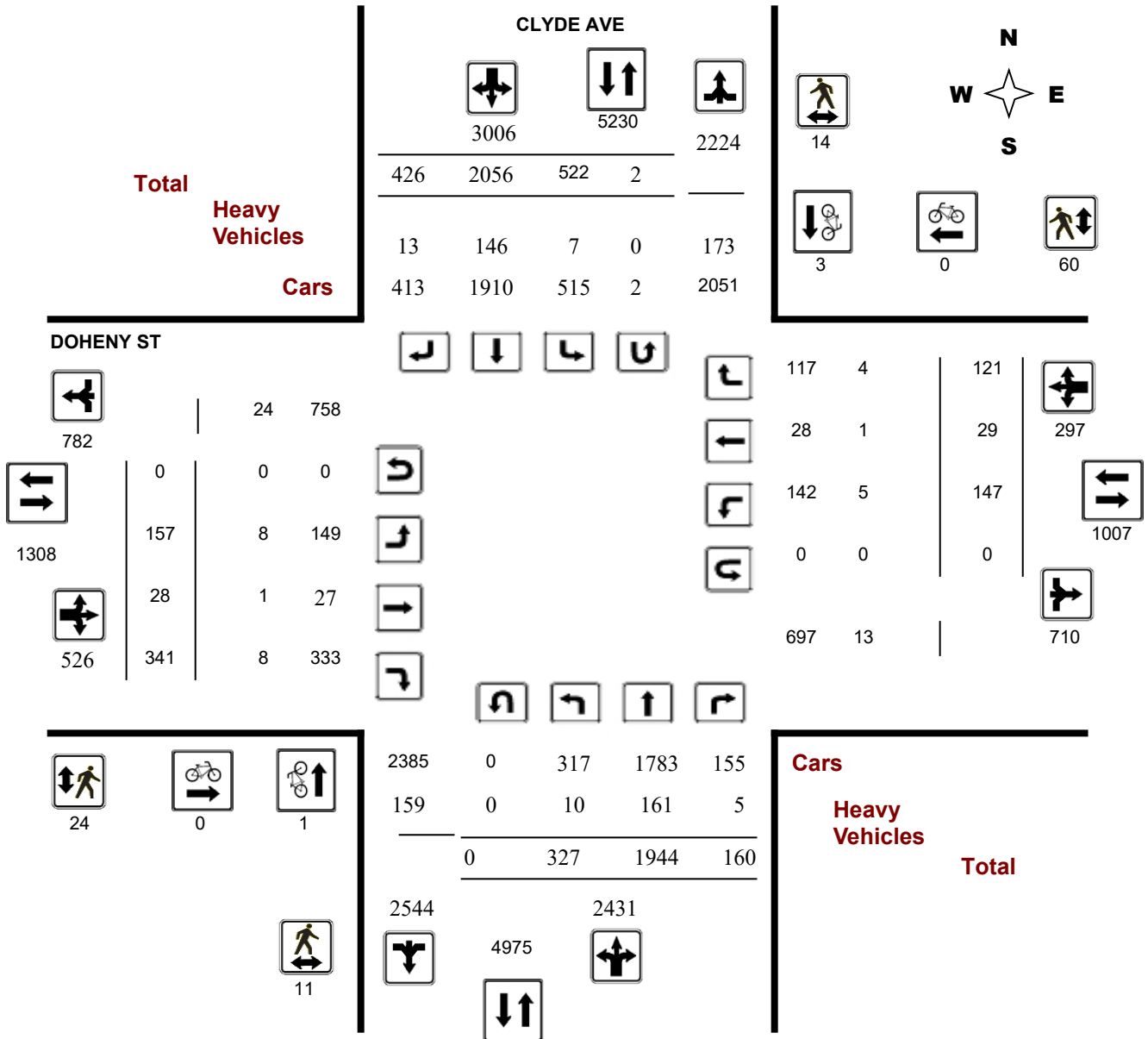
Survey Date: Wednesday, February 27, 2019

WO No: 38266

Start Time: 07:00

Device: Miovision

Full Study Diagram



Turning Movement Count - Study Results

CLYDE AVE @ DOHENY ST

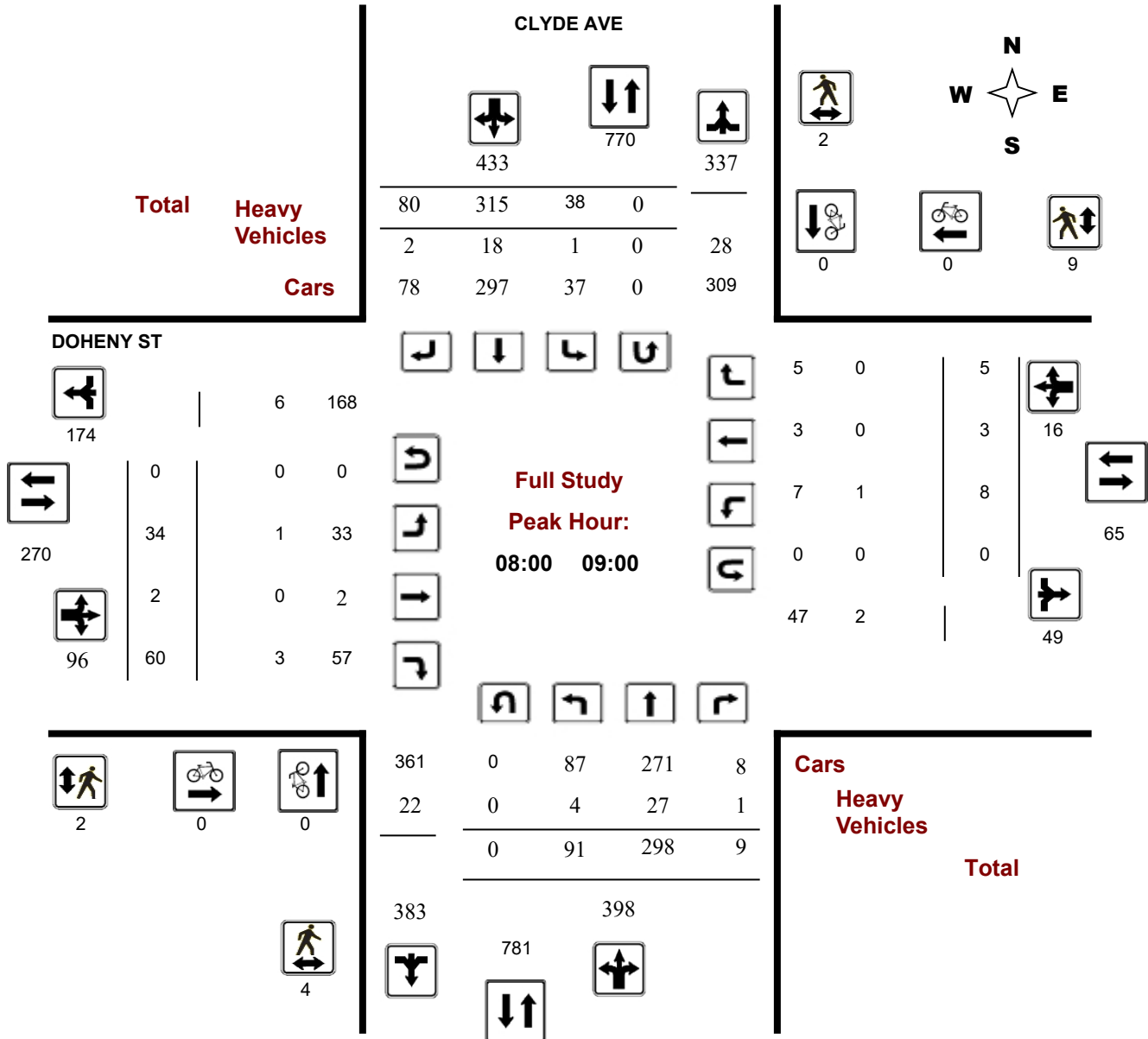
Survey Date: Wednesday, February 27, 2019

WO No: 38266

Start Time: 07:00

Device: Miovision

Full Study Peak Hour Diagram



Turning Movement Count - Peak Hour Diagram

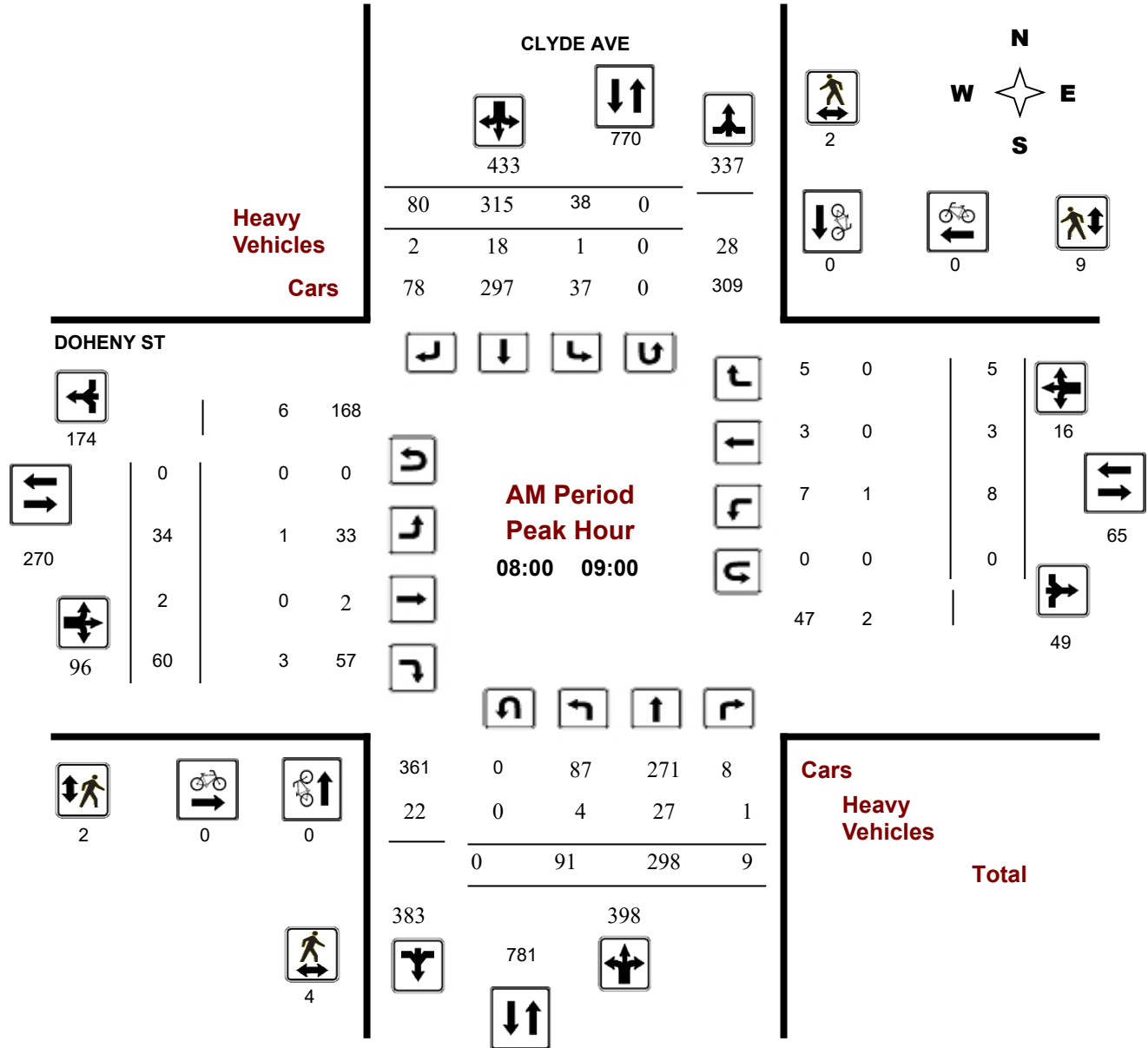
CLYDE AVE @ DOHENY ST

Survey Date: Wednesday, February 27, 2019

Start Time: 07:00

WO No: 38266

Device: Miovision



Turning Movement Count - Peak Hour Diagram

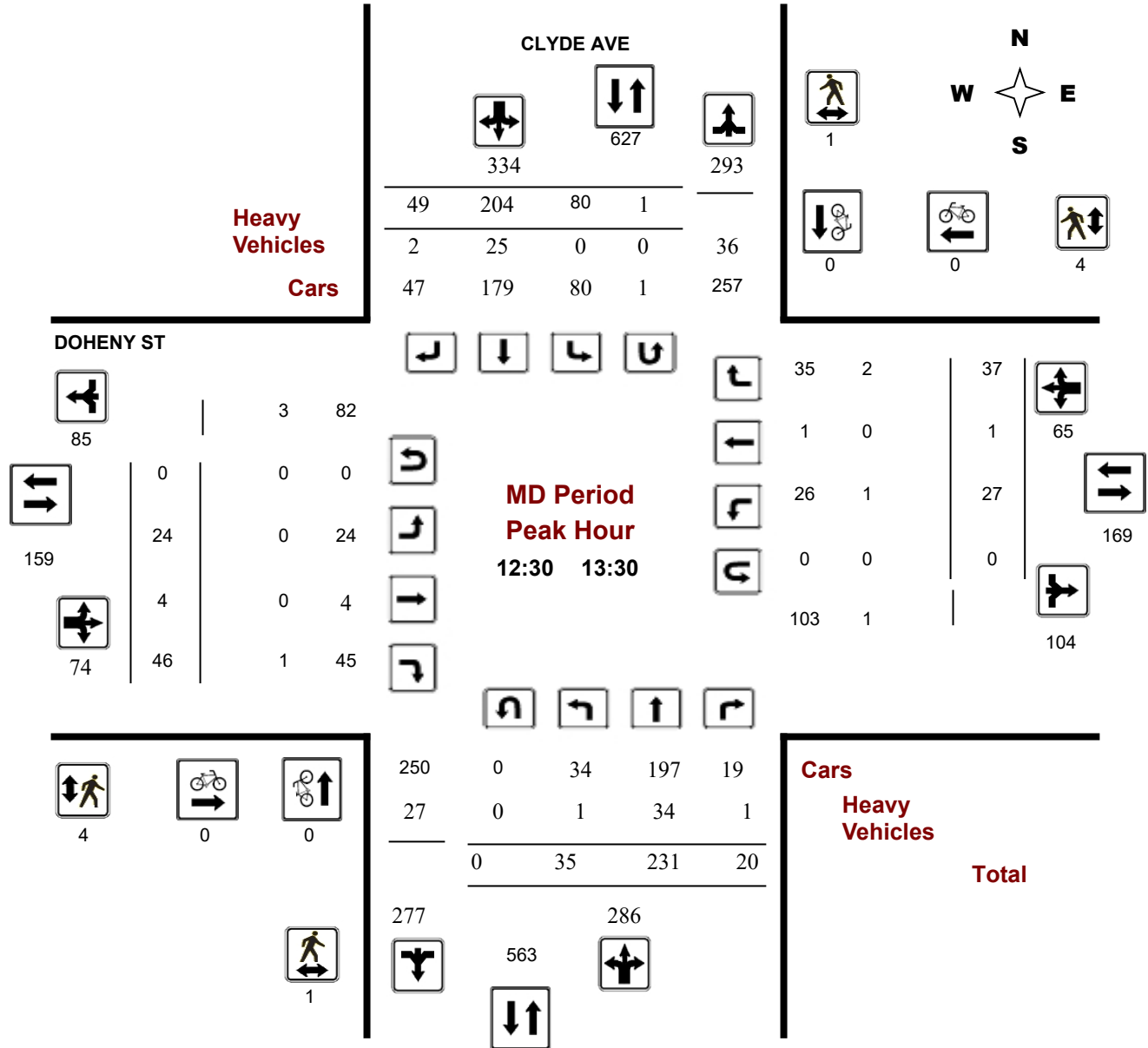
CLYDE AVE @ DOHENY ST

Survey Date: Wednesday, February 27, 2019

Start Time: 07:00

WO No: 38266

Device: Miovision



Comments

Turning Movement Count - Peak Hour Diagram

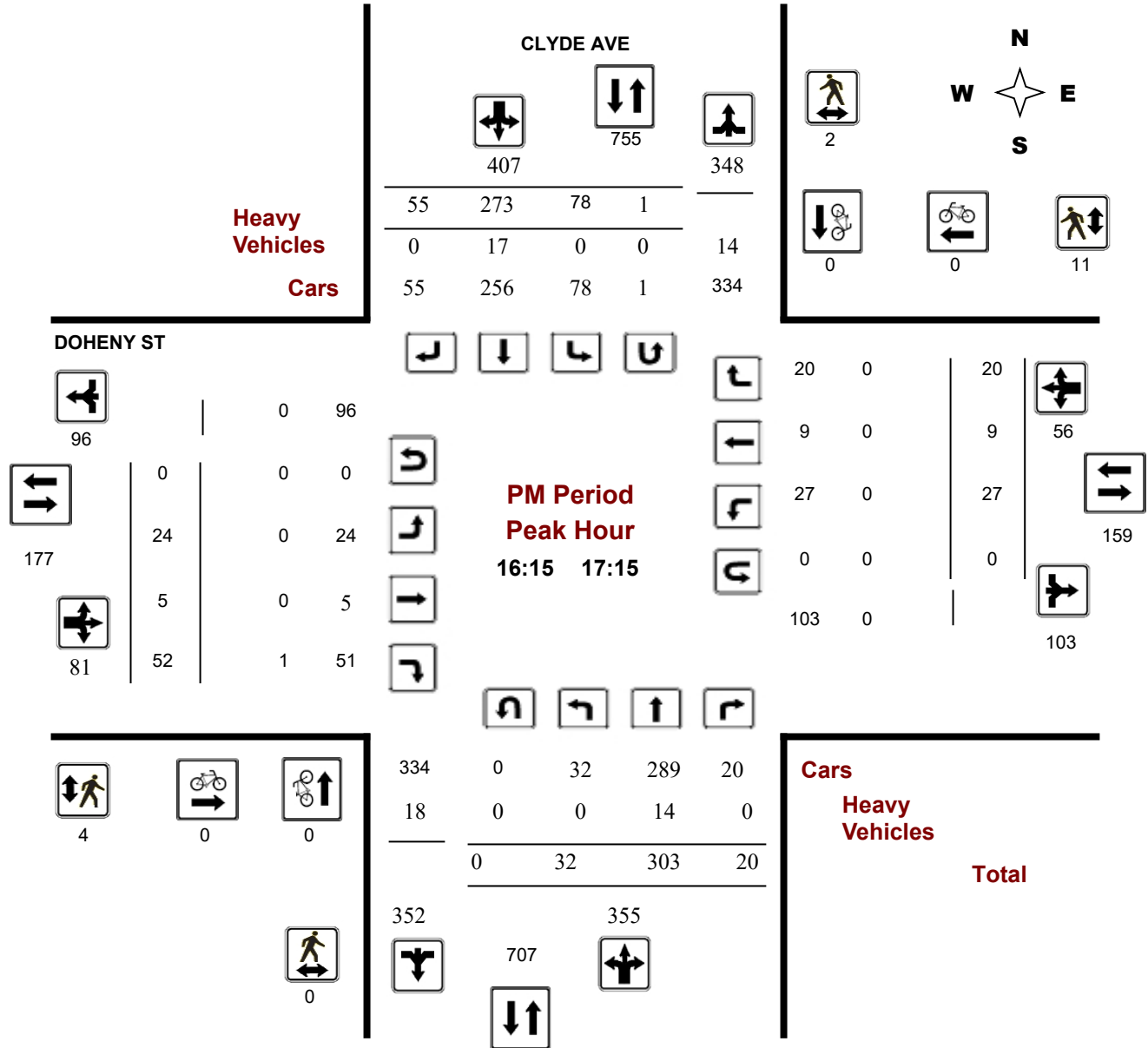
CLYDE AVE @ DOHENY ST

Survey Date: Wednesday, February 27, 2019

Start Time: 07:00

WO No: 38266

Device: Miovision





Transportation Services - Traffic Services

Turning Movement Count - Study Results

CLYDE AVE @ DOHENY ST

Survey Date: Wednesday, February 27, 2019

WO No: 38266

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: 2
 Eastbound: 0 Westbound: 0

AADT Factor
 1.00

Period	CLYDE AVE									DOHENY ST									Grand Total
	Northbound				Southbound					STR TOT	Eastbound			Westbound			WB TOT	STR TOT	
	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	LT		ST	RT	EB TOT	LT	ST	RT			
07:00 08:00	36	166	7	209	18	301	47	366	575	8	3	29	40	4	2	3	9	49	624
08:00 09:00	91	298	9	398	38	315	80	433	831	34	2	60	96	8	3	5	16	112	943
09:00 10:00	40	206	18	264	73	256	58	387	651	17	4	28	49	14	6	11	31	80	731
11:30 12:30	31	202	31	264	89	217	60	366	630	20	5	39	64	26	4	22	52	116	746
12:30 13:30	35	231	20	286	80	204	49	333	619	24	4	46	74	27	1	37	65	139	758
15:00 16:00	34	267	37	338	70	265	48	383	721	16	4	50	70	22	2	14	38	108	829
16:00 17:00	34	305	18	357	68	278	52	398	755	20	5	52	77	27	10	13	50	127	882
17:00 18:00	26	269	20	315	86	220	32	338	653	18	1	37	56	19	1	16	36	92	745
Sub Total	327	1944	160	2431	522	2056	426	3004	5435	157	28	341	526	147	29	121	297	823	6258
U Turns				0				2	2				0				0	0	2
Total	327	1944	160	2431	522	2056	426	3006	5437	157	28	341	526	147	29	121	297	823	6260
EQ 12Hr	455	2702	222	3379	726	2858	592	4178	7557	218	39	474	731	204	40	168	413	1144	8701
Note: These values are calculated by multiplying the totals by the appropriate expansion factor.													1.39						
AVG 12Hr	455	2702	222	3379	726	3744	776	4178	7557	218	39	474	731	204	40	168	413	1144	8701
Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor.													1.00						
AVG 24Hr	596	3540	291	4426	951	4905	1017	5473	9900	286	51	621	958	267	52	220	541	1499	11398
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

CLYDE AVE @ DOHENY ST

Survey Date: Wednesday, February 27, 2019

WO No: 38266

Start Time: 07:00

Device: Miovision

Full Study 15 Minute Increments

CLYDE AVE

DOHENY ST

Northbound

Southbound

Eastbound

Westbound

Time Period	LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT	W TOT	STR TOT	Grand Total
07:00 07:15	7	35	1	43	0	66	12	78	121	2	0	6	8	0	0	0	0	8	129
07:15 07:30	10	37	1	48	3	81	6	90	138	1	1	5	7	0	1	0	1	8	146
07:30 07:45	5	39	2	46	5	81	7	93	139	1	1	7	9	3	0	1	4	13	152
07:45 08:00	14	55	3	72	10	73	22	105	177	4	1	11	16	1	1	2	4	20	197
08:00 08:15	28	78	1	107	11	87	18	116	223	9	2	12	23	0	0	1	1	24	247
08:15 08:30	23	79	2	104	8	79	24	111	215	3	0	16	19	1	1	1	3	22	237
08:30 08:45	19	71	3	93	6	72	23	101	194	9	0	16	25	3	0	1	4	29	223
08:45 09:00	21	70	3	94	13	77	15	105	199	13	0	16	29	4	2	2	8	37	236
09:00 09:15	8	54	5	67	21	82	17	120	187	8	2	11	21	1	1	3	5	26	213
09:15 09:30	12	55	5	72	14	58	18	90	162	3	0	2	5	6	3	3	12	17	179
09:30 09:45	9	49	2	60	17	69	10	96	156	3	0	11	14	3	0	4	7	21	177
09:45 10:00	11	48	6	65	21	47	13	81	146	3	2	4	9	4	2	1	7	16	162
11:30 11:45	5	49	12	66	22	57	14	93	159	7	1	15	23	6	0	9	15	38	197
11:45 12:00	15	46	7	68	21	64	14	99	167	6	2	4	12	7	3	4	14	26	193
12:00 12:15	8	58	7	73	24	46	16	86	159	4	1	11	16	7	1	6	14	30	189
12:15 12:30	3	49	5	57	22	50	16	88	145	3	1	9	13	6	0	3	9	22	167
12:30 12:45	5	60	4	69	19	47	12	79	148	5	3	14	22	6	0	10	16	38	186
12:45 13:00	10	50	6	66	16	46	9	71	137	7	0	8	15	7	0	5	12	27	164
13:00 13:15	14	71	4	89	23	57	16	96	185	7	0	11	18	9	1	12	22	40	225
13:15 13:30	6	50	6	62	22	54	12	88	150	5	1	13	19	5	0	10	15	34	184
15:00 15:15	4	82	9	95	16	56	6	78	173	2	1	15	18	3	1	3	7	25	198
15:15 15:30	4	59	12	75	17	75	17	109	184	3	1	8	12	4	0	6	10	22	206
15:30 15:45	11	62	8	81	23	68	11	102	183	3	1	10	14	9	0	2	11	25	208
15:45 16:00	15	64	8	87	14	66	14	94	181	8	1	17	26	6	1	3	10	36	217
16:00 16:15	7	82	3	92	19	73	7	99	191	4	0	15	19	9	1	1	11	30	221
16:15 16:30	10	71	4	85	18	71	23	113	198	5	3	11	19	5	2	4	11	30	228
16:30 16:45	6	77	5	88	16	61	15	92	180	7	2	16	25	6	3	1	10	35	215
16:45 17:00	11	75	6	92	15	73	7	95	187	4	0	10	14	7	4	7	18	32	219
17:00 17:15	5	80	5	90	29	68	10	107	197	8	0	15	23	9	0	8	17	40	237
17:15 17:30	13	76	4	93	16	58	6	80	173	6	0	8	14	2	0	3	5	19	192
17:30 17:45	6	63	8	77	18	46	8	72	149	2	0	7	9	4	1	3	8	17	166
17:45 18:00	2	50	3	55	23	48	8	79	134	2	1	7	10	4	0	2	6	16	150
Total:	327	1944	160	2431	522	2056	426	3006	5437	157	28	341	526	147	29	121	297	823	6,260

Note: U-Turns are included in Totals.



Transportation Services - Traffic Services

Turning Movement Count - Study Results

CLYDE AVE @ DOHENY ST

Survey Date: Wednesday, February 27, 2019

WO No: 38266

Start Time: 07:00

Device: Miovision

Full Study Cyclist Volume

Time Period	CLYDE AVE			DOHENY ST			Grand Total
	Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	
07:00 07:15	1	0	1	0	0	0	1
07:15 07:30	0	0	0	0	0	0	0
07:30 07:45	0	0	0	0	0	0	0
07:45 08:00	0	0	0	0	0	0	0
08:00 08:15	0	0	0	0	0	0	0
08:15 08:30	0	0	0	0	0	0	0
08:30 08:45	0	0	0	0	0	0	0
08:45 09:00	0	0	0	0	0	0	0
09:00 09:15	0	0	0	0	0	0	0
09:15 09:30	0	0	0	0	0	0	0
09:30 09:45	0	0	0	0	0	0	0
09:45 10:00	0	0	0	0	0	0	0
11:30 11:45	0	0	0	0	0	0	0
11:45 12:00	0	0	0	0	0	0	0
12:00 12:15	0	0	0	0	0	0	0
12:15 12:30	0	0	0	0	0	0	0
12:30 12:45	0	0	0	0	0	0	0
12:45 13:00	0	0	0	0	0	0	0
13:00 13:15	0	0	0	0	0	0	0
13:15 13:30	0	0	0	0	0	0	0
15:00 15:15	0	0	0	0	0	0	0
15:15 15:30	0	1	1	0	0	0	1
15:30 15:45	0	0	0	0	0	0	0
15:45 16:00	0	0	0	0	0	0	0
16:00 16:15	0	1	1	0	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	1	1	0	0	0	1
17:30 17:45	0	0	0	0	0	0	0
17:45 18:00	0	0	0	0	0	0	0
Total	1	3	4	0	0	0	4



Transportation Services - Traffic Services

Turning Movement Count - Study Results

CLYDE AVE @ DOHENY ST

Survey Date: Wednesday, February 27, 2019

WO No: 38266

Start Time: 07:00

Device: Miovision

Full Study Pedestrian Volume

CLYDE AVE

DOHENY ST

Time Period	NB Approach (E or W Crossing)	SB Approach (E or W Crossing)	Total	EB Approach (N or S Crossing)	WB Approach (N or S Crossing)	Total	Grand Total
07:00 07:15	0	0	0	1	2	3	3
07:15 07:30	0	0	0	1	3	4	4
07:30 07:45	0	0	0	0	2	2	2
07:45 08:00	0	0	0	0	2	2	2
08:00 08:15	0	0	0	0	1	1	1
08:15 08:30	2	0	2	0	1	1	3
08:30 08:45	2	2	4	2	4	6	10
08:45 09:00	0	0	0	0	3	3	3
09:00 09:15	0	0	0	2	2	4	4
09:15 09:30	0	1	1	0	1	1	2
09:30 09:45	0	1	1	0	2	2	3
09:45 10:00	0	0	0	1	1	2	2
11:30 11:45	0	0	0	0	3	3	3
11:45 12:00	0	1	1	1	0	1	2
12:00 12:15	0	0	0	0	1	1	1
12:15 12:30	0	2	2	1	2	3	5
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	2	1	3	3
13:15 13:30	1	1	2	2	3	5	7
15:00 15:15	2	1	3	2	3	5	8
15:15 15:30	1	1	2	3	4	7	9
15:30 15:45	2	0	2	0	2	2	4
15:45 16:00	1	0	1	1	1	2	3
16:00 16:15	0	1	1	1	4	5	6
16:15 16:30	0	0	0	1	1	2	2
16:30 16:45	0	1	1	2	4	6	7
16:45 17:00	0	0	0	1	4	5	5
17:00 17:15	0	1	1	0	2	2	3
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	0	0	0	1	1	1
Total	11	14	25	24	60	84	109



Transportation Services - Traffic Services

Turning Movement Count - Study Results

CLYDE AVE @ DOHENY ST

Survey Date: Wednesday, February 27, 2019

WO No: 38266

Start Time: 07:00

Device: Miovision

Full Study Heavy Vehicles

CLYDE AVE

DOHENY ST

Northbound

Southbound

Eastbound

Westbound

Time Period	Northbound			N TOT	Southbound			S TOT	STR TOT	Eastbound			E TOT	Westbound			W TOT	STR TOT	Grand Total
	LT	ST	RT		LT	ST	RT			LT	ST	RT		LT	ST	RT			
07:00 07:15	0	3	0	5	0	1	1	7	12	2	0	1	4	0	0	0	0	4	8
07:15 07:30	0	4	0	4	0	0	0	4	8	0	0	0	0	0	0	0	0	0	4
07:30 07:45	0	1	0	5	0	4	0	5	10	0	0	0	0	0	0	0	0	0	5
07:45 08:00	0	6	0	7	1	1	1	10	17	1	0	0	2	0	0	0	1	3	10
08:00 08:15	1	10	0	13	0	2	0	12	25	0	0	0	1	0	0	0	0	1	13
08:15 08:30	1	4	0	10	1	5	1	11	21	0	0	0	2	0	0	0	1	3	12
08:30 08:45	1	10	0	20	0	7	1	18	38	0	0	2	4	0	0	0	0	4	21
08:45 09:00	1	3	1	11	0	4	0	8	19	1	0	1	3	1	0	0	2	5	12
09:00 09:15	0	5	0	12	2	7	1	16	28	0	1	0	2	0	0	1	4	6	17
09:15 09:30	1	7	0	14	0	5	0	13	27	1	0	0	2	1	0	0	1	3	15
09:30 09:45	2	7	0	19	0	9	3	19	38	0	0	0	5	1	0	0	1	6	22
09:45 10:00	0	6	1	12	0	5	0	11	23	0	0	0	0	0	0	0	1	1	12
11:30 11:45	1	5	1	14	1	7	0	13	27	0	0	0	1	0	0	0	2	3	15
11:45 12:00	0	3	0	10	1	7	0	11	21	0	0	0	0	0	0	0	1	1	11
12:00 12:15	0	6	0	8	0	2	0	9	17	0	0	0	0	0	0	1	1	1	9
12:15 12:30	0	4	0	10	0	5	0	11	21	2	0	0	2	1	0	0	1	3	12
12:30 12:45	0	7	1	13	0	5	0	12	25	0	0	0	0	0	0	0	1	1	13
12:45 13:00	1	8	0	17	0	7	0	16	33	0	0	0	1	1	0	1	2	3	18
13:00 13:15	0	10	0	18	0	8	2	21	39	0	0	0	2	0	0	1	1	3	21
13:15 13:30	0	9	0	15	0	5	0	14	29	0	0	1	1	0	0	0	0	1	15
15:00 15:15	0	5	0	10	0	5	1	11	21	0	0	0	1	0	0	0	0	1	11
15:15 15:30	0	5	1	12	0	6	1	12	24	0	0	0	1	0	0	0	1	2	13
15:30 15:45	1	4	0	11	1	6	1	12	23	0	0	0	2	0	0	0	1	3	13
15:45 16:00	0	4	0	8	0	3	0	8	16	1	0	1	3	0	1	0	1	4	10
16:00 16:15	0	4	0	10	0	5	0	9	19	0	0	1	1	0	0	0	0	1	10
16:15 16:30	0	4	0	5	0	1	0	5	10	0	0	0	0	0	0	0	0	0	5
16:30 16:45	0	3	0	14	0	10	0	13	27	0	0	1	1	0	0	0	0	1	14
16:45 17:00	0	4	0	7	0	3	0	7	14	0	0	0	0	0	0	0	0	0	7
17:00 17:15	0	3	0	6	0	3	0	6	12	0	0	0	0	0	0	0	0	0	6
17:15 17:30	0	4	0	6	0	2	0	6	12	0	0	0	0	0	0	0	0	0	6
17:30 17:45	0	1	0	3	0	2	0	3	6	0	0	0	0	0	0	0	0	0	3
17:45 18:00	0	2	0	6	0	4	0	6	12	0	0	0	0	0	0	0	0	0	6
Total: None	10	161	5	335	7	146	13	339	674	8	1	8	41	5	1	4	23	64	369



Transportation Services - Traffic Services

Turning Movement Count - Study Results

CLYDE AVE @ DOHENY ST

Survey Date: Wednesday, February 27, 2019

WO No: 38266

Start Time: 07:00

Device: Miovision

Full Study 15 Minute U-Turn Total

CLYDE AVE

DOHENY ST

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

Turning Movement Count - Study Results

CLYDE AVE @ LAPERRIERE AVE

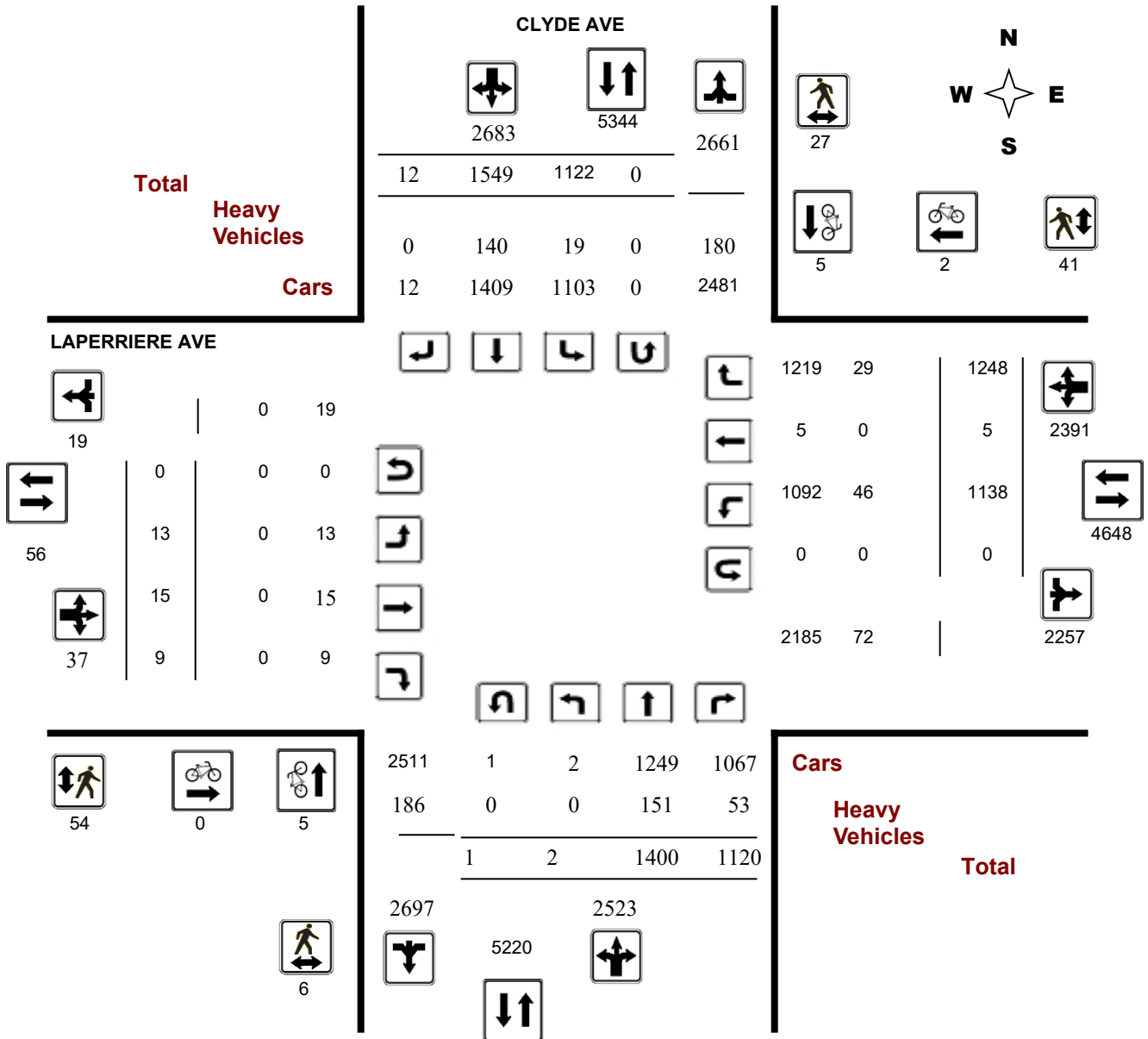
Survey Date: Wednesday, February 27, 2019

WO No: 38401

Start Time: 07:00

Device: Miovision

Full Study Diagram



Turning Movement Count - Study Results

CLYDE AVE @ LAPERRIERE AVE

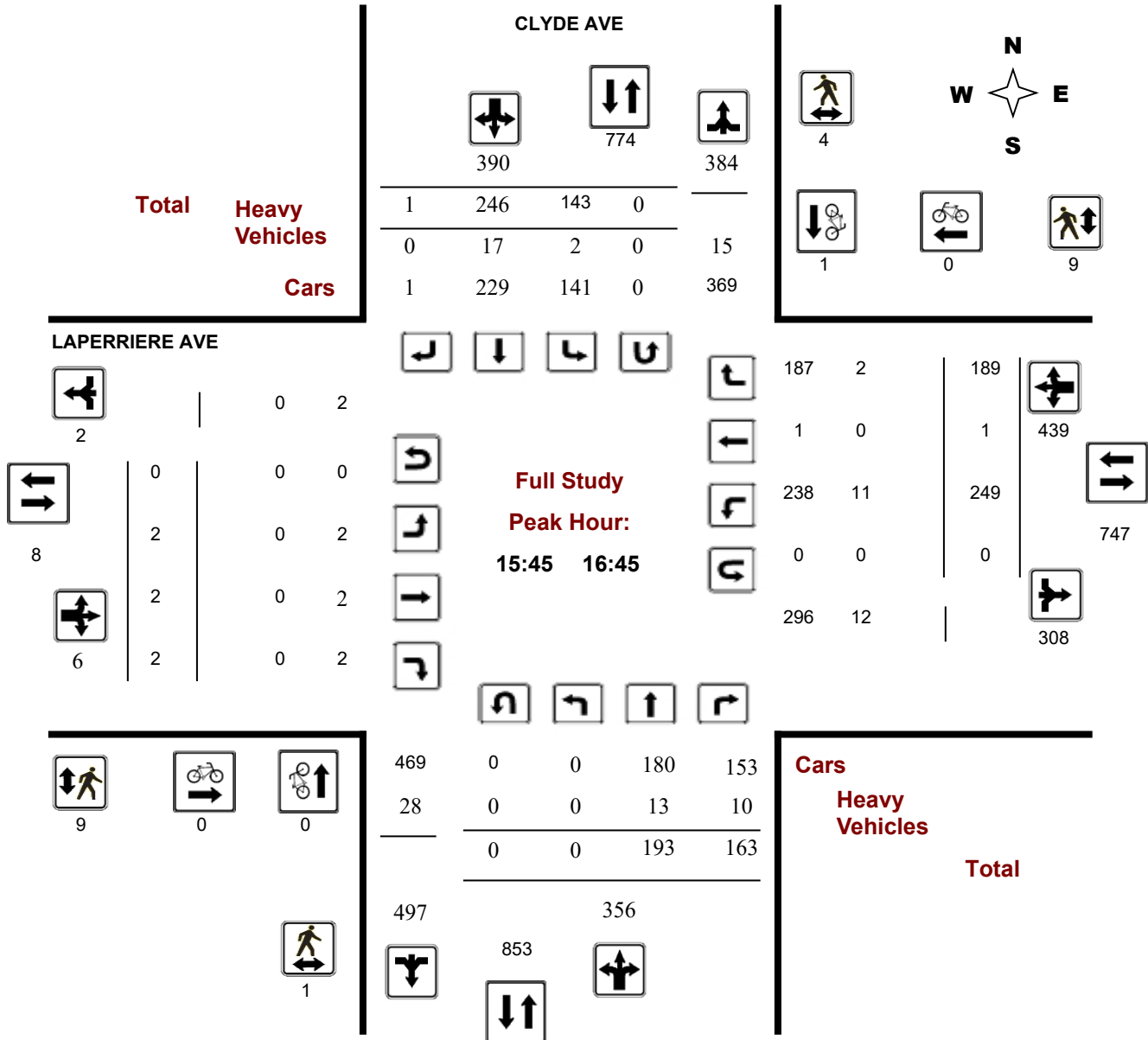
Survey Date: Wednesday, February 27, 2019

WO No: 38401

Start Time: 07:00

Device: Miovision

Full Study Peak Hour Diagram



Turning Movement Count - Peak Hour Diagram

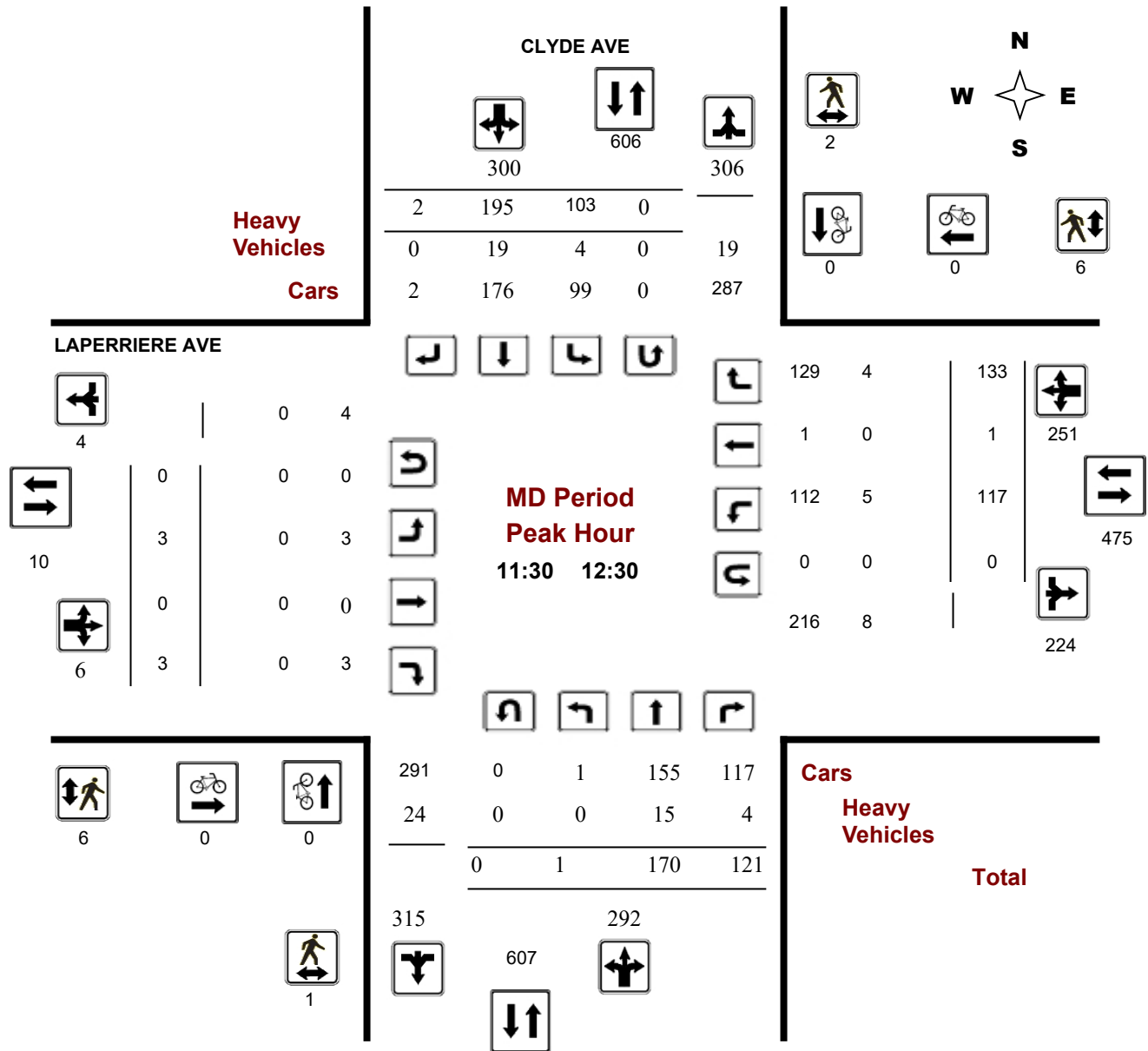
CLYDE AVE @ LAPERRIERE AVE

Survey Date: Wednesday, February 27, 2019

Start Time: 07:00

WO No: 38401

Device: Miovision



Turning Movement Count - Peak Hour Diagram

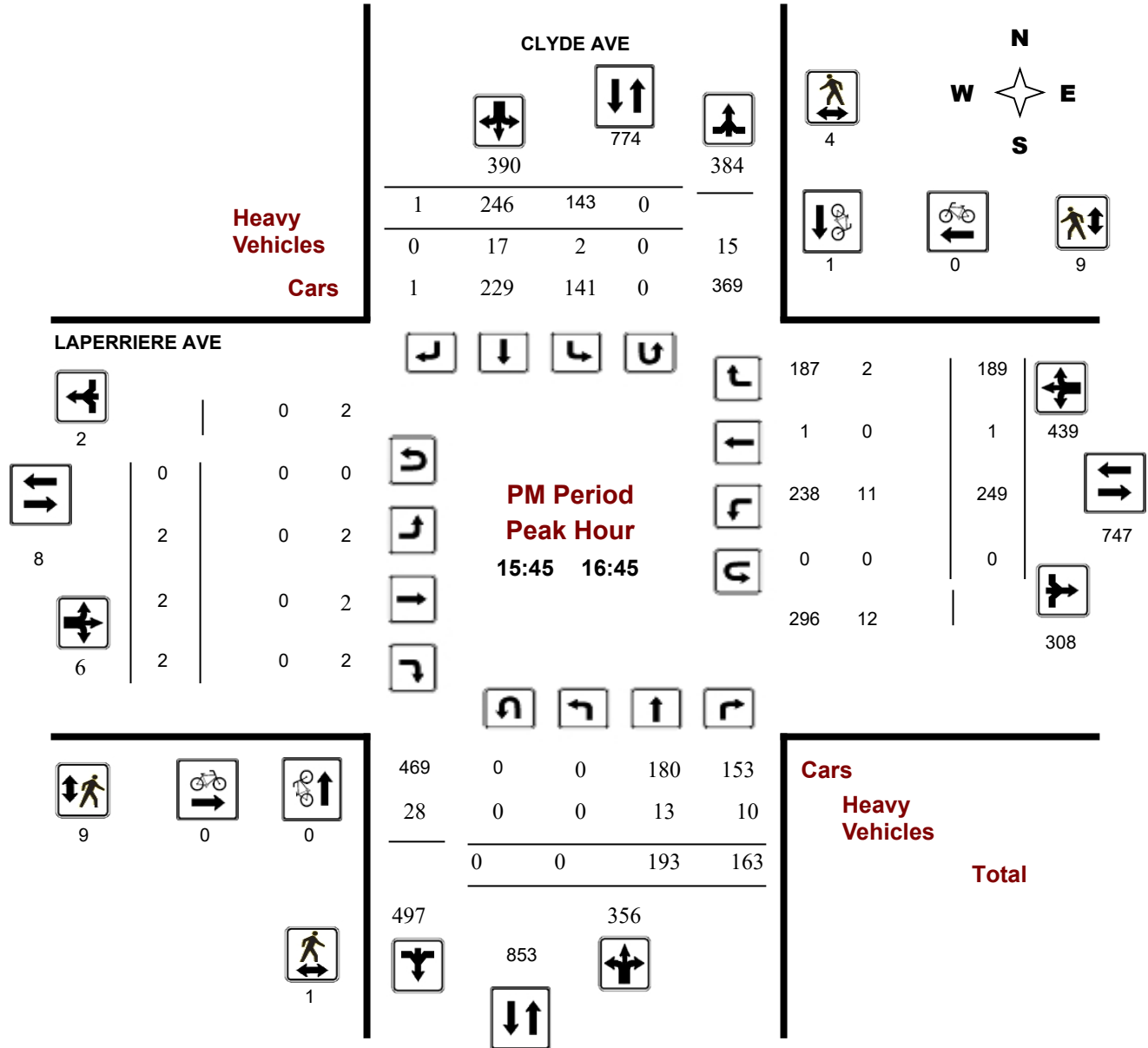
CLYDE AVE @ LAPERRIERE AVE

Survey Date: Wednesday, February 27, 2019

Start Time: 07:00

WO No: 38401

Device: Miovision





Transportation Services - Traffic Services

Turning Movement Count - Study Results

CLYDE AVE @ LAPERRIERE AVE

Survey Date: Wednesday, February 27, 2019

WO No: 38401

Start Time: 07:00

Device: Miovision

Full Study Summary (8 HR Standard)

Survey Date: Wednesday, February 27, 2019

Total Observed U-Turns
 Northbound: 1 Southbound: 0
 Eastbound: 0 Westbound: 0

AADT Factor
 1.00

CLYDE AVE

LAPERRIERE AVE

Period	Northbound					Southbound					Eastbound					Westbound					STR TOT	Grand Total
	LT	ST	RT	NB TOT	LT	ST	RT	SB TOT	STR TOT	LT	ST	RT	EB TOT	LT	ST	RT	WB TOT					
07:00 08:00	0	122	169	291	150	184	5	339	630	0	1	1	2	80	0	98	178	180	810			
08:00 09:00	0	212	172	384	189	189	0	378	762	0	0	0	0	128	0	235	363	363	1125			
09:00 10:00	0	172	142	314	134	178	1	313	627	1	6	0	7	103	0	128	231	238	865			
11:30 12:30	1	170	121	292	103	195	2	300	592	3	0	3	6	117	1	133	251	257	849			
12:30 13:30	1	167	115	283	118	173	3	294	577	0	1	3	4	110	2	143	255	259	836			
15:00 16:00	0	191	139	330	157	208	0	365	695	0	2	0	2	171	0	169	340	342	1037			
16:00 17:00	0	195	152	347	149	236	1	386	733	2	2	2	6	252	1	181	434	440	1173			
17:00 18:00	0	171	110	281	122	186	0	308	589	7	3	0	10	177	1	161	339	349	938			
Sub Total	2	1400	1120	2522	1122	1549	12	2683	5205	13	15	9	37	1138	5	1248	2391	2428	7633			
U Turns				1				0	1				0				0	0	1			
Total	2	1400	1120	2523	1122	1549	12	2683	5206	13	15	9	37	1138	5	1248	2391	2428	7634			

EQ 12Hr 3 1946 1557 3507 1560 2153 17 3729 7236 18 21 13 51 1582 7 1735 3323 3375 10611
 Note: These values are calculated by multiplying the totals by the appropriate expansion factor. **1.39**

AVG 12Hr 3 1946 1557 3507 1560 2821 22 3729 7236 18 21 13 51 1582 7 1735 3323 3375 10611
 Note: These volumes are calculated by multiplying the Equivalent 12 hr. totals by the AADT factor. **1.00**

AVG 24Hr 4 2549 2040 4594 2044 3696 29 4885 9479 24 28 17 67 2072 9 2273 4353 4421 13900
 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

CLYDE AVE @ LAPERRIERE AVE

Survey Date: Wednesday, February 27, 2019

WO No: 38401

Start Time: 07:00

Device: Miovision

Full Study 15 Minute Increments

CLYDE AVE

LAPERRIERE 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	21	27	48	30	44	0	74	122	0	0	0	0	18	0	19	37	37	159
07:15 07:30	0	26	45	71	30	44	3	77	148	0	0	0	0	23	0	15	38	38	186
07:30 07:45	0	42	46	88	45	43	2	90	178	0	0	1	1	23	0	24	47	48	226
07:45 08:00	0	33	51	84	45	53	0	98	182	0	1	0	1	16	0	40	56	57	239
08:00 08:15	0	52	42	94	61	30	0	91	185	0	0	0	0	32	0	56	88	88	273
08:15 08:30	0	45	38	83	47	45	0	92	175	0	0	0	0	42	0	58	100	100	275
08:30 08:45	0	55	45	101	42	60	0	102	203	0	0	0	0	29	0	64	93	93	296
08:45 09:00	0	60	47	107	39	54	0	93	200	0	0	0	0	25	0	57	82	82	282
09:00 09:15	0	46	38	84	49	51	0	100	184	0	2	0	2	20	0	36	56	58	242
09:15 09:30	0	41	41	82	35	40	0	75	157	1	1	0	2	38	0	37	75	77	234
09:30 09:45	0	47	28	75	34	45	1	80	155	0	1	0	1	23	0	26	49	50	205
09:45 10:00	0	38	35	73	16	42	0	58	131	0	2	0	2	22	0	29	51	53	184
11:30 11:45	0	42	34	76	24	47	0	71	147	0	0	1	1	38	0	26	64	65	212
11:45 12:00	1	37	32	70	22	64	0	86	156	1	0	0	1	19	0	41	60	61	217
12:00 12:15	0	55	32	87	33	41	2	76	163	2	0	1	3	29	1	35	65	68	231
12:15 12:30	0	36	23	59	24	43	0	67	126	0	0	1	1	31	0	31	62	63	189
12:30 12:45	0	36	35	71	31	37	1	69	140	0	0	0	0	22	1	30	53	53	193
12:45 13:00	1	39	26	66	21	43	0	64	130	0	0	2	2	27	1	34	62	64	194
13:00 13:15	0	52	26	78	34	51	1	86	164	0	1	1	2	31	0	39	70	72	236
13:15 13:30	0	40	28	68	32	42	1	75	143	0	0	0	0	30	0	40	70	70	213
15:00 15:15	0	44	26	70	36	47	0	83	153	0	0	0	0	36	0	44	80	80	233
15:15 15:30	0	47	42	89	44	55	0	99	188	0	2	0	2	40	0	46	86	88	276
15:30 15:45	0	49	24	73	40	49	0	89	162	0	0	0	0	47	0	33	80	80	242
15:45 16:00	0	51	47	98	37	57	0	94	192	0	0	0	0	48	0	46	94	94	286
16:00 16:15	0	48	43	91	35	73	0	108	199	2	1	0	3	72	0	48	120	123	322
16:15 16:30	0	41	37	78	37	56	0	93	171	0	1	0	1	64	0	44	108	109	280
16:30 16:45	0	53	36	89	34	60	1	95	184	0	0	2	2	65	1	51	117	119	303
16:45 17:00	0	53	36	89	43	47	0	90	179	0	0	0	0	51	0	38	89	89	268
17:00 17:15	0	48	39	87	37	55	0	92	179	3	3	0	6	58	1	46	105	111	290
17:15 17:30	0	44	28	72	32	51	0	83	155	2	0	0	2	41	0	40	81	83	238
17:30 17:45	0	49	30	79	26	44	0	70	149	2	0	0	2	39	0	36	75	77	226
17:45 18:00	0	30	13	43	27	36	0	63	106	0	0	0	0	39	0	39	78	78	184
Total:	2	1400	1120	2523	1122	1549	12	2683	5206	13	15	9	37	1138	5	1248	2391	2428	7,634

Note: U-Turns are included in Totals.



Transportation Services - Traffic Services

Turning Movement Count - Study Results

CLYDE AVE @ LAPERRIERE AVE

Survey Date: Wednesday, February 27, 2019

WO No: 38401

Start Time: 07:00

Device: Miovision

Full Study Cyclist Volume

Time Period	CLYDE AVE			LAPERRIERE AVE			Grand Total
	Northbound	Southbound	Street Total	Eastbound	Westbound	Street Total	
07:00 07:15	0	0	0	0	0	0	0
07:15 07:30	2	0	2	0	0	0	2
07:30 07:45	0	0	0	0	0	0	0
07:45 08:00	0	0	0	0	0	0	0
08:00 08:15	0	0	0	0	0	0	0
08:15 08:30	1	0	1	0	0	0	1
08:30 08:45	1	1	2	0	0	0	2
08:45 09:00	0	0	0	0	0	0	0
09:00 09:15	0	0	0	0	0	0	0
09:15 09:30	0	0	0	0	0	0	0
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	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	1	1	0	0	0	1
13:15 13:30	0	1	1	0	0	0	1
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	1	1	1
17:15 17:30	0	1	1	0	1	1	2
17:30 17:45	0	0	0	0	0	0	0
17:45 18:00	0	0	0	0	0	0	0
Total	5	5	10	0	2	2	12



Transportation Services - Traffic Services

Turning Movement Count - Study Results

CLYDE AVE @ LAPERRIERE AVE

Survey Date: Wednesday, February 27, 2019

WO No: 38401

Start Time: 07:00

Device: Miovision

Full Study Pedestrian Volume

CLYDE AVE

LAPERRIERE 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	1	0	1	1
07:15 07:30	1	1	2	2	1	3	5
07:30 07:45	0	2	2	3	1	4	6
07:45 08:00	0	1	1	1	1	2	3
08:00 08:15	0	1	1	1	0	1	2
08:15 08:30	0	2	2	1	1	2	4
08:30 08:45	1	0	1	0	2	2	3
08:45 09:00	0	1	1	2	1	3	4
09:00 09:15	1	1	2	2	2	4	6
09:15 09:30	0	0	0	1	1	2	2
09:30 09:45	0	1	1	0	0	0	1
09:45 10:00	0	1	1	0	0	0	1
11:30 11:45	0	1	1	5	1	6	7
11:45 12:00	0	0	0	0	2	2	2
12:00 12:15	0	0	0	0	0	0	0
12:15 12:30	1	1	2	1	3	4	6
12:30 12:45	0	1	1	17	1	18	19
12:45 13:00	0	0	0	1	0	1	1
13:00 13:15	0	0	0	0	4	4	4
13:15 13:30	0	1	1	3	1	4	5
15:00 15:15	0	0	0	0	1	1	1
15:15 15:30	0	0	0	0	1	1	1
15:30 15:45	0	0	0	1	0	1	1
15:45 16:00	0	1	1	3	2	5	6
16:00 16:15	0	1	1	2	2	4	5
16:15 16:30	0	1	1	0	2	2	3
16:30 16:45	1	1	2	4	3	7	9
16:45 17:00	0	1	1	0	1	1	2
17:00 17:15	1	5	6	3	7	10	16
17:15 17:30	0	1	1	0	0	0	1
17:30 17:45	0	0	0	0	0	0	0
17:45 18:00	0	1	1	0	0	0	1
Total	6	27	33	54	41	95	128



Transportation Services - Traffic Services

Turning Movement Count - Study Results

CLYDE AVE @ LAPERRIERE AVE

Survey Date: Wednesday, February 27, 2019

WO No: 38401

Start Time: 07:00

Device: Miovision

Full Study Heavy Vehicles

CLYDE AVE

LAPERRIERE AVE

Northbound

Southbound

Eastbound

Westbound

Time Period	Northbound				Southbound				Eastbound				Westbound				Grand Total		
	LT	ST	RT	N TOT	LT	ST	RT	S TOT	STR TOT	LT	ST	RT	E TOT	LT	ST	RT		W TOT	STR TOT
07:00 07:15	0	3	4	12	1	5	0	9	21	0	0	0	0	0	0	0	5	5	13
07:15 07:30	0	2	1	5	0	1	0	3	8	0	0	0	0	1	0	0	2	2	5
07:30 07:45	0	2	2	7	0	2	0	4	11	0	0	0	0	1	0	0	3	3	7
07:45 08:00	0	3	1	5	1	1	0	5	10	0	0	0	0	0	0	0	2	2	6
08:00 08:15	0	9	5	16	1	1	0	12	28	0	0	0	0	1	0	1	8	8	18
08:15 08:30	0	5	1	11	0	3	0	9	20	0	0	0	0	2	0	1	4	4	12
08:30 08:45	0	7	2	19	2	10	0	21	40	0	0	0	0	0	0	2	6	6	23
08:45 09:00	0	5	3	12	0	3	0	11	23	0	0	0	0	1	0	3	7	7	15
09:00 09:15	0	3	1	9	1	4	0	11	20	0	0	0	0	1	0	3	6	6	13
09:15 09:30	0	5	3	15	1	6	0	13	28	0	0	0	0	1	0	1	6	6	17
09:30 09:45	0	11	1	19	0	7	0	18	37	0	0	0	0	0	0	0	1	1	19
09:45 10:00	0	7	0	15	0	5	0	13	28	0	0	0	0	3	0	1	4	4	16
11:30 11:45	0	3	2	17	0	7	0	10	27	0	0	0	0	5	0	0	7	7	17
11:45 12:00	0	1	1	8	0	6	0	9	17	0	0	0	0	0	0	2	3	3	10
12:00 12:15	0	7	0	10	1	3	0	12	22	0	0	0	0	0	0	1	2	2	12
12:15 12:30	0	4	1	8	3	3	0	11	19	0	0	0	0	0	0	1	5	5	12
12:30 12:45	0	7	4	18	0	4	0	12	30	0	0	0	0	3	0	1	8	8	19
12:45 13:00	0	8	4	22	0	7	0	16	38	0	0	0	0	3	0	1	8	8	23
13:00 13:15	0	9	1	21	0	7	0	19	40	0	0	0	0	4	0	3	8	8	24
13:15 13:30	0	10	0	17	1	5	0	18	35	0	0	0	0	2	0	2	5	5	20
15:00 15:15	0	1	1	10	1	5	0	10	20	0	0	0	0	3	0	3	8	8	14
15:15 15:30	0	6	1	14	1	4	0	11	25	0	0	0	0	3	0	0	5	5	15
15:30 15:45	0	7	1	16	2	7	0	16	32	0	0	0	0	1	0	0	4	4	18
15:45 16:00	0	3	0	7	0	2	0	6	13	0	0	0	0	2	0	1	3	3	8
16:00 16:15	0	3	6	22	0	8	0	11	33	0	0	0	0	5	0	0	11	11	22
16:15 16:30	0	4	3	12	1	1	0	7	19	0	0	0	0	4	0	1	9	9	14
16:30 16:45	0	3	1	10	1	6	0	10	20	0	0	0	0	0	0	0	2	2	11
16:45 17:00	0	4	2	11	0	5	0	9	20	0	0	0	0	0	0	0	2	2	11
17:00 17:15	0	3	0	6	0	3	0	6	12	0	0	0	0	0	0	0	0	0	6
17:15 17:30	0	4	0	6	0	2	0	6	12	0	0	0	0	0	0	0	0	0	6
17:30 17:45	0	1	1	4	0	2	0	3	7	0	0	0	0	0	0	0	1	1	4
17:45 18:00	0	1	0	6	1	5	0	8	14	0	0	0	0	0	0	1	2	2	8
Total: None	0	151	53	390	19	140	0	339	729	0	0	0	0	46	0	29	147	147	438



Transportation Services - Traffic Services

Turning Movement Count - Study Results

CLYDE AVE @ LAPERRIERE AVE

Survey Date: Wednesday, February 27, 2019

WO No: 38401

Start Time: 07:00

Device: Miovision

Full Study 15 Minute U-Turn Total

CLYDE AVE

LAPERRIERE 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	1	0	0	0	1
08:45	09:00	0	0	0	0	0
09:00	09:15	0	0	0	0	0
09:15	09:30	0	0	0	0	0
09:30	09:45	0	0	0	0	0
09:45	10:00	0	0	0	0	0
11:30	11:45	0	0	0	0	0
11:45	12:00	0	0	0	0	0
12:00	12:15	0	0	0	0	0
12:15	12:30	0	0	0	0	0
12:30	12:45	0	0	0	0	0
12:45	13:00	0	0	0	0	0
13:00	13:15	0	0	0	0	0
13:15	13:30	0	0	0	0	0
15:00	15:15	0	0	0	0	0
15:15	15:30	0	0	0	0	0
15:30	15:45	0	0	0	0	0
15:45	16:00	0	0	0	0	0
16:00	16:15	0	0	0	0	0
16:15	16:30	0	0	0	0	0
16:30	16:45	0	0	0	0	0
16:45	17:00	0	0	0	0	0
17:00	17:15	0	0	0	0	0
17:15	17:30	0	0	0	0	0
17:30	17:45	0	0	0	0	0
17:45	18:00	0	0	0	0	0
Total		1	0	0	0	1

DRAFT

Appendix D:

Collision Data

Total Area

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	SMV other	SMV unattended vehicle	Other	Total
P.D. only	21	18	23	5	0	2	0	1	70
Non-fatal injury	9	11	2	2	0	5	0	0	29
Non-reportable	0	0	0	0	0	0	0	0	0
Total	30	29	25	7	0	7	0	1	99
	#1 or 30%	#2 or 29%	#3 or 25%	#4 or 7%	#7 or 0%	#4 or 7%	#7 or 0%	#6 or 1%	

71%
29%
0%
100%

CARLING AVE/CHURCHILL AVE

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2016-2020	30	38,416	1825	0.43

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	SMV other	SMV unattended vehicle	Other	Total
P.D. only	11	1	9	1	0	1	0	0	23
Non-fatal injury	5	0	1	0	0	1	0	0	7
Non-reportable	0	0	0	0	0	0	0	0	0
Total	16	1	10	1	0	2	0	0	30
	53%	3%	33%	3%	0%	7%	0%	0%	

77%
23%
0%
100%

CARLING AVE/CLYDE AVE/COLE AVE

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2016-2020	53	35,384	1825	0.82

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	SMV other	SMV unattended vehicle	Other	Total
P.D. only	6	13	11	2	0	1	0	1	34
Non-fatal injury	3	10	1	2	0	3	0	0	19
Non-reportable	0	0	0	0	0	0	0	0	0
Total	9	23	12	4	0	4	0	1	53
	17%	43%	23%	8%	0%	8%	0%	2%	

64%
36%
0%
100%

CARLING AVE EB, CHURCHILL AVE N to CLYDE AVE

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2016-2020	1	n/a	1825	n/a

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

100%
0%
0%
100%

CARLING AVE WB, CHURCHILL AVE N to COLE AVE

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2016-2020	8	n/a	1825	n/a

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	SMV other	SMV unattended vehicle	Other	Total
P.D. only	3	3	1	0	0	0	0	0	7
Non-fatal injury	0	0	0	0	0	1	0	0	1
Non-reportable	0	0	0	0	0	0	0	0	0
Total	3	3	1	0	0	1	0	0	8
	38%	38%	13%	0%	0%	13%	0%	0%	

88%
13%
0%
100%

CLYDE AVE/DOHENY ST

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2016-2020	3	n/a	1825	n/a

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

67%
33%
0%
100%

CLYDE AVE, CARLING AVE to DOHENY ST

Years	Total # Collisions	24 Hr AADT Veh Volume	Days	Collisions/MEV
2016-2020	4	n/a	1825	n/a

Classification of Accident	Rear End	Turning Movement	Sideswipe	Angle	Approaching	SMV other	SMV unattended vehicle	Other	Total
P.D. only	0	1	0	2	0	0	0	0	3
Non-fatal injury	0	1	0	0	0	0	0	0	1
Non-reportable	0	0	0	0	0	0	0	0	0
Total	0	2	0	2	0	0	0	0	4
	0%	50%	0%	50%	0%	0%	0%	0%	

75%
25%
0%
100%



Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: CARLING AVE @ CHURCHILL AVE

Traffic Control: Traffic signal

Total Collisions: 30

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2016-Mar-04, Fri,11:19	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	
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2016-May-19, Thu,13:41	Clear	Rear end	P.D. only	Dry	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2016-Jul-08, Fri,14:38	Clear	Sideswipe	P.D. only	Dry	East	Turning right	Truck - open	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Feb-10, Fri,09:52	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Pick-up truck	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Jul-19, Wed,16:45	Clear	Angle	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Turning left	Automobile, station wagon	Other motor vehicle	
2017-Aug-16, Wed,15:00	Clear	Turning movement	P.D. only	Dry	East	Going ahead	Delivery van	Other motor vehicle	0
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2017-Sep-20, Wed,19:20	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Jan-16, Tue,18:18	Clear	Rear end	P.D. only	Slush	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Feb-27, Tue,11:26	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Truck - closed	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Mar-27, Tue,10:50	Clear	SMV other	Non-fatal injury	Dry	South	Turning left	Automobile, station wagon	Curb	0
2018-Jul-23, Mon,18:59	Clear	Rear end	Non-fatal injury	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Aug-27, Mon,12:02	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Pick-up truck	Other motor vehicle	0
					West	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: CARLING AVE @ CHURCHILL AVE

Traffic Control: Traffic signal

Total Collisions: 30

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2018-Sep-04, Tue,08:30	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Truck - dump	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Sep-05, Wed,08:46	Clear	Rear end	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Oct-12, Fri,10:20	Clear	Rear end	P.D. only	Dry	East	Turning left	Truck - dump	Other motor vehicle	0
					East	Turning left	Delivery van	Other motor vehicle	
2018-Dec-25, Tue,12:19	Clear	Rear end	Non-fatal injury	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Turning left	Automobile, station wagon	Other motor vehicle	
2019-Jan-02, Wed,22:19	Snow	SMV other	P.D. only	Loose snow	East	Going ahead	Automobile, station wagon	Snowbank/drift	0
2019-Jan-29, Tue,14:45	Snow	Sideswipe	P.D. only	Slush	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Pick-up truck	Other motor vehicle	
2019-Apr-09, Tue,14:52	Snow	Sideswipe	Non-fatal injury	Wet	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-May-28, Tue,17:48	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Jun-18, Tue,16:50	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Sep-15, Sun,14:40	Clear	Rear end	P.D. only	Dry	North	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					North	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Sep-24, Tue,15:15	Clear	Sideswipe	P.D. only	Dry	South	Unknown	Unknown	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2020-Feb-03, Mon,17:19	Clear	Rear end	P.D. only	Wet	West	Going ahead	Pick-up truck	Other motor vehicle	0
					West	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: CARLING AVE @ CHURCHILL AVE

Traffic Control: Traffic signal

Total Collisions: 30

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2020-Feb-18, Tue,08:11	Snow	Rear end	P.D. only	Slush	East	Unknown	Unknown	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2020-Jul-06, Mon,13:40	Clear	Rear end	Non-fatal injury	Dry	West	Going ahead	Pick-up truck	Other motor vehicle	0
					West	Stopped	Pick-up truck	Other motor vehicle	
2020-Jul-14, Tue,12:15	Clear	Rear end	Non-fatal injury	Dry	East	Slowing or stopping	Delivery van	Other motor vehicle	0
					East	Going ahead	Passenger van	Other motor vehicle	
2020-Aug-22, Sat,13:39	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2020-Oct-14, Wed,09:12	Clear	Rear end	Non-fatal injury	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2020-Nov-18, Wed,10:13	Clear	Rear end	P.D. only	Dry	South	Going ahead	Pick-up truck	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: CARLING AVE @ CLYDE AVE/COLE AVE

Traffic Control: Traffic signal

Total Collisions: 53

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2016-Feb-12, Fri,09:41	Clear	Turning movement	Non-fatal injury	Wet	West	Turning left	Pick-up truck	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Aug-02, Tue,10:00	Clear	Turning movement	Non-fatal injury	Dry	East	Turning left	Passenger van	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2016-Oct-08, Sat,15:20	Clear	SMV other	P.D. only	Dry	East	Turning right	Truck and trailer	Pole (utility, power)	0
2016-Nov-28, Mon,08:41	Clear	SMV other	Non-fatal injury	Dry	North	Turning right	Automobile, station wagon	Pedestrian	1
2017-May-18, Thu,08:36	Clear	Turning movement	Non-fatal injury	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Turning left	Automobile, station wagon	Other motor vehicle	



Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: CARLING AVE @ CLYDE AVE/COLE AVE

Traffic Control: Traffic signal

Total Collisions: 53

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2017-Jun-27, Tue,14:30	Clear	Turning movement	P.D. only	Dry	West	Turning left	Unknown	Other motor vehicle	0
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2017-Jun-28, Wed,17:55	Clear	Sideswipe	P.D. only	Dry	East	Unknown	Unknown	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Jul-07, Fri,15:43	Clear	Rear end	P.D. only	Dry	South	Slowing or stopping	Motorcycle	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Jul-20, Thu,15:48	Clear	Angle	Non-fatal injury	Dry	East	Going ahead	Passenger van	Other motor vehicle	0
					South	Turning left	Municipal transit bus	Other motor vehicle	
2017-Jul-26, Wed,08:34	Clear	Turning movement	Non-fatal injury	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Sep-21, Thu,16:00	Clear	Rear end	Non-fatal injury	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2017-Sep-22, Fri,15:43	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Truck - dump	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Oct-14, Sat,13:15	Clear	Turning movement	P.D. only	Dry	North	Turning right	Delivery van	Other motor vehicle	0
					South	Turning left	Automobile, station wagon	Other motor vehicle	
2017-Oct-26, Thu,16:59	Clear	Turning movement	P.D. only	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2017-Nov-30, Thu,14:31	Clear	Rear end	P.D. only	Wet	North	Turning right	Automobile, station wagon	Other motor vehicle	0
					North	Turning right	Pick-up truck	Other motor vehicle	
2018-Jan-09, Tue,21:41	Clear	Sideswipe	P.D. only	Slush	South	Unknown	Unknown	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2018-Jan-10, Wed,21:16	Clear	Turning movement	P.D. only	Wet	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Turning left	Automobile, station wagon	Other motor vehicle	



Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: CARLING AVE @ CLYDE AVE/COLE AVE

Traffic Control: Traffic signal

Total Collisions: 53

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2018-Jan-13, Sat,10:12	Drifting Snow	Sideswipe	P.D. only	Ice	West	Slowing or stopping	Automobile, station wagon	Skidding/sliding	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2018-Feb-01, Thu,07:07	Snow	Sideswipe	P.D. only	Loose snow	West	Turning left	School bus	Other motor vehicle	0
					West	Changing lanes	Pick-up truck	Other motor vehicle	
2018-Feb-06, Tue,18:13	Clear	Turning movement	P.D. only	Wet	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Turning left	Pick-up truck	Other motor vehicle	
2018-Feb-09, Fri,12:58	Clear	Rear end	P.D. only	Wet	West	Slowing or stopping	Truck - dump	Other motor vehicle	0
					West	Turning right	Automobile, station wagon	Other motor vehicle	
2018-May-12, Sat,14:30	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-May-18, Fri,11:37	Clear	Sideswipe	P.D. only	Dry	East	Changing lanes	Truck - closed	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-May-31, Thu,08:11	Clear	Turning movement	Non-fatal injury	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Jun-29, Fri,15:48	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	
2018-Aug-11, Sat,12:51	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	
2018-Aug-13, Mon,16:20	Clear	Turning movement	P.D. only	Dry	East	Turning left	Pick-up truck	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Aug-17, Fri,10:38	Clear	Turning movement	P.D. only	Wet	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
					East	Going ahead	Truck - closed	Other motor vehicle	



Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: CARLING AVE @ CLYDE AVE/COLE AVE

Traffic Control: Traffic signal

Total Collisions: 53

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2018-Oct-19, Fri,09:19	Clear	Turning movement	P.D. only	Dry	West	Turning left	Pick-up truck	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Oct-24, Wed,12:43	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	
2018-Oct-27, Sat,22:36	Snow	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-Nov-16, Fri,07:23	Snow	Angle	Non-fatal injury	Loose snow	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
					South	Going ahead	Pick-up truck	Other motor vehicle	
2018-Nov-23, Fri,13:08	Clear	SMV other	Non-fatal injury	Dry	North	Turning left	Automobile, station wagon	Pedestrian	1
2019-Jan-03, Thu,11:46	Clear	Rear end	P.D. only	Dry	South	Going ahead	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	
					South	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Jan-21, Mon,20:49	Snow	Angle	P.D. only	Packed snow	East	Turning right	Automobile, station wagon	Skidding/sliding	0
					North	Turning left	Automobile, station wagon	Other motor vehicle	
2019-Jan-25, Fri,10:49	Clear	Sideswipe	P.D. only	Slush	North	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Delivery van	Other motor vehicle	
2019-Feb-06, Wed,16:17	Rain	Sideswipe	P.D. only	Wet	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-May-21, Tue,18:53	Clear	Turning movement	Non-fatal injury	Dry	West	Turning left	Pick-up truck	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Jun-10, Mon,19:51	Clear	Turning movement	P.D. only	Dry	West	Turning right	Unknown	Cyclist	0
					West	Going ahead	Bicycle	Other motor vehicle	



Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: CARLING AVE @ CLYDE AVE/COLE AVE

Traffic Control: Traffic signal

Total Collisions: 53

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2019-Jun-12, Wed,09:14	Clear	Rear end	Non-fatal injury	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Jun-25, Tue,07:07	Clear	Turning movement	Non-fatal injury	Wet	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
					North	Stopped	Pick-up truck	Other motor vehicle	
2019-Aug-17, Sat,16:38	Clear	Sideswipe	P.D. only	Wet	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Oct-17, Thu,06:50	Rain	Sideswipe	P.D. only	Wet	West	Going ahead	Unknown	Other motor vehicle	0
					West	Turning left	Automobile, station wagon	Other motor vehicle	
2020-Jan-31, Fri,17:53	Clear	SMV other	Non-fatal injury	Dry	North	Turning left	Automobile, station wagon	Pedestrian	1
2020-Feb-22, Sat,02:05	Clear	Sideswipe	Non-fatal injury	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Passenger van	Other motor vehicle	
2020-Feb-26, Wed,19:34	Snow	Turning movement	Non-fatal injury	Slush	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Automobile, station wagon	Other motor vehicle	
2020-Feb-28, Fri,15:40	Clear	Rear end	P.D. only	Dry	East	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					East	Stopped	Automobile, station wagon	Other motor vehicle	
2020-Mar-12, Thu,12:00	Clear	Other	P.D. only	Dry	East	Stopped	Automobile, station wagon	Debris falling off vehicle	0
					East	Slowing or stopping	Pick-up truck	Other	
2020-Apr-21, Tue,12:31	Snow	Angle	P.D. only	Wet	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2020-Jul-16, Thu,13:21	Clear	Turning movement	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Pick-up truck	Other motor vehicle	
2020-Sep-29, Tue,19:44	Clear	Turning movement	Non-fatal injury	Dry	East	Turning left	Pick-up truck	Other motor vehicle	0
					West	Going ahead	Pick-up truck	Other motor vehicle	



Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: CARLING AVE @ CLYDE AVE/COLE AVE

Traffic Control: Traffic signal

Total Collisions: 53

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2020-Oct-07, Wed,11:33	Clear	Rear end	Non-fatal injury	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2020-Oct-27, Tue,11:59	Clear	Turning movement	Non-fatal injury	Dry	East	Turning left	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Pick-up truck	Other motor vehicle	

Location: CARLING AVE EB btwn CHURCHILL AVE N & CLYDE AVE

Traffic Control: No control

Total Collisions: 1

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2017-Mar-27, Mon,15:30	Clear	Sideswipe	P.D. only	Wet	East	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					East	Going ahead	Passenger van	Other motor vehicle	

Location: CARLING AVE WB btwn CHURCHILL AVE N & COLE AVE

Traffic Control: No control

Total Collisions: 8

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuvre	Vehicle type	First Event	No. Ped
2016-Oct-07, Fri,14:55	Clear	Rear end	P.D. only	Dry	East	Going ahead	Automobile, station wagon	Other motor vehicle	0
					East	Turning right	Automobile, station wagon	Other motor vehicle	
2017-May-04, Thu,16:47	Clear	Sideswipe	P.D. only	Dry	West	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	
2018-Aug-02, Thu,17:43	Clear	Turning movement	P.D. only	Dry	West	Going ahead	Automobile, station wagon	Other motor vehicle	0
					West	Turning right	Automobile, station wagon	Other motor vehicle	
2019-Jan-21, Mon,19:30	Snow	SMV other	Non-fatal injury	Loose snow	West	Going ahead	Automobile, station wagon	Pedestrian	1
2019-Feb-04, Mon,17:31	Snow	Rear end	P.D. only	Loose snow	West	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					West	Stopped	Automobile, station wagon	Other motor vehicle	
2019-Aug-27, Tue,15:05	Clear	Turning movement	P.D. only	Dry	West	Turning right	Passenger van	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: CARLING AVE WB btwn CHURCHILL AVE N & COLE AVE

Traffic Control: No control

Total Collisions: 8

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2019-Sep-26, Thu,13:48	Clear	Turning movement	P.D. only	Dry	West	Turning right	Automobile, station wagon	Other motor vehicle	0
					West	Going ahead	Truck - closed	Other motor vehicle	
2020-Sep-21, Mon,20:32	Clear	Rear end	P.D. only	Dry	West	Going ahead	Passenger van	Other motor vehicle	0
					West	Going ahead	Automobile, station wagon	Other motor vehicle	

Location: CLYDE AVE @ DOHENY ST

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
2016-Feb-18, Thu,07:00	Clear	Rear end	P.D. only	Ice	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Pick-up truck	Other motor vehicle	
2016-Feb-18, Thu,19:12	Freezing Rain	Rear end	Non-fatal injury	Ice	South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	0
					South	Slowing or stopping	Pick-up truck	Other motor vehicle	
2018-Jul-27, Fri,14:24	Clear	Sideswipe	P.D. only	Dry	South	Changing lanes	Automobile, station wagon	Other motor vehicle	0
					South	Slowing or stopping	Automobile, station wagon	Other motor vehicle	

Location: CLYDE AVE btwn CARLING AVE & DOHENY ST

Traffic Control: No control

Total Collisions: 4

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2019-Mar-23, Sat,09:45	Clear	Turning movement	P.D. only	Dry	South	Turning left	Automobile, station wagon	Other motor vehicle	0
					North	Going ahead	Automobile, station wagon	Other motor vehicle	
2019-Aug-18, Sun,13:08	Clear	Turning movement	Non-fatal injury	Dry	North	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Automobile, station wagon	Other motor vehicle	
2020-Jan-31, Fri,13:47	Clear	Angle	P.D. only	Dry	West	Turning left	Automobile, station wagon	Other motor vehicle	0
					South	Going ahead	Pick-up truck	Other motor vehicle	



Transportation Services - Traffic Services

Collision Details Report - Public Version

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

Location: CLYDE AVE btwn CARLING AVE & DOHENY ST

Traffic Control: No control

Total Collisions: 4

Date/Day/Time	Environment	Impact Type	Classification	Surface Cond'n	Veh. Dir	Vehicle Manoeuver	Vehicle type	First Event	No. Ped
2020-Sep-13, Sun,14:13	Clear	Angle	P.D. only	Dry	East	Reversing	Automobile, station wagon	Other motor vehicle	0
					South	Stopped	Automobile, station wagon	Other motor vehicle	

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Appendix E:

Adjacent Development Site-Generated Volume Excerpts

Figure 9: 2025 Site-Generated Traffic Volumes

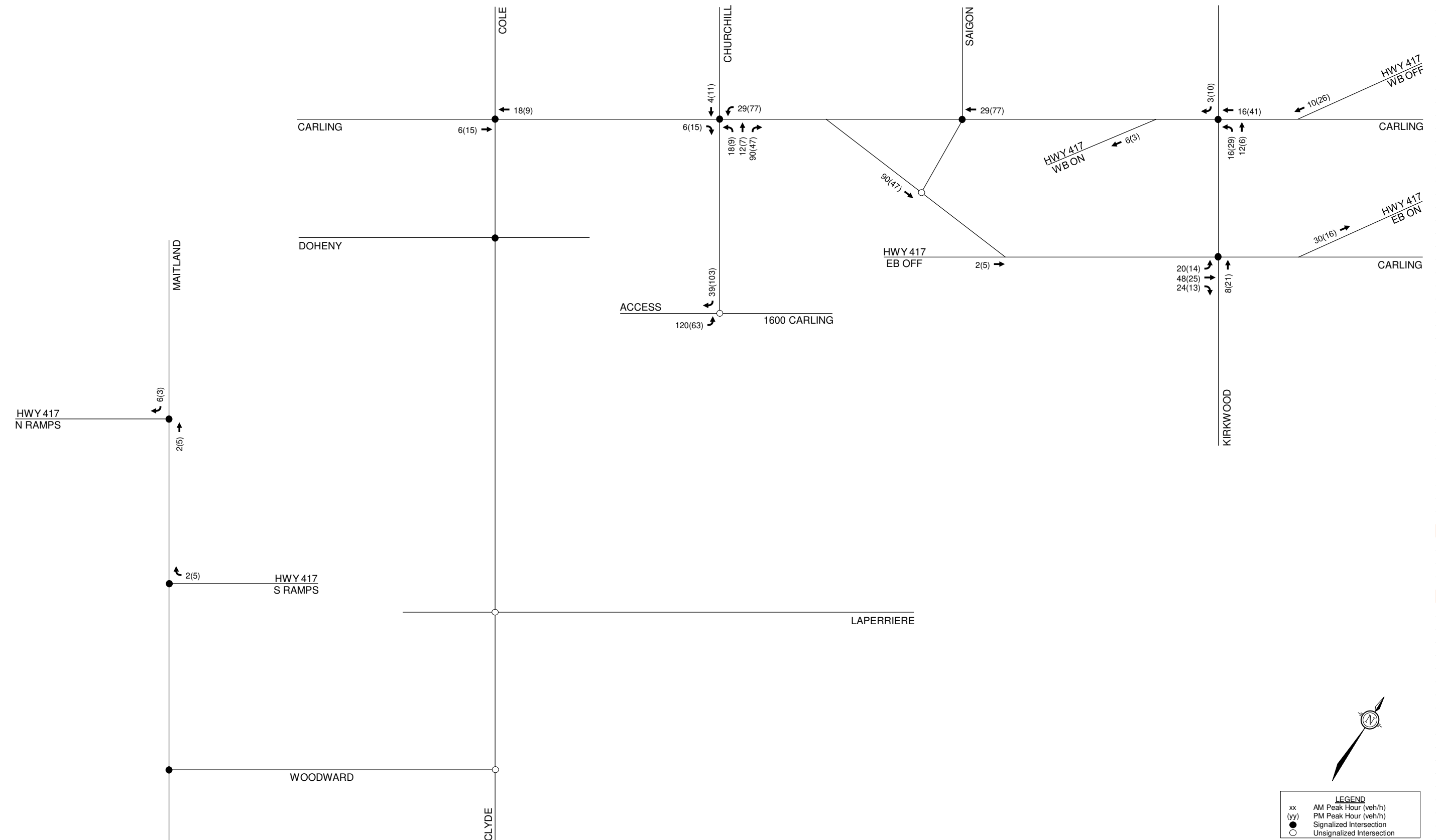
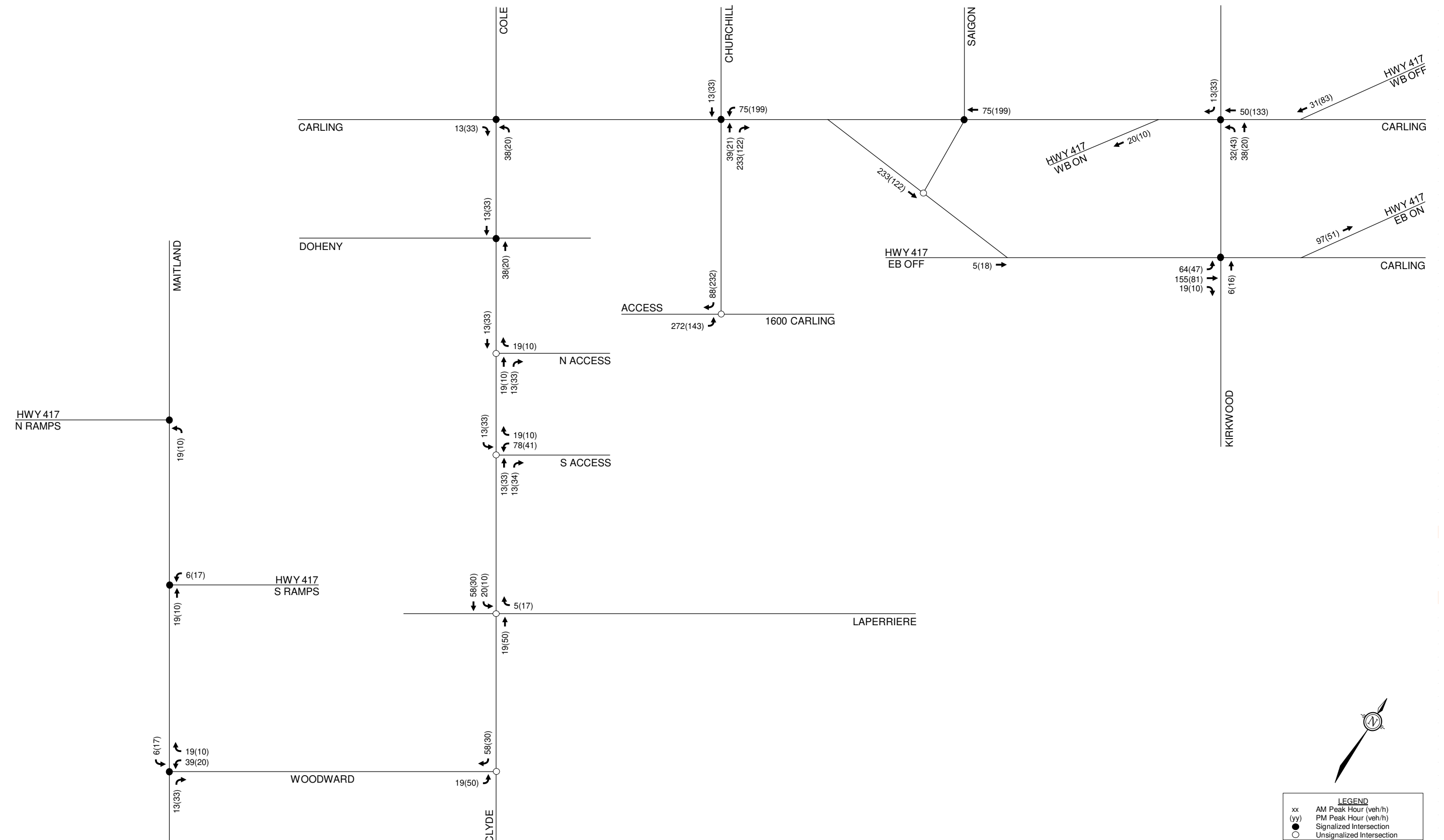


Figure 10: 2032 Site-Generated Traffic Volumes



LEGEND

- xx AM Peak Hour (veh/h)
- (yy) PM Peak Hour (veh/h)
- Signalized Intersection
- Unsignalized Intersection

- 65% to east Carling Ave (3/4 of which complete the U-turn at Carling/Clyde/Cole and 1/4 use Tillbury Ave).

Figure 8: Planned Residential Development Site-Generated Traffic

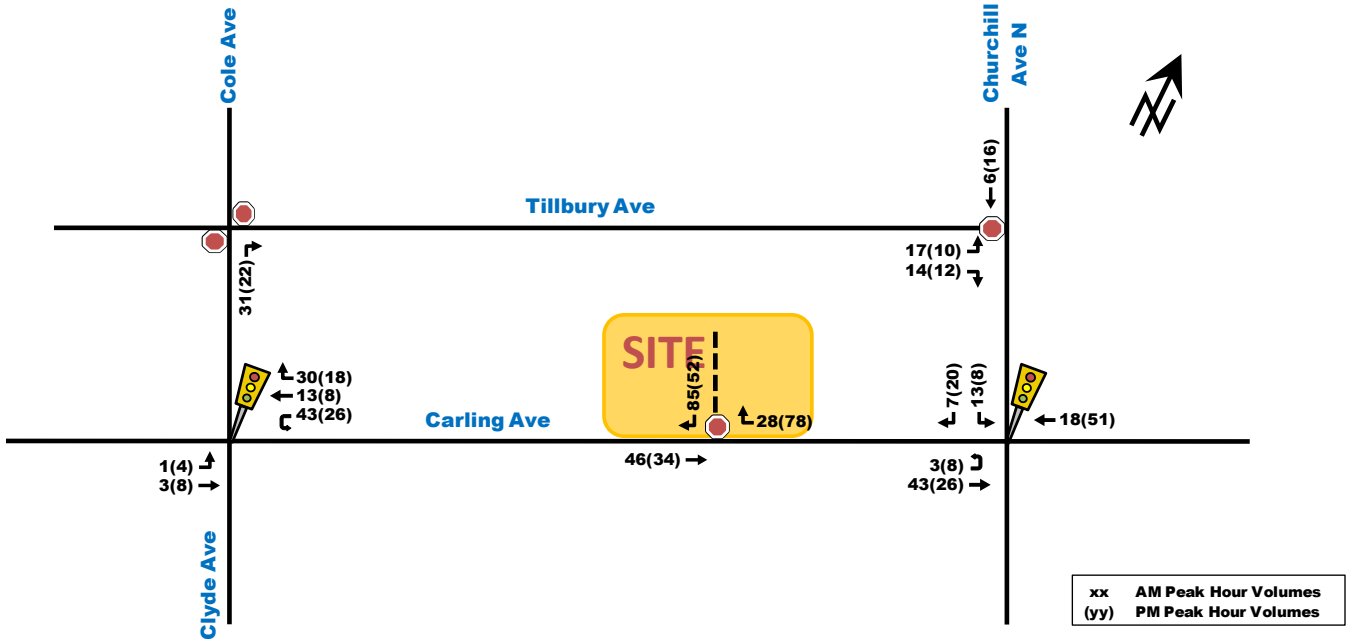
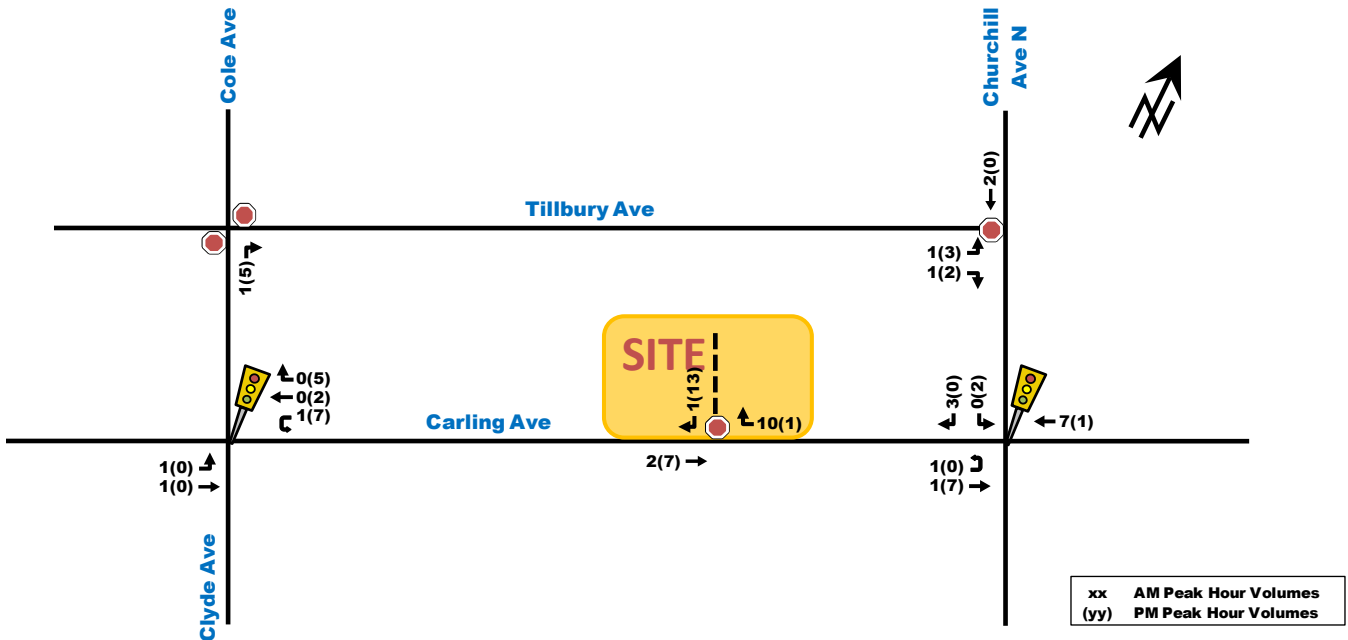


Figure 9: Existing Parking Lot Traffic Volumes



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Appendix F:

TDM-Supportive Development Design and Infrastructure Checklist

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

<i>Legend</i>	
REQUIRED	The Official Plan or Zoning By-law provides related guidance that must be followed
BASIC	The measure is generally feasible and effective, and in most cases would benefit the development and its users
BETTER	The measure could maximize support for users of sustainable modes, and optimize development performance

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

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

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

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

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

Legend	
BASIC	The measure is generally feasible and effective, and in most cases would benefit the development and its users
BETTER	The measure could maximize support for users of sustainable modes, and optimize development performance
★	The measure is one of the most dependably effective tools to encourage the use of sustainable modes

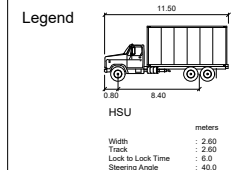
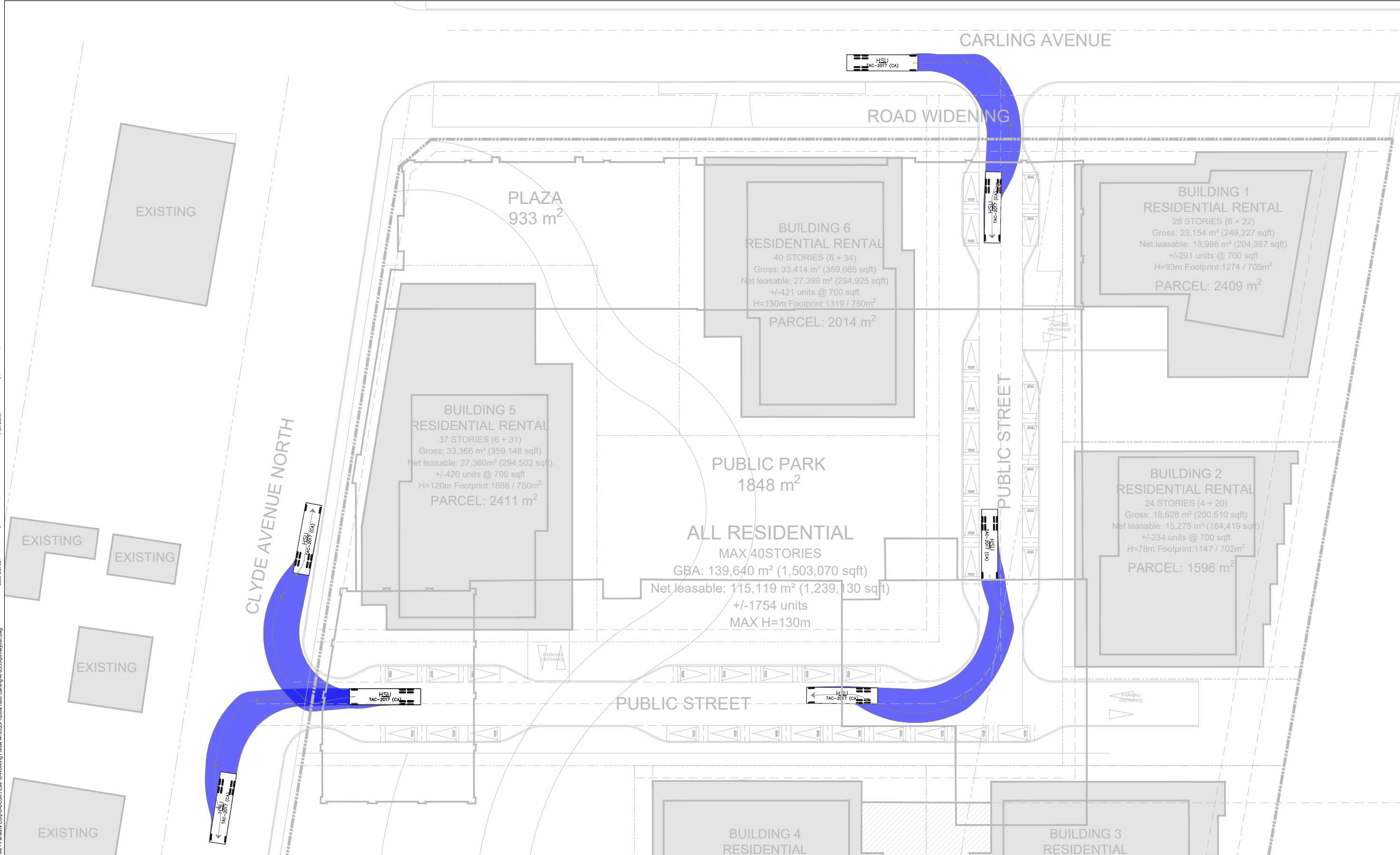
TDM measures: <i>Residential developments</i>		Check if proposed & add descriptions
1. TDM PROGRAM MANAGEMENT		
1.1 Program coordinator		
BASIC	★ 1.1.1 Designate an internal coordinator, or contract with an external coordinator	<input type="checkbox"/>
1.2 Travel surveys		
BETTER	1.2.1 Conduct periodic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

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

TDM measures: Residential developments		Check if proposed & add descriptions
6. TDM MARKETING & COMMUNICATIONS		
6.1 Multimodal travel information		
BASIC	★ 6.1.1 Provide a multimodal travel option information package to new residents	<input type="checkbox"/>
6.2 Personalized trip planning		
BETTER	★ 6.2.1 Offer personalized trip planning to new residents	<input type="checkbox"/>

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Appendix G:
Truck Turn Templates



NOTE: The location of utilities is approximate only, the exact location should be determined by consulting the municipal authorities and utility companies concerned. The contractor shall prove the location of utilities and shall be responsible for adequate protection from damage.

Not to Scale

Drawing Description		Fire Route (Entering From Carling) - HSU	
Client	Date	Figure Number	002
Project Number	478355	Project Description	1650-1660 Carling

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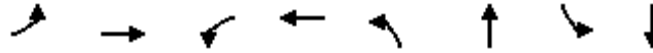
Appendix H:

Existing and Future Synchro Analysis Reports

Existing Conditions

Lanes, Volumes, Timings
1: Churchill Ave & Carling Ave

12/06/2022

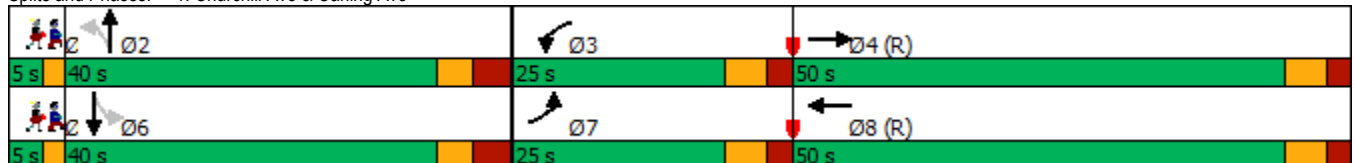


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø1	Ø5
Lane Configurations										
Traffic Volume (vph)	173	1502	106	710	11	5	336	31		
Future Volume (vph)	173	1502	106	710	11	5	336	31		
Lane Group Flow (vph)	192	1778	118	960	12	18	373	304		
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA		
Protected Phases	7	4	3	8		2		6	1	5
Permitted Phases					2		6			
Detector Phase	7	4	3	8	2	2	6	6		
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	3.0	3.0
Minimum Split (s)	11.1	34.1	11.1	34.1	39.8	39.8	39.8	39.8	5.0	5.0
Total Split (s)	25.0	50.0	25.0	50.0	40.0	40.0	40.0	40.0	5.0	5.0
Total Split (%)	20.8%	41.7%	20.8%	41.7%	33.3%	33.3%	33.3%	33.3%	4%	4%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	2.0	2.0
All-Red Time (s)	2.4	2.4	2.4	2.4	3.5	3.5	3.5	3.5	0.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.8	6.8	6.8	6.8		
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	C-Max	Max	Max	Max	Max	None	None
Act Effct Green (s)	17.1	49.2	13.6	45.7	38.2	38.2	38.2	38.2		
Actuated g/C Ratio	0.14	0.41	0.11	0.38	0.32	0.32	0.32	0.32		
v/c Ratio	0.80	0.90	0.61	0.54	0.05	0.04	0.91	0.47		
Control Delay	91.7	18.7	60.2	27.4	29.3	16.8	66.5	8.1		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	91.7	18.7	60.2	27.4	29.3	16.8	66.5	8.1		
LOS	F	B	E	C	C	B	E	A		
Approach Delay		25.8		31.0		21.8		40.3		
Approach LOS		C		C		C		D		
Queue Length 50th (m)	45.4	53.5	27.1	63.2	2.0	1.0	83.9	5.6		
Queue Length 95th (m)	m66.4	#184.0	44.2	77.2	6.6	6.2	#140.2	27.8		
Internal Link Dist (m)		273.9		176.6		177.0		412.2		
Turn Bay Length (m)	65.0		65.0		20.0		20.0			
Base Capacity (vph)	266	1977	266	1766	239	508	411	644		
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	0.72	0.90	0.44	0.54	0.05	0.04	0.91	0.47		

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 101 (84%), Referenced to phase 4:EBT and 8:WBT, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.91
 Intersection Signal Delay: 29.9
 Intersection LOS: C
 Intersection Capacity Utilization 82.6%
 ICU Level of Service E
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Churchill Ave & Carling Ave



Lanes, Volumes, Timings
2: Clyde Ave/Cole Ave & Carling Ave

12/06/2022

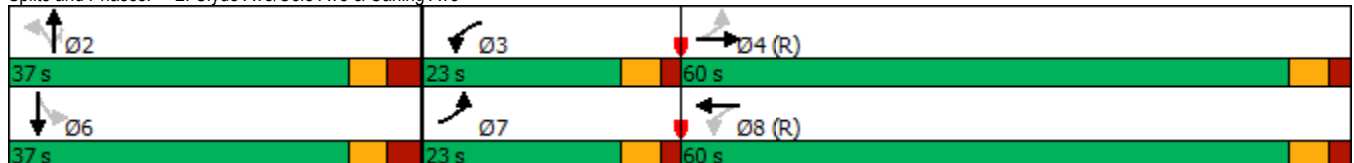


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	60	1631	197	710	121	51	147	35	63
Future Volume (vph)	60	1631	197	710	121	51	147	35	63
Lane Group Flow (vph)	67	1953	219	818	134	57	163	39	143
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	Perm	NA
Protected Phases	7	4	3	8		2			6
Permitted Phases	4		8		2		2	6	
Detector Phase	7	4	3	8	2	2	2	6	6
Switch Phase									
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	10.4	30.8	10.4	30.8	36.6	36.6	36.6	36.6	36.6
Total Split (s)	23.0	60.0	23.0	60.0	37.0	37.0	37.0	37.0	37.0
Total Split (%)	19.2%	50.0%	19.2%	50.0%	30.8%	30.8%	30.8%	30.8%	30.8%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	1.7	2.1	1.7	2.1	3.3	3.3	3.3	3.3	3.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.4	5.8	5.4	5.8	6.6	6.6	6.6	6.6	6.6
Lead/Lag	Lead	Lag	Lead	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					
Recall Mode	None	C-Max	None	C-Max	None	None	None	None	None
Act Effct Green (s)	73.1	65.7	87.6	77.0	20.4	20.4	20.4	20.4	20.4
Actuated g/C Ratio	0.61	0.55	0.73	0.64	0.17	0.17	0.17	0.17	0.17
v/c Ratio	0.16	0.74	0.80	0.27	0.78	0.19	0.45	0.18	0.46
Control Delay	3.8	11.0	53.1	10.8	75.8	41.2	9.9	41.4	34.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	3.8	11.0	53.1	10.8	75.8	41.2	9.9	41.4	34.4
LOS	A	B	D	B	E	D	A	D	C
Approach Delay		10.8		19.7		39.9			35.9
Approach LOS		B		B		D			D
Queue Length 50th (m)	1.3	28.9	43.7	20.4	30.6	11.6	0.0	8.0	21.3
Queue Length 95th (m)	m2.4	m192.5	#74.3	40.0	48.2	21.4	16.5	16.4	37.3
Internal Link Dist (m)		369.5		273.9		124.0			136.4
Turn Bay Length (m)	20.0		120.0		95.0		5.0	20.0	
Base Capacity (vph)	570	2640	303	3050	254	451	455	320	444
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.74	0.72	0.27	0.53	0.13	0.36	0.12	0.32

Intersection Summary

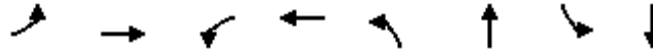
Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 84 (70%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.80
 Intersection Signal Delay: 17.5
 Intersection Capacity Utilization 90.7%
 Analysis Period (min) 15
 # 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: 2: Clyde Ave/Cole Ave & Carling Ave



Lanes, Volumes, Timings
3: Broadview Ave & Carling Ave

12/06/2022

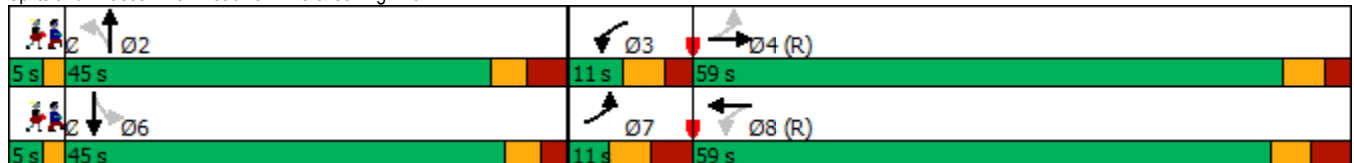


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø1	Ø5
Lane Configurations										
Traffic Volume (vph)	197	1647	99	690	112	24	160	20		
Future Volume (vph)	197	1647	99	690	112	24	160	20		
Lane Group Flow (vph)	219	1946	110	899	124	107	178	172		
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	NA		
Protected Phases	7	4	3	8		2		6	1	5
Permitted Phases	4		8		2		6			
Detector Phase	7	4	3	8	2	2	6	6		
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	3.0	3.0
Minimum Split (s)	12.4	23.2	11.2	24.4	37.0	37.0	35.8	35.8	5.0	5.0
Total Split (s)	11.0	59.0	11.0	59.0	45.0	45.0	45.0	45.0	5.0	5.0
Total Split (%)	9.2%	49.2%	9.2%	49.2%	37.5%	37.5%	37.5%	37.5%	4%	4%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	2.0	2.0
All-Red Time (s)	3.7	2.5	2.5	3.7	3.7	3.7	2.5	2.5	0.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	7.4	6.2	6.2	7.4	7.0	7.0	5.8	5.8		
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	C-Max	Max	Max	Max	Max	Min	Min
Act Effct Green (s)	55.2	52.8	57.6	51.6	38.0	38.0	39.2	39.2		
Actuated g/C Ratio	0.46	0.44	0.48	0.43	0.32	0.32	0.33	0.33		
v/c Ratio	0.90	0.92	0.86	0.46	0.40	0.20	0.46	0.31		
Control Delay	63.1	40.2	74.2	23.0	36.9	11.0	36.9	8.1		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	63.1	40.2	74.2	23.0	36.9	11.0	36.9	8.1		
LOS	E	D	E	C	D	B	D	A		
Approach Delay		42.5		28.6		24.9		22.8		
Approach LOS		D		C		C		C		
Queue Length 50th (m)	27.3	154.5	13.2	57.1	22.8	4.4	33.1	3.5		
Queue Length 95th (m)	#62.5	#178.3	#40.6	83.9	40.9	17.2	54.8	19.3		
Internal Link Dist (m)		239.1		369.5		434.9		268.8		
Turn Bay Length (m)	70.0		50.0		20.0		45.0			
Base Capacity (vph)	244	2107	128	1955	310	534	384	551		
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	0.90	0.92	0.86	0.46	0.40	0.20	0.46	0.31		

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 48 (40%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.92
 Intersection Signal Delay: 35.8
 Intersection LOS: D
 Intersection Capacity Utilization 97.4%
 ICU Level of Service F
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 3: Broadview Ave & Carling Ave



Lanes, Volumes, Timings

4: Clyde Ave & Doheny St/Existing Site Access

12/06/2022



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	34	2	8	3	5	91	298	38	315
Future Volume (vph)	34	2	8	3	5	91	298	38	315
Lane Group Flow (vph)	0	107	0	12	6	101	341	42	439
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4		8			2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	2	2	1	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	24.6	24.6	24.6	24.6	24.6	29.0	29.0	11.0	29.0
Total Split (s)	25.0	25.0	25.0	25.0	25.0	42.0	42.0	23.0	65.0
Total Split (%)	27.8%	27.8%	27.8%	27.8%	27.8%	46.7%	46.7%	25.6%	72.2%
Yellow Time (s)	3.3	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	2.7	2.7	2.7	2.7
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.6		5.6	5.6	6.0	6.0	6.0	6.0
Lead/Lag						Lag	Lag	Lead	
Lead-Lag Optimize?						Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	Max	Max	None	Max
Act Effct Green (s)		11.8		11.8	11.8	58.5	58.5	64.9	66.2
Actuated g/C Ratio		0.14		0.14	0.14	0.69	0.69	0.76	0.78
v/c Ratio		0.42		0.06	0.02	0.16	0.30	0.06	0.34
Control Delay		19.8		30.6	0.2	9.7	9.5	4.2	4.9
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.3
Total Delay		19.8		30.6	0.2	9.7	9.5	4.2	5.2
LOS		B		C	A	A	A	A	A
Approach Delay		19.8		20.5			9.6		5.1
Approach LOS		B		C			A		A
Queue Length 50th (m)		5.6		1.7	0.0	6.6	24.9	1.4	17.8
Queue Length 95th (m)		19.2		6.0	0.0	18.6	53.9	5.5	44.5
Internal Link Dist (m)		281.3		151.2			265.7		124.0
Turn Bay Length (m)					40.0	45.0			
Base Capacity (vph)		373		326	423	623	1146	830	1306
Starvation Cap Reductn		0		0	0	0	0	0	346
Spillback Cap Reductn		0		0	0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0	0
Reduced v/c Ratio		0.29		0.04	0.01	0.16	0.30	0.05	0.46

Intersection Summary

Cycle Length: 90

Actuated Cycle Length: 85

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.42

Intersection Signal Delay: 8.7

Intersection LOS: A

Intersection Capacity Utilization 59.0%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 4: Clyde Ave & Doheny St/Existing Site Access



Lanes, Volumes, Timings
5: Saigon Ct & Carling Ave WB

12/06/2022



Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	29	952	22	52	26
Future Volume (vph)	29	952	22	52	26
Lane Group Flow (vph)	32	1122	0	82	39
Turn Type	Perm	NA	Perm	NA	NA
Protected Phases		8		2	6
Permitted Phases	8		2		
Detector Phase	8	8	2	2	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	29.7	29.7	26.7	26.7	26.7
Total Split (s)	85.0	85.0	35.0	35.0	35.0
Total Split (%)	70.8%	70.8%	29.2%	29.2%	29.2%
Yellow Time (s)	3.7	3.7	3.3	3.3	3.3
All-Red Time (s)	2.0	2.0	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.7	5.7		5.7	5.7
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	C-Max	None	None	None
Act Effct Green (s)	100.8	100.8		12.1	12.1
Actuated g/C Ratio	0.84	0.84		0.10	0.10
v/c Ratio	0.02	0.28		0.52	0.21
Control Delay	2.8	3.0		57.2	41.3
Queue Delay	0.0	0.0		0.0	0.0
Total Delay	2.8	3.0		57.3	41.3
LOS	A	A		E	D
Approach Delay		2.9		57.3	41.3
Approach LOS		A		E	D
Queue Length 50th (m)	1.2	18.8		16.0	6.4
Queue Length 95th (m)	3.6	28.7		29.3	16.5
Internal Link Dist (m)		298.8		45.3	50.2
Turn Bay Length (m)					
Base Capacity (vph)	1423	3937		386	428
Starvation Cap Reductn	0	0		16	0
Spillback Cap Reductn	0	0		0	0
Storage Cap Reductn	0	0		0	0
Reduced v/c Ratio	0.02	0.28		0.22	0.09

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 53 (44%), Referenced to phase 8:WBTL, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.52
 Intersection Signal Delay: 7.6
 Intersection Capacity Utilization 41.2%
 Analysis Period (min) 15
 Intersection LOS: A
 ICU Level of Service A

Splits and Phases: 5: Saigon Ct & Carling Ave WB



Lanes, Volumes, Timings
6: Carling Ave EB & Saigon Ct

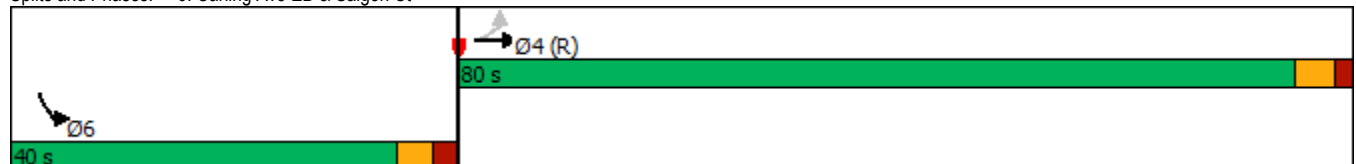
12/06/2022



Lane Group	EBT	SBL
Lane Configurations	↕↕↕	↔↔
Traffic Volume (vph)	1801	42
Future Volume (vph)	1801	42
Lane Group Flow (vph)	2118	47
Turn Type	NA	Prot
Protected Phases	4	6
Permitted Phases		
Detector Phase	4	6
Switch Phase		
Minimum Initial (s)	10.0	5.0
Minimum Split (s)	15.4	22.6
Total Split (s)	80.0	40.0
Total Split (%)	66.7%	33.3%
Yellow Time (s)	3.7	3.3
All-Red Time (s)	1.7	2.3
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	5.4	5.6
Lead/Lag		
Lead-Lag Optimize?		
Recall Mode	C-Max	None
Act Effct Green (s)	105.2	7.1
Actuated g/C Ratio	0.88	0.06
v/c Ratio	0.50	0.24
Control Delay	1.3	56.4
Queue Delay	0.0	0.0
Total Delay	1.3	56.4
LOS	A	E
Approach Delay	1.3	56.4
Approach LOS	A	E
Queue Length 50th (m)	11.0	5.7
Queue Length 95th (m)	14.6	12.2
Internal Link Dist (m)	110.2	45.3
Turn Bay Length (m)		
Base Capacity (vph)	4256	942
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.50	0.05

Intersection Summary
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 1 (1%), Referenced to phase 4:EBTL, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.50
 Intersection Signal Delay: 2.5
 Intersection Capacity Utilization 52.3%
 Analysis Period (min) 15
 Intersection LOS: A
 ICU Level of Service A

Splits and Phases: 6: Carling Ave EB & Saigon Ct



Lanes, Volumes, Timings
 7: Clyde Ave & Laperriere Ave

12/06/2022



Lane Group	WBL	NBT	SBT
Lane Configurations			
Traffic Volume (vph)	128	212	189
Future Volume (vph)	128	212	189
Lane Group Flow (vph)	403	427	420
Sign Control	Stop	Stop	Stop
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 77.6%		ICU Level of Service D	
Analysis Period (min) 15			

HCM Unsignalized Intersection Capacity Analysis
 7: Clyde Ave & Laperriere Ave

12/06/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	128	235	212	172	189	189
Future Volume (vph)	128	235	212	172	189	189
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	142	261	236	191	210	210
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	403	427	420			
Volume Left (vph)	142	0	210			
Volume Right (vph)	261	191	0			
Hadj (s)	-0.27	-0.11	0.19			
Departure Headway (s)	6.0	5.9	6.2			
Degree Utilization, x	0.67	0.70	0.72			
Capacity (veh/h)	563	586	555			
Control Delay (s)	20.4	21.4	23.4			
Approach Delay (s)	20.4	21.4	23.4			
Approach LOS	C	C	C			
Intersection Summary						
Delay			21.8			
Level of Service			C			
Intersection Capacity Utilization			77.6%	ICU Level of Service	D	
Analysis Period (min)			15			

Lanes, Volumes, Timings
 8: Clyde Ave & Woodward Dr

12/06/2022



Lane Group	EBL	EBR	NBT	SBT	SBR
Lane Configurations					
Traffic Volume (vph)	346	8	38	47	270
Future Volume (vph)	346	8	38	47	270
Lane Group Flow (vph)	384	9	55	52	300
Sign Control	Free		Stop	Stop	
Intersection Summary					
Control Type: Unsignalized					
Intersection Capacity Utilization 36.4%			ICU Level of Service A		
Analysis Period (min) 15					

HCM Unsignalized Intersection Capacity Analysis
 8: Clyde Ave & Woodward Dr

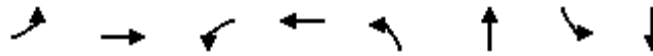
12/06/2022



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	346	8	12	38	47	270
Future Volume (Veh/h)	346	8	12	38	47	270
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	384	9	13	42	52	300
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)	3					
Median type	None					
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	0		794	768	768	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		794	768	768	0
tC, single (s)	4.1		7.1	6.5	6.5	6.2
tC, 2 stage (s)						
tF (s)	2.2		3.5	4.0	4.0	3.3
p0 queue free %	76		92	83	79	72
cM capacity (veh/h)	1623		154	253	253	1085
Direction, Lane #	EB 1	EB 2	NB 1	SB 1		
Volume Total	384	9	55	352		
Volume Left	384	0	13	0		
Volume Right	0	9	0	300		
cSH	1623	1700	220	1273		
Volume to Capacity	0.24	0.01	0.25	0.28		
Queue Length 95th (m)	7.0	0.0	7.3	8.6		
Control Delay (s)	7.9	0.0	26.8	11.5		
Lane LOS	A		D	B		
Approach Delay (s)	7.7		26.8	11.5		
Approach LOS			D	B		
Intersection Summary						
Average Delay			10.7			
Intersection Capacity Utilization			36.4%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings
1: Churchill Ave & Carling Ave

12/06/2022

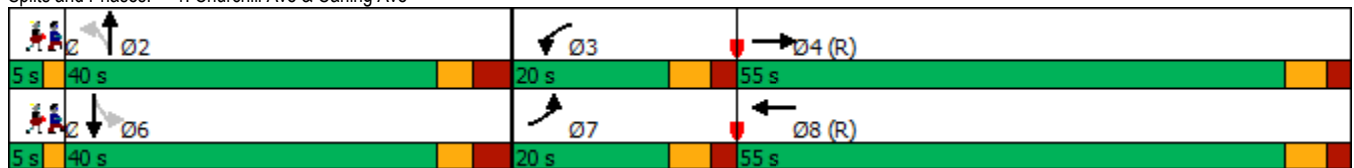


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø1	Ø5
Lane Configurations										
Traffic Volume (vph)	245	892	37	1782	96	33	182	7		
Future Volume (vph)	245	892	37	1782	96	33	182	7		
Lane Group Flow (vph)	272	1011	41	2222	107	66	202	307		
Turn Type	Prot	NA	Prot	NA	Perm	NA	Perm	NA		
Protected Phases	7	4	3	8		2		6	1	5
Permitted Phases					2		6			
Detector Phase	7	4	3	8	2	2	6	6		
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	3.0	3.0
Minimum Split (s)	11.1	34.1	11.1	34.1	39.8	39.8	39.8	39.8	5.0	5.0
Total Split (s)	20.0	55.0	20.0	55.0	40.0	40.0	40.0	40.0	5.0	5.0
Total Split (%)	16.7%	45.8%	16.7%	45.8%	33.3%	33.3%	33.3%	33.3%	4%	4%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	2.0	2.0
All-Red Time (s)	2.4	2.4	2.4	2.4	3.5	3.5	3.5	3.5	0.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.8	6.8	6.8	6.8		
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	C-Max	Max	Max	Max	Max	None	None
Act Effct Green (s)	13.9	56.8	8.3	48.9	38.2	38.2	38.2	38.2		
Actuated g/C Ratio	0.12	0.47	0.07	0.41	0.32	0.32	0.32	0.32		
v/c Ratio	1.39	0.44	0.35	1.14	0.45	0.12	0.50	0.47		
Control Delay	246.2	14.7	71.9	97.9	40.1	18.5	38.5	7.4		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	246.2	14.7	71.9	97.9	40.1	18.5	38.5	7.4		
LOS	F	B	E	F	D	B	D	A		
Approach Delay		63.7		97.4		31.9		19.8		
Approach LOS		E		F		C		B		
Queue Length 50th (m)	~88.0	25.6	8.5	~223.3	20.0	6.1	38.5	4.2		
Queue Length 95th (m)	#142.2	39.5	m17.5	#252.4	38.0	16.3	62.2	26.0		
Internal Link Dist (m)		273.9		176.6		177.0		412.2		
Turn Bay Length (m)	65.0		65.0		20.0		20.0			
Base Capacity (vph)	196	2296	196	1954	236	544	401	658		
Starvation Cap Reductn	0	0	0	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0	0	0		
Reduced v/c Ratio	1.39	0.44	0.21	1.14	0.45	0.12	0.50	0.47		

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 92 (77%), Referenced to phase 4:EBT and 8:WBT, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.39
 Intersection Signal Delay: 75.1
 Intersection Capacity Utilization 115.6%
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Churchill Ave & Carling Ave



Lanes, Volumes, Timings
2: Clyde Ave/Cole Ave & Carling Ave

12/06/2022



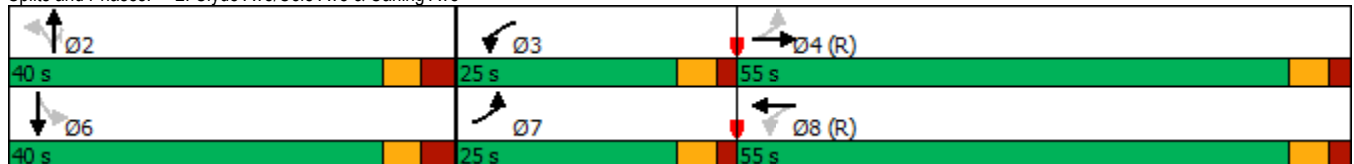
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	NBR	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	74	890	216	1866	126	87	155	22	54
Future Volume (vph)	74	890	216	1866	126	87	155	22	54
Lane Group Flow (vph)	82	1135	240	2124	140	97	172	24	129
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	Perm	NA
Protected Phases	7	4	3	8		2			6
Permitted Phases	4		8		2		2	6	
Detector Phase	7	4	3	8	2	2	2	6	6
Switch Phase									
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	10.4	30.8	10.4	30.8	36.6	36.6	36.6	36.6	36.6
Total Split (s)	25.0	55.0	25.0	55.0	40.0	40.0	40.0	40.0	40.0
Total Split (%)	20.8%	45.8%	20.8%	45.8%	33.3%	33.3%	33.3%	33.3%	33.3%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	1.7	2.1	1.7	2.1	3.3	3.3	3.3	3.3	3.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.4	5.8	5.4	5.8	6.6	6.6	6.6	6.6	6.6
Lead/Lag	Lead	Lag	Lead	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes					
Recall Mode	None	C-Max	None	C-Max	None	None	None	None	None
Act Effct Green (s)	75.1	67.0	86.4	75.4	21.3	21.3	21.3	21.3	21.3
Actuated g/C Ratio	0.63	0.56	0.72	0.63	0.18	0.18	0.18	0.18	0.18
v/c Ratio	0.49	0.43	0.60	0.70	0.69	0.31	0.48	0.11	0.39
Control Delay	44.2	6.8	24.5	17.5	62.6	43.0	17.6	38.5	28.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.2	6.8	24.5	17.5	62.6	43.0	17.6	38.5	28.4
LOS	D	A	C	B	E	D	B	D	C
Approach Delay		9.3		18.2		39.0			30.0
Approach LOS		A		B		D			C
Queue Length 50th (m)	10.7	15.8	33.7	77.6	31.9	20.5	10.3	4.9	17.0
Queue Length 95th (m)	27.4	19.3	m33.3	m75.7	49.0	32.7	28.1	11.4	31.8
Internal Link Dist (m)		369.5		273.9		124.0			136.4
Turn Bay Length (m)	20.0		120.0		95.0		5.0	20.0	
Base Capacity (vph)	334	2668	466	3043	316	496	496	339	486
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.43	0.52	0.70	0.44	0.20	0.35	0.07	0.27

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 93 (78%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.70
 Intersection Signal Delay: 18.1
 Intersection Capacity Utilization 76.9%
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

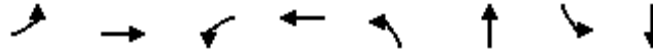
Intersection LOS: B
 ICU Level of Service D

Splits and Phases: 2: Clyde Ave/Cole Ave & Carling Ave



Lanes, Volumes, Timings
3: Broadview Ave & Carling Ave

12/06/2022

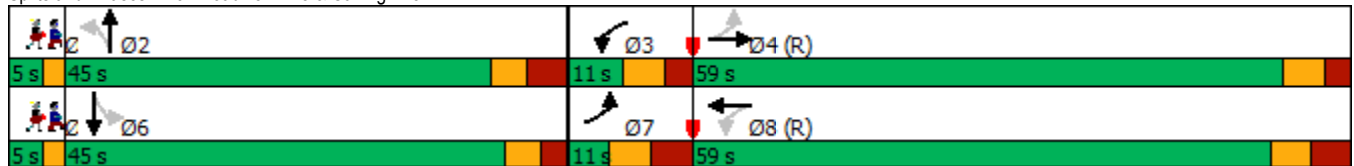


Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	Ø1	Ø5
Lane Configurations										
Traffic Volume (vph)	94	1017	67	1938	181	35	67	23		
Future Volume (vph)	94	1017	67	1938	181	35	67	23		
Lane Group Flow (vph)	104	1164	74	2227	201	76	74	193		
Turn Type	pm+pt	NA	pm+pt	NA	Perm	NA	Perm	NA		
Protected Phases	7	4	3	8		2		6	1	5
Permitted Phases	4		8		2		6			
Detector Phase	7	4	3	8	2	2	6	6		
Switch Phase										
Minimum Initial (s)	5.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	3.0	3.0
Minimum Split (s)	12.4	23.2	11.2	24.4	37.0	37.0	35.8	35.8	5.0	5.0
Total Split (s)	11.0	59.0	11.0	59.0	45.0	45.0	45.0	45.0	5.0	5.0
Total Split (%)	9.2%	49.2%	9.2%	49.2%	37.5%	37.5%	37.5%	37.5%	4%	4%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	2.0	2.0
All-Red Time (s)	3.7	2.5	2.5	3.7	3.7	3.7	2.5	2.5	0.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	7.4	6.2	6.2	7.4	7.0	7.0	5.8	5.8		
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	None	C-Max	Max	Max	Max	Max	Min	Min
Act Effct Green (s)	56.7	55.0	57.6	51.6	38.0	38.0	39.2	39.2		
Actuated g/C Ratio	0.47	0.46	0.48	0.43	0.32	0.32	0.33	0.33		
v/c Ratio	0.95	0.52	0.37	1.07	0.64	0.14	0.18	0.34		
Control Delay	99.9	24.6	25.9	81.3	46.2	17.3	30.5	13.2		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	99.9	24.6	25.9	81.3	46.2	17.3	30.5	13.2		
LOS	F	C	C	F	D	B	C	B		
Approach Delay		30.8		79.5		38.2		18.0		
Approach LOS		C		E		D		B		
Queue Length 50th (m)	12.1	72.1	11.3	~219.4	40.5	6.4	12.4	11.4		
Queue Length 95th (m)	#38.7	86.0	m16.3	#237.0	67.8	17.6	24.3	29.8		
Internal Link Dist (m)		239.1		369.5		434.9		268.8		
Turn Bay Length (m)	70.0		50.0		20.0		45.0			
Base Capacity (vph)	109	2221	201	2079	313	541	405	568		
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	0.95	0.52	0.37	1.07	0.64	0.14	0.18	0.34		

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 77 (64%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.07
 Intersection Signal Delay: 57.7
 Intersection LOS: E
 Intersection Capacity Utilization 105.3%
 ICU Level of Service G
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Broadview Ave & Carling Ave



Existing PM

Synchro 11 Report

Lanes, Volumes, Timings
 4: Clyde Ave & Doheny St/Existing Site Access

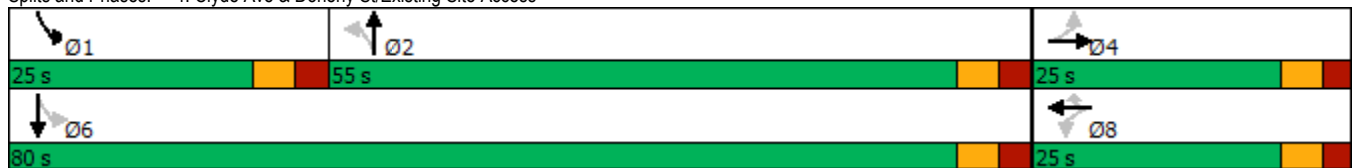
12/06/2022



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	24	5	27	9	20	32	303	79	273
Future Volume (vph)	24	5	27	9	20	32	303	79	273
Lane Group Flow (vph)	0	91	0	40	22	36	359	88	364
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4		8			2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	2	2	1	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	24.6	24.6	24.6	24.6	24.6	29.0	29.0	11.0	29.0
Total Split (s)	25.0	25.0	25.0	25.0	25.0	55.0	55.0	25.0	80.0
Total Split (%)	23.8%	23.8%	23.8%	23.8%	23.8%	52.4%	52.4%	23.8%	76.2%
Yellow Time (s)	3.3	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	2.7	2.7	2.7	2.7
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.6		5.6	5.6	6.0	6.0	6.0	6.0
Lead/Lag						Lag	Lag	Lead	
Lead-Lag Optimize?						Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	Max	Max	None	Max
Act Effct Green (s)		11.7		11.7	11.7	68.0	68.0	77.2	78.4
Actuated g/C Ratio		0.12		0.12	0.12	0.70	0.70	0.79	0.81
v/c Ratio		0.41		0.26	0.08	0.05	0.30	0.12	0.27
Control Delay		22.9		42.9	0.7	8.4	9.1	3.7	3.9
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		22.9		42.9	0.7	8.4	9.1	3.7	3.9
LOS		C		D	A	A	A	A	A
Approach Delay		22.9		27.9			9.1		3.9
Approach LOS		C		C			A		A
Queue Length 50th (m)		5.7		6.9	0.0	2.2	26.7	3.1	14.2
Queue Length 95th (m)		19.5		16.5	0.0	7.7	55.9	9.3	34.2
Internal Link Dist (m)		281.3		151.2			265.7		124.0
Turn Bay Length (m)					40.0	45.0			
Base Capacity (vph)		334		257	370	674	1200	843	1356
Starvation Cap Reductn		0		0	0	0	0	0	0
Spillback Cap Reductn		0		0	0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0	0
Reduced v/c Ratio		0.27		0.16	0.06	0.05	0.30	0.10	0.27

Intersection Summary	
Cycle Length: 105	
Actuated Cycle Length: 97.3	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.41	
Intersection Signal Delay: 9.1	Intersection LOS: A
Intersection Capacity Utilization 53.9%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 4: Clyde Ave & Doheny St/Existing Site Access



Lanes, Volumes, Timings
5: Saigon Ct & Carling Ave WB

12/06/2022



Lane Group	WBL	WBT	NBL	NBT	SBT
Lane Configurations					
Traffic Volume (vph)	32	1927	37	9	87
Future Volume (vph)	32	1927	37	9	87
Lane Group Flow (vph)	36	2154	0	51	114
Turn Type	Perm	NA	Perm	NA	NA
Protected Phases		8		2	6
Permitted Phases	8		2		
Detector Phase	8	8	2	2	6
Switch Phase					
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	29.7	29.7	26.7	26.7	26.7
Total Split (s)	90.0	90.0	30.0	30.0	30.0
Total Split (%)	75.0%	75.0%	25.0%	25.0%	25.0%
Yellow Time (s)	3.7	3.7	3.3	3.3	3.3
All-Red Time (s)	2.0	2.0	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.7	5.7		5.7	5.7
Lead/Lag					
Lead-Lag Optimize?					
Recall Mode	C-Max	C-Max	None	None	None
Act Effct Green (s)	94.8	94.8		13.8	13.8
Actuated g/C Ratio	0.79	0.79		0.12	0.12
v/c Ratio	0.03	0.56		0.41	0.55
Control Delay	3.5	5.8		41.4	56.4
Queue Delay	0.0	0.0		0.0	0.0
Total Delay	3.5	5.8		41.4	56.4
LOS	A	A		D	E
Approach Delay		5.8		41.4	56.4
Approach LOS		A		D	E
Queue Length 50th (m)	1.4	54.1		9.1	24.4
Queue Length 95th (m)	4.8	90.0		20.9	40.0
Internal Link Dist (m)		298.8		45.3	50.2
Turn Bay Length (m)					
Base Capacity (vph)	1332	3842		220	358
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	0.03	0.56		0.23	0.32

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 62 (52%), Referenced to phase 8:WBTL, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.56
 Intersection Signal Delay: 9.0
 Intersection LOS: A
 Intersection Capacity Utilization 60.0%
 ICU Level of Service B
 Analysis Period (min) 15

Splits and Phases: 5: Saigon Ct & Carling Ave WB



Lanes, Volumes, Timings
6: Carling Ave EB & Saigon Ct

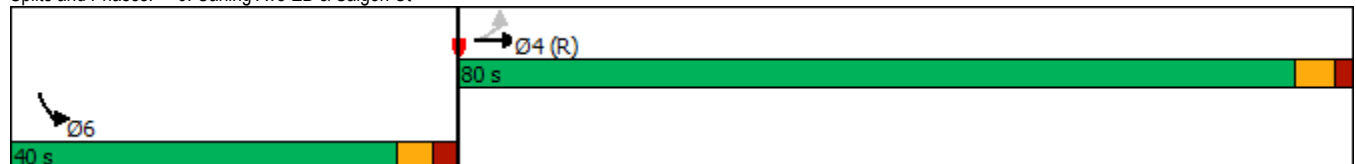
12/06/2022



Lane Group	EBT	SBL
Lane Configurations	↑↑↑	↑↑
Traffic Volume (vph)	1135	119
Future Volume (vph)	1135	119
Lane Group Flow (vph)	1311	132
Turn Type	NA	Prot
Protected Phases	4	6
Permitted Phases		
Detector Phase	4	6
Switch Phase		
Minimum Initial (s)	10.0	5.0
Minimum Split (s)	15.4	22.6
Total Split (s)	80.0	40.0
Total Split (%)	66.7%	33.3%
Yellow Time (s)	3.7	3.3
All-Red Time (s)	1.7	2.3
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	5.4	5.6
Lead/Lag		
Lead-Lag Optimize?		
Recall Mode	C-Max	None
Act Effct Green (s)	98.8	10.2
Actuated g/C Ratio	0.82	0.08
v/c Ratio	0.33	0.47
Control Delay	1.3	38.6
Queue Delay	0.0	0.0
Total Delay	1.3	38.6
LOS	A	D
Approach Delay	1.3	38.6
Approach LOS	A	D
Queue Length 50th (m)	6.8	16.8
Queue Length 95th (m)	13.5	27.0
Internal Link Dist (m)	110.2	45.3
Turn Bay Length (m)		
Base Capacity (vph)	4002	942
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.33	0.14

Intersection Summary
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 105 (88%), Referenced to phase 4:EBTL, Start of Green
 Natural Cycle: 45
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.47
 Intersection Signal Delay: 4.7
 Intersection Capacity Utilization 37.4%
 Analysis Period (min) 15
 Intersection LOS: A
 ICU Level of Service A

Splits and Phases: 6: Carling Ave EB & Saigon Ct



Lanes, Volumes, Timings
 7: Clyde Ave & Laperriere Ave

12/06/2022



Lane Group	WBL	NBT	SBT
Lane Configurations			
Traffic Volume (vph)	249	193	246
Future Volume (vph)	249	193	246
Lane Group Flow (vph)	487	395	432
Sign Control	Stop	Stop	Stop
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 80.6%		ICU Level of Service D	
Analysis Period (min) 15			

HCM Unsignalized Intersection Capacity Analysis
 7: Clyde Ave & Laperriere Ave

12/06/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	249	189	193	163	143	246
Future Volume (vph)	249	189	193	163	143	246
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	277	210	214	181	159	273
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	487	395	432			
Volume Left (vph)	277	0	159			
Volume Right (vph)	210	181	0			
Hadj (s)	-0.09	-0.16	0.16			
Departure Headway (s)	6.3	6.3	6.6			
Degree Utilization, x	0.85	0.70	0.79			
Capacity (veh/h)	556	545	529			
Control Delay (s)	35.3	22.5	29.6			
Approach Delay (s)	35.3	22.5	29.6			
Approach LOS	E	C	D			
Intersection Summary						
Delay			29.6			
Level of Service			D			
Intersection Capacity Utilization			80.6%	ICU Level of Service	D	
Analysis Period (min)			15			

Lanes, Volumes, Timings
 8: Clyde Ave & Woodward Dr

12/06/2022



Lane Group	EBL	EBR	NBT	SBT	SBR
Lane Configurations					
Traffic Volume (vph)	304	17	52	18	479
Future Volume (vph)	304	17	52	18	479
Lane Group Flow (vph)	338	19	81	20	532
Sign Control	Free		Stop	Stop	
Intersection Summary					
Control Type: Unsignalized					
Intersection Capacity Utilization 42.1%			ICU Level of Service A		
Analysis Period (min) 15					

HCM Unsignalized Intersection Capacity Analysis
 8: Clyde Ave & Woodward Dr

12/06/2022

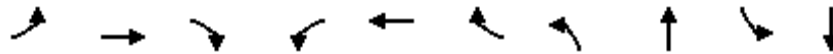


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	304	17	21	52	18	479
Future Volume (Veh/h)	304	17	21	52	18	479
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Hourly flow rate (vph)	338	19	23	58	20	532
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)	3					
Median type	None					
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	0		686	676	676	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		686	676	676	0
tC, single (s)	4.1		7.1	6.5	6.5	6.2
tC, 2 stage (s)						
tF (s)	2.2		3.5	4.0	4.0	3.3
p0 queue free %	79		84	80	93	51
cM capacity (veh/h)	1623		147	297	297	1085
Direction, Lane #	EB 1	EB 2	NB 1	SB 1		
Volume Total	338	19	81	552		
Volume Left	338	0	23	0		
Volume Right	0	19	0	532		
cSH	1623	1700	230	1126		
Volume to Capacity	0.21	0.01	0.35	0.49		
Queue Length 95th (m)	6.0	0.0	11.4	21.1		
Control Delay (s)	7.8	0.0	28.9	11.7		
Lane LOS	A		D	B		
Approach Delay (s)	7.4		28.9	11.7		
Approach LOS			D	B		
Intersection Summary						
Average Delay			11.6			
Intersection Capacity Utilization			42.1%	ICU Level of Service	A	
Analysis Period (min)			15			

Total Future Background 2026

Lanes, Volumes, Timings
1: Churchill Ave & Carling Ave

12/06/2022

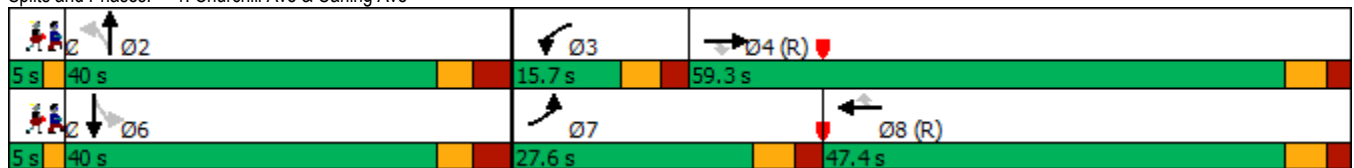


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	Ø1	Ø5
Lane Configurations												
Traffic Volume (vph)	175	1599	104	135	748	154	29	17	347	35		
Future Volume (vph)	175	1599	104	135	748	154	29	17	347	35		
Lane Group Flow (vph)	175	1599	104	135	748	154	29	118	347	282		
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	NA		
Protected Phases	7	4		3	8			2		6	1	5
Permitted Phases			4			8	2		6			
Detector Phase	7	4	4	3	8	8	2	2	6	6		
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	3.0	3.0
Minimum Split (s)	11.1	34.1	34.1	11.1	34.1	34.1	39.8	39.8	39.8	39.8	5.0	5.0
Total Split (s)	27.6	59.3	59.3	15.7	47.4	47.4	40.0	40.0	40.0	40.0	5.0	5.0
Total Split (%)	23.0%	49.4%	49.4%	13.1%	39.5%	39.5%	33.3%	33.3%	33.3%	33.3%	4%	4%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	2.0	2.0
All-Red Time (s)	2.4	2.4	2.4	2.4	2.4	2.4	3.5	3.5	3.5	3.5	0.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1	6.1	6.8	6.8	6.8	6.8		
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	Max	Max	Max	Max	None	None
Act Effct Green (s)	17.1	53.2	53.2	9.6	45.7	45.7	38.2	38.2	38.2	38.2		
Actuated g/C Ratio	0.14	0.44	0.44	0.08	0.38	0.38	0.32	0.32	0.32	0.32		
v/c Ratio	0.73	1.06	0.15	1.00	0.59	0.25	0.11	0.21	0.92	0.45		
Control Delay	59.5	70.3	12.0	133.9	30.1	5.1	30.6	8.8	71.0	8.2		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	59.5	70.3	12.0	133.9	30.1	5.1	30.6	8.8	71.0	8.2		
LOS	E	E	B	F	C	A	C	A	E	A		
Approach Delay		66.0			39.9			13.1		42.9		
Approach LOS		E			D			B		D		
Queue Length 50th (m)	44.1	~212.5	5.9	27.0	74.4	3.5	4.8	2.8	78.7	5.7		
Queue Length 95th (m)	m45.6	m#211.1	m6.9	#70.6	99.7	16.3	12.3	15.9	#135.1	27.1		
Internal Link Dist (m)		273.9			176.6			177.0		412.2		
Turn Bay Length (m)	65.0		30.0	65.0		40.0	20.0		20.0			
Base Capacity (vph)	303	1502	699	135	1266	613	256	550	376	630		
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Reduced v/c Ratio	0.58	1.06	0.15	1.00	0.59	0.25	0.11	0.21	0.92	0.45		

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 92 (77%), Referenced to phase 4:EBT and 8:WBT, Start of Green
 Natural Cycle: 130
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.06
 Intersection Signal Delay: 52.6
 Intersection Capacity Utilization 97.9%
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Churchill Ave & Carling Ave



Lanes, Volumes, Timings
2: Clyde Ave/Cole Ave & Carling Ave

12/06/2022



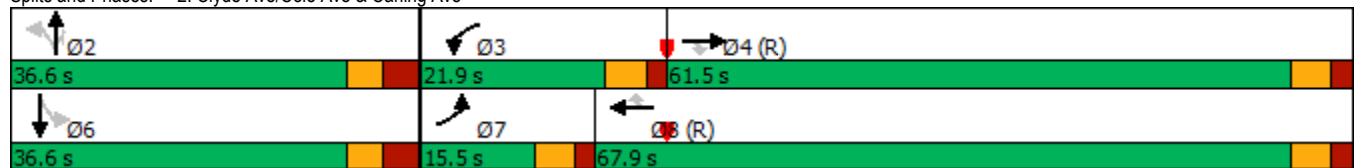
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	61	1704	127	234	767	52	121	51	147	35	63
Future Volume (vph)	61	1704	127	234	767	52	121	51	147	35	63
Lane Group Flow (vph)	61	1704	127	234	767	52	121	51	147	35	129
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA
Protected Phases	7	4		3	8			2			6
Permitted Phases			4			8	2		2	6	
Detector Phase	7	4	4	3	8	8	2	2	2	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	10.4	30.8	30.8	10.4	30.8	30.8	36.6	36.6	36.6	36.6	36.6
Total Split (s)	15.5	61.5	61.5	21.9	67.9	67.9	36.6	36.6	36.6	36.6	36.6
Total Split (%)	12.9%	51.3%	51.3%	18.3%	56.6%	56.6%	30.5%	30.5%	30.5%	30.5%	30.5%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	1.7	2.1	2.1	1.7	2.1	2.1	3.3	3.3	3.3	3.3	3.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.4	5.8	5.8	5.4	5.8	5.8	6.6	6.6	6.6	6.6	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)	9.0	59.5	59.5	23.7	76.5	76.5	19.0	19.0	19.0	19.0	19.0
Actuated g/C Ratio	0.08	0.50	0.50	0.20	0.64	0.64	0.16	0.16	0.16	0.16	0.16
v/c Ratio	0.48	1.01	0.16	0.73	0.36	0.05	0.72	0.18	0.44	0.17	0.44
Control Delay	66.4	29.8	0.2	71.6	5.7	0.2	70.2	42.0	10.4	42.2	33.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.4	29.8	0.2	71.6	5.7	0.2	70.2	42.0	10.4	42.2	33.3
LOS	E	C	A	E	A	A	E	D	B	D	C
Approach Delay		29.0			20.1			38.1			35.2
Approach LOS		C			C			D			D
Queue Length 50th (m)	15.4	~224.3	0.1	57.3	16.0	0.1	27.6	10.6	0.0	7.3	18.6
Queue Length 95th (m)	m16.9	m#234.7	m0.0	#112.6	26.5	m0.4	43.2	19.6	15.7	14.9	33.2
Internal Link Dist (m)		369.5			273.9			124.0			136.4
Turn Bay Length (m)	20.0		105.0	120.0		30.0	95.0		5.0	20.0	
Base Capacity (vph)	145	1681	802	321	2118	963	264	446	439	318	438
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	1.01	0.16	0.73	0.36	0.05	0.46	0.11	0.33	0.11	0.29

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 93 (78%), Referenced to phase 4:EBT and 8:WBT, Start of Green
 Natural Cycle: 140
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.01
 Intersection Signal Delay: 27.4
 Intersection Capacity Utilization 106.3%
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

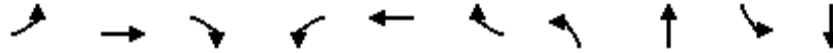
Intersection LOS: C
 ICU Level of Service G

Splits and Phases: 2: Clyde Ave/Cole Ave & Carling Ave



Lanes, Volumes, Timings
3: Broadview Ave & Carling Ave

12/06/2022



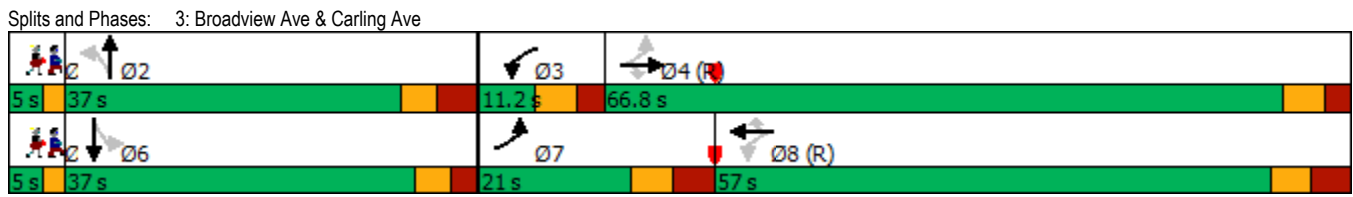
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	Ø1	Ø5
Lane Configurations												
Traffic Volume (vph)	197	1722	104	99	747	119	112	24	160	20		
Future Volume (vph)	197	1722	104	99	747	119	112	24	160	20		
Lane Group Flow (vph)	197	1722	104	99	747	119	112	96	160	155		
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA		
Protected Phases	7	4		3	8			2		6	1	5
Permitted Phases	4		4	8		8	2		6			
Detector Phase	7	4	4	3	8	8	2	2	6	6		
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	3.0	3.0
Minimum Split (s)	12.4	23.2	23.2	11.2	24.4	24.4	37.0	37.0	35.8	35.8	5.0	5.0
Total Split (s)	21.0	66.8	66.8	11.2	57.0	57.0	37.0	37.0	37.0	37.0	5.0	5.0
Total Split (%)	17.5%	55.7%	55.7%	9.3%	47.5%	47.5%	30.8%	30.8%	30.8%	30.8%	4%	4%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	2.0	2.0
All-Red Time (s)	3.7	2.5	2.5	2.5	3.7	3.7	3.7	3.7	2.5	2.5	0.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	7.4	6.2	6.2	6.2	7.4	7.4	7.0	7.0	5.8	5.8		
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	Max	Max	Max	Max	Min	Min
Act Effct Green (s)	69.9	60.6	60.6	57.8	51.6	51.6	30.0	30.0	31.2	31.2		
Actuated g/C Ratio	0.58	0.50	0.50	0.48	0.43	0.43	0.25	0.25	0.26	0.26		
v/c Ratio	0.52	1.01	0.15	0.76	0.53	0.18	0.46	0.22	0.52	0.34		
Control Delay	16.6	53.3	3.1	59.7	43.2	10.5	45.3	13.7	45.0	10.3		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	16.6	53.3	3.1	59.7	43.2	10.5	45.3	13.7	45.0	10.3		
LOS	B	D	A	E	D	B	D	B	D	B		
Approach Delay		47.2			40.8			30.7		27.9		
Approach LOS		D			D			C		C		
Queue Length 50th (m)	20.4	~210.2	0.0	15.9	81.7	5.6	22.4	4.3	32.4	3.6		
Queue Length 95th (m)	32.2	#265.6	7.7	#37.0	96.0	15.9	40.8	17.8	54.5	20.2		
Internal Link Dist (m)		239.1			369.5			434.9		268.8		
Turn Bay Length (m)	70.0		30.0	50.0		30.0	20.0		45.0			
Base Capacity (vph)	404	1711	683	131	1402	651	244	432	309	458		
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Reduced v/c Ratio	0.49	1.01	0.15	0.76	0.53	0.18	0.46	0.22	0.52	0.34		

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 77 (64%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
 Natural Cycle: 120
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.01
 Intersection Signal Delay: 42.7
 Intersection LOS: D
 Intersection Capacity Utilization 111.4%
 ICU Level of Service H
 Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.



Lanes, Volumes, Timings
 4: Clyde Ave & Doheny St/Existing Site Access

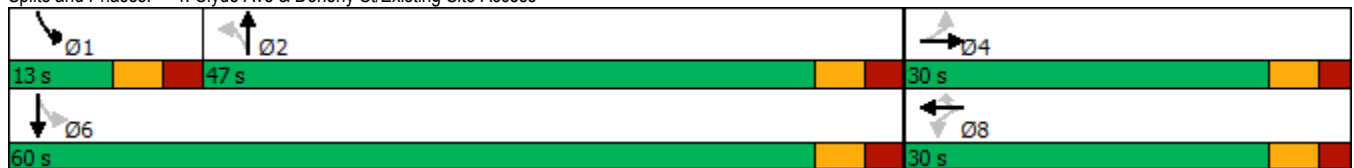
12/06/2022



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	34	2	8	3	5	91	298	38	315
Future Volume (vph)	34	2	8	3	5	91	298	38	315
Lane Group Flow (vph)	0	96	0	11	5	91	307	38	395
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4		8			2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	2	2	1	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	24.6	24.6	24.6	24.6	24.6	29.0	29.0	11.0	29.0
Total Split (s)	30.0	30.0	30.0	30.0	30.0	47.0	47.0	13.0	60.0
Total Split (%)	33.3%	33.3%	33.3%	33.3%	33.3%	52.2%	52.2%	14.4%	66.7%
Yellow Time (s)	3.3	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	2.7	2.7	2.7	2.7
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.6		5.6	5.6	6.0	6.0	6.0	6.0
Lead/Lag						Lag	Lag	Lead	
Lead-Lag Optimize?						Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	Max	Max	None	Max
Act Effct Green (s)		11.8		11.8	11.8	53.9	53.9	60.2	61.5
Actuated g/C Ratio		0.15		0.15	0.15	0.67	0.67	0.75	0.77
v/c Ratio		0.37		0.05	0.02	0.14	0.27	0.05	0.31
Control Delay		18.0		27.8	0.0	10.1	9.8	4.4	5.0
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		18.0		27.8	0.0	10.1	9.8	4.4	5.0
LOS		B		C	A	B	A	A	A
Approach Delay		18.0		19.1			9.9		5.0
Approach LOS		B		B			A		A
Queue Length 50th (m)		4.7		1.4	0.0	5.9	21.7	1.3	15.7
Queue Length 95th (m)		16.6		5.4	0.0	17.0	48.1	5.2	39.9
Internal Link Dist (m)		281.3		151.2			265.7		124.0
Turn Bay Length (m)					40.0	45.0			
Base Capacity (vph)		471		459	527	632	1117	746	1284
Starvation Cap Reductn		0		0	0	0	0	0	0
Spillback Cap Reductn		0		0	0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0	0
Reduced v/c Ratio		0.20		0.02	0.01	0.14	0.27	0.05	0.31

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 80.3	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.37	
Intersection Signal Delay: 8.6	Intersection LOS: A
Intersection Capacity Utilization 59.0%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 4: Clyde Ave & Doheny St/Existing Site Access



Lanes, Volumes, Timings
5: Saigon Ct & Carling Ave WB

12/06/2022



Lane Group	WBL	WBT	WBR	NBL	NBT	SBT
Lane Configurations						
Traffic Volume (vph)	29	1029	58	22	52	26
Future Volume (vph)	29	1029	58	22	52	26
Lane Group Flow (vph)	29	1029	58	0	74	35
Turn Type	Perm	NA	Perm	Perm	NA	NA
Protected Phases		8			2	6
Permitted Phases	8		8	2		
Detector Phase	8	8	8	2	2	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	29.7	29.7	29.7	26.7	26.7	26.7
Total Split (s)	86.0	86.0	86.0	34.0	34.0	34.0
Total Split (%)	71.7%	71.7%	71.7%	28.3%	28.3%	28.3%
Yellow Time (s)	3.7	3.7	3.7	3.3	3.3	3.3
All-Red Time (s)	2.0	2.0	2.0	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.7	5.7	5.7		5.7	5.7
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max	C-Max	C-Max	None	None	None
Act Effct Green (s)	101.2	101.2	101.2		11.7	11.7
Actuated g/C Ratio	0.84	0.84	0.84		0.10	0.10
v/c Ratio	0.02	0.37	0.05		0.48	0.20
Control Delay	2.6	3.4	0.8		49.2	41.7
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	2.6	3.4	0.8		49.3	41.7
LOS	A	A	A		D	D
Approach Delay		3.2			49.3	41.7
Approach LOS		A			D	D
Queue Length 50th (m)	1.0	26.9	0.0		15.7	5.8
Queue Length 95th (m)	3.2	42.3	2.5		m21.9	15.2
Internal Link Dist (m)		298.8			45.3	50.2
Turn Bay Length (m)	50.0		40.0			
Base Capacity (vph)	1429	2776	1237		373	412
Starvation Cap Reductn	0	0	0		14	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.02	0.37	0.05		0.21	0.08

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 62 (52%), Referenced to phase 8:WBTL, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.48
 Intersection Signal Delay: 7.1
 Intersection Capacity Utilization 50.4%
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Saigon Ct & Carling Ave WB



Lanes, Volumes, Timings
6: Carling Ave EB & Saigon Ct

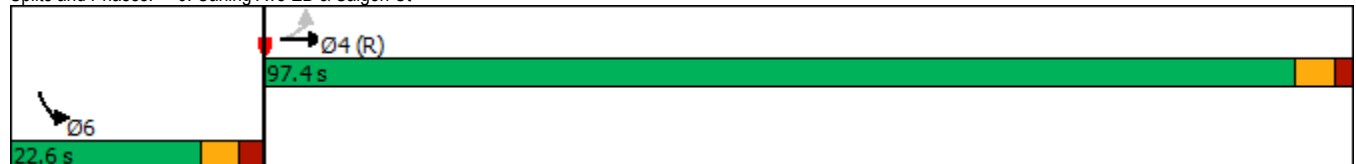
12/06/2022



Lane Group	EBT	SBL
Lane Configurations	↕↕	↕↕
Traffic Volume (vph)	2011	42
Future Volume (vph)	2011	42
Lane Group Flow (vph)	2116	42
Turn Type	NA	Prot
Protected Phases	4	6
Permitted Phases		
Detector Phase	4	6
Switch Phase		
Minimum Initial (s)	10.0	5.0
Minimum Split (s)	15.4	22.6
Total Split (s)	97.4	22.6
Total Split (%)	81.2%	18.8%
Yellow Time (s)	3.7	3.3
All-Red Time (s)	1.7	2.3
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	5.4	5.6
Lead/Lag		
Lead-Lag Optimize?		
Recall Mode	C-Max	None
Act Effct Green (s)	105.3	7.0
Actuated g/C Ratio	0.88	0.06
v/c Ratio	0.71	0.22
Control Delay	3.6	53.2
Queue Delay	0.0	0.0
Total Delay	3.6	53.2
LOS	A	D
Approach Delay	3.6	53.2
Approach LOS	A	D
Queue Length 50th (m)	22.6	5.2
Queue Length 95th (m)	m13.7	11.1
Internal Link Dist (m)	110.2	45.3
Turn Bay Length (m)		
Base Capacity (vph)	2969	465
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.71	0.09

Intersection Summary
 Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 105 (88%), Referenced to phase 4:EBTL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.71
 Intersection Signal Delay: 4.5
 Intersection LOS: A
 Intersection Capacity Utilization 75.2%
 ICU Level of Service D
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Carling Ave EB & Saigon Ct



Lanes, Volumes, Timings
 7: Clyde Ave & Laperriere Ave

12/06/2022



Lane Group	WBL	NBT	SBT
Lane Configurations			
Traffic Volume (vph)	128	212	189
Future Volume (vph)	128	212	189
Lane Group Flow (vph)	363	384	378
Sign Control	Stop	Stop	Stop
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 77.6%		ICU Level of Service D	
Analysis Period (min) 15			

HCM Unsignalized Intersection Capacity Analysis
 7: Clyde Ave & Laperriere Ave

12/06/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	128	235	212	172	189	189
Future Volume (vph)	128	235	212	172	189	189
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	128	235	212	172	189	189
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	363	384	378			
Volume Left (vph)	128	0	189			
Volume Right (vph)	235	172	0			
Hadj (s)	-0.27	-0.11	0.19			
Departure Headway (s)	5.7	5.6	5.8			
Degree Utilization, x	0.57	0.59	0.61			
Capacity (veh/h)	584	614	581			
Control Delay (s)	16.1	16.3	17.7			
Approach Delay (s)	16.1	16.3	17.7			
Approach LOS	C	C	C			
Intersection Summary						
Delay			16.7			
Level of Service			C			
Intersection Capacity Utilization			77.6%	ICU Level of Service	D	
Analysis Period (min)			15			

Lanes, Volumes, Timings
 8: Clyde Ave & Woodward Dr

12/06/2022



Lane Group	EBL	EBR	NBT	SBT	SBR
Lane Configurations					
Traffic Volume (vph)	346	8	38	47	270
Future Volume (vph)	346	8	38	47	270
Lane Group Flow (vph)	346	8	50	47	270
Sign Control	Free		Stop	Stop	
Intersection Summary					
Control Type: Unsignalized					
Intersection Capacity Utilization 36.4%			ICU Level of Service A		
Analysis Period (min) 15					

HCM Unsignalized Intersection Capacity Analysis
8: Clyde Ave & Woodward Dr

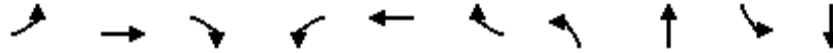
12/06/2022



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	346	8	12	38	47	270
Future Volume (Veh/h)	346	8	12	38	47	270
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	346	8	12	38	47	270
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)	3					
Median type	None					
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	0		716	692	692	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		716	692	692	0
tC, single (s)	4.1		7.1	6.5	6.5	6.2
tC, 2 stage (s)						
tF (s)	2.2		3.5	4.0	4.0	3.3
p0 queue free %	79		94	87	84	75
cM capacity (veh/h)	1623		191	289	289	1085
Direction, Lane #	EB 1	EB 2	NB 1	SB 1		
Volume Total	346	8	50	317		
Volume Left	346	0	12	0		
Volume Right	0	8	0	270		
cSH	1623	1700	257	1274		
Volume to Capacity	0.21	0.00	0.19	0.25		
Queue Length 95th (m)	6.1	0.0	5.4	7.5		
Control Delay (s)	7.8	0.0	22.3	11.0		
Lane LOS	A		C	B		
Approach Delay (s)	7.6		22.3	11.0		
Approach LOS			C	B		
Intersection Summary						
Average Delay			10.1			
Intersection Capacity Utilization			36.4%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings
1: Churchill Ave & Carling Ave

12/06/2022

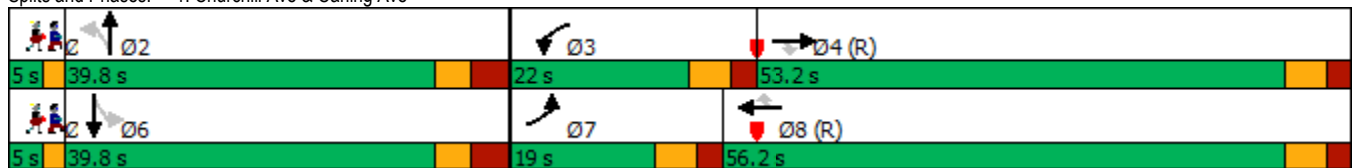


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	Ø1	Ø5
Lane Configurations												
Traffic Volume (vph)	252	946	33	114	1898	218	105	40	187	18		
Future Volume (vph)	252	946	33	114	1898	218	105	40	187	18		
Lane Group Flow (vph)	252	946	33	114	1898	218	105	113	187	304		
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	NA		
Protected Phases	7	4		3	8			2		6	1	5
Permitted Phases			4			8	2		6			
Detector Phase	7	4	4	3	8	8	2	2	6	6		
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	3.0	3.0
Minimum Split (s)	11.1	34.1	34.1	11.1	34.1	34.1	39.8	39.8	39.8	39.8	5.0	5.0
Total Split (s)	19.0	53.2	53.2	22.0	56.2	56.2	39.8	39.8	39.8	39.8	5.0	5.0
Total Split (%)	15.8%	44.3%	44.3%	18.3%	46.8%	46.8%	33.2%	33.2%	33.2%	33.2%	4%	4%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	2.0	2.0
All-Red Time (s)	2.4	2.4	2.4	2.4	2.4	2.4	3.5	3.5	3.5	3.5	0.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1	6.1	6.8	6.8	6.8	6.8		
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	Max	Max	Max	Max	None	None
Act Effct Green (s)	12.9	50.2	50.2	12.8	50.1	50.1	38.0	38.0	38.0	38.0		
Actuated g/C Ratio	0.11	0.42	0.42	0.11	0.42	0.42	0.32	0.32	0.32	0.32		
v/c Ratio	1.38	0.67	0.05	0.63	1.34	0.33	0.44	0.20	0.49	0.46		
Control Delay	245.6	24.1	0.5	72.8	184.7	8.9	39.8	13.2	38.4	7.5		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	245.6	24.1	0.5	72.8	184.7	8.9	39.8	13.2	38.4	7.5		
LOS	F	C	A	E	F	A	D	B	D	A		
Approach Delay		68.8			161.8			26.0		19.3		
Approach LOS		E			F			C		B		
Queue Length 50th (m)	~81.6	70.6	0.0	25.2	~309.3	8.2	19.6	6.6	35.5	4.4		
Queue Length 95th (m)	#134.1	65.7	m0.5	m35.6	#349.1	m16.6	37.2	19.9	58.2	26.0		
Internal Link Dist (m)		273.9			176.6			177.0		412.2		
Turn Bay Length (m)	65.0		30.0	65.0		40.0	20.0		20.0			
Base Capacity (vph)	182	1418	660	224	1415	664	237	552	382	657		
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Reduced v/c Ratio	1.38	0.67	0.05	0.51	1.34	0.33	0.44	0.20	0.49	0.46		

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 92 (77%), Referenced to phase 4:EBT and 8:WBT, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.38
 Intersection Signal Delay: 110.5
 Intersection Capacity Utilization 130.1%
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Churchill Ave & Carling Ave



Lanes, Volumes, Timings
2: Clyde Ave/Cole Ave & Carling Ave

12/06/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	77	948	131	234	1955	58	126	87	155	22	54
Future Volume (vph)	77	948	131	234	1955	58	126	87	155	22	54
Lane Group Flow (vph)	77	948	131	234	1955	58	126	87	155	22	116
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA
Protected Phases	7	4		3	8			2			6
Permitted Phases			4			8	2		2	6	
Detector Phase	7	4	4	3	8	8	2	2	2	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	10.4	30.8	30.8	10.4	30.8	30.8	36.6	36.6	36.6	36.6	36.6
Total Split (s)	11.3	51.2	51.2	32.2	72.1	72.1	36.6	36.6	36.6	36.6	36.6
Total Split (%)	9.4%	42.7%	42.7%	26.8%	60.1%	60.1%	30.5%	30.5%	30.5%	30.5%	30.5%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	1.7	2.1	2.1	1.7	2.1	2.1	3.3	3.3	3.3	3.3	3.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.4	5.8	5.8	5.4	5.8	5.8	6.6	6.6	6.6	6.6	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)	9.0	60.5	60.5	21.2	72.7	72.7	20.5	20.5	20.5	20.5	20.5
Actuated g/C Ratio	0.08	0.50	0.50	0.18	0.61	0.61	0.17	0.17	0.17	0.17	0.17
v/c Ratio	0.61	0.56	0.16	0.78	0.95	0.07	0.62	0.29	0.44	0.10	0.37
Control Delay	70.0	12.5	0.9	50.1	29.4	4.3	57.5	43.0	14.4	38.6	27.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.0	12.5	0.9	50.1	29.4	4.3	57.5	43.0	14.4	38.6	27.6
LOS	E	B	A	D	C	A	E	D	B	D	C
Approach Delay		15.0			30.9			35.9			29.4
Approach LOS		B			C			D			C
Queue Length 50th (m)	18.3	30.4	0.0	58.4	139.8	1.1	28.6	18.6	6.4	4.6	14.9
Queue Length 95th (m)	m#42.7	37.2	2.5	m50.0	m93.6	m0.9	43.7	29.9	22.7	10.8	28.7
Internal Link Dist (m)		369.5			273.9			124.0			136.4
Turn Bay Length (m)	20.0		105.0	120.0		30.0	95.0		5.0	20.0	
Base Capacity (vph)	127	1707	806	378	2053	891	298	446	459	307	440
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.61	0.56	0.16	0.62	0.95	0.07	0.42	0.20	0.34	0.07	0.26

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 93 (78%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 130

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.95

Intersection Signal Delay: 26.7

Intersection LOS: C

Intersection Capacity Utilization 94.9%

ICU Level of Service F

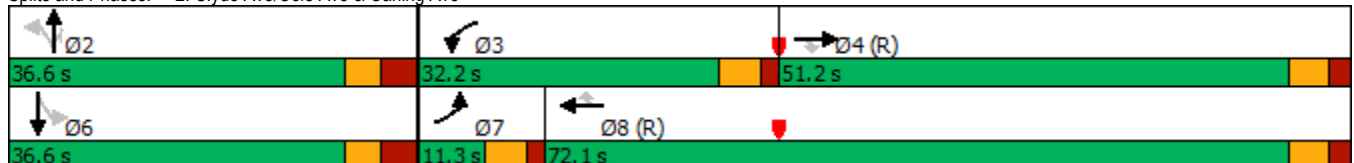
Analysis Period (min) 15

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

Queue shown is maximum after two cycles.

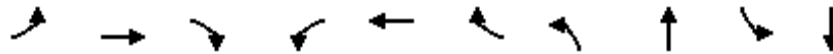
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Clyde Ave/Cole Ave & Carling Ave



Lanes, Volumes, Timings
3: Broadview Ave & Carling Ave

12/06/2022

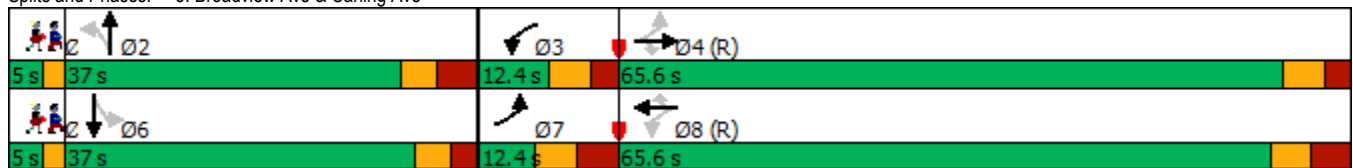


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	Ø1	Ø5
Lane Configurations												
Traffic Volume (vph)	94	1083	31	67	2030	67	181	35	67	23		
Future Volume (vph)	94	1083	31	67	2030	67	181	35	67	23		
Lane Group Flow (vph)	94	1083	31	67	2030	67	181	68	67	173		
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA		
Protected Phases	7	4		3	8			2		6	1	5
Permitted Phases	4		4	8		8	2		6			
Detector Phase	7	4	4	3	8	8	2	2	6	6		
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	3.0	3.0
Minimum Split (s)	12.4	23.2	23.2	11.2	24.4	24.4	37.0	37.0	35.8	35.8	5.0	5.0
Total Split (s)	12.4	65.6	65.6	12.4	65.6	65.6	37.0	37.0	37.0	37.0	5.0	5.0
Total Split (%)	10.3%	54.7%	54.7%	10.3%	54.7%	54.7%	30.8%	30.8%	30.8%	30.8%	4%	4%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	2.0	2.0
All-Red Time (s)	3.7	2.5	2.5	2.5	3.7	3.7	3.7	3.7	2.5	2.5	0.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	7.4	6.2	6.2	6.2	7.4	7.4	7.0	7.0	5.8	5.8		
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	Max	Max	Max	Max	Min	Min
Act Effct Green (s)	64.7	61.9	61.9	65.5	58.2	58.2	30.0	30.0	31.2	31.2		
Actuated g/C Ratio	0.54	0.52	0.52	0.55	0.48	0.48	0.25	0.25	0.26	0.26		
v/c Ratio	0.73	0.62	0.04	0.28	1.23	0.09	0.74	0.16	0.21	0.36		
Control Delay	50.1	23.3	0.1	15.2	138.0	1.9	60.4	21.3	36.8	12.2		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	50.1	23.3	0.1	15.2	138.0	1.9	60.4	21.3	36.8	12.2		
LOS	D	C	A	B	F	A	E	C	D	B		
Approach Delay		24.8			130.0			49.8		19.1		
Approach LOS		C			F			D		B		
Queue Length 50th (m)	9.2	96.5	0.0	7.1	~308.3	0.0	39.3	6.3	12.4	7.0		
Queue Length 95th (m)	#34.3	119.0	0.0	m8.0	m#336.1	m0.2	#72.9	17.9	24.7	25.3		
Internal Link Dist (m)		239.1			369.5			434.9		268.8		
Turn Bay Length (m)	70.0		30.0	50.0		30.0	20.0		45.0			
Base Capacity (vph)	129	1748	781	240	1644	715	246	432	325	485		
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Reduced v/c Ratio	0.73	0.62	0.04	0.28	1.23	0.09	0.74	0.16	0.21	0.36		

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 77 (64%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.23
 Intersection Signal Delay: 85.0
 Intersection LOS: F
 Intersection Capacity Utilization 123.3%
 ICU Level of Service H
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Broadview Ave & Carling Ave



Lanes, Volumes, Timings
4: Clyde Ave & Doheny St/Existing Site Access

12/06/2022



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	24	5	27	9	20	32	303	79	273
Future Volume (vph)	24	5	27	9	20	32	303	79	273
Lane Group Flow (vph)	0	81	0	36	20	32	323	79	328
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4		8			2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	2	2	1	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	24.6	24.6	24.6	24.6	24.6	29.0	29.0	11.0	29.0
Total Split (s)	32.0	32.0	32.0	32.0	32.0	55.0	55.0	18.0	73.0
Total Split (%)	30.5%	30.5%	30.5%	30.5%	30.5%	52.4%	52.4%	17.1%	69.5%
Yellow Time (s)	3.3	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	2.7	2.7	2.7	2.7
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.6		5.6	5.6	6.0	6.0	6.0	6.0
Lead/Lag						Lag	Lag	Lead	
Lead-Lag Optimize?						Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	Max	Max	None	Max
Act Effct Green (s)		11.7		11.7	11.7	61.1	61.1	70.2	71.4
Actuated g/C Ratio		0.13		0.13	0.13	0.68	0.68	0.78	0.79
v/c Ratio		0.35		0.20	0.07	0.05	0.28	0.11	0.25
Control Delay		20.5		37.4	0.5	8.9	9.5	3.9	4.1
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		20.5		37.4	0.5	8.9	9.5	3.9	4.1
LOS		C		D	A	A	A	A	A
Approach Delay		20.5		24.2			9.4		4.1
Approach LOS		C		C			A		A
Queue Length 50th (m)		4.5		5.7	0.0	2.0	23.3	2.7	12.5
Queue Length 95th (m)		16.8		14.1	0.0	7.2	50.1	8.6	31.1
Internal Link Dist (m)		281.3		151.2			265.7		124.0
Turn Bay Length (m)					40.0	45.0			
Base Capacity (vph)		459		408	499	675	1163	798	1330
Starvation Cap Reductn		0		0	0	0	0	0	0
Spillback Cap Reductn		0		0	0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0	0
Reduced v/c Ratio		0.18		0.09	0.04	0.05	0.28	0.10	0.25

Intersection Summary

Cycle Length: 105	
Actuated Cycle Length: 90.3	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.35	
Intersection Signal Delay: 8.9	Intersection LOS: A
Intersection Capacity Utilization 53.9%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 4: Clyde Ave & Doheny St/Existing Site Access



Lanes, Volumes, Timings
5: Saigon Ct & Carling Ave WB

12/06/2022



Lane Group	WBL	WBT	WBR	NBL	NBT	SBT
Lane Configurations						
Traffic Volume (vph)	32	2126	12	37	9	87
Future Volume (vph)	32	2126	12	37	9	87
Lane Group Flow (vph)	32	2126	12	0	46	102
Turn Type	Perm	NA	Perm	Perm	NA	NA
Protected Phases		8			2	6
Permitted Phases	8		8	2		
Detector Phase	8	8	8	2	2	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	29.7	29.7	29.7	26.7	26.7	26.7
Total Split (s)	93.3	93.3	93.3	26.7	26.7	26.7
Total Split (%)	77.8%	77.8%	77.8%	22.3%	22.3%	22.3%
Yellow Time (s)	3.7	3.7	3.7	3.3	3.3	3.3
All-Red Time (s)	2.0	2.0	2.0	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.7	5.7	5.7		5.7	5.7
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max	C-Max	C-Max	None	None	None
Act Effct Green (s)	95.2	95.2	95.2		13.4	13.4
Actuated g/C Ratio	0.79	0.79	0.79		0.11	0.11
v/c Ratio	0.02	0.79	0.01		0.35	0.51
Control Delay	3.4	10.6	0.7		40.3	55.4
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	3.4	10.6	0.7		40.3	55.4
LOS	A	B	A		D	E
Approach Delay		10.4			40.3	55.4
Approach LOS		B			D	E
Queue Length 50th (m)	1.2	110.4	0.0		9.4	21.9
Queue Length 95th (m)	4.4	206.4	0.8		20.5	36.6
Internal Link Dist (m)		298.8			45.3	50.2
Turn Bay Length (m)	50.0		40.0			
Base Capacity (vph)	1338	2689	1161		204	309
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.02	0.79	0.01		0.23	0.33

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 62 (52%), Referenced to phase 8:WBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.79
 Intersection Signal Delay: 13.0
 Intersection Capacity Utilization 82.5%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service E

Splits and Phases: 5: Saigon Ct & Carling Ave WB



Lanes, Volumes, Timings
6: Carling Ave EB & Saigon Ct

12/06/2022

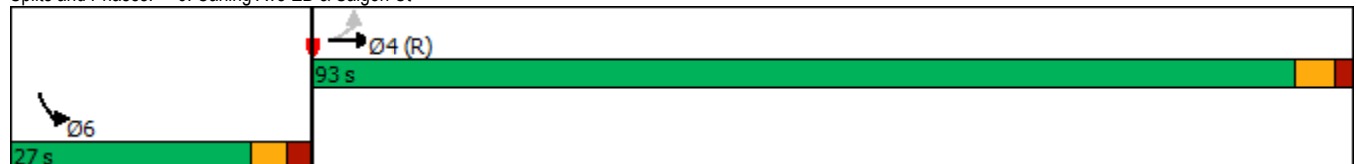


Lane Group	EBT	SBL
Lane Configurations		
Traffic Volume (vph)	1250	119
Future Volume (vph)	1250	119
Lane Group Flow (vph)	1295	119
Turn Type	NA	Prot
Protected Phases	4	6
Permitted Phases		
Detector Phase	4	6
Switch Phase		
Minimum Initial (s)	10.0	5.0
Minimum Split (s)	15.4	22.6
Total Split (s)	93.0	27.0
Total Split (%)	77.5%	22.5%
Yellow Time (s)	3.7	3.3
All-Red Time (s)	1.7	2.3
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	5.4	5.6
Lead/Lag		
Lead-Lag Optimize?		
Recall Mode	C-Max	None
Act Effct Green (s)	99.3	9.7
Actuated g/C Ratio	0.83	0.08
v/c Ratio	0.46	0.45
Control Delay	1.0	45.0
Queue Delay	0.0	0.0
Total Delay	1.0	45.0
LOS	A	D
Approach Delay	1.0	45.0
Approach LOS	A	D
Queue Length 50th (m)	5.0	15.1
Queue Length 95th (m)	5.9	24.7
Internal Link Dist (m)	110.2	45.3
Turn Bay Length (m)		
Base Capacity (vph)	2799	586
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.46	0.20

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 105 (88%), Referenced to phase 4:EBTL, Start of Green
 Natural Cycle: 55
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.46
 Intersection Signal Delay: 4.7
 Intersection Capacity Utilization 51.2%
 Analysis Period (min) 15
 Intersection LOS: A
 ICU Level of Service A

Splits and Phases: 6: Carling Ave EB & Saigon Ct



Lanes, Volumes, Timings
 7: Clyde Ave & Laperriere Ave

12/06/2022



Lane Group	WBL	NBT	SBT
Lane Configurations			
Traffic Volume (vph)	249	193	246
Future Volume (vph)	249	193	246
Lane Group Flow (vph)	438	356	389
Sign Control	Stop	Stop	Stop
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 80.6%		ICU Level of Service D	
Analysis Period (min) 15			

HCM Unsignalized Intersection Capacity Analysis
 7: Clyde Ave & Laperriere Ave

12/06/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	249	189	193	163	143	246
Future Volume (vph)	249	189	193	163	143	246
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	249	189	193	163	143	246
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	438	356	389			
Volume Left (vph)	249	0	143			
Volume Right (vph)	189	163	0			
Hadj (s)	-0.09	-0.16	0.16			
Departure Headway (s)	5.9	5.9	6.1			
Degree Utilization, x	0.72	0.58	0.66			
Capacity (veh/h)	576	577	554			
Control Delay (s)	22.7	16.7	20.2			
Approach Delay (s)	22.7	16.7	20.2			
Approach LOS	C	C	C			
Intersection Summary						
Delay			20.1			
Level of Service			C			
Intersection Capacity Utilization			80.6%	ICU Level of Service	D	
Analysis Period (min)			15			

Lanes, Volumes, Timings
 8: Clyde Ave & Woodward Dr

12/06/2022



Lane Group	EBL	EBR	NBT	SBT	SBR
Lane Configurations					
Traffic Volume (vph)	304	17	52	18	479
Future Volume (vph)	304	17	52	18	479
Lane Group Flow (vph)	304	17	73	18	479
Sign Control	Free		Stop	Stop	
Intersection Summary					
Control Type: Unsignalized					
Intersection Capacity Utilization 42.1%			ICU Level of Service A		
Analysis Period (min) 15					

HCM Unsignalized Intersection Capacity Analysis
 8: Clyde Ave & Woodward Dr

12/06/2022

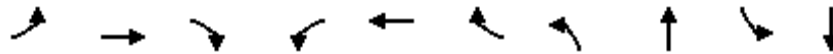


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	304	17	21	52	18	479
Future Volume (Veh/h)	304	17	21	52	18	479
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	304	17	21	52	18	479
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)	3					
Median type	None					
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	0		617	608	608	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		617	608	608	0
tC, single (s)	4.1		7.1	6.5	6.5	6.2
tC, 2 stage (s)						
tF (s)	2.2		3.5	4.0	4.0	3.3
p0 queue free %	81		89	84	95	56
cM capacity (veh/h)	1623		185	333	333	1085
Direction, Lane #	EB 1	EB 2	NB 1	SB 1		
Volume Total	304	17	73	497		
Volume Left	304	0	21	0		
Volume Right	0	17	0	479		
cSH	1623	1700	271	1126		
Volume to Capacity	0.19	0.01	0.27	0.44		
Queue Length 95th (m)	5.2	0.0	8.1	17.5		
Control Delay (s)	7.7	0.0	23.1	11.1		
Lane LOS	A		C	B		
Approach Delay (s)	7.3		23.1	11.1		
Approach LOS			C	B		
Intersection Summary						
Average Delay			10.7			
Intersection Capacity Utilization			42.1%	ICU Level of Service	A	
Analysis Period (min)			15			

Total Future Background 2036

Lanes, Volumes, Timings
1: Churchill Ave & Carling Ave

12/06/2022

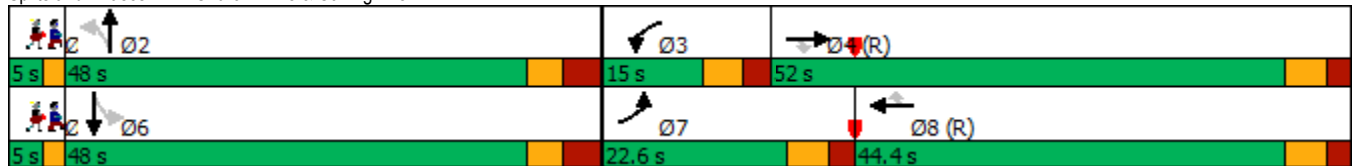


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	Ø1	Ø5
Lane Configurations												
Traffic Volume (vph)	175	1674	98	181	784	154	11	44	347	44		
Future Volume (vph)	175	1674	98	181	784	154	11	44	347	44		
Lane Group Flow (vph)	175	1674	98	181	784	154	11	288	347	291		
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	NA		
Protected Phases	7	4		3	8			2		6	1	5
Permitted Phases			4			8	2		6			
Detector Phase	7	4	4	3	8	8	2	2	6	6		
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	3.0	3.0
Minimum Split (s)	11.1	34.1	34.1	11.1	34.1	34.1	39.8	39.8	39.8	39.8	5.0	5.0
Total Split (s)	22.6	52.0	52.0	15.0	44.4	44.4	48.0	48.0	48.0	48.0	5.0	5.0
Total Split (%)	18.8%	43.3%	43.3%	12.5%	37.0%	37.0%	40.0%	40.0%	40.0%	40.0%	4%	4%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	2.0	2.0
All-Red Time (s)	2.4	2.4	2.4	2.4	2.4	2.4	3.5	3.5	3.5	3.5	0.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1	6.1	6.8	6.8	6.8	6.8		
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	Max	Max	Max	Max	None	None
Act Effct Green (s)	15.3	45.9	45.9	8.9	39.5	39.5	46.2	46.2	46.2	46.2		
Actuated g/C Ratio	0.13	0.38	0.38	0.07	0.33	0.33	0.38	0.38	0.38	0.38		
v/c Ratio	0.81	1.29	0.16	1.45	0.72	0.28	0.03	0.39	1.05	0.41		
Control Delay	59.1	169.3	14.0	278.1	37.1	5.5	23.5	6.8	100.6	7.0		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	59.1	169.3	14.0	278.1	37.1	5.5	23.5	6.8	100.6	7.0		
LOS	E	F	B	F	D	A	C	A	F	A		
Approach Delay		151.6			71.7			7.4		57.9		
Approach LOS		F			E			A		E		
Queue Length 50th (m)	44.1	~258.9	6.2	~55.9	86.7	4.0	1.6	6.5	~89.0	6.5		
Queue Length 95th (m)	m42.8	m#228.5	m5.9	#100.6	109.2	16.3	5.5	25.5	#146.3	26.1		
Internal Link Dist (m)		273.9			176.6			177.0		412.2		
Turn Bay Length (m)	65.0		30.0	65.0		40.0	20.0		20.0			
Base Capacity (vph)	233	1296	618	125	1093	551	330	733	330	714		
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Reduced v/c Ratio	0.75	1.29	0.16	1.45	0.72	0.28	0.03	0.39	1.05	0.41		

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 92 (77%), Referenced to phase 4:EBT and 8:WBT, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.45
 Intersection Signal Delay: 103.6
 Intersection Capacity Utilization 128.7%
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Churchill Ave & Carling Ave



Lanes, Volumes, Timings
2: Clyde Ave/Cole Ave & Carling Ave

12/06/2022

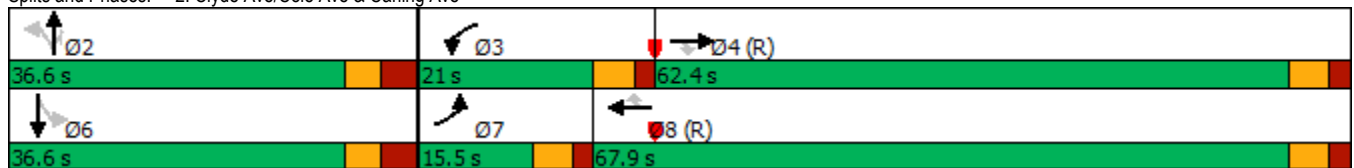


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	61	1780	140	234	785	52	159	51	147	35	63
Future Volume (vph)	61	1780	140	234	785	52	159	51	147	35	63
Lane Group Flow (vph)	61	1780	140	234	785	52	159	51	147	35	129
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA
Protected Phases	7	4		3	8			2			6
Permitted Phases			4			8	2		2	6	
Detector Phase	7	4	4	3	8	8	2	2	2	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	10.4	30.8	30.8	10.4	30.8	30.8	36.6	36.6	36.6	36.6	36.6
Total Split (s)	15.5	62.4	62.4	21.0	67.9	67.9	36.6	36.6	36.6	36.6	36.6
Total Split (%)	12.9%	52.0%	52.0%	17.5%	56.6%	56.6%	30.5%	30.5%	30.5%	30.5%	30.5%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	1.7	2.1	2.1	1.7	2.1	2.1	3.3	3.3	3.3	3.3	3.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.4	5.8	5.8	5.4	5.8	5.8	6.6	6.6	6.6	6.6	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)	9.0	57.4	57.4	22.8	73.5	73.5	22.0	22.0	22.0	22.0	22.0
Actuated g/C Ratio	0.08	0.48	0.48	0.19	0.61	0.61	0.18	0.18	0.18	0.18	0.18
v/c Ratio	0.48	1.10	0.18	0.75	0.39	0.06	0.81	0.16	0.41	0.15	0.39
Control Delay	68.8	60.5	0.2	74.3	4.9	0.2	74.7	39.5	9.4	39.6	30.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.8	60.5	0.2	74.3	4.9	0.2	74.7	39.5	9.4	39.6	30.4
LOS	E	E	A	E	A	A	E	D	A	D	C
Approach Delay		56.5			19.8			42.8			32.4
Approach LOS		E			B			D			C
Queue Length 50th (m)	15.4	~247.9	0.1	57.8	13.8	0.0	36.1	10.2	0.0	7.0	17.8
Queue Length 95th (m)	m16.1	m#230.1	m0.0	m#112.4	22.7	m0.1	56.5	19.6	15.7	14.9	33.2
Internal Link Dist (m)		369.5			273.9			124.0			136.4
Turn Bay Length (m)	20.0		105.0	120.0		30.0	95.0		5.0	20.0	
Base Capacity (vph)	145	1621	779	310	2035	928	269	446	439	318	438
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	1.10	0.18	0.75	0.39	0.06	0.59	0.11	0.33	0.11	0.29

Intersection Summary

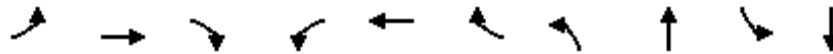
Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 93 (78%), Referenced to phase 4:EBT and 8:WBT, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.10
 Intersection Signal Delay: 43.0
 Intersection LOS: D
 Intersection Capacity Utilization 108.5%
 ICU Level of Service G
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Clyde Ave/Cole Ave & Carling Ave



Lanes, Volumes, Timings
3: Broadview Ave & Carling Ave

12/06/2022

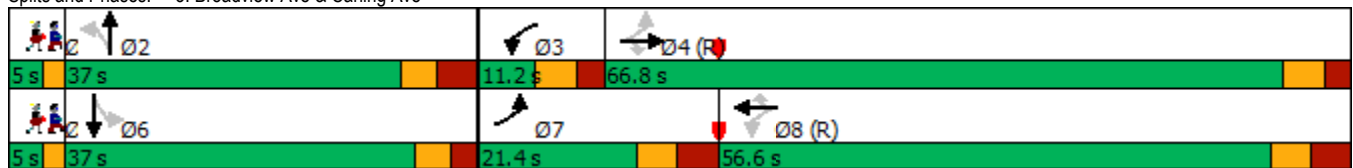


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	Ø1	Ø5
Lane Configurations												
Traffic Volume (vph)	197	1811	104	99	801	119	112	24	160	20		
Future Volume (vph)	197	1811	104	99	801	119	112	24	160	20		
Lane Group Flow (vph)	197	1811	104	99	801	119	112	96	160	155		
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA		
Protected Phases	7	4		3	8			2		6	1	5
Permitted Phases	4		4	8		8	2		6			
Detector Phase	7	4	4	3	8	8	2	2	6	6		
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	3.0	3.0
Minimum Split (s)	12.4	23.2	23.2	11.2	24.4	24.4	37.0	37.0	35.8	35.8	5.0	5.0
Total Split (s)	21.4	66.8	66.8	11.2	56.6	56.6	37.0	37.0	37.0	37.0	5.0	5.0
Total Split (%)	17.8%	55.7%	55.7%	9.3%	47.2%	47.2%	30.8%	30.8%	30.8%	30.8%	4%	4%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	2.0	2.0
All-Red Time (s)	3.7	2.5	2.5	2.5	3.7	3.7	3.7	3.7	2.5	2.5	0.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	7.4	6.2	6.2	6.2	7.4	7.4	7.0	7.0	5.8	5.8		
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	Max	Max	Max	Max	Min	Min
Act Effct Green (s)	69.9	60.6	60.6	57.7	51.5	51.5	30.0	30.0	31.2	31.2		
Actuated g/C Ratio	0.58	0.50	0.50	0.48	0.43	0.43	0.25	0.25	0.26	0.26		
v/c Ratio	0.55	1.06	0.15	0.76	0.57	0.18	0.46	0.22	0.52	0.34		
Control Delay	17.5	68.9	3.1	58.1	44.3	10.5	45.3	13.7	45.0	10.3		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	17.5	68.9	3.1	58.1	44.3	10.5	45.3	13.7	45.0	10.3		
LOS	B	E	A	E	D	B	D	B	D	B		
Approach Delay		60.8			41.7			30.7		27.9		
Approach LOS		E			D			C		C		
Queue Length 50th (m)	20.4	~246.3	0.0	16.1	91.2	6.0	22.4	4.3	32.4	3.6		
Queue Length 95th (m)	32.2	#288.5	7.7	m#37.2	106.2	16.2	40.8	17.8	54.5	20.2		
Internal Link Dist (m)		239.1			369.5			434.9		268.8		
Turn Bay Length (m)	70.0		30.0	50.0		30.0	20.0		45.0			
Base Capacity (vph)	388	1711	683	131	1400	650	244	432	309	458		
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Reduced v/c Ratio	0.51	1.06	0.15	0.76	0.57	0.18	0.46	0.22	0.52	0.34		

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 77 (64%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
 Natural Cycle: 120
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.06
 Intersection Signal Delay: 50.9
 Intersection LOS: D
 Intersection Capacity Utilization 114.0%
 ICU Level of Service H
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 3: Broadview Ave & Carling Ave



Lanes, Volumes, Timings
 4: Clyde Ave & Doheny St/Existing Site Access

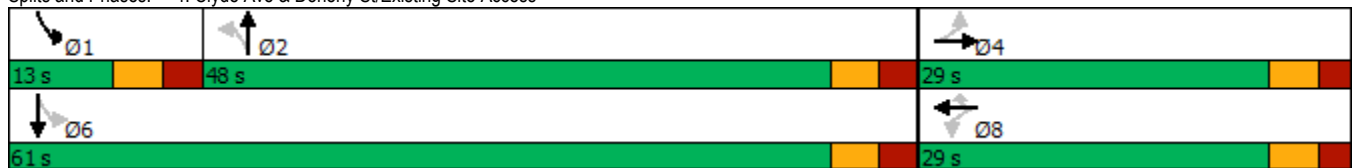
12/06/2022



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	34	2	8	3	5	91	336	38	328
Future Volume (vph)	34	2	8	3	5	91	336	38	328
Lane Group Flow (vph)	0	96	0	11	5	91	345	38	408
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4		8			2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	2	2	1	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	24.6	24.6	24.6	24.6	24.6	29.0	29.0	11.0	29.0
Total Split (s)	29.0	29.0	29.0	29.0	29.0	48.0	48.0	13.0	61.0
Total Split (%)	32.2%	32.2%	32.2%	32.2%	32.2%	53.3%	53.3%	14.4%	67.8%
Yellow Time (s)	3.3	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	2.7	2.7	2.7	2.7
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.6		5.6	5.6	6.0	6.0	6.0	6.0
Lead/Lag						Lag	Lag	Lead	
Lead-Lag Optimize?						Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	Max	Max	None	Max
Act Effct Green (s)		11.8		11.8	11.8	54.9	54.9	61.2	62.5
Actuated g/C Ratio		0.15		0.15	0.15	0.68	0.68	0.75	0.77
v/c Ratio		0.38		0.05	0.02	0.14	0.31	0.05	0.32
Control Delay		18.3		28.3	0.0	9.9	10.0	4.4	5.0
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		18.3		28.3	0.0	9.9	10.0	4.4	5.0
LOS		B		C	A	A	A	A	A
Approach Delay		18.3		19.4			10.0		5.0
Approach LOS		B		B			A		A
Queue Length 50th (m)		4.7		1.4	0.0	5.9	25.1	1.3	16.4
Queue Length 95th (m)		16.9		5.4	0.0	17.0	54.7	5.2	41.4
Internal Link Dist (m)		281.3		151.2			265.7		124.0
Turn Bay Length (m)					40.0	45.0			
Base Capacity (vph)		449		434	505	628	1124	718	1290
Starvation Cap Reductn		0		0	0	0	0	0	0
Spillback Cap Reductn		0		0	0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0	0
Reduced v/c Ratio		0.21		0.03	0.01	0.14	0.31	0.05	0.32

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 81.3	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.38	
Intersection Signal Delay: 8.7	Intersection LOS: A
Intersection Capacity Utilization 59.7%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 4: Clyde Ave & Doheny St/Existing Site Access



Lanes, Volumes, Timings
5: Saigon Ct & Carling Ave WB

12/06/2022



Lane Group	WBL	WBT	WBR	NBL	NBT	SBT
Lane Configurations						
Traffic Volume (vph)	29	1123	58	22	52	26
Future Volume (vph)	29	1123	58	22	52	26
Lane Group Flow (vph)	29	1123	58	0	74	35
Turn Type	Perm	NA	Perm	Perm	NA	NA
Protected Phases		8			2	6
Permitted Phases	8		8	2		
Detector Phase	8	8	8	2	2	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	29.7	29.7	29.7	26.7	26.7	26.7
Total Split (s)	87.0	87.0	87.0	33.0	33.0	33.0
Total Split (%)	72.5%	72.5%	72.5%	27.5%	27.5%	27.5%
Yellow Time (s)	3.7	3.7	3.7	3.3	3.3	3.3
All-Red Time (s)	2.0	2.0	2.0	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.7	5.7	5.7		5.7	5.7
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max	C-Max	C-Max	None	None	None
Act Effct Green (s)	101.2	101.2	101.2		11.7	11.7
Actuated g/C Ratio	0.84	0.84	0.84		0.10	0.10
v/c Ratio	0.02	0.40	0.05		0.48	0.20
Control Delay	2.6	3.6	0.8		53.2	41.7
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	2.6	3.6	0.8		53.2	41.7
LOS	A	A	A		D	D
Approach Delay		3.4			53.2	41.7
Approach LOS		A			D	D
Queue Length 50th (m)	1.0	30.6	0.0		16.1	5.8
Queue Length 95th (m)	3.2	48.0	2.6		m20.0	15.2
Internal Link Dist (m)		298.8			45.3	50.2
Turn Bay Length (m)	50.0		40.0			
Base Capacity (vph)	1429	2776	1237		360	398
Starvation Cap Reductn	0	0	0		14	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.02	0.40	0.05		0.21	0.09

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 62 (52%), Referenced to phase 8:WBTL, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.48
 Intersection Signal Delay: 7.2
 Intersection LOS: A
 Intersection Capacity Utilization 53.1%
 ICU Level of Service A
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Saigon Ct & Carling Ave WB



Lanes, Volumes, Timings
6: Carling Ave EB & Saigon Ct

12/06/2022

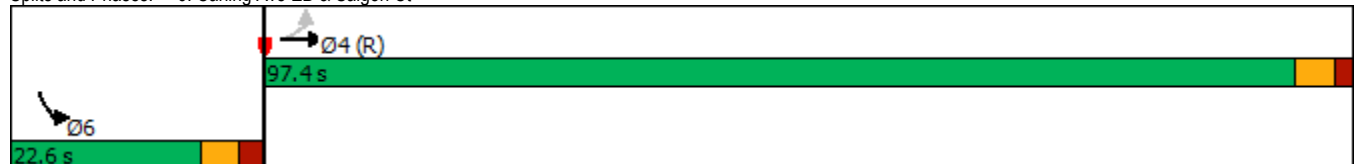


Lane Group	EBT	SBL
Lane Configurations		
Traffic Volume (vph)	2244	42
Future Volume (vph)	2244	42
Lane Group Flow (vph)	2349	42
Turn Type	NA	Prot
Protected Phases	4	6
Permitted Phases		
Detector Phase	4	6
Switch Phase		
Minimum Initial (s)	10.0	5.0
Minimum Split (s)	15.4	22.6
Total Split (s)	97.4	22.6
Total Split (%)	81.2%	18.8%
Yellow Time (s)	3.7	3.3
All-Red Time (s)	1.7	2.3
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	5.4	5.6
Lead/Lag		
Lead-Lag Optimize?		
Recall Mode	C-Max	None
Act Effct Green (s)	105.3	7.0
Actuated g/C Ratio	0.88	0.06
v/c Ratio	0.79	0.22
Control Delay	8.4	52.9
Queue Delay	0.0	0.0
Total Delay	8.4	52.9
LOS	A	D
Approach Delay	8.4	52.9
Approach LOS	A	D
Queue Length 50th (m)	84.3	5.2
Queue Length 95th (m)	m25.7	11.1
Internal Link Dist (m)	110.2	45.3
Turn Bay Length (m)		
Base Capacity (vph)	2969	465
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.79	0.09

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 105 (88%), Referenced to phase 4:EBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.79
 Intersection Signal Delay: 9.2
 Intersection Capacity Utilization 82.0%
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Carling Ave EB & Saigon Ct



Lanes, Volumes, Timings
 7: Clyde Ave & Laperriere Ave

12/06/2022



Lane Group	WBL	NBT	SBT
Lane Configurations			
Traffic Volume (vph)	128	231	247
Future Volume (vph)	128	231	247
Lane Group Flow (vph)	368	403	456
Sign Control	Stop	Stop	Stop
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 83.4%		ICU Level of Service E	
Analysis Period (min) 15			

HCM Unsignalized Intersection Capacity Analysis
 7: Clyde Ave & Laperriere Ave

12/06/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	128	240	231	172	209	247
Future Volume (vph)	128	240	231	172	209	247
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	128	240	231	172	209	247
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	368	403	456			
Volume Left (vph)	128	0	209			
Volume Right (vph)	240	172	0			
Hadj (s)	-0.27	-0.10	0.19			
Departure Headway (s)	6.0	5.8	6.0			
Degree Utilization, x	0.61	0.65	0.76			
Capacity (veh/h)	560	591	576			
Control Delay (s)	18.0	19.0	25.3			
Approach Delay (s)	18.0	19.0	25.3			
Approach LOS	C	C	D			
Intersection Summary						
Delay			21.0			
Level of Service			C			
Intersection Capacity Utilization			83.4%	ICU Level of Service	E	
Analysis Period (min)			15			

Lanes, Volumes, Timings
 8: Clyde Ave & Woodward Dr

12/06/2022



Lane Group	EBL	EBR	NBT	SBT	SBR
Lane Configurations					
Traffic Volume (vph)	365	8	38	47	328
Future Volume (vph)	365	8	38	47	328
Lane Group Flow (vph)	365	8	50	47	328
Sign Control	Free		Stop	Stop	
Intersection Summary					
Control Type: Unsignalized					
Intersection Capacity Utilization 37.5%			ICU Level of Service A		
Analysis Period (min) 15					

HCM Unsignalized Intersection Capacity Analysis
8: Clyde Ave & Woodward Dr

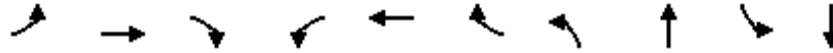
12/06/2022



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	365	8	12	38	47	328
Future Volume (Veh/h)	365	8	12	38	47	328
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	365	8	12	38	47	328
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)	3					
Median type	None					
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	0		754	730	730	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		754	730	730	0
tC, single (s)	4.1		7.1	6.5	6.5	6.2
tC, 2 stage (s)						
tF (s)	2.2		3.5	4.0	4.0	3.3
p0 queue free %	78		93	86	83	70
cM capacity (veh/h)	1623		164	271	271	1085
Direction, Lane #	EB 1	EB 2	NB 1	SB 1		
Volume Total	365	8	50	375		
Volume Left	365	0	12	0		
Volume Right	0	8	0	328		
cSH	1623	1700	234	1240		
Volume to Capacity	0.22	0.00	0.21	0.30		
Queue Length 95th (m)	6.6	0.0	6.0	9.8		
Control Delay (s)	7.9	0.0	24.5	11.2		
Lane LOS	A		C	B		
Approach Delay (s)	7.7		24.5	11.2		
Approach LOS			C	B		
Intersection Summary						
Average Delay			10.4			
Intersection Capacity Utilization			37.5%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings
1: Churchill Ave & Carling Ave

12/06/2022

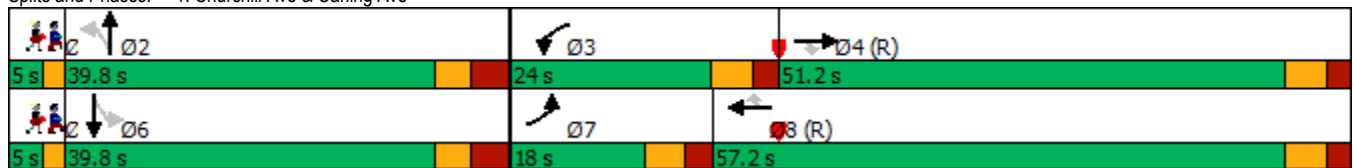


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	Ø1	Ø5
Lane Configurations												
Traffic Volume (vph)	252	990	18	236	1987	218	96	54	187	40		
Future Volume (vph)	252	990	18	236	1987	218	96	54	187	40		
Lane Group Flow (vph)	252	990	18	236	1987	218	96	202	187	326		
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	NA		
Protected Phases	7	4		3	8			2		6	1	5
Permitted Phases			4			8	2		6			
Detector Phase	7	4	4	3	8	8	2	2	6	6		
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	3.0	3.0
Minimum Split (s)	11.1	34.1	34.1	11.1	34.1	34.1	39.8	39.8	39.8	39.8	5.0	5.0
Total Split (s)	18.0	51.2	51.2	24.0	57.2	57.2	39.8	39.8	39.8	39.8	5.0	5.0
Total Split (%)	15.0%	42.7%	42.7%	20.0%	47.7%	47.7%	33.2%	33.2%	33.2%	33.2%	4%	4%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	2.0	2.0
All-Red Time (s)	2.4	2.4	2.4	2.4	2.4	2.4	3.5	3.5	3.5	3.5	0.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1	6.1	6.8	6.8	6.8	6.8		
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	Max	Max	Max	Max	None	None
Act Effct Green (s)	11.9	45.1	45.1	17.9	51.1	51.1	38.0	38.0	38.0	38.0		
Actuated g/C Ratio	0.10	0.38	0.38	0.15	0.43	0.43	0.32	0.32	0.32	0.32		
v/c Ratio	1.50	0.78	0.03	0.94	1.38	0.32	0.44	0.35	0.58	0.49		
Control Delay	291.0	33.7	0.1	88.1	199.3	9.1	40.1	15.7	43.1	9.3		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	291.0	33.7	0.1	88.1	199.3	9.1	40.1	15.7	43.1	9.3		
LOS	F	C	A	F	F	A	D	B	D	A		
Approach Delay		84.7			171.6			23.6		21.6		
Approach LOS		F			F			C		C		
Queue Length 50th (m)	~84.8	72.1	0.0	53.7	~329.0	6.5	17.9	15.2	36.8	9.0		
Queue Length 95th (m)	#137.5	82.6	m0.0	m#72.0	#368.0	m15.7	35.0	34.7	61.8	33.3		
Internal Link Dist (m)		273.9			176.6			177.0		412.2		
Turn Bay Length (m)	65.0		30.0	65.0		40.0	20.0		20.0			
Base Capacity (vph)	168	1274	604	252	1443	676	220	571	320	660		
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Reduced v/c Ratio	1.50	0.78	0.03	0.94	1.38	0.32	0.44	0.35	0.58	0.49		

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 92 (77%), Referenced to phase 4:EBT and 8:WBT, Start of Green
 Natural Cycle: 150
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.50
 Intersection Signal Delay: 120.5
 Intersection Capacity Utilization 132.6%
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Churchill Ave & Carling Ave



Lanes, Volumes, Timings
2: Clyde Ave/Cole Ave & Carling Ave

12/06/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	77	977	164	234	2039	58	146	87	155	22	54
Future Volume (vph)	77	977	164	234	2039	58	146	87	155	22	54
Lane Group Flow (vph)	77	977	164	234	2039	58	146	87	155	22	116
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA
Protected Phases	7	4		3	8			2			6
Permitted Phases			4			8	2		2	6	
Detector Phase	7	4	4	3	8	8	2	2	2	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	10.4	30.8	30.8	10.4	30.8	30.8	36.6	36.6	36.6	36.6	36.6
Total Split (s)	11.3	56.9	56.9	26.5	72.1	72.1	36.6	36.6	36.6	36.6	36.6
Total Split (%)	9.4%	47.4%	47.4%	22.1%	60.1%	60.1%	30.5%	30.5%	30.5%	30.5%	30.5%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	1.7	2.1	2.1	1.7	2.1	2.1	3.3	3.3	3.3	3.3	3.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.4	5.8	5.8	5.4	5.8	5.8	6.6	6.6	6.6	6.6	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)	9.0	60.9	60.9	19.8	71.7	71.7	21.5	21.5	21.5	21.5	21.5
Actuated g/C Ratio	0.08	0.51	0.51	0.16	0.60	0.60	0.18	0.18	0.18	0.18	0.18
v/c Ratio	0.61	0.57	0.20	0.84	1.01	0.07	0.68	0.27	0.43	0.10	0.35
Control Delay	73.7	10.2	0.6	58.7	31.8	1.6	60.6	42.1	14.0	38.1	27.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.7	10.2	0.6	58.7	31.8	1.6	60.6	42.1	14.0	38.1	27.0
LOS	E	B	A	E	C	A	E	D	B	D	C
Approach Delay		12.9			33.7			37.8			28.7
Approach LOS		B			C			D			C
Queue Length 50th (m)	19.3	25.4	0.0	58.4	~128.5	0.4	33.1	18.2	6.3	4.5	14.6
Queue Length 95th (m)	m#38.7	29.8	m1.4	m49.3	m65.3	m0.3	50.5	29.9	22.7	10.8	28.7
Internal Link Dist (m)		369.5			273.9			124.0			136.4
Turn Bay Length (m)	20.0		105.0	120.0		30.0	95.0		5.0	20.0	
Base Capacity (vph)	127	1720	827	301	2024	880	299	446	459	307	440
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.61	0.57	0.20	0.78	1.01	0.07	0.49	0.20	0.34	0.07	0.26

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 93 (78%), Referenced to phase 4:EBT and 8:WBT, Start of Green

Natural Cycle: 140

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.01

Intersection Signal Delay: 27.7

Intersection LOS: C

Intersection Capacity Utilization 98.1%

ICU Level of Service F

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

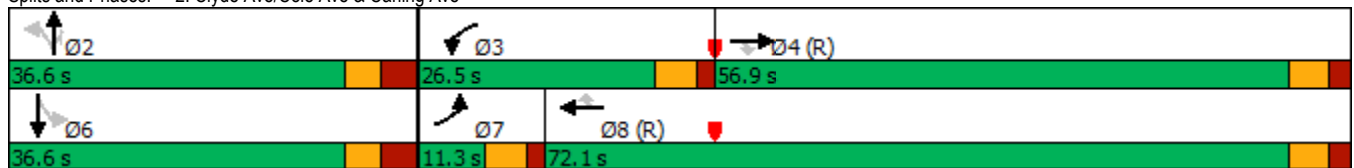
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

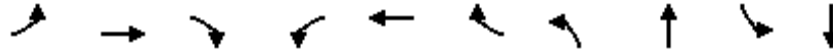
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Clyde Ave/Cole Ave & Carling Ave



Lanes, Volumes, Timings
3: Broadview Ave & Carling Ave

12/06/2022



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	Ø1	Ø5
Lane Configurations												
Traffic Volume (vph)	94	1152	31	67	2137	67	181	35	67	23		
Future Volume (vph)	94	1152	31	67	2137	67	181	35	67	23		
Lane Group Flow (vph)	94	1152	31	67	2137	67	181	68	67	173		
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA		
Protected Phases	7	4		3	8			2		6	1	5
Permitted Phases	4		4	8		8	2		6			
Detector Phase	7	4	4	3	8	8	2	2	6	6		
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	3.0	3.0
Minimum Split (s)	12.4	23.2	23.2	11.2	24.4	24.4	37.0	37.0	35.8	35.8	5.0	5.0
Total Split (s)	12.4	65.4	65.4	12.6	65.6	65.6	37.0	37.0	37.0	37.0	5.0	5.0
Total Split (%)	10.3%	54.5%	54.5%	10.5%	54.7%	54.7%	30.8%	30.8%	30.8%	30.8%	4%	4%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	2.0	2.0
All-Red Time (s)	3.7	2.5	2.5	2.5	3.7	3.7	3.7	3.7	2.5	2.5	0.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	7.4	6.2	6.2	6.2	7.4	7.4	7.0	7.0	5.8	5.8		
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	Max	Max	Max	Max	Min	Min
Act Effct Green (s)	64.5	61.7	61.7	65.7	58.2	58.2	30.0	30.0	31.2	31.2		
Actuated g/C Ratio	0.54	0.51	0.51	0.55	0.48	0.48	0.25	0.25	0.26	0.26		
v/c Ratio	0.73	0.66	0.04	0.30	1.30	0.09	0.74	0.16	0.21	0.36		
Control Delay	50.2	24.4	0.1	16.4	167.0	2.7	60.4	21.3	36.8	12.2		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	50.2	24.4	0.1	16.4	167.0	2.7	60.4	21.3	36.8	12.2		
LOS	D	C	A	B	F	A	E	C	D	B		
Approach Delay		25.7			157.8			49.8		19.1		
Approach LOS		C			F			D		B		
Queue Length 50th (m)	9.2	106.1	0.0	7.8	~336.1	0.0	39.3	6.3	12.4	7.0		
Queue Length 95th (m)	#34.4	130.4	0.0	m8.5	m#336.5	m0.0	#72.9	17.9	24.7	25.3		
Internal Link Dist (m)		239.1			369.5			434.9		268.8		
Turn Bay Length (m)	70.0		30.0	50.0		30.0	20.0		45.0			
Base Capacity (vph)	129	1743	779	222	1644	715	246	432	325	485		
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Reduced v/c Ratio	0.73	0.66	0.04	0.30	1.30	0.09	0.74	0.16	0.21	0.36		

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 77 (64%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green

Natural Cycle: 150

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.30

Intersection Signal Delay: 101.1

Intersection LOS: F

Intersection Capacity Utilization 126.4%

ICU Level of Service H

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

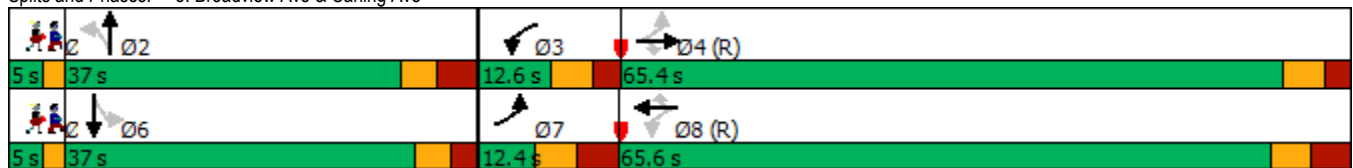
Queue shown is maximum after two cycles.

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

Queue shown is maximum after two cycles.

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

Splits and Phases: 3: Broadview Ave & Carling Ave



Lanes, Volumes, Timings

4: Clyde Ave & Doheny St/Existing Site Access

12/06/2022



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	24	5	27	9	20	32	323	79	306
Future Volume (vph)	24	5	27	9	20	32	323	79	306
Lane Group Flow (vph)	0	81	0	36	20	32	343	79	361
Turn Type	Perm	NA	Perm	NA	Perm	Perm	NA	pm+pt	NA
Protected Phases		4		8			2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	2	2	1	6
Switch Phase									
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	5.0	10.0
Minimum Split (s)	24.6	24.6	24.6	24.6	24.6	29.0	29.0	11.0	29.0
Total Split (s)	31.0	31.0	31.0	31.0	31.0	58.0	58.0	16.0	74.0
Total Split (%)	29.5%	29.5%	29.5%	29.5%	29.5%	55.2%	55.2%	15.2%	70.5%
Yellow Time (s)	3.3	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	2.7	2.7	2.7	2.7
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.6		5.6	5.6	6.0	6.0	6.0	6.0
Lead/Lag						Lag	Lag	Lead	
Lead-Lag Optimize?						Yes	Yes	Yes	
Recall Mode	None	None	None	None	None	Max	Max	None	Max
Act Effct Green (s)		11.7		11.7	11.7	62.1	62.1	71.2	72.4
Actuated g/C Ratio		0.13		0.13	0.13	0.68	0.68	0.78	0.79
v/c Ratio		0.35		0.20	0.07	0.05	0.29	0.11	0.27
Control Delay		20.7		38.1	0.6	8.8	9.5	3.9	4.2
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		20.7		38.1	0.6	8.8	9.5	3.9	4.2
LOS		C		D	A	A	A	A	A
Approach Delay		20.7		24.7			9.5		4.2
Approach LOS		C		C			A		A
Queue Length 50th (m)		4.6		5.7	0.0	2.0	25.1	2.7	14.3
Queue Length 95th (m)		16.9		14.3	0.0	7.1	53.2	8.5	34.9
Internal Link Dist (m)		281.3		151.2			265.7		124.0
Turn Bay Length (m)					40.0	45.0			
Base Capacity (vph)		439		386	479	659	1169	766	1336
Starvation Cap Reductn		0		0	0	0	0	0	0
Spillback Cap Reductn		0		0	0	0	0	0	0
Storage Cap Reductn		0		0	0	0	0	0	0
Reduced v/c Ratio		0.18		0.09	0.04	0.05	0.29	0.10	0.27

Intersection Summary

Cycle Length: 105

Actuated Cycle Length: 91.3

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 0.35

Intersection Signal Delay: 8.9

Intersection LOS: A

Intersection Capacity Utilization 55.3%

ICU Level of Service B

Analysis Period (min) 15

Splits and Phases: 4: Clyde Ave & Doheny St/Existing Site Access



Lanes, Volumes, Timings
5: Saigon Ct & Carling Ave WB

12/06/2022



Lane Group	WBL	WBT	WBR	NBL	NBT	SBT
Lane Configurations						
Traffic Volume (vph)	32	2344	12	37	9	87
Future Volume (vph)	32	2344	12	37	9	87
Lane Group Flow (vph)	32	2344	12	0	46	102
Turn Type	Perm	NA	Perm	Perm	NA	NA
Protected Phases		8			2	6
Permitted Phases	8		8	2		
Detector Phase	8	8	8	2	2	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	29.7	29.7	29.7	26.7	26.7	26.7
Total Split (s)	93.3	93.3	93.3	26.7	26.7	26.7
Total Split (%)	77.8%	77.8%	77.8%	22.3%	22.3%	22.3%
Yellow Time (s)	3.7	3.7	3.7	3.3	3.3	3.3
All-Red Time (s)	2.0	2.0	2.0	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.7	5.7	5.7		5.7	5.7
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max	C-Max	C-Max	None	None	None
Act Effct Green (s)	95.2	95.2	95.2		13.4	13.4
Actuated g/C Ratio	0.79	0.79	0.79		0.11	0.11
v/c Ratio	0.02	0.87	0.01		0.35	0.51
Control Delay	3.4	14.1	0.7		41.4	55.4
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	3.4	14.1	0.7		41.4	55.4
LOS	A	B	A		D	E
Approach Delay		13.9			41.4	55.4
Approach LOS		B			D	E
Queue Length 50th (m)	1.2	147.2	0.0		9.9	21.9
Queue Length 95th (m)	4.4	#293.2	0.8		m19.3	36.6
Internal Link Dist (m)		298.8			45.3	50.2
Turn Bay Length (m)	50.0		40.0			
Base Capacity (vph)	1338	2689	1161		204	309
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.02	0.87	0.01		0.23	0.33

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 62 (52%), Referenced to phase 8:WBTL, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.87
 Intersection Signal Delay: 16.1
 Intersection Capacity Utilization 88.8%
 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: 5: Saigon Ct & Carling Ave WB



Lanes, Volumes, Timings
6: Carling Ave EB & Saigon Ct

12/06/2022



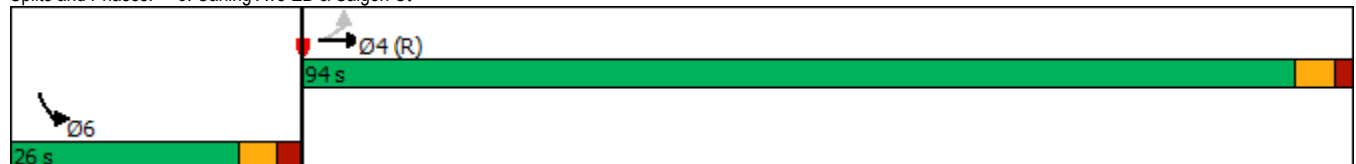
Lane Group	EBT	SBL
Lane Configurations	↕↕	↗↗
Traffic Volume (vph)	1382	119
Future Volume (vph)	1382	119
Lane Group Flow (vph)	1427	119
Turn Type	NA	Prot
Protected Phases	4	6
Permitted Phases		
Detector Phase	4	6
Switch Phase		
Minimum Initial (s)	10.0	5.0
Minimum Split (s)	15.4	22.6
Total Split (s)	94.0	26.0
Total Split (%)	78.3%	21.7%
Yellow Time (s)	3.7	3.3
All-Red Time (s)	1.7	2.3
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	5.4	5.6
Lead/Lag		
Lead-Lag Optimize?		
Recall Mode	C-Max	None
Act Effct Green (s)	99.3	9.7
Actuated g/C Ratio	0.83	0.08
v/c Ratio	0.51	0.45
Control Delay	1.3	45.7
Queue Delay	0.0	0.0
Total Delay	1.3	45.7
LOS	A	D
Approach Delay	1.3	45.7
Approach LOS	A	D
Queue Length 50th (m)	5.5	15.1
Queue Length 95th (m)	7.4	24.7
Internal Link Dist (m)	110.2	45.3
Turn Bay Length (m)		
Base Capacity (vph)	2799	558
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.51	0.21

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 105 (88%), Referenced to phase 4:EBTL, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.51
 Intersection Signal Delay: 4.7
 Intersection Capacity Utilization 55.0%
 Analysis Period (min) 15

Intersection LOS: A
 ICU Level of Service B

Splits and Phases: 6: Carling Ave EB & Saigon Ct



Lanes, Volumes, Timings
 7: Clyde Ave & Laperriere Ave

12/06/2022



Lane Group	WBL	NBT	SBT
Lane Configurations			
Traffic Volume (vph)	249	243	276
Future Volume (vph)	249	243	276
Lane Group Flow (vph)	455	406	429
Sign Control	Stop	Stop	Stop
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 86.7%		ICU Level of Service E	
Analysis Period (min) 15			

HCM Unsignalized Intersection Capacity Analysis
 7: Clyde Ave & Laperriere Ave

12/06/2022



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	249	206	243	163	153	276
Future Volume (vph)	249	206	243	163	153	276
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	249	206	243	163	153	276
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	455	406	429			
Volume Left (vph)	249	0	153			
Volume Right (vph)	206	163	0			
Hadj (s)	-0.11	-0.13	0.16			
Departure Headway (s)	6.3	6.2	6.4			
Degree Utilization, x	0.79	0.70	0.77			
Capacity (veh/h)	555	557	539			
Control Delay (s)	28.8	22.4	27.4			
Approach Delay (s)	28.8	22.4	27.4			
Approach LOS	D	C	D			
Intersection Summary						
Delay			26.3			
Level of Service			D			
Intersection Capacity Utilization			86.7%	ICU Level of Service	E	
Analysis Period (min)			15			

Lanes, Volumes, Timings
 8: Clyde Ave & Woodward Dr

12/06/2022



Lane Group	EBL	EBR	NBT	SBT	SBR
Lane Configurations					
Traffic Volume (vph)	354	17	52	18	509
Future Volume (vph)	354	17	52	18	509
Lane Group Flow (vph)	354	17	73	18	509
Sign Control	Free		Stop	Stop	
Intersection Summary					
Control Type: Unsignalized					
Intersection Capacity Utilization 44.0%			ICU Level of Service A		
Analysis Period (min) 15					

HCM Unsignalized Intersection Capacity Analysis
 8: Clyde Ave & Woodward Dr

12/06/2022

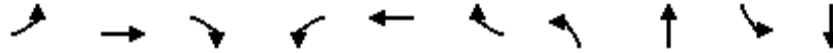


Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	354	17	21	52	18	509
Future Volume (Veh/h)	354	17	21	52	18	509
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	354	17	21	52	18	509
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)	3					
Median type	None					
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	0		717	708	708	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		717	708	708	0
tC, single (s)	4.1		7.1	6.5	6.5	6.2
tC, 2 stage (s)						
tF (s)	2.2		3.5	4.0	4.0	3.3
p0 queue free %	78		86	82	94	53
cM capacity (veh/h)	1623		145	281	281	1085
Direction, Lane #	EB 1	EB 2	NB 1	SB 1		
Volume Total	354	17	73	527		
Volume Left	354	0	21	0		
Volume Right	0	17	0	509		
cSH	1623	1700	221	1123		
Volume to Capacity	0.22	0.01	0.33	0.47		
Queue Length 95th (m)	6.3	0.0	10.4	19.5		
Control Delay (s)	7.8	0.0	29.1	11.5		
Lane LOS	A		D	B		
Approach Delay (s)	7.5		29.1	11.5		
Approach LOS			D	B		
Intersection Summary						
Average Delay			11.3			
Intersection Capacity Utilization			44.0%	ICU Level of Service	A	
Analysis Period (min)			15			

Total Projected 2026 with Demand Rationalization

Lanes, Volumes, Timings
1: Churchill Ave & Carling Ave

10/18/2023

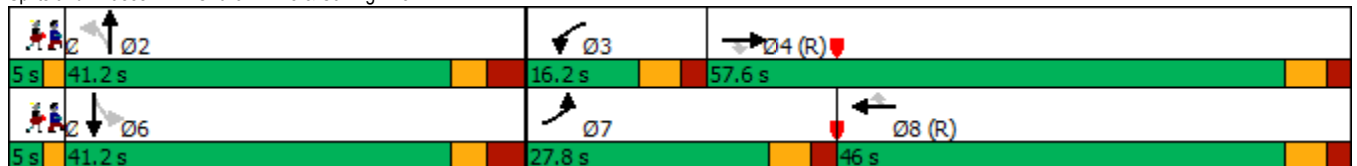


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	Ø1	Ø5
Lane Configurations												
Traffic Volume (vph)	174	1387	104	135	633	154	29	17	347	35		
Future Volume (vph)	174	1387	104	135	633	154	29	17	347	35		
Lane Group Flow (vph)	174	1387	104	135	633	154	29	118	347	280		
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	NA		
Protected Phases	7	4		3	8			2		6	1	5
Permitted Phases			4			8	2		6			
Detector Phase	7	4	4	3	8	8	2	2	6	6		
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	3.0	3.0
Minimum Split (s)	11.1	34.1	34.1	11.1	34.1	34.1	39.8	39.8	39.8	39.8	5.0	5.0
Total Split (s)	27.8	57.6	57.6	16.2	46.0	46.0	41.2	41.2	41.2	41.2	5.0	5.0
Total Split (%)	23.2%	48.0%	48.0%	13.5%	38.3%	38.3%	34.3%	34.3%	34.3%	34.3%	4%	4%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	2.0	2.0
All-Red Time (s)	2.4	2.4	2.4	2.4	2.4	2.4	3.5	3.5	3.5	3.5	0.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1	6.1	6.8	6.8	6.8	6.8		
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	Max	Max	Max	Max	None	None
Act Effct Green (s)	17.1	51.5	51.5	10.1	44.5	44.5	39.4	39.4	39.4	39.4		
Actuated g/C Ratio	0.14	0.43	0.43	0.08	0.37	0.37	0.33	0.33	0.33	0.33		
v/c Ratio	0.72	0.95	0.15	0.95	0.51	0.26	0.11	0.21	0.89	0.44		
Control Delay	66.3	47.4	11.7	117.0	29.6	5.6	29.6	8.5	65.0	8.0		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	66.3	47.4	11.7	117.0	29.6	5.6	29.6	8.5	65.0	8.0		
LOS	E	D	B	F	C	A	C	A	E	A		
Approach Delay		47.1			38.4			12.6		39.5		
Approach LOS		D			D			B		D		
Queue Length 50th (m)	43.8	100.6	3.9	28.6	61.4	2.3	4.8	2.7	77.4	5.7		
Queue Length 95th (m)	m54.6	#206.5	m10.1	#68.1	83.7	16.1	12.1	15.6	#132.2	26.5		
Internal Link Dist (m)		162.3			176.6			177.0		412.2		
Turn Bay Length (m)	65.0		30.0	65.0		40.0	20.0		20.0			
Base Capacity (vph)	306	1454	680	142	1233	601	270	564	388	640		
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Reduced v/c Ratio	0.57	0.95	0.15	0.95	0.51	0.26	0.11	0.21	0.89	0.44		

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 92 (77%), Referenced to phase 4:EBT and 8:WBT, Start of Green
 Natural Cycle: 120
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.95
 Intersection Signal Delay: 41.8
 Intersection LOS: D
 Intersection Capacity Utilization 91.7%
 ICU Level of Service F
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Churchill Ave & Carling Ave



Lanes, Volumes, Timings
2: Clyde Ave/Cole Ave & Carling Ave

10/18/2023

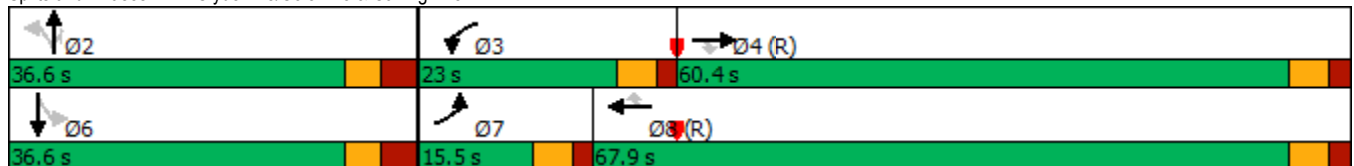


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	61	1467	118	216	668	52	120	51	147	35	63
Future Volume (vph)	61	1467	118	216	668	52	120	51	147	35	63
Lane Group Flow (vph)	61	1467	118	216	668	52	120	51	147	35	129
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA
Protected Phases	7	4		3	8			2			6
Permitted Phases			4			8	2		2	6	
Detector Phase	7	4	4	3	8	8	2	2	2	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	10.4	30.8	30.8	10.4	30.8	30.8	36.6	36.6	36.6	36.6	36.6
Total Split (s)	15.5	60.4	60.4	23.0	67.9	67.9	36.6	36.6	36.6	36.6	36.6
Total Split (%)	12.9%	50.3%	50.3%	19.2%	56.6%	56.6%	30.5%	30.5%	30.5%	30.5%	30.5%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	1.7	2.1	2.1	1.7	2.1	2.1	3.3	3.3	3.3	3.3	3.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.4	5.8	5.8	5.4	5.8	5.8	6.6	6.6	6.6	6.6	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)	9.0	62.7	62.7	20.6	76.5	76.5	18.9	18.9	18.9	18.9	18.9
Actuated g/C Ratio	0.08	0.52	0.52	0.17	0.64	0.64	0.16	0.16	0.16	0.16	0.16
v/c Ratio	0.48	0.83	0.14	0.77	0.32	0.05	0.72	0.18	0.44	0.17	0.44
Control Delay	66.4	12.5	0.3	76.0	6.5	0.3	70.3	42.1	10.5	42.3	33.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.4	12.5	0.3	76.0	6.5	0.3	70.3	42.1	10.5	42.3	33.4
LOS	E	B	A	E	A	A	E	D	B	D	C
Approach Delay		13.6			22.2			38.1			35.3
Approach LOS		B			C			D			D
Queue Length 50th (m)	15.2	29.8	0.1	52.6	16.4	0.2	27.4	10.6	0.0	7.3	18.6
Queue Length 95th (m)	m18.8	#216.5	m0.0	#96.7	27.7	m0.7	43.0	19.6	15.7	14.9	33.2
Internal Link Dist (m)		369.5			87.5			83.7			136.4
Turn Bay Length (m)	20.0		105.0	120.0		30.0	95.0		5.0	20.0	
Base Capacity (vph)	145	1770	838	283	2120	963	263	446	439	318	438
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.83	0.14	0.76	0.32	0.05	0.46	0.11	0.33	0.11	0.29

Intersection Summary

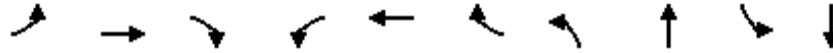
Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 93 (78%), Referenced to phase 4:EBT and 8:WBT, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.83
 Intersection Signal Delay: 19.9
 Intersection LOS: B
 Intersection Capacity Utilization 98.3%
 ICU Level of Service F
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Clyde Ave/Cole Ave & Carling Ave



Lanes, Volumes, Timings
3: Broadview Ave & Carling Ave

10/18/2023

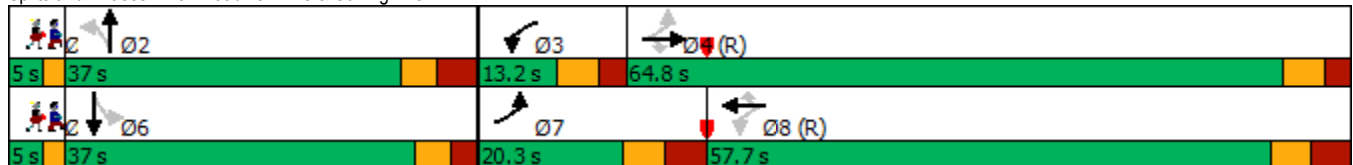


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	Ø1	Ø5
Lane Configurations												
Traffic Volume (vph)	197	1475	104	99	649	118	112	24	158	20		
Future Volume (vph)	197	1475	104	99	649	118	112	24	158	20		
Lane Group Flow (vph)	197	1475	104	99	649	118	112	96	158	155		
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA		
Protected Phases	7	4		3	8			2		6	1	5
Permitted Phases	4		4	8		8	2		6			
Detector Phase	7	4	4	3	8	8	2	2	6	6		
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	3.0	3.0
Minimum Split (s)	12.4	23.2	23.2	11.2	24.4	24.4	37.0	37.0	35.8	35.8	5.0	5.0
Total Split (s)	20.3	64.8	64.8	13.2	57.7	57.7	37.0	37.0	37.0	37.0	5.0	5.0
Total Split (%)	16.9%	54.0%	54.0%	11.0%	48.1%	48.1%	30.8%	30.8%	30.8%	30.8%	4%	4%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	2.0	2.0
All-Red Time (s)	3.7	2.5	2.5	2.5	3.7	3.7	3.7	3.7	2.5	2.5	0.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	7.4	6.2	6.2	6.2	7.4	7.4	7.0	7.0	5.8	5.8		
Lead-Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	Max	Max	Max	Max	Min	Min
Act Effct Green (s)	68.8	58.7	58.7	60.0	51.9	51.9	30.0	30.0	31.2	31.2		
Actuated g/C Ratio	0.57	0.49	0.49	0.50	0.43	0.43	0.25	0.25	0.26	0.26		
v/c Ratio	0.47	0.89	0.16	0.63	0.46	0.19	0.46	0.22	0.51	0.34		
Control Delay	15.5	35.9	3.3	42.0	39.0	16.7	45.3	13.7	44.8	10.3		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	15.5	35.9	3.3	42.0	39.0	16.7	45.3	13.7	44.8	10.3		
LOS	B	D	A	D	D	B	D	B	D	B		
Approach Delay		31.7			36.3			30.7		27.7		
Approach LOS		C			D			C		C		
Queue Length 50th (m)	20.4	160.6	0.0	14.4	67.7	8.4	22.4	4.3	31.9	3.6		
Queue Length 95th (m)	32.2	195.5	8.0	#32.9	80.9	21.7	40.8	17.8	53.7	20.2		
Internal Link Dist (m)		239.1			369.5			434.9		268.8		
Turn Bay Length (m)	70.0		30.0	50.0		30.0	20.0		45.0			
Base Capacity (vph)	439	1658	665	159	1409	615	244	432	309	458		
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Reduced v/c Ratio	0.45	0.89	0.16	0.62	0.46	0.19	0.46	0.22	0.51	0.34		

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 77 (64%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.89
 Intersection Signal Delay: 32.5
 Intersection LOS: C
 Intersection Capacity Utilization 104.1%
 ICU Level of Service G
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

Splits and Phases: 3: Broadview Ave & Carling Ave



Lanes, Volumes, Timings
4: Clyde Ave & Doheny St

10/18/2023



Lane Group	EBL	NBL	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	34	91	289	313
Future Volume (vph)	34	91	289	313
Lane Group Flow (vph)	94	91	289	393
Turn Type	Perm	Perm	NA	NA
Protected Phases			2	6
Permitted Phases	4	2		
Detector Phase	4	2	2	6
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	10.0
Minimum Split (s)	24.6	29.0	29.0	29.0
Total Split (s)	31.0	59.0	59.0	59.0
Total Split (%)	34.4%	65.6%	65.6%	65.6%
Yellow Time (s)	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.7	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	Max	Max	Max
Act Effct Green (s)	11.8	65.0	65.0	65.0
Actuated g/C Ratio	0.14	0.78	0.78	0.78
v/c Ratio	0.34	0.12	0.22	0.30
Control Delay	17.8	4.8	4.6	4.8
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	17.8	4.8	4.6	4.8
LOS	B	A	A	A
Approach Delay	17.8		4.7	4.8
Approach LOS	B		A	A
Queue Length 50th (m)	5.3	3.3	11.6	15.5
Queue Length 95th (m)	16.1	11.1	29.6	39.5
Internal Link Dist (m)	281.3		265.7	16.3
Turn Bay Length (m)		45.0		
Base Capacity (vph)	521	734	1298	1308
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	0.12	0.22	0.30

Intersection Summary

Cycle Length: 90	
Actuated Cycle Length: 83.6	
Natural Cycle: 55	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.34	
Intersection Signal Delay: 6.1	Intersection LOS: A
Intersection Capacity Utilization 54.8%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 4: Clyde Ave & Doheny St



Lanes, Volumes, Timings
5: Saigon Ct & Carling Ave WB

10/18/2023



Lane Group	WBL	WBT	WBR	NBL	NBT	SBT
Lane Configurations						
Traffic Volume (vph)	29	880	58	22	52	26
Future Volume (vph)	29	880	58	22	52	26
Lane Group Flow (vph)	29	880	58	0	74	35
Turn Type	Perm	NA	Perm	Perm	NA	NA
Protected Phases		8			2	6
Permitted Phases	8		8	2		
Detector Phase	8	8	8	2	2	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	29.7	29.7	29.7	26.7	26.7	26.7
Total Split (s)	84.0	84.0	84.0	36.0	36.0	36.0
Total Split (%)	70.0%	70.0%	70.0%	30.0%	30.0%	30.0%
Yellow Time (s)	3.7	3.7	3.7	3.3	3.3	3.3
All-Red Time (s)	2.0	2.0	2.0	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.7	5.7	5.7		5.7	5.7
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max	C-Max	C-Max	None	None	None
Act Effct Green (s)	101.2	101.2	101.2		11.7	11.7
Actuated g/C Ratio	0.84	0.84	0.84		0.10	0.10
v/c Ratio	0.02	0.32	0.05		0.48	0.20
Control Delay	2.6	3.1	0.8		45.1	41.7
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	2.6	3.1	0.8		45.2	41.7
LOS	A	A	A		D	D
Approach Delay		3.0			45.2	41.7
Approach LOS		A			D	D
Queue Length 50th (m)	1.0	21.5	0.0		15.4	5.8
Queue Length 95th (m)	3.2	34.2	2.5		m24.5	15.2
Internal Link Dist (m)		298.8			45.3	50.2
Turn Bay Length (m)	50.0		40.0			
Base Capacity (vph)	1429	2777	1238		399	441
Starvation Cap Reductn	0	0	0		14	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.02	0.32	0.05		0.19	0.08

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 62 (52%), Referenced to phase 8:WBTL, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.48
 Intersection Signal Delay: 7.1
 Intersection LOS: A
 Intersection Capacity Utilization 46.0%
 ICU Level of Service A
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Saigon Ct & Carling Ave WB



Lanes, Volumes, Timings
6: Carling Ave EB & Saigon Ct

10/18/2023



Lane Group	EBT	SBL
Lane Configurations		
Traffic Volume (vph)	1757	42
Future Volume (vph)	1757	42
Lane Group Flow (vph)	1862	42
Turn Type	NA	Prot
Protected Phases	4	6
Permitted Phases		
Detector Phase	4	6
Switch Phase		
Minimum Initial (s)	10.0	5.0
Minimum Split (s)	15.4	22.6
Total Split (s)	97.0	23.0
Total Split (%)	80.8%	19.2%
Yellow Time (s)	3.7	3.3
All-Red Time (s)	1.7	2.3
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	5.4	5.6
Lead/Lag		
Lead-Lag Optimize?		
Recall Mode	C-Max	None
Act Effct Green (s)	105.3	7.0
Actuated g/C Ratio	0.88	0.06
v/c Ratio	0.63	0.22
Control Delay	1.7	53.8
Queue Delay	0.0	0.0
Total Delay	1.7	53.8
LOS	A	D
Approach Delay	1.7	53.8
Approach LOS	A	D
Queue Length 50th (m)	5.1	5.2
Queue Length 95th (m)	m6.8	11.1
Internal Link Dist (m)	110.2	45.3
Turn Bay Length (m)		
Base Capacity (vph)	2966	476
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.63	0.09

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 105 (88%), Referenced to phase 4:EBTL, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.63
 Intersection Signal Delay: 2.8
 Intersection LOS: A
 Intersection Capacity Utilization 67.8%
 ICU Level of Service C
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Carling Ave EB & Saigon Ct



Lanes, Volumes, Timings
 7: Clyde Ave & Laperriere Ave

10/18/2023



Lane Group	WBL	NBT	SBT
Lane Configurations			
Traffic Volume (vph)	128	203	187
Future Volume (vph)	128	203	187
Lane Group Flow (vph)	363	375	376
Sign Control	Stop	Stop	Stop

Intersection Summary	
Control Type: Unsignalized	
Intersection Capacity Utilization 77.0%	ICU Level of Service D
Analysis Period (min) 15	

HCM Unsignalized Intersection Capacity Analysis
 7: Clyde Ave & Laperriere Ave

10/18/2023



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	128	235	203	172	189	187
Future Volume (vph)	128	235	203	172	189	187
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	128	235	203	172	189	187
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	363	375	376			
Volume Left (vph)	128	0	189			
Volume Right (vph)	235	172	0			
Hadj (s)	-0.27	-0.12	0.19			
Departure Headway (s)	5.7	5.5	5.8			
Degree Utilization, x	0.57	0.58	0.61			
Capacity (veh/h)	587	615	582			
Control Delay (s)	16.0	15.8	17.4			
Approach Delay (s)	16.0	15.8	17.4			
Approach LOS	C	C	C			
Intersection Summary						
Delay			16.4			
Level of Service			C			
Intersection Capacity Utilization			77.0%	ICU Level of Service	D	
Analysis Period (min)			15			

Lanes, Volumes, Timings
 8: Clyde Ave & Woodward Dr

10/18/2023



Lane Group	EBL	EBR	NBT	SBT	SBR
Lane Configurations					
Traffic Volume (vph)	337	8	38	47	268
Future Volume (vph)	337	8	38	47	268
Lane Group Flow (vph)	337	8	50	47	268
Sign Control	Free		Stop		Stop

Intersection Summary	
Control Type: Unsignalized	
Intersection Capacity Utilization 35.9%	ICU Level of Service A
Analysis Period (min) 15	

HCM Unsignalized Intersection Capacity Analysis
 8: Clyde Ave & Woodward Dr

10/18/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	337	8	12	38	47	268
Future Volume (Veh/h)	337	8	12	38	47	268
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	337	8	12	38	47	268
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)	3					
Median type	None					
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	0		698	674	674	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		698	674	674	0
tC, single (s)	4.1		7.1	6.5	6.5	6.2
tC, 2 stage (s)						
tF (s)	2.2		3.5	4.0	4.0	3.3
p0 queue free %	79		94	87	84	75
cM capacity (veh/h)	1623		198	298	298	1085
Direction, Lane #	EB 1	EB 2	NB 1	SB 1		
Volume Total	337	8	50	315		
Volume Left	337	0	12	0		
Volume Right	0	8	0	268		
cSH	1623	1700	266	1275		
Volume to Capacity	0.21	0.00	0.19	0.25		
Queue Length 95th (m)	5.9	0.0	5.1	7.4		
Control Delay (s)	7.8	0.0	21.6	10.9		
Lane LOS	A		C	B		
Approach Delay (s)	7.6		21.6	10.9		
Approach LOS			C	B		
Intersection Summary						
Average Delay			10.1			
Intersection Capacity Utilization			35.9%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings
 9: Clyde Ave & Clyde Access

10/18/2023



Lane Group	WBL	NBT	SBT
Lane Configurations			
Traffic Volume (vph)	30	319	387
Future Volume (vph)	30	319	387
Lane Group Flow (vph)	60	334	420
Sign Control	Stop	Free	Free
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 35.8%		ICU Level of Service A	
Analysis Period (min) 15			

HCM Unsignalized Intersection Capacity Analysis
 9: Clyde Ave & Clyde Access

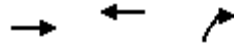
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Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		↑↓			↑↓
Traffic Volume (veh/h)	30	30	319	15	33	387
Future Volume (Veh/h)	30	30	319	15	33	387
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	30	30	319	15	33	387
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)			40			108
pX, platoon unblocked						
vC, conflicting volume	586	167			334	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	586	167			334	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	93	96			97	
cM capacity (veh/h)	429	848			1222	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	60	213	121	162	258	
Volume Left	30	0	0	33	0	
Volume Right	30	0	15	0	0	
cSH	570	1700	1700	1222	1700	
Volume to Capacity	0.11	0.13	0.07	0.03	0.15	
Queue Length 95th (m)	2.7	0.0	0.0	0.6	0.0	
Control Delay (s)	12.1	0.0	0.0	1.8	0.0	
Lane LOS	B			A		
Approach Delay (s)	12.1	0.0		0.7		
Approach LOS	B					
Intersection Summary						
Average Delay			1.3			
Intersection Capacity Utilization			35.8%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
 10: Carling Access & Carling Ave

10/18/2023



Lane Group	EBT	WBT	NBR
Lane Configurations			
Traffic Volume (vph)	1583	845	26
Future Volume (vph)	1583	845	26
Lane Group Flow (vph)	1609	845	26
Sign Control	Free	Free	

Intersection Summary	
Control Type: Unsignalized	
Intersection Capacity Utilization 57.1%	ICU Level of Service B
Analysis Period (min) 15	

HCM Unsignalized Intersection Capacity Analysis
 10: Carling Access & Carling Ave

10/18/2023



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕↕			↕↕		↗
Traffic Volume (veh/h)	1583	26	0	845	0	26
Future Volume (Veh/h)	1583	26	0	845	0	26
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1583	26	0	845	0	26
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	112			186		
pX, platoon unblocked			0.63		0.70	0.63
vC, conflicting volume			1609		2018	804
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			795		726	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	96
cM capacity (veh/h)			519		251	684
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	1055	554	422	422	26	
Volume Left	0	0	0	0	0	
Volume Right	0	26	0	0	26	
cSH	1700	1700	1700	1700	684	
Volume to Capacity	0.62	0.33	0.25	0.25	0.04	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.9	
Control Delay (s)	0.0	0.0	0.0	0.0	10.5	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		10.5	
Approach LOS					B	
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			57.1%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes, Volumes, Timings

11: Carling Ave EB & Carling Ave/Carling Ave WB

10/18/2023



Lane Group	EBR	WBT
Lane Configurations		
Traffic Volume (vph)	1851	896
Future Volume (vph)	1851	896
Lane Group Flow (vph)	1851	896
Sign Control		Free

Intersection Summary

Control Type: Unsignalized	
Intersection Capacity Utilization 71.7%	ICU Level of Service C
Analysis Period (min) 15	

Intersection Sign configuration not allowed in HCM analysis.

Lanes, Volumes, Timings
2: Clyde Ave/Cole Ave & Carling Ave

10/18/2023

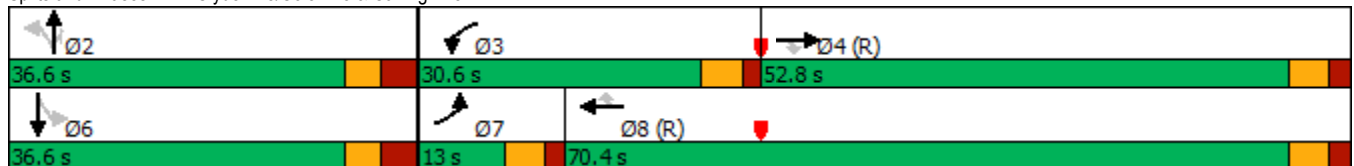


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	77	839	143	261	1694	58	131	87	156	22	54
Future Volume (vph)	77	839	143	261	1694	58	131	87	156	22	54
Lane Group Flow (vph)	77	839	143	261	1694	58	131	87	156	22	116
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA
Protected Phases	7	4		3	8			2			6
Permitted Phases			4			8	2		2	6	
Detector Phase	7	4	4	3	8	8	2	2	2	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	10.4	30.8	30.8	10.4	30.8	30.8	36.6	36.6	36.6	36.6	36.6
Total Split (s)	13.0	52.8	52.8	30.6	70.4	70.4	36.6	36.6	36.6	36.6	36.6
Total Split (%)	10.8%	44.0%	44.0%	25.5%	58.7%	58.7%	30.5%	30.5%	30.5%	30.5%	30.5%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	1.7	2.1	2.1	1.7	2.1	2.1	3.3	3.3	3.3	3.3	3.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.4	5.8	5.8	5.4	5.8	5.8	6.6	6.6	6.6	6.6	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)	8.7	59.2	59.2	22.2	72.8	72.8	20.8	20.8	20.8	20.8	20.8
Actuated g/C Ratio	0.07	0.49	0.49	0.18	0.61	0.61	0.17	0.17	0.17	0.17	0.17
v/c Ratio	0.63	0.50	0.18	0.83	0.82	0.07	0.64	0.28	0.44	0.10	0.36
Control Delay	75.6	12.2	0.8	49.9	24.2	4.8	58.2	42.8	14.5	38.5	27.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	75.6	12.2	0.8	49.9	24.2	4.8	58.2	42.8	14.5	38.5	27.4
LOS	E	B	A	D	C	A	E	D	B	D	C
Approach Delay		15.2			27.0			36.4			29.2
Approach LOS		B			C			D			C
Queue Length 50th (m)	18.1	26.9	0.0	64.8	109.8	1.2	29.7	18.5	6.6	4.5	14.8
Queue Length 95th (m)	#43.1	32.4	2.0	m61.5	m97.1	m1.4	45.4	29.9	23.2	10.8	28.7
Internal Link Dist (m)		369.5			87.5			83.7			136.4
Turn Bay Length (m)	20.0		105.0	120.0		30.0	95.0		5.0	20.0	
Base Capacity (vph)	124	1673	798	355	2055	892	298	446	459	307	440
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.50	0.18	0.74	0.82	0.07	0.44	0.20	0.34	0.07	0.26

Intersection Summary

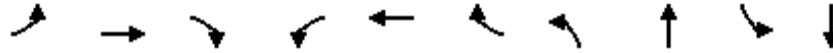
Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 93 (78%), Referenced to phase 4:EBT and 8:WBT, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.83
 Intersection Signal Delay: 24.6
 Intersection LOS: C
 Intersection Capacity Utilization 87.5%
 ICU Level of Service E
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Clyde Ave/Cole Ave & Carling Ave



Lanes, Volumes, Timings
3: Broadview Ave & Carling Ave

10/18/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	Ø1	Ø5
Lane Configurations												
Traffic Volume (vph)	94	964	31	67	1763	68	181	35	71	23		
Future Volume (vph)	94	964	31	67	1763	68	181	35	71	23		
Lane Group Flow (vph)	94	964	31	67	1763	68	181	68	71	173		
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA		
Protected Phases	7	4		3	8			2		6	1	5
Permitted Phases	4		4	8		8	2		6			
Detector Phase	7	4	4	3	8	8	2	2	6	6		
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	3.0	3.0
Minimum Split (s)	12.4	23.2	23.2	11.2	24.4	24.4	37.0	37.0	35.8	35.8	5.0	5.0
Total Split (s)	12.4	65.9	65.9	12.1	65.6	65.6	37.0	37.0	37.0	37.0	5.0	5.0
Total Split (%)	10.3%	54.9%	54.9%	10.1%	54.7%	54.7%	30.8%	30.8%	30.8%	30.8%	4%	4%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	2.0	2.0
All-Red Time (s)	3.7	2.5	2.5	2.5	3.7	3.7	3.7	3.7	2.5	2.5	0.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	7.4	6.2	6.2	6.2	7.4	7.4	7.0	7.0	5.8	5.8		
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	Max	Max	Max	Max	Min	Min
Act Effct Green (s)	64.9	62.1	62.1	65.3	58.2	58.2	30.0	30.0	31.2	31.2		
Actuated g/C Ratio	0.54	0.52	0.52	0.54	0.48	0.48	0.25	0.25	0.26	0.26		
v/c Ratio	0.73	0.55	0.04	0.24	1.07	1.07	0.10	0.16	0.22	0.35		
Control Delay	49.3	21.6	0.1	16.5	75.7	3.5	60.4	21.3	37.1	10.0		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	49.3	21.6	0.1	16.5	75.7	3.5	60.4	21.3	37.1	10.0		
LOS	D	C	A	B	E	A	E	C	D	B		
Approach Delay		23.4			71.0			49.8		17.9		
Approach LOS		C			E			D		B		
Queue Length 50th (m)	9.2	81.2	0.0	8.3	~247.1	0.6	39.3	6.3	13.2	4.1		
Queue Length 95th (m)	#34.2	101.0	0.0	m9.8	#280.7	m1.8	#72.9	17.9	25.8	21.7		
Internal Link Dist (m)		239.1			369.5			434.9		268.8		
Turn Bay Length (m)	70.0		30.0	50.0		30.0	20.0		45.0			
Base Capacity (vph)	129	1754	778	275	1644	709	246	432	325	496		
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Reduced v/c Ratio	0.73	0.55	0.04	0.24	1.07	0.10	0.74	0.16	0.22	0.35		

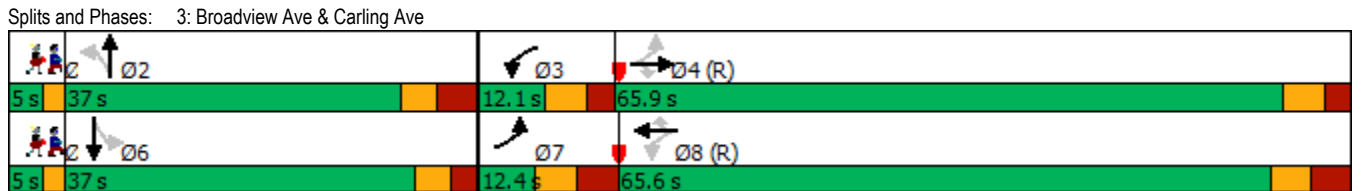
Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 77 (64%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
 Natural Cycle: 130
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.07
 Intersection Signal Delay: 50.9
 Intersection LOS: D
 Intersection Capacity Utilization 115.5%
 ICU Level of Service H
 Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

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



Lanes, Volumes, Timings
4: Clyde Ave & Doheny St

10/18/2023



Lane Group	EBL	NBL	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	24	32	317	281
Future Volume (vph)	24	32	317	281
Lane Group Flow (vph)	76	32	317	336
Turn Type	Perm	Perm	NA	NA
Protected Phases			2	6
Permitted Phases	4	2		
Detector Phase	4	2	2	6
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	10.0
Minimum Split (s)	24.6	29.0	29.0	29.0
Total Split (s)	35.0	70.0	70.0	70.0
Total Split (%)	33.3%	66.7%	66.7%	66.7%
Yellow Time (s)	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.7	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	Max	Max	Max
Act Effct Green (s)	10.1	77.7	77.7	77.7
Actuated g/C Ratio	0.11	0.82	0.82	0.82
v/c Ratio	0.35	0.04	0.22	0.24
Control Delay	22.0	2.8	3.2	3.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	22.0	2.8	3.2	3.1
LOS	C	A	A	A
Approach Delay	22.0		3.1	3.1
Approach LOS	C		A	A
Queue Length 50th (m)	4.4	1.1	12.8	13.0
Queue Length 95th (m)	16.2	3.1	20.8	21.3
Internal Link Dist (m)	281.3		265.7	16.3
Turn Bay Length (m)		45.0		
Base Capacity (vph)	532	812	1422	1383
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	0.14	0.04	0.22	0.24

Intersection Summary

Cycle Length: 105	
Actuated Cycle Length: 94.7	
Natural Cycle: 55	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.35	
Intersection Signal Delay: 5.0	Intersection LOS: A
Intersection Capacity Utilization 46.1%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 4: Clyde Ave & Doheny St



Lanes, Volumes, Timings
5: Saigon Ct & Carling Ave WB

10/18/2023



Lane Group	WBL	WBT	WBR	NBL	NBT	SBT
Lane Configurations						
Traffic Volume (vph)	32	1880	12	37	9	87
Future Volume (vph)	32	1880	12	37	9	87
Lane Group Flow (vph)	32	1880	12	0	46	102
Turn Type	Perm	NA	Perm	Perm	NA	NA
Protected Phases		8			2	6
Permitted Phases	8		8	2		
Detector Phase	8	8	8	2	2	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	29.7	29.7	29.7	26.7	26.7	26.7
Total Split (s)	93.0	93.0	93.0	27.0	27.0	27.0
Total Split (%)	77.5%	77.5%	77.5%	22.5%	22.5%	22.5%
Yellow Time (s)	3.7	3.7	3.7	3.3	3.3	3.3
All-Red Time (s)	2.0	2.0	2.0	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.7	5.7	5.7		5.7	5.7
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max	C-Max	C-Max	None	None	None
Act Effct Green (s)	95.2	95.2	95.2		13.4	13.4
Actuated g/C Ratio	0.79	0.79	0.79		0.11	0.11
v/c Ratio	0.02	0.70	0.01		0.35	0.51
Control Delay	3.4	8.1	0.7		41.6	55.4
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	3.4	8.1	0.7		41.6	55.4
LOS	A	A	A		D	E
Approach Delay		8.0			41.6	55.4
Approach LOS		A			D	E
Queue Length 50th (m)	1.2	81.7	0.0		9.3	21.9
Queue Length 95th (m)	4.4	151.3	0.8		20.4	36.6
Internal Link Dist (m)		298.8			45.3	50.2
Turn Bay Length (m)	50.0		40.0			
Base Capacity (vph)	1338	2689	1161		207	313
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.02	0.70	0.01		0.22	0.33

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 62 (52%), Referenced to phase 8:WBTL, Start of Green
 Natural Cycle: 80
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.70
 Intersection Signal Delay: 11.1
 Intersection Capacity Utilization 75.3%
 Analysis Period (min) 15
 Intersection LOS: B
 ICU Level of Service D

Splits and Phases: 5: Saigon Ct & Carling Ave WB



Lanes, Volumes, Timings
6: Carling Ave EB & Saigon Ct

10/18/2023

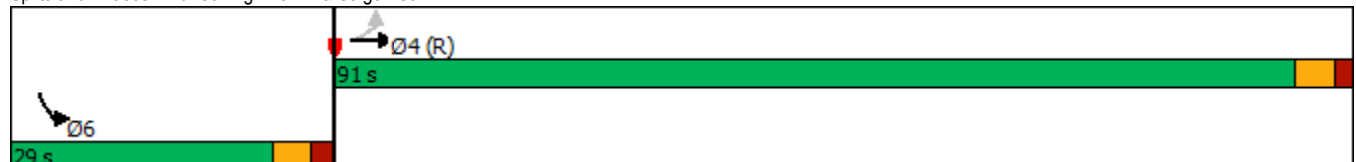


Lane Group	EBT	SBL
Lane Configurations		
Traffic Volume (vph)	1099	119
Future Volume (vph)	1099	119
Lane Group Flow (vph)	1144	119
Turn Type	NA	Prot
Protected Phases	4	6
Permitted Phases		
Detector Phase	4	6
Switch Phase		
Minimum Initial (s)	10.0	5.0
Minimum Split (s)	15.4	22.6
Total Split (s)	91.0	29.0
Total Split (%)	75.8%	24.2%
Yellow Time (s)	3.7	3.3
All-Red Time (s)	1.7	2.3
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	5.4	5.6
Lead/Lag		
Lead-Lag Optimize?		
Recall Mode	C-Max	None
Act Effct Green (s)	99.3	9.7
Actuated g/C Ratio	0.83	0.08
v/c Ratio	0.41	0.45
Control Delay	0.9	43.9
Queue Delay	0.0	0.0
Total Delay	0.9	43.9
LOS	A	D
Approach Delay	0.9	43.9
Approach LOS	A	D
Queue Length 50th (m)	4.8	15.1
Queue Length 95th (m)	5.7	24.7
Internal Link Dist (m)	110.2	45.3
Turn Bay Length (m)		
Base Capacity (vph)	2799	641
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.41	0.19

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 105 (88%), Referenced to phase 4:EBTL, Start of Green	
Natural Cycle: 50	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.45	
Intersection Signal Delay: 5.0	Intersection LOS: A
Intersection Capacity Utilization 46.8%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: Carling Ave EB & Saigon Ct



Lanes, Volumes, Timings
 7: Clyde Ave & Laperriere Ave

10/18/2023



Lane Group	WBL	NBT	SBT
Lane Configurations			
Traffic Volume (vph)	249	207	254
Future Volume (vph)	249	207	254
Lane Group Flow (vph)	438	370	397
Sign Control	Stop	Stop	Stop
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 81.8%		ICU Level of Service D	
Analysis Period (min) 15			

HCM Unsignalized Intersection Capacity Analysis
 7: Clyde Ave & Laperriere Ave

10/18/2023



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	249	189	207	163	143	254
Future Volume (vph)	249	189	207	163	143	254
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	249	189	207	163	143	254
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	438	370	397			
Volume Left (vph)	249	0	143			
Volume Right (vph)	189	163	0			
Hadj (s)	-0.09	-0.15	0.16			
Departure Headway (s)	6.0	5.9	6.2			
Degree Utilization, x	0.73	0.61	0.68			
Capacity (veh/h)	570	574	551			
Control Delay (s)	23.4	17.7	21.3			
Approach Delay (s)	23.4	17.7	21.3			
Approach LOS	C	C	C			
Intersection Summary						
Delay			21.0			
Level of Service			C			
Intersection Capacity Utilization			81.8%	ICU Level of Service		D
Analysis Period (min)			15			

Lanes, Volumes, Timings
 8: Clyde Ave & Woodward Dr

10/18/2023



Lane Group	EBL	EBR	NBT	SBT	SBR
Lane Configurations					
Traffic Volume (vph)	318	17	52	18	487
Future Volume (vph)	318	17	52	18	487
Lane Group Flow (vph)	318	17	73	18	487
Sign Control	Free		Stop	Stop	

Intersection Summary	
Control Type: Unsignalized	
Intersection Capacity Utilization 42.6%	ICU Level of Service A
Analysis Period (min) 15	

HCM Unsignalized Intersection Capacity Analysis
 8: Clyde Ave & Woodward Dr

10/18/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	318	17	21	52	18	487
Future Volume (Veh/h)	318	17	21	52	18	487
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	318	17	21	52	18	487
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						3
Median type	None					
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	0		645	636	636	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		645	636	636	0
tC, single (s)	4.1		7.1	6.5	6.5	6.2
tC, 2 stage (s)						
tF (s)	2.2		3.5	4.0	4.0	3.3
p0 queue free %	80		88	84	94	55
cM capacity (veh/h)	1623		173	318	318	1085
Direction, Lane #	EB 1	EB 2	NB 1	SB 1		
Volume Total	318	17	73	505		
Volume Left	318	0	21	0		
Volume Right	0	17	0	487		
cSH	1623	1700	256	1125		
Volume to Capacity	0.20	0.01	0.29	0.45		
Queue Length 95th (m)	5.5	0.0	8.7	18.0		
Control Delay (s)	7.8	0.0	24.6	11.2		
Lane LOS	A		C	B		
Approach Delay (s)	7.4		24.6	11.2		
Approach LOS			C	B		
Intersection Summary						
Average Delay			10.9			
Intersection Capacity Utilization			42.6%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings
 9: Clyde Ave & Clyde Access

10/18/2023



Lane Group	WBL	NBT	SBT
Lane Configurations			
Traffic Volume (vph)	38	368	401
Future Volume (vph)	38	368	401
Lane Group Flow (vph)	75	398	466
Sign Control	Stop	Free	Free
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 40.1%		ICU Level of Service A	
Analysis Period (min) 15			

HCM Unsignalized Intersection Capacity Analysis
 9: Clyde Ave & Clyde Access

10/18/2023



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T			T
Traffic Volume (veh/h)	38	37	368	30	65	401
Future Volume (Veh/h)	38	37	368	30	65	401
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	38	37	368	30	65	401
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)			40			108
pX, platoon unblocked						
vC, conflicting volume	714	199			398	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	714	199			398	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	89	95			94	
cM capacity (veh/h)	346	809			1157	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	75	245	153	199	267	
Volume Left	38	0	0	65	0	
Volume Right	37	0	30	0	0	
cSH	482	1700	1700	1157	1700	
Volume to Capacity	0.16	0.14	0.09	0.06	0.16	
Queue Length 95th (m)	4.2	0.0	0.0	1.4	0.0	
Control Delay (s)	13.8	0.0	0.0	3.1	0.0	
Lane LOS	B			A		
Approach Delay (s)	13.8	0.0		1.3		
Approach LOS	B					
Intersection Summary						
Average Delay			1.8			
Intersection Capacity Utilization			40.1%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
 10: Carling Access & Carling Ave

10/18/2023



Lane Group	EBT	WBT	NBR
Lane Configurations			
Traffic Volume (vph)	950	1964	35
Future Volume (vph)	950	1964	35
Lane Group Flow (vph)	1006	1964	35
Sign Control	Free	Free	

Intersection Summary	
Control Type: Unsignalized	
Intersection Capacity Utilization 60.6%	ICU Level of Service B
Analysis Period (min) 15	

HCM Unsignalized Intersection Capacity Analysis
 10: Carling Access & Carling Ave

10/18/2023



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕↕			↕↕		↗
Traffic Volume (veh/h)	950	56	0	1964	0	35
Future Volume (Veh/h)	950	56	0	1964	0	35
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	950	56	0	1964	0	35
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	112			186		
pX, platoon unblocked			0.84		0.69	0.84
vC, conflicting volume			1006		1960	503
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			616		408	15
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	96
cM capacity (veh/h)			803		392	888
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	633	373	982	982	35	
Volume Left	0	0	0	0	0	
Volume Right	0	56	0	0	35	
cSH	1700	1700	1700	1700	888	
Volume to Capacity	0.37	0.22	0.58	0.58	0.04	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.9	
Control Delay (s)	0.0	0.0	0.0	0.0	9.2	
Lane LOS					A	
Approach Delay (s)	0.0		0.0		9.2	
Approach LOS					A	
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			60.6%		ICU Level of Service	B
Analysis Period (min)			15			

Lanes, Volumes, Timings

11: Carling Ave EB & Carling Ave/Carling Ave WB

10/18/2023



Lane Group	EBR	WBT
Lane Configurations		
Traffic Volume (vph)	1140	1979
Future Volume (vph)	1140	1979
Lane Group Flow (vph)	1140	1979
Sign Control		Free

Intersection Summary

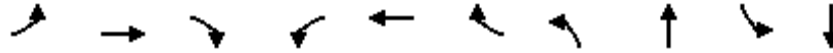
Control Type: Unsignalized	
Intersection Capacity Utilization 61.1%	ICU Level of Service B
Analysis Period (min) 15	

Intersection Sign configuration not allowed in HCM analysis.

Total Projected 2036 with Demand Rationalization

Lanes, Volumes, Timings
1: Churchill Ave & Carling Ave

10/18/2023

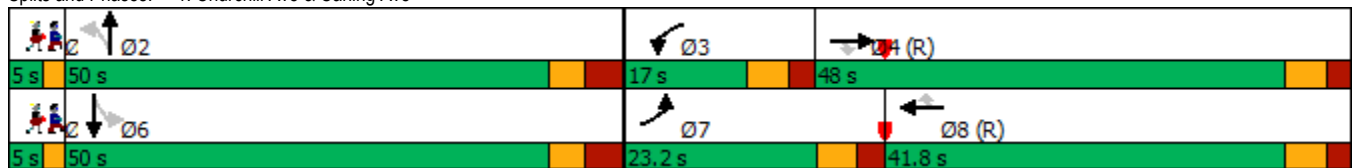


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	Ø1	Ø5
Lane Configurations												
Traffic Volume (vph)	177	1253	98	181	592	154	11	44	347	44		
Future Volume (vph)	177	1253	98	181	592	154	11	44	347	44		
Lane Group Flow (vph)	177	1253	98	181	592	154	11	288	347	288		
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	NA		
Protected Phases	7	4		3	8			2		6	1	5
Permitted Phases			4			8	2		6			
Detector Phase	7	4	4	3	8	8	2	2	6	6		
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	3.0	3.0
Minimum Split (s)	11.1	34.1	34.1	11.1	34.1	34.1	39.8	39.8	39.8	39.8	5.0	5.0
Total Split (s)	23.2	48.0	48.0	17.0	41.8	41.8	50.0	50.0	50.0	50.0	5.0	5.0
Total Split (%)	19.3%	40.0%	40.0%	14.2%	34.8%	34.8%	41.7%	41.7%	41.7%	41.7%	4%	4%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	2.0	2.0
All-Red Time (s)	2.4	2.4	2.4	2.4	2.4	2.4	3.5	3.5	3.5	3.5	0.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1	6.1	6.8	6.8	6.8	6.8		
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	Max	Max	Max	Max	None	None
Act Effct Green (s)	15.7	41.9	41.9	10.9	37.1	37.1	48.2	48.2	48.2	48.2		
Actuated g/C Ratio	0.13	0.35	0.35	0.09	0.31	0.31	0.40	0.40	0.40	0.40		
v/c Ratio	0.80	1.06	0.17	1.18	0.58	0.29	0.03	0.38	0.99	0.39		
Control Delay	79.9	81.9	13.8	174.3	35.6	6.4	22.3	6.4	82.8	6.6		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	79.9	81.9	13.8	174.3	35.6	6.4	22.3	6.4	82.8	6.6		
LOS	E	F	B	F	D	A	C	A	F	A		
Approach Delay		77.3			57.9			7.0		48.2		
Approach LOS		E			E			A		D		
Queue Length 50th (m)	44.4	~165.7	3.5	~51.2	63.2	2.2	1.6	6.3	80.0	6.3		
Queue Length 95th (m)	m59.7	#206.6	m11.5	#92.4	82.0	15.9	5.4	24.7	#141.4	25.0		
Internal Link Dist (m)		162.3			176.6			177.0		412.2		
Turn Bay Length (m)	65.0		30.0	65.0		40.0	20.0		20.0			
Base Capacity (vph)	241	1183	573	153	1027	527	353	754	350	732		
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Reduced v/c Ratio	0.73	1.06	0.17	1.18	0.58	0.29	0.03	0.38	0.99	0.39		

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 92 (77%), Referenced to phase 4:EBT and 8:WBT, Start of Green
 Natural Cycle: 140
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.18
 Intersection Signal Delay: 60.3
 Intersection LOS: E
 Intersection Capacity Utilization 116.4%
 ICU Level of Service H
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Churchill Ave & Carling Ave



Lanes, Volumes, Timings
2: Clyde Ave/Cole Ave & Carling Ave

10/18/2023

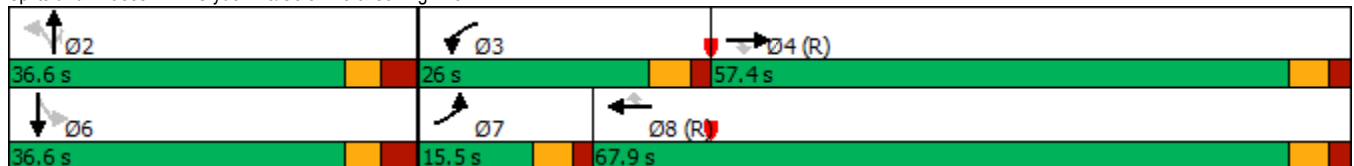


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	61	1295	128	210	614	52	169	51	151	35	63
Future Volume (vph)	61	1295	128	210	614	52	169	51	151	35	63
Lane Group Flow (vph)	61	1295	128	210	614	52	169	51	151	35	129
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA
Protected Phases	7	4		3	8			2			6
Permitted Phases			4			8	2		2	6	
Detector Phase	7	4	4	3	8	8	2	2	2	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	10.4	30.8	30.8	10.4	30.8	30.8	36.6	36.6	36.6	36.6	36.6
Total Split (s)	15.5	57.4	57.4	26.0	67.9	67.9	36.6	36.6	36.6	36.6	36.6
Total Split (%)	12.9%	47.8%	47.8%	21.7%	56.6%	56.6%	30.5%	30.5%	30.5%	30.5%	30.5%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	1.7	2.1	2.1	1.7	2.1	2.1	3.3	3.3	3.3	3.3	3.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.4	5.8	5.8	5.4	5.8	5.8	6.6	6.6	6.6	6.6	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)	9.0	60.0	60.0	19.4	72.7	72.7	22.8	22.8	22.8	22.8	22.8
Actuated g/C Ratio	0.08	0.50	0.50	0.16	0.61	0.61	0.19	0.19	0.19	0.19	0.19
v/c Ratio	0.48	0.76	0.16	0.80	0.30	0.06	0.82	0.15	0.41	0.15	0.38
Control Delay	68.8	13.3	0.5	79.5	6.5	0.3	75.9	38.9	9.1	39.0	29.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.8	13.3	0.5	79.5	6.5	0.3	75.9	38.9	9.1	39.0	29.8
LOS	E	B	A	E	A	A	E	D	A	D	C
Approach Delay		14.5			23.7			43.6			31.8
Approach LOS		B			C			D			C
Queue Length 50th (m)	15.2	32.2	0.2	51.4	15.4	0.1	38.3	10.0	0.0	6.9	17.6
Queue Length 95th (m)	m20.9	#104.3	m0.7	#84.4	25.0	m0.4	59.8	19.6	16.1	14.9	33.2
Internal Link Dist (m)		369.5			87.5			83.7			136.4
Turn Bay Length (m)	20.0		105.0	120.0		30.0	95.0		5.0	20.0	
Base Capacity (vph)	145	1696	808	288	2014	919	270	446	442	318	438
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.42	0.76	0.16	0.73	0.30	0.06	0.63	0.11	0.34	0.11	0.29

Intersection Summary

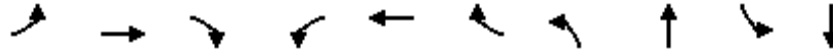
Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 93 (78%), Referenced to phase 4:EBT and 8:WBT, Start of Green
 Natural Cycle: 100
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.82
 Intersection Signal Delay: 22.0
 Intersection LOS: C
 Intersection Capacity Utilization 92.9%
 ICU Level of Service F
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: Clyde Ave/Cole Ave & Carling Ave



Lanes, Volumes, Timings
3: Broadview Ave & Carling Ave

10/18/2023



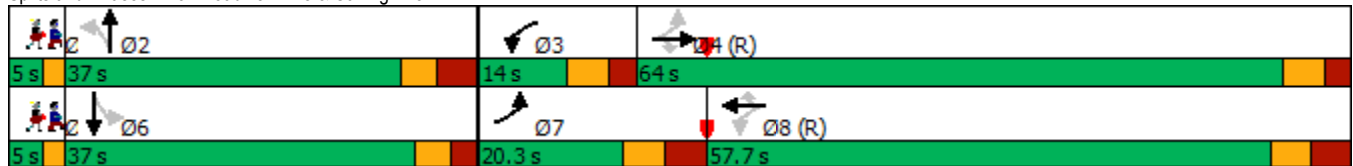
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	Ø1	Ø5
Lane Configurations												
Traffic Volume (vph)	197	1313	104	99	643	121	112	24	157	20		
Future Volume (vph)	197	1313	104	99	643	121	112	24	157	20		
Lane Group Flow (vph)	197	1313	104	99	643	121	112	96	157	155		
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA		
Protected Phases	7	4		3	8			2		6	1	5
Permitted Phases	4		4	8		8	2		6			
Detector Phase	7	4	4	3	8	8	2	2	6	6		
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	3.0	3.0
Minimum Split (s)	12.4	23.2	23.2	11.2	24.4	24.4	37.0	37.0	35.8	35.8	5.0	5.0
Total Split (s)	20.3	64.0	64.0	14.0	57.7	57.7	37.0	37.0	37.0	37.0	5.0	5.0
Total Split (%)	16.9%	53.3%	53.3%	11.7%	48.1%	48.1%	30.8%	30.8%	30.8%	30.8%	4%	4%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	2.0	2.0
All-Red Time (s)	3.7	2.5	2.5	2.5	3.7	3.7	3.7	3.7	2.5	2.5	0.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	7.4	6.2	6.2	6.2	7.4	7.4	7.0	7.0	5.8	5.8		
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	Max	Max	Max	Max	Min	Min
Act Effct Green (s)	68.3	58.2	58.2	60.5	51.9	51.9	30.0	30.0	31.2	31.2		
Actuated g/C Ratio	0.57	0.48	0.48	0.50	0.43	0.43	0.25	0.25	0.26	0.26		
v/c Ratio	0.47	0.80	0.16	0.54	0.46	0.20	0.46	0.22	0.51	0.34		
Control Delay	15.5	30.7	3.3	30.8	38.9	16.4	45.3	13.7	44.7	10.3		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	15.5	30.7	3.3	30.8	38.9	16.4	45.3	13.7	44.7	10.3		
LOS	B	C	A	C	D	B	D	B	D	B		
Approach Delay		27.1			34.8			30.7		27.6		
Approach LOS		C			C			C		C		
Queue Length 50th (m)	20.4	133.8	0.0	13.5	68.1	9.5	22.4	4.3	31.6	3.6		
Queue Length 95th (m)	32.2	163.1	8.1	m24.6	81.9	m22.0	40.8	17.8	53.4	20.2		
Internal Link Dist (m)		239.1			369.5			434.9		268.8		
Turn Bay Length (m)	70.0		30.0	50.0		30.0	20.0		45.0			
Base Capacity (vph)	440	1642	660	189	1409	615	244	432	309	458		
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Reduced v/c Ratio	0.45	0.80	0.16	0.52	0.46	0.20	0.46	0.22	0.51	0.34		

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 77 (64%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.80
 Intersection Signal Delay: 29.6
 Intersection Capacity Utilization 99.3%
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Intersection LOS: C
 ICU Level of Service F

Splits and Phases: 3: Broadview Ave & Carling Ave



Lanes, Volumes, Timings
4: Clyde Ave & Doheny St

10/18/2023

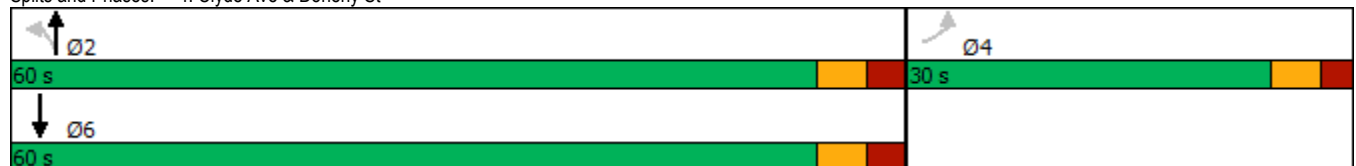


Lane Group	EBL	NBL	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	34	91	324	342
Future Volume (vph)	34	91	324	342
Lane Group Flow (vph)	94	91	324	422
Turn Type	Perm	Perm	NA	NA
Protected Phases			2	6
Permitted Phases	4	2		
Detector Phase	4	2	2	6
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	10.0
Minimum Split (s)	24.6	29.0	29.0	29.0
Total Split (s)	30.0	60.0	60.0	60.0
Total Split (%)	33.3%	66.7%	66.7%	66.7%
Yellow Time (s)	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.7	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	Max	Max	Max
Act Effct Green (s)	11.8	66.0	66.0	66.0
Actuated g/C Ratio	0.14	0.78	0.78	0.78
v/c Ratio	0.35	0.13	0.25	0.32
Control Delay	18.0	4.7	4.7	4.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	18.0	4.7	4.7	4.9
LOS	B	A	A	A
Approach Delay	18.0		4.7	4.9
Approach LOS	B		A	A
Queue Length 50th (m)	5.4	3.3	13.2	17.2
Queue Length 95th (m)	16.3	11.2	33.4	43.5
Internal Link Dist (m)	281.3		265.7	16.3
Turn Bay Length (m)		45.0		
Base Capacity (vph)	497	711	1302	1313
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	0.19	0.13	0.25	0.32

Intersection Summary

Cycle Length: 90	
Actuated Cycle Length: 84.6	
Natural Cycle: 55	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.35	
Intersection Signal Delay: 6.2	Intersection LOS: A
Intersection Capacity Utilization 56.4%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 4: Clyde Ave & Doheny St



Lanes, Volumes, Timings
5: Saigon Ct & Carling Ave WB

10/18/2023



Lane Group	WBL	WBT	WBR	NBL	NBT	SBT
Lane Configurations						
Traffic Volume (vph)	29	873	58	22	52	26
Future Volume (vph)	29	873	58	22	52	26
Lane Group Flow (vph)	29	873	58	0	74	35
Turn Type	Perm	NA	Perm	Perm	NA	NA
Protected Phases		8			2	6
Permitted Phases	8		8	2		
Detector Phase	8	8	8	2	2	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	29.7	29.7	29.7	26.7	26.7	26.7
Total Split (s)	84.0	84.0	84.0	36.0	36.0	36.0
Total Split (%)	70.0%	70.0%	70.0%	30.0%	30.0%	30.0%
Yellow Time (s)	3.7	3.7	3.7	3.3	3.3	3.3
All-Red Time (s)	2.0	2.0	2.0	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.7	5.7	5.7		5.7	5.7
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max	C-Max	C-Max	None	None	None
Act Effct Green (s)	101.2	101.2	101.2		11.7	11.7
Actuated g/C Ratio	0.84	0.84	0.84		0.10	0.10
v/c Ratio	0.02	0.31	0.05		0.48	0.20
Control Delay	2.6	3.1	0.8		46.6	41.7
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	2.6	3.1	0.8		46.6	41.7
LOS	A	A	A		D	D
Approach Delay		3.0			46.6	41.7
Approach LOS		A			D	D
Queue Length 50th (m)	1.0	21.3	0.0		15.2	5.8
Queue Length 95th (m)	3.2	33.8	2.5		m24.7	15.2
Internal Link Dist (m)		298.8			45.3	50.2
Turn Bay Length (m)	50.0		40.0			
Base Capacity (vph)	1429	2777	1238		399	441
Starvation Cap Reductn	0	0	0		14	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.02	0.31	0.05		0.19	0.08

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 62 (52%), Referenced to phase 8:WBTL, Start of Green
 Natural Cycle: 60
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.48
 Intersection Signal Delay: 7.3
 Intersection LOS: A
 Intersection Capacity Utilization 45.8%
 ICU Level of Service A
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: Saigon Ct & Carling Ave WB



Lanes, Volumes, Timings
6: Carling Ave EB & Saigon Ct

10/18/2023

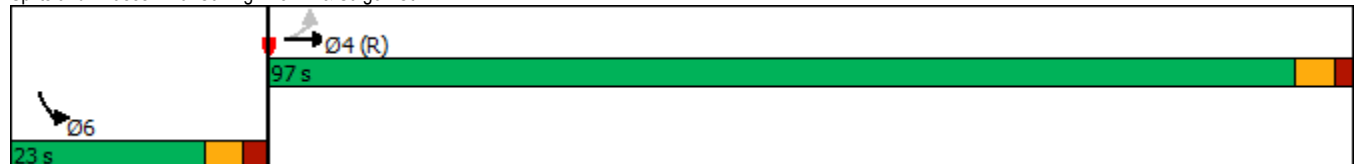


Lane Group	EBT	SBL
Lane Configurations		
Traffic Volume (vph)	1736	42
Future Volume (vph)	1736	42
Lane Group Flow (vph)	1841	42
Turn Type	NA	Prot
Protected Phases	4	6
Permitted Phases		
Detector Phase	4	6
Switch Phase		
Minimum Initial (s)	10.0	5.0
Minimum Split (s)	15.4	22.6
Total Split (s)	97.0	23.0
Total Split (%)	80.8%	19.2%
Yellow Time (s)	3.7	3.3
All-Red Time (s)	1.7	2.3
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	5.4	5.6
Lead/Lag		
Lead-Lag Optimize?		
Recall Mode	C-Max	None
Act Effct Green (s)	105.3	7.0
Actuated g/C Ratio	0.88	0.06
v/c Ratio	0.62	0.22
Control Delay	3.0	53.8
Queue Delay	0.0	0.0
Total Delay	3.0	53.8
LOS	A	D
Approach Delay	3.0	53.8
Approach LOS	A	D
Queue Length 50th (m)	17.6	5.2
Queue Length 95th (m)	m10.6	11.1
Internal Link Dist (m)	110.2	45.3
Turn Bay Length (m)		
Base Capacity (vph)	2966	476
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.62	0.09

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 105 (88%), Referenced to phase 4:EBTL, Start of Green
 Natural Cycle: 70
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.62
 Intersection Signal Delay: 4.2
 Intersection LOS: A
 Intersection Capacity Utilization 67.2%
 ICU Level of Service C
 Analysis Period (min) 15
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Carling Ave EB & Saigon Ct



Lanes, Volumes, Timings
 7: Clyde Ave & Laperriere Ave

10/18/2023



Lane Group	WBL	NBT	SBT
Lane Configurations			
Traffic Volume (vph)	128	219	261
Future Volume (vph)	128	219	261
Lane Group Flow (vph)	368	391	470
Sign Control	Stop	Stop	Stop
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 83.5%		ICU Level of Service E	
Analysis Period (min) 15			

HCM Unsignalized Intersection Capacity Analysis
 7: Clyde Ave & Laperriere Ave

10/18/2023



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	128	240	219	172	209	261
Future Volume (vph)	128	240	219	172	209	261
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	128	240	219	172	209	261
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	368	391	470			
Volume Left (vph)	128	0	209			
Volume Right (vph)	240	172	0			
Hadj (s)	-0.27	-0.10	0.19			
Departure Headway (s)	6.0	5.8	6.0			
Degree Utilization, x	0.61	0.63	0.78			
Capacity (veh/h)	559	588	579			
Control Delay (s)	18.0	18.3	26.8			
Approach Delay (s)	18.0	18.3	26.8			
Approach LOS	C	C	D			
Intersection Summary						
Delay			21.5			
Level of Service			C			
Intersection Capacity Utilization			83.5%	ICU Level of Service		E
Analysis Period (min)			15			

Lanes, Volumes, Timings
 8: Clyde Ave & Woodward Dr

10/18/2023



Lane Group	EBL	EBR	NBT	SBT	SBR
Lane Configurations					
Traffic Volume (vph)	353	8	38	47	342
Future Volume (vph)	353	8	38	47	342
Lane Group Flow (vph)	353	8	50	47	342
Sign Control	Free		Stop	Stop	

Intersection Summary	
Control Type: Unsignalized	
Intersection Capacity Utilization 36.8%	ICU Level of Service A
Analysis Period (min) 15	

HCM Unsignalized Intersection Capacity Analysis
 8: Clyde Ave & Woodward Dr

10/18/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	353	8	12	38	47	342
Future Volume (Veh/h)	353	8	12	38	47	342
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	353	8	12	38	47	342
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)	3					
Median type	None					
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	0		730	706	706	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		730	706	706	0
tC, single (s)	4.1		7.1	6.5	6.5	6.2
tC, 2 stage (s)						
tF (s)	2.2		3.5	4.0	4.0	3.3
p0 queue free %	78		93	87	83	68
cM capacity (veh/h)	1623		169	282	282	1085
Direction, Lane #	EB 1	EB 2	NB 1	SB 1		
Volume Total	353	8	50	389		
Volume Left	353	0	12	0		
Volume Right	0	8	0	342		
cSH	1623	1700	243	1234		
Volume to Capacity	0.22	0.00	0.21	0.32		
Queue Length 95th (m)	6.3	0.0	5.7	10.4		
Control Delay (s)	7.8	0.0	23.6	11.1		
Lane LOS	A		C	B		
Approach Delay (s)	7.7		23.6	11.1		
Approach LOS			C	B		
Intersection Summary						
Average Delay			10.3			
Intersection Capacity Utilization			36.8%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings
 9: Clyde Ave & Clyde Access

10/18/2023



Lane Group	WBL	NBT	SBT
Lane Configurations			
Traffic Volume (vph)	46	357	400
Future Volume (vph)	46	357	400
Lane Group Flow (vph)	92	369	427
Sign Control	Stop	Free	Free

Intersection Summary	
Control Type: Unsignalized	
Intersection Capacity Utilization 39.0%	ICU Level of Service A
Analysis Period (min) 15	

HCM Unsignalized Intersection Capacity Analysis
 9: Clyde Ave & Clyde Access

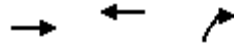
10/18/2023



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	46	46	357	12	27	400
Future Volume (Veh/h)	46	46	357	12	27	400
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	46	46	357	12	27	400
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)			40			108
pX, platoon unblocked						
vC, conflicting volume	617	184			369	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	617	184			369	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	89	94			98	
cM capacity (veh/h)	412	826			1186	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	92	238	131	160	267	
Volume Left	46	0	0	27	0	
Volume Right	46	0	12	0	0	
cSH	550	1700	1700	1186	1700	
Volume to Capacity	0.17	0.14	0.08	0.02	0.16	
Queue Length 95th (m)	4.5	0.0	0.0	0.5	0.0	
Control Delay (s)	12.9	0.0	0.0	1.5	0.0	
Lane LOS	B			A		
Approach Delay (s)	12.9	0.0		0.6		
Approach LOS	B					
Intersection Summary						
Average Delay			1.6			
Intersection Capacity Utilization			39.0%	ICU Level of Service		A
Analysis Period (min)			15			

Lanes, Volumes, Timings
 10: Carling Access & Carling Ave

10/18/2023



Lane Group	EBT	WBT	NBR
Lane Configurations	↕↕	↕↕	↗
Traffic Volume (vph)	1411	777	40
Future Volume (vph)	1411	777	40
Lane Group Flow (vph)	1432	777	40
Sign Control	Free	Free	

Intersection Summary	
Control Type: Unsignalized	
Intersection Capacity Utilization 51.9%	ICU Level of Service A
Analysis Period (min) 15	

HCM Unsignalized Intersection Capacity Analysis
 10: Carling Access & Carling Ave

10/18/2023



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕↕			↕↕		↗
Traffic Volume (veh/h)	1411	21	0	777	0	40
Future Volume (Veh/h)	1411	21	0	777	0	40
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	1411	21	0	777	0	40
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	112			186		
pX, platoon unblocked			0.69		0.76	0.69
vC, conflicting volume			1432		1810	716
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			727		628	0
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	95
cM capacity (veh/h)			602		314	748
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	941	491	388	388	40	
Volume Left	0	0	0	0	0	
Volume Right	0	21	0	0	40	
cSH	1700	1700	1700	1700	748	
Volume to Capacity	0.55	0.29	0.23	0.23	0.05	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	1.3	
Control Delay (s)	0.0	0.0	0.0	0.0	10.1	
Lane LOS					B	
Approach Delay (s)	0.0		0.0		10.1	
Approach LOS					B	
Intersection Summary						
Average Delay			0.2			
Intersection Capacity Utilization			51.9%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings

11: Carling Ave EB & Carling Ave/Carling Ave WB

10/18/2023



Lane Group	EBR	WBT
Lane Configurations		
Traffic Volume (vph)	1820	888
Future Volume (vph)	1820	888
Lane Group Flow (vph)	1820	888
Sign Control		Free

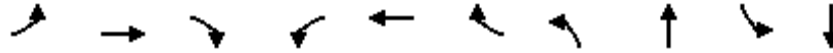
Intersection Summary

Control Type: Unsignalized	
Intersection Capacity Utilization 70.5%	ICU Level of Service C
Analysis Period (min) 15	

Intersection Sign configuration not allowed in HCM analysis.

Lanes, Volumes, Timings
1: Churchill Ave & Carling Ave

10/18/2023



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	Ø1	Ø5
Lane Configurations												
Traffic Volume (vph)	252	778	18	236	1485	218	96	54	187	40		
Future Volume (vph)	252	778	18	236	1485	218	96	54	187	40		
Lane Group Flow (vph)	252	778	18	236	1485	218	96	202	187	328		
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	NA		
Protected Phases	7	4		3	8			2		6	1	5
Permitted Phases			4			8	2		6			
Detector Phase	7	4	4	3	8	8	2	2	6	6		
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	3.0	3.0
Minimum Split (s)	11.1	34.1	34.1	11.1	34.1	34.1	39.8	39.8	39.8	39.8	5.0	5.0
Total Split (s)	22.0	47.9	47.9	27.3	53.2	53.2	39.8	39.8	39.8	39.8	5.0	5.0
Total Split (%)	18.3%	39.9%	39.9%	22.8%	44.3%	44.3%	33.2%	33.2%	33.2%	33.2%	4%	4%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	2.0	2.0
All-Red Time (s)	2.4	2.4	2.4	2.4	2.4	2.4	3.5	3.5	3.5	3.5	0.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	6.1	6.1	6.1	6.1	6.1	6.1	6.8	6.8	6.8	6.8		
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	Max	Max	Max	Max	None	None
Act Effct Green (s)	15.9	43.4	43.4	19.6	47.1	47.1	38.0	38.0	38.0	38.0		
Actuated g/C Ratio	0.13	0.36	0.36	0.16	0.39	0.39	0.32	0.32	0.32	0.32		
v/c Ratio	1.12	0.64	0.03	0.85	1.12	0.35	0.44	0.35	0.58	0.49		
Control Delay	149.7	31.5	0.1	79.2	91.8	9.2	40.3	15.7	43.1	8.3		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	149.7	31.5	0.1	79.2	91.8	9.2	40.3	15.7	43.1	8.3		
LOS	F	C	A	E	F	A	D	B	D	A		
Approach Delay		59.4			81.0			23.6		20.9		
Approach LOS		E			F			C		C		
Queue Length 50th (m)	~70.3	58.0	0.0	47.3	~212.4	10.7	17.9	15.2	36.8	6.6		
Queue Length 95th (m)	#122.4	68.0	m0.0	#90.8	#251.5	14.4	35.0	34.7	61.8	29.9		
Internal Link Dist (m)		162.3			176.6			177.0		412.2		
Turn Bay Length (m)	65.0		30.0	65.0		40.0	20.0		20.0			
Base Capacity (vph)	224	1224	585	299	1330	631	219	571	320	671		
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Reduced v/c Ratio	1.13	0.64	0.03	0.79	1.12	0.35	0.44	0.35	0.58	0.49		

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 92 (77%), Referenced to phase 4:EBT and 8:WBT, Start of Green
 Natural Cycle: 140
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 1.13
 Intersection Signal Delay: 62.4
 Intersection LOS: E
 Intersection Capacity Utilization 118.0%
 ICU Level of Service H
 Analysis Period (min) 15
 ~ Volume exceeds capacity, queue is theoretically infinite.
 Queue shown is maximum after two cycles.
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.
 m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Churchill Ave & Carling Ave



Lanes, Volumes, Timings
2: Clyde Ave/Cole Ave & Carling Ave

10/18/2023



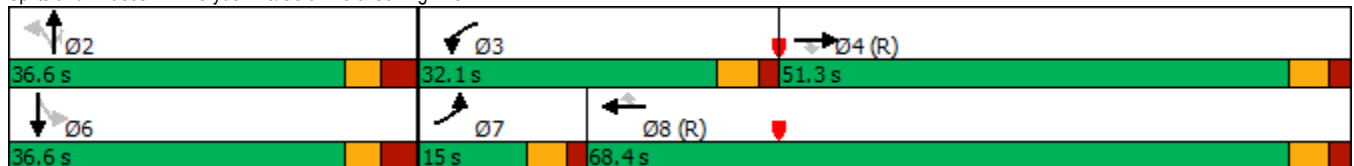
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations											
Traffic Volume (vph)	77	770	175	250	1497	58	147	87	156	22	54
Future Volume (vph)	77	770	175	250	1497	58	147	87	156	22	54
Lane Group Flow (vph)	77	770	175	250	1497	58	147	87	156	22	116
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Perm	NA	Perm	Perm	NA
Protected Phases	7	4		3	8			2			6
Permitted Phases			4			8	2		2	6	
Detector Phase	7	4	4	3	8	8	2	2	2	6	6
Switch Phase											
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	10.4	30.8	30.8	10.4	30.8	30.8	36.6	36.6	36.6	36.6	36.6
Total Split (s)	15.0	51.3	51.3	32.1	68.4	68.4	36.6	36.6	36.6	36.6	36.6
Total Split (%)	12.5%	42.8%	42.8%	26.8%	57.0%	57.0%	30.5%	30.5%	30.5%	30.5%	30.5%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	3.3
All-Red Time (s)	1.7	2.1	2.1	1.7	2.1	2.1	3.3	3.3	3.3	3.3	3.3
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.4	5.8	5.8	5.4	5.8	5.8	6.6	6.6	6.6	6.6	6.6
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag					
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes					
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None
Act Effct Green (s)	9.1	58.6	58.6	22.0	73.9	73.9	21.6	21.6	21.6	21.6	21.6
Actuated g/C Ratio	0.08	0.49	0.49	0.18	0.62	0.62	0.18	0.18	0.18	0.18	0.18
v/c Ratio	0.60	0.47	0.22	0.80	0.72	0.06	0.68	0.27	0.43	0.10	0.35
Control Delay	72.6	12.7	0.9	59.3	17.1	2.8	60.7	42.1	14.2	38.0	26.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.6	12.7	0.9	59.3	17.1	2.8	60.7	42.1	14.2	38.0	26.9
LOS	E	B	A	E	B	A	E	D	B	D	C
Approach Delay		15.2			22.5			38.0			28.7
Approach LOS		B			C			D			C
Queue Length 50th (m)	18.1	25.8	0.0	62.0	73.6	0.7	33.3	18.2	6.5	4.5	14.5
Queue Length 95th (m)	#36.5	31.6	2.3	m63.2	m74.7	m0.9	50.5	29.9	23.2	10.8	28.7
Internal Link Dist (m)		369.5			87.5			83.7			136.4
Turn Bay Length (m)	20.0		105.0	120.0		30.0	95.0		5.0	20.0	
Base Capacity (vph)	138	1654	807	377	2086	905	299	446	459	307	440
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.47	0.22	0.66	0.72	0.06	0.49	0.20	0.34	0.07	0.26

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 93 (78%), Referenced to phase 4:EBT and 8:WBT, Start of Green
 Natural Cycle: 90
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.80
 Intersection Signal Delay: 22.3
 Intersection Capacity Utilization 82.3%
 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.

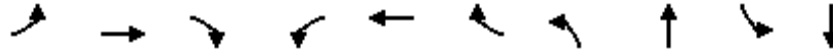
Intersection LOS: C
 ICU Level of Service E

Splits and Phases: 2: Clyde Ave/Cole Ave & Carling Ave



Lanes, Volumes, Timings
3: Broadview Ave & Carling Ave

10/18/2023



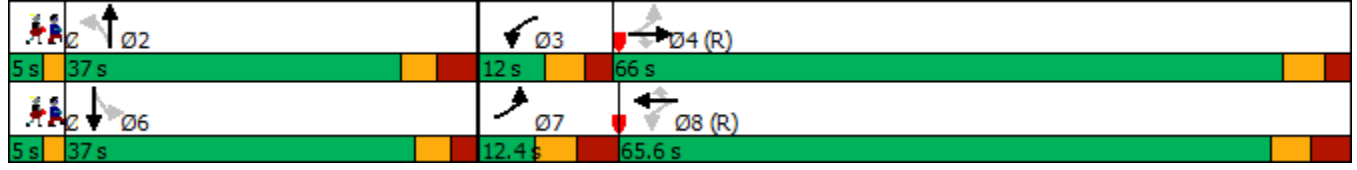
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT	Ø1	Ø5
Lane Configurations												
Traffic Volume (vph)	94	921	31	67	1576	68	181	35	69	23		
Future Volume (vph)	94	921	31	67	1576	68	181	35	69	23		
Lane Group Flow (vph)	94	921	31	67	1576	68	181	68	69	173		
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	NA		
Protected Phases	7	4		3	8			2		6	1	5
Permitted Phases	4		4	8		8	2		6			
Detector Phase	7	4	4	3	8	8	2	2	6	6		
Switch Phase												
Minimum Initial (s)	5.0	10.0	10.0	5.0	10.0	10.0	10.0	10.0	10.0	10.0	3.0	3.0
Minimum Split (s)	12.4	23.2	23.2	11.2	24.4	24.4	37.0	37.0	35.8	35.8	5.0	5.0
Total Split (s)	12.4	66.0	66.0	12.0	65.6	65.6	37.0	37.0	37.0	37.0	5.0	5.0
Total Split (%)	10.3%	55.0%	55.0%	10.0%	54.7%	54.7%	30.8%	30.8%	30.8%	30.8%	4%	4%
Yellow Time (s)	3.7	3.7	3.7	3.7	3.7	3.7	3.3	3.3	3.3	3.3	2.0	2.0
All-Red Time (s)	3.7	2.5	2.5	2.5	3.7	3.7	3.7	3.7	2.5	2.5	0.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	7.4	6.2	6.2	6.2	7.4	7.4	7.0	7.0	5.8	5.8		
Lead-Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lag	Lag	Lag	Lag	Lead	Lead
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	Max	Max	Max	Max	Min	Min
Act Effct Green (s)	65.0	62.2	62.2	65.2	58.2	58.2	30.0	30.0	31.2	31.2		
Actuated g/C Ratio	0.54	0.52	0.52	0.54	0.48	0.48	0.25	0.25	0.26	0.26		
v/c Ratio	0.73	0.52	0.04	0.23	0.96	0.10	0.74	0.16	0.21	0.35		
Control Delay	49.2	21.1	0.1	16.9	47.3	3.7	60.4	21.3	37.0	10.0		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay	49.2	21.1	0.1	16.9	47.3	3.7	60.4	21.3	37.0	10.0		
LOS	D	C	A	B	D	A	E	C	D	B		
Approach Delay		23.0			44.4			49.8		17.7		
Approach LOS		C			D			D		B		
Queue Length 50th (m)	9.2	76.2	0.0	8.5	185.2	0.7	39.3	6.3	12.8	4.1		
Queue Length 95th (m)	#34.1	94.7	0.0	m10.9	#232.4	m2.6	#72.9	17.9	25.4	21.7		
Internal Link Dist (m)		239.1			369.5			434.9		268.8		
Turn Bay Length (m)	70.0		30.0	50.0		30.0	20.0		45.0			
Base Capacity (vph)	129	1757	779	288	1644	709	246	432	325	496		
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0		
Reduced v/c Ratio	0.73	0.52	0.04	0.23	0.96	0.10	0.74	0.16	0.21	0.35		

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 77 (64%), Referenced to phase 4:EBTL and 8:WBTL, Start of Green
 Natural Cycle: 110
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.96
 Intersection Signal Delay: 35.9
 Intersection LOS: D
 Intersection Capacity Utilization 110.1%
 ICU Level of Service H
 Analysis Period (min) 15

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

Splits and Phases: 3: Broadview Ave & Carling Ave



Lanes, Volumes, Timings
4: Clyde Ave & Doheny St

10/18/2023



Lane Group	EBL	NBL	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	24	32	332	308
Future Volume (vph)	24	32	332	308
Lane Group Flow (vph)	76	32	332	363
Turn Type	Perm	Perm	NA	NA
Protected Phases			2	6
Permitted Phases	4	2		
Detector Phase	4	2	2	6
Switch Phase				
Minimum Initial (s)	10.0	10.0	10.0	10.0
Minimum Split (s)	24.6	29.0	29.0	29.0
Total Split (s)	34.0	71.0	71.0	71.0
Total Split (%)	32.4%	67.6%	67.6%	67.6%
Yellow Time (s)	3.3	3.3	3.3	3.3
All-Red Time (s)	2.3	2.7	2.7	2.7
Lost Time Adjust (s)	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.6	6.0	6.0	6.0
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode	None	Max	Max	Max
Act Effct Green (s)	10.2	78.7	78.7	78.7
Actuated g/C Ratio	0.11	0.82	0.82	0.82
v/c Ratio	0.35	0.04	0.23	0.26
Control Delay	22.2	2.8	3.2	3.2
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	22.2	2.8	3.2	3.2
LOS	C	A	A	A
Approach Delay	22.2		3.2	3.2
Approach LOS	C		A	A
Queue Length 50th (m)	4.4	1.1	13.6	14.4
Queue Length 95th (m)	16.4	3.0	22.0	23.5
Internal Link Dist (m)	281.3		265.7	16.3
Turn Bay Length (m)		45.0		
Base Capacity (vph)	510	795	1425	1388
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	0.15	0.04	0.23	0.26

Intersection Summary

Cycle Length: 105	
Actuated Cycle Length: 95.7	
Natural Cycle: 55	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.35	
Intersection Signal Delay: 5.0	Intersection LOS: A
Intersection Capacity Utilization 46.1%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 4: Clyde Ave & Doheny St



Lanes, Volumes, Timings
5: Saigon Ct & Carling Ave WB

10/18/2023



Lane Group	WBL	WBT	WBR	NBL	NBT	SBT
Lane Configurations						
Traffic Volume (vph)	32	1800	12	37	9	87
Future Volume (vph)	32	1800	12	37	9	87
Lane Group Flow (vph)	32	1800	12	0	46	102
Turn Type	Perm	NA	Perm	Perm	NA	NA
Protected Phases		8			2	6
Permitted Phases	8		8	2		
Detector Phase	8	8	8	2	2	6
Switch Phase						
Minimum Initial (s)	10.0	10.0	10.0	10.0	10.0	10.0
Minimum Split (s)	29.7	29.7	29.7	26.7	26.7	26.7
Total Split (s)	92.0	92.0	92.0	28.0	28.0	28.0
Total Split (%)	76.7%	76.7%	76.7%	23.3%	23.3%	23.3%
Yellow Time (s)	3.7	3.7	3.7	3.3	3.3	3.3
All-Red Time (s)	2.0	2.0	2.0	2.4	2.4	2.4
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	5.7	5.7	5.7		5.7	5.7
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	C-Max	C-Max	C-Max	None	None	None
Act Effct Green (s)	95.2	95.2	95.2		13.4	13.4
Actuated g/C Ratio	0.79	0.79	0.79		0.11	0.11
v/c Ratio	0.02	0.67	0.01		0.35	0.51
Control Delay	3.4	7.6	0.7		43.8	55.4
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	3.4	7.6	0.7		43.8	55.4
LOS	A	A	A		D	E
Approach Delay		7.5			43.8	55.4
Approach LOS		A			D	E
Queue Length 50th (m)	1.2	74.3	0.0		10.2	21.9
Queue Length 95th (m)	4.4	137.3	0.8		20.8	36.6
Internal Link Dist (m)		298.8			45.3	50.2
Turn Bay Length (m)	50.0		40.0			
Base Capacity (vph)	1338	2689	1161		217	328
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.02	0.67	0.01		0.21	0.31

Intersection Summary

Cycle Length: 120
 Actuated Cycle Length: 120
 Offset: 62 (52%), Referenced to phase 8:WBTL, Start of Green
 Natural Cycle: 75
 Control Type: Actuated-Coordinated
 Maximum v/c Ratio: 0.67
 Intersection Signal Delay: 10.8
 Intersection LOS: B
 Intersection Capacity Utilization 73.0%
 ICU Level of Service C
 Analysis Period (min) 15

Splits and Phases: 5: Saigon Ct & Carling Ave WB



Lanes, Volumes, Timings
6: Carling Ave EB & Saigon Ct

10/18/2023

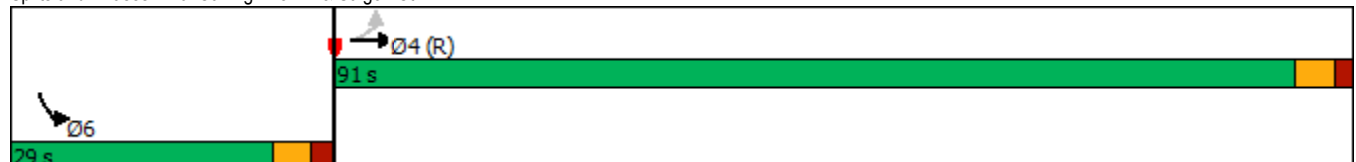


Lane Group	EBT	SBL
Lane Configurations		
Traffic Volume (vph)	1112	119
Future Volume (vph)	1112	119
Lane Group Flow (vph)	1157	119
Turn Type	NA	Prot
Protected Phases	4	6
Permitted Phases		
Detector Phase	4	6
Switch Phase		
Minimum Initial (s)	10.0	5.0
Minimum Split (s)	15.4	22.6
Total Split (s)	91.0	29.0
Total Split (%)	75.8%	24.2%
Yellow Time (s)	3.7	3.3
All-Red Time (s)	1.7	2.3
Lost Time Adjust (s)	0.0	0.0
Total Lost Time (s)	5.4	5.6
Lead/Lag		
Lead-Lag Optimize?		
Recall Mode	C-Max	None
Act Effct Green (s)	99.3	9.7
Actuated g/C Ratio	0.83	0.08
v/c Ratio	0.41	0.45
Control Delay	1.0	44.6
Queue Delay	0.0	0.0
Total Delay	1.0	44.6
LOS	A	D
Approach Delay	1.0	44.6
Approach LOS	A	D
Queue Length 50th (m)	4.3	15.1
Queue Length 95th (m)	5.6	24.7
Internal Link Dist (m)	110.2	45.3
Turn Bay Length (m)		
Base Capacity (vph)	2799	641
Starvation Cap Reductn	0	0
Spillback Cap Reductn	0	0
Storage Cap Reductn	0	0
Reduced v/c Ratio	0.41	0.19

Intersection Summary

Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 105 (88%), Referenced to phase 4:EBTL, Start of Green	
Natural Cycle: 50	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.45	
Intersection Signal Delay: 5.0	Intersection LOS: A
Intersection Capacity Utilization 47.2%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 6: Carling Ave EB & Saigon Ct



Lanes, Volumes, Timings
 7: Clyde Ave & Laperriere Ave

10/18/2023



Lane Group	WBL	NBT	SBT
Lane Configurations			
Traffic Volume (vph)	249	252	278
Future Volume (vph)	249	252	278
Lane Group Flow (vph)	455	415	431
Sign Control	Stop	Stop	Stop
Intersection Summary			
Control Type: Unsignalized			
Intersection Capacity Utilization 87.3%		ICU Level of Service E	
Analysis Period (min) 15			

HCM Unsignalized Intersection Capacity Analysis
 7: Clyde Ave & Laperriere Ave

10/18/2023



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Sign Control	Stop		Stop			Stop
Traffic Volume (vph)	249	206	252	163	153	278
Future Volume (vph)	249	206	252	163	153	278
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	249	206	252	163	153	278
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total (vph)	455	415	431			
Volume Left (vph)	249	0	153			
Volume Right (vph)	206	163	0			
Hadj (s)	-0.11	-0.12	0.16			
Departure Headway (s)	6.3	6.2	6.5			
Degree Utilization, x	0.80	0.72	0.77			
Capacity (veh/h)	552	556	537			
Control Delay (s)	29.4	23.5	28.1			
Approach Delay (s)	29.4	23.5	28.1			
Approach LOS	D	C	D			
Intersection Summary						
Delay			27.1			
Level of Service			D			
Intersection Capacity Utilization			87.3%	ICU Level of Service		E
Analysis Period (min)			15			

Lanes, Volumes, Timings
 8: Clyde Ave & Woodward Dr

10/18/2023



Lane Group	EBL	EBR	NBT	SBT	SBR
Lane Configurations					
Traffic Volume (vph)	363	17	52	18	511
Future Volume (vph)	363	17	52	18	511
Lane Group Flow (vph)	363	17	73	18	511
Sign Control	Free		Stop	Stop	

Intersection Summary	
Control Type: Unsignalized	
Intersection Capacity Utilization 44.2%	ICU Level of Service A
Analysis Period (min) 15	

HCM Unsignalized Intersection Capacity Analysis
 8: Clyde Ave & Woodward Dr

10/18/2023



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	363	17	21	52	18	511
Future Volume (Veh/h)	363	17	21	52	18	511
Sign Control	Free			Stop	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	363	17	21	52	18	511
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						3
Median type	None					
Median storage (veh)						
Upstream signal (m)						
pX, platoon unblocked						
vC, conflicting volume	0		735	726	726	0
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		735	726	726	0
tC, single (s)	4.1		7.1	6.5	6.5	6.2
tC, 2 stage (s)						
tF (s)	2.2		3.5	4.0	4.0	3.3
p0 queue free %	78		85	81	93	53
cM capacity (veh/h)	1623		140	273	273	1085
Direction, Lane #	EB 1	EB 2	NB 1	SB 1		
Volume Total	363	17	73	529		
Volume Left	363	0	21	0		
Volume Right	0	17	0	511		
cSH	1623	1700	214	1123		
Volume to Capacity	0.22	0.01	0.34	0.47		
Queue Length 95th (m)	6.5	0.0	10.9	19.6		
Control Delay (s)	7.9	0.0	30.3	11.5		
Lane LOS	A		D	B		
Approach Delay (s)	7.5		30.3	11.5		
Approach LOS			D	B		
Intersection Summary						
Average Delay			11.4			
Intersection Capacity Utilization			44.2%	ICU Level of Service	A	
Analysis Period (min)			15			

Lanes, Volumes, Timings
 9: Clyde Ave & Clyde Access

10/18/2023



Lane Group	WBL	NBT	SBT
Lane Configurations			
Traffic Volume (vph)	34	388	434
Future Volume (vph)	34	388	434
Lane Group Flow (vph)	68	415	494
Sign Control	Stop	Free	Free

Intersection Summary	
Control Type: Unsignalized	
Intersection Capacity Utilization 40.9%	ICU Level of Service A
Analysis Period (min) 15	

HCM Unsignalized Intersection Capacity Analysis
 9: Clyde Ave & Clyde Access

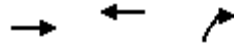
10/18/2023



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	34	34	388	27	60	434
Future Volume (Veh/h)	34	34	388	27	60	434
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	34	34	388	27	60	434
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (m)			40			108
pX, platoon unblocked						
vC, conflicting volume	738	208			415	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	738	208			415	
tC, single (s)	6.8	6.9			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	90	96			95	
cM capacity (veh/h)	334	799			1140	
Direction, Lane #	WB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	68	259	156	205	289	
Volume Left	34	0	0	60	0	
Volume Right	34	0	27	0	0	
cSH	471	1700	1700	1140	1700	
Volume to Capacity	0.14	0.15	0.09	0.05	0.17	
Queue Length 95th (m)	3.8	0.0	0.0	1.3	0.0	
Control Delay (s)	13.9	0.0	0.0	2.8	0.0	
Lane LOS	B			A		
Approach Delay (s)	13.9	0.0		1.2		
Approach LOS	B					
Intersection Summary						
Average Delay			1.6			
Intersection Capacity Utilization			40.9%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings
 10: Carling Access & Carling Ave

10/18/2023

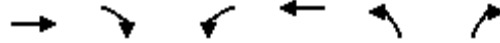


Lane Group	EBT	WBT	NBR
Lane Configurations			
Traffic Volume (vph)	885	1741	25
Future Volume (vph)	885	1741	25
Lane Group Flow (vph)	932	1741	25
Sign Control	Free	Free	

Intersection Summary	
Control Type: Unsignalized	
Intersection Capacity Utilization 54.1%	ICU Level of Service A
Analysis Period (min) 15	

HCM Unsignalized Intersection Capacity Analysis
 10: Carling Access & Carling Ave

10/18/2023



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↕↕			↕↕		↗
Traffic Volume (veh/h)	885	47	0	1741	0	25
Future Volume (Veh/h)	885	47	0	1741	0	25
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	1.00	1.00	1.00	1.00	1.00	1.00
Hourly flow rate (vph)	885	47	0	1741	0	25
Pedestrians						
Lane Width (m)						
Walking Speed (m/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (m)	112			186		
pX, platoon unblocked			0.85		0.69	0.85
vC, conflicting volume			932		1779	466
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			578		280	32
tC, single (s)			4.1		6.8	6.9
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			100		100	97
cM capacity (veh/h)			847		474	883
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	590	342	870	870	25	
Volume Left	0	0	0	0	0	
Volume Right	0	47	0	0	25	
cSH	1700	1700	1700	1700	883	
Volume to Capacity	0.35	0.20	0.51	0.51	0.03	
Queue Length 95th (m)	0.0	0.0	0.0	0.0	0.7	
Control Delay (s)	0.0	0.0	0.0	0.0	9.2	
Lane LOS					A	
Approach Delay (s)	0.0		0.0		9.2	
Approach LOS					A	
Intersection Summary						
Average Delay			0.1			
Intersection Capacity Utilization			54.1%		ICU Level of Service	A
Analysis Period (min)			15			

Lanes, Volumes, Timings

11: Carling Ave EB & Carling Ave/Carling Ave WB

10/18/2023



Lane Group	EBR	WBT
Lane Configurations		
Traffic Volume (vph)	1150	1888
Future Volume (vph)	1150	1888
Lane Group Flow (vph)	1150	1888
Sign Control		Free

Intersection Summary

Control Type: Unsignalized	
Intersection Capacity Utilization 58.4%	ICU Level of Service B
Analysis Period (min) 15	

Intersection Sign configuration not allowed in HCM analysis.